

## At a glance:

Paradise Scientific Company is the company which provides Quality Equipments to the Customers. Three words: Honesty, Integrity and Trust are the foundation of our business. We are committed to supply quality products. We always provide our best support and services to our Consumers.

**Company Profile:** Since 1997

**Company Name:** Paradise Scientific Company

**Business Type:** Distributor, Consultant, Importer, Suppliers & Indentor.

**Range of Business Sector:** Biotechnology, Molecular Biology, Biochemistry, Microbiology, Chemistry, Pharmaceuticals, Food & Beverage, Environment, Forestry, Aquaculture, Agriculture, Medical, (Research, Analytical) Equipments.

### Products List:

Air Sampler	143	Gel Electrophoresis Horizontal/Vertical	125-127	Pipette Controller	100,101
AAS (Atomic Absorption Spectrophotometer)	175	GC (Gas Chromatograph)	172,174	Potentiometric Titrator	11,12
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Block Heater	49,106,107	Hardness Tester Digital	163,165	Rotary Evaporator	108
Bath & Circulator	47,48,130	HPLC (High Performance Liquid Chromatography)	170,171	Refractometer	21,22,23
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Friability Tester	158,168	Nitrogen-Protein Distiller (Food Analysis)	134,135	Vacuum Oven	44
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Gel Documentation System	125	pH Meter	01,02,06,08,13,16		
Gel Dryer	126	Powder Flow Meter	162		

So many Instrument/Equipment with accessories, Glassware, Reagents and Chemicals available

## Multi-parameter Bench Type



### Technical Data

	inoLab® Multi 9310 IDS	inoLab® Multi 9620 IDS	inoLab® Multi 9630 IDS
Parameters	pH, mV, D.O./saturation, concentration, partial pressure, BOD, conductivity (specific resistance, salinity, TDS), temperature, turbidity		
Digital/IDS sensor	●		
Sensor channels	1 universal channel	2 universal channels	3 universal channels
Analog pH/ORP sensors	ADA S7/IDS (optional)	ADA 94 pH/IDS (optional)	
Temp. compensation	all except ORP		all except ORP
Calibration points	pH 1-5 ISE - D.O. 1 Conductivity 1 Turbidity 3	1-5 2-7, adapter required 1 1 3	
Calibration memory	max. 10		max. 10
Calibration timer	1 - 999 days		1 - 999 days
Memory	manual: 500 data sets automatic: 4,500 data sets		manual: 500 data sets automatic: 10,000 data sets
Logger	●		
Interface	Mini USB-B	USB-A, Mini USB-B	
GLP/AQS support	●		
Display	black and white graphic display		color graphic display
Optional printer	yes	external	
Others	CMC, QSC		anti-bacterial keyboard, QSC, CMC
Power supply	universal power supply, batteries (4 x 1.5 V AA type)		universal power supply

## pH Meter Bench Type



### Technical Data

Model	inoLab® pH 7110	inoLab® pH 7310	inoLab® pH/ION 7320
pH	-2.0 ... 20.0 ±0.1 pH -2.00 ... 20.00 ±0.01 pH -2.000 ... 19.999 ±0.005 pH	-2.0 ... 20.0 ±0.1 pH -2.00 ... 20.00 ±0.01 pH -2.000 ... 19.999 ±0.005 pH	-2.0 ... 20.0 ±0.1 pH -2.00 ... 20.00 ±0.01 pH -2.000 ... 19.999 ±0.005 pH
mV	±1200.0 mV ±0.3 mV ±(2000 ±1) mV	±1200.0 mV ±0.3 mV ±(2500 ±1) mV	±1200.0 mV ±0.3 mV ±(2500 ±1) mV
ISE (mg/l, µmol/l, mg/kg, ppm, %)	-	-	0.000 ... 9.999 10.00 ... 99.99 100.0 ... 999.9 1000 ... 9999.99
Temperature	-5.0 ... 105.0 °C ±0.1 °C	-5.0 ... 105.0 °C ±0.1 °C	-5.0 ... 105.0 °C ±0.1 °C
CMC	-	yes	yes

## Conductivity Meter Bench Type



Ultrapure water cell LR 325/01 with glass flow-through vessel

### Technical Data

Model	inoLab® Cond 7110	inoLab® Cond 7310
Conductivity	0.00 ... 1000 mS/cm ±0.5 % of value 0.000 ... 1.999 µS/cm, K= 0.01 cm <sup>-1</sup> 0.00 ... 19.99 µS/cm, K= 0.1 cm <sup>-1</sup>	0.00 ... 1000 mS/cm ±0.5 % of value 0.000 ... 1.999 µS/cm, K= 0.01 cm <sup>-1</sup> 0.00 ... 19.99 µS/cm, K= 0.1 cm <sup>-1</sup>
Resistivity	0.00 ... 199.9 MΩcm	0.00 ... 199.9 MΩcm
Cell constants	fixed: 0.01 cm <sup>-1</sup> with calibration: 0.450 ... 0.500 cm <sup>-1</sup> , 0.800 ... 0.880 cm <sup>-1</sup> adjustable: 0.090 ... 0.110 cm <sup>-1</sup> 0.250 ... 2.500 cm <sup>-1</sup>	0.01 cm <sup>-1</sup> 0.450 ... 0.500 cm <sup>-1</sup> , 0.800 ... 0.880 cm <sup>-1</sup> 0.090 ... 0.110 cm <sup>-1</sup> 0.250 ... 2.500 cm <sup>-1</sup>
Salinity	0.0 ... 70.0 (acc. IOT)	0.0 ... 70.0 (acc. IOT)
TDS	1 ... 1999 mg/l	1 ... 1999 mg/l, 0 ... 199.9 g/l
Temperature	-5.0 ... 105.0 °C ±0.1 °C	-5.0 ... 105.0 °C ±0.1 °C
T <sub>ref</sub>	20 °C/25 °C	20 °C/25 °C
Temperature compensation	none, nIF, 0.000 ... 3.000 %/K	none, nIF, 0.000 ... 10.000 %/K

## DO Meter Bench Type



### Technical Data

Model	inoLab® Oxi 7310
Dissolved Oxygen Concentration*	0.00 ... 20.00 mg/l ±0.5 % of value 0 ... 90 mg/l ±0.5 %
Saturation*	0.0 ... 200.0 % ±0.5 % of value 0 ... 600 % ±0.5 of value
Partial pressure*	0 ... 200.0 hPa, 0 ... 1250 hPa ±0.5% of value
Temperature	0.0 ... 50.0 °C ±0.1 °C
Built-in pressure sensor	yes

\* depends on D.O. sensor

### ▶ pH Meter Portable Type



Technical Data	
Model	Multi 3510 IDS
Range/ pH	-2.000 ... +19.999 ± 0.005 pH
Resolution mV	-1200.0 ... +1200.0 ± 0.3 mV
Accuracy	-2000 ... +2000 ± 1mV
Temperature	-5.0 ... +105.0 ± 0.1 °C (23 ... 221 °F)
Calibration	1, 2 or 3 -point calibration WTW technical buffers, DIN/NIST buffers
Measuring range	Measuring range of the IDS sensor
Display	LCD graphic, backlit
Memory	manual 500 / 4500 automatic
Measurement channel	1
Protection class	IP 67
Power supply	4 x 1,5 V AA (supplied) 4x 1,2 V NiMH-Akku or via USB port

### ▶ Cond./TDS Meter Portable Type



Technical Data	
Model	Multi 3510 IDS
Conductivity	10 µS/cm ... 2000 mS/cm ± 0.5 % of value
Specific resistance	0.5 Ohm cm ... 100 kOhm cm ± 0.5 % of value
Salinity	0.0 ... 70.0 ± 0.5 % of value
TDS	0 ... 1999 mg/l, 0,0 ... 199.9 g/l ± 0.5 % of value
Temperature	0 ... 100.0 °C (32 ... 212 °F) ± 0,2 °C
Cell constant	0.475 cm-1 ± 1.5 %
Shaft material	Epoxy
Shaft dimensions	Length 120 mm (0.39 ft.) ± 1 mm, Ø 15.3 mm (0.05 ft.) ± 0.2 mm
Cable length	1.5 m* (4.92 ft.)
Measuring range	Measuring range of the IDS sensor
Display	LCD graphic, backlit
Memory	manual 500 / 4500 automatic
Measurement channel	1
Protection class	IP 67
Power supply	4 x 1,5 V AA (supplied) 4x 1,2 V NiMH-Akku or via USB port

### ▶ DO Meter Portable Type



Technical Data	
Model	Multi 3510 IDS
Concentration measuring range	0.00...20.00 mg/l ± 0.5 % of value
Saturation measuring range	0.0 ... 200.0 % ± 0.5 % of value
Partial pressure measuring range	0.0 to 400 hPa ± 0.5 % of value
Temperature	0 ... 50.0 °C (32 ... 122 °F) ± 0.2 °C
Membrane shape	Beveled
Shaft material	POM, Stainless steel
Shaft dimensions	length, 140 mm (0.46 ft.) ± 1 mm, Ø 15,3 mm (0.05 ft.) ± 0,2 mm
Cable length	1,5 m* (4.92 ft.)
Measuring range	Measuring range of the IDS sensor
Display	LCD graphic, backlit
Memory	manual 500 / 4500 automatic
Measurement channel	1
Protection class	IP 67
Power supply	4 x 1,5 V AA (supplied) 4x 1,2 V NiMH-Akku or via USB port

### ▶ Turbidity Meter



Technical Data		
Model	Turb® 430	Turb® 555
Measuring ranges	NTU 0 ... 1100 / 0-1100 FNU 0 ... 1100	NTU 0 ... 10000 FNU 0 ... 10000 (IR)
Resolution	0.01 for range 0.00 ... 9.99 0.1 for range 10 ... 99.90 1 for range 100 ... 1100	0.0001 for range 0.0001 ... 9.9999 0.001 for range 10 ... 99.999 0.01 for range 100.00 ... 999.99 0.1 for range 1000.0 ... 9999.9
Accuracy	± 0.01 NTU or ± 2% of the measured value	0 ... 1000: 0.01 or ±2% of the value 1000...4000: ±5% of the value 4000 ... 10000: ± 10% of the value
Reproducibility	0.01 NTU or < 0.5% of measured value	0.01 NTU or ± 1% of the measured value
Cuvette size	28x60 mm, 20 ml sample volume	28x70 mm, 25 ml sample volume
Power supply	4 x AA batteries for approx. 3000 measurements	Power cable 100-240 VAC ±10%

## ↘ BOD Self-check Measurement



### Oxi Top® IS 6, IS 12

- \* High-precision
- \* 5-day automatic storage of measured values
- \* Portable
- \* Extendable

### Technical Data OxiTop® Measuring Head

Measuring principle	Manometric with pressure sensor
Measurement of	BOD <sub>n</sub>
Measurement range	0 ... 40 digit corresponding to 0 ... 40 / 80 / 200 / 400 / 800 / 2000 / 4000 mg/l BOD
Accuracy	±1 digit (corresponds to ±3,55 hPa)
Pressure range	500 - 1350 hPa
Memory	For BOD <sub>5</sub> : 1 value per day
Ambient temperature	Storage: -25 ... +65 °C (-13 ... 149 °F) Operation: +5 ... +50 °C (41 ... 122 °F)
Dimensions	H: 70 mm (2.8 in), Ø 70 mm (2.8 in)

## ↘ BOD Incubators



### Technical Data

Model	TS 606/2-i	TS 606/3-i	TS 606/4-i	TS 1006-i
Shelves	2	3	4	4 widely spaced
Number of samples	2 x 12 BOD standard	3 x 12 BOD standard	4 x 12 BOD standard	4 x 12 BOD standard 4 x 6 special vessels
Glass door	Optional	—	Optional	—
Temp. control range	+10 °C ... +40 °C (50 °F ... 104 °F) ±1 K; adjustment interval: 1 °C			
Ambient temperature	Operation: +10 °C ... +32 °C (50 °F ... 89.6 °F) (Climate class SN); Storage: -25 °C ... +65 °C (-13 °F ... 149 °F)			
Gross contents	180 l	260 l	360 l	500 l
Dimensions (H x B x D)	outside	1215 x 602 x 600 mm 33.47 x 23.70 x 23.62 in	1589 x 602 x 600 mm 62.56 x 23.70 x 23.62 in	1515 x 755 x 715 mm 59.65 x 29.72 x 28.15 in
	inside	734 x 513 x 433 mm 28.90 x 20.20 x 17.05 in	1047 x 513 x 433 mm 41.22 x 20.20 x 17.05 in	1418 x 513 x 433 mm 55.83 x 20.20 x 17.05 in
Weight	37 kg (81.571 lb)	45 kg (99.208 lb)	50 kg (110.23 lb)	72 kg (158.73 lb)

## ↘ COD / Thermo Reactor



COD Reactor

### Application Areas and Technical Data Thermoreactors

Application Areas	CR 2200	CR 3200	CR 4200
Routine measurements	●	●	●
Wastewater	●	●	●
Specialized tasks in wastewater	—	●	●
Specialized tasks in wastewater and in laboratories	—	●	●
Number of samples, max.	1 x 12	2 x 12, same program	2 x 12, different programs
8 pre-stored programs	100 °C (212 °F) 30 min, 60 min, 120 °C (248 °F) with 30 min, 60 min, 120 min, 148 °C (298.4 °F) 120 min, 20 min 150 °C (302 °F) 120 min	100 °C (212 °F) 30 min, 60 min, 120 °C (248 °F) with 30 min, 60 min, 120 min, 148 °C (298.4 °F) 120 min, 20 min 150 °C (302 °F) 120 min	100 °C (212 °F) 30 min, 60 min, 120 °C (248 °F) with 30 min, 60 min, 120 min, 148 °C (298.4 °F) 120 min, 20 min 150 °C (302 °F) 120 min
User programs	—	8 freely selectable 25-170 °C (77-338 °F)	8 freely selectable 25-170 °C (77-338 °F)
Control accuracy	±1 °C ±1 digit		
Safety class	I to DIN VDE 0700 part 1/11.90		
Instrument safety	EN 61010, UL 3101, CAN/CSA C22.2-1010; EN 61010-2-010, IEC-CAN/CSA C22.2-1010.2.010		
Dimensions	W: 256 mm (10.08 in); H: 185 mm (7.28 in), open: 290 mm (11.42 in); D: 315 mm (12.4 in)		

## ↘ pHotoFlex® STD Colorimeter



### Technical Data

Model	pHotoFlex® STD	pHotoFlex® pH	pHotoFlex® Turb
Light source	LED	LED	LED
Wavelengths nm	436, 517, 557, 594, 610, 690	436, 517, 557, 594, 610, 690	436, 517, 557, 594, 610, 690 + 860
User-defined methods	10	100	100
Methods/software update	Via Internet	Via Internet	Via Internet
Data storage	100 data sets	1000 data sets	1000 data sets
pH	—	0-16	0-16
Turbidity	—	—	0-1100 NTU/FNU
Accuracy	Photometry pH / Turbidity	<2 nm wavelength accuracy, 0.005 abs. reproducibility — —	< 2 nm wavelength accuracy, 0.005 abs. reproducibility ±0.01 pH 0.01 NTU/FNU or ±2% of the measured value
Calibration:	pH / Turbidity	3 point	3 point
Interface	RS 232, USB via adapter (optional)	RS 232, USB via adapter (optional)	RS 232, USB via adapter (optional)
Measuring parameters	Photometry	Photometry, pH	Photometry, pH, Turbidity
Battery	Type AA batteries 4x1.5 V, for approx. 3000 measurements	Type AA batteries 4x1.5 V, for approx. 3000 measurements	Type AA batteries 4x1.5 V, for approx. 3000 measurements
Rechargeable battery	Optional: LabStation	Optional: rechargeable battery or LabStation	Optional: rechargeable battery or LabStation
Test marks	cETLus	cETLus	cETLus
Warranty	2 years	2 years	2 years

## Spectrophotometer



### Technical Data

	photoLab® 7100 VIS	photoLab® 7600 UV/VIS
Wavelength range	320–1100 nm	190–1100 nm
Optics	Monochromator with grating and step motor / reference beam	
Lamp	Tungsten-halogen	Xenon flash lamp
Display	Backlit 7" colour display for extensive graphical evaluation	
Bandwidth	4 nm	
Measurement	Concentration, absorbance, % transmission, kinetics and spectra in Abs or % transmission, multi-wavelengths and multi-step readings	
Scan speed	700–2000 nm/min, Scans in 1, 2, 5, 10 nm steps of wavelength range	
Wavelength accuracy/ reproducibility	± 1 nm / < 0.5 nm	
Photometric accuracy/ reproducibility	– 0.003 E for E < 0.600; 0.5 % of values for 0.600 < E < 2.000	
Cuvette	16 mm round, 10 mm, 20 mm, 50 mm rectangular with automatic detection w/o adapter	
Bar code	Automatic method recognition including measurement range for all cuvettes	
Data storage	5000 measurement values, spectra and kinetics approx. 40 MB => 500 spectra (300–900 nm) and 400 kinetics with 150 measurement values	
Methods and profiles	> 200 pre-programmed methods, 1000 user-defined methods, 20 profiles for kinetics and spectra, comprehensive programming options	
Interface/update	1 USB-A, 1 USB-B, 1 Ethernet / Update via Internet and USB stick	
IP Class	IP 30 including drainage in optical compartment	
Power Supply	Universal power supply, optional supply via standard adaptor cable for car batteries	
Temperature Range	Operation: +10 °C to +35 °C, Storage: –25 °C to +65 °C	
Weight / Dimensions	approx. 4.5 kg / 404 mm width x 197 mm height x 314 mm depth	
Accessories	PC software photoLab® Data spectral +photoLab® color, field case, checking tools for AQA	



## TSS / MLSS Meter (USA)



### 711 Portable MLSS / ILA System

#### Features

- Two complete analyzers in one package (TSS & Interface Level)
- Microprocessor based
- Automatic ranging
- Simple, insitu calibration
- Electronic self-diagnostics
- Nine volt battery with automatic shutoff
- Waterproof, rugged housing

### Royce Portable Suspended Solids Unit

#### Model 711 Portable System Supplied Standards

- Model 711 rugged Suspended Solids analyzer
- Model 71 rugged SS sensor with 8 meters (P/N 2459760) or 25 feet (P/N 2459761) of cable and waterproof, military connector.
- Cable is scaled in one foot or one meter increments.
- Velcro "grip strap" which can convert to a handy belt holder.
- 9V battery.
- Detailed instruction manual.

#### Optional Accessories and Equipment

- Flexible, zippered waterproof nylon carry-bag with webbed nylon handle, separate protective pocket for manual

#### Model 711 Portable System Specific Features

- Two analyzers in one package : Switch from Solids measurement to Interface level without losing calibration.
- Automatic ranging : Goes completely over the operating range of the analyzer with manual adjustment.
- Simple, insitu calibration.

#### Model 711 Portable System Specifications

##### 711 Analyzer

Range : .01 – 10 grams per liter (10 to 10,000 mg/l)  
 Readout Device : Harsh environment, 1/2" (12.7mm) LCD digital display  
 Input Power : Standard 9V battery  
 Enclosure : Waterproof  
 Size : 7" L x 3.2" W x 1.5" D  
 178mm L x 81.3mm W x 38mm D  
 Weight : 1.5 pounds (0.68 Kg)

##### 71 Sensor

Type : Single Gap, Optical  
 Accuracy : ± 5% of reading or ± 100 mg/l, whichever is greater  
 Repeatability : ± 1% of reading or ± 20 mg/l, whichever is greater  
 Range : .01 – 10 g/l  
 Operating Limits : Temperature, 0 – 65°C Pressure, 0-50 PSIG  
 Size : 4" L x 2" D  
 101.6mm x 50.8mm  
 Weight : 1 pound (.45 Kg)  
 Construction : Polyurethane body Optical grade polymer lenses

Parameter	Test-Type	Model	Measuring Range	Order-No.
Acid Capacity up to pH 4.3	●/■	01758	K <sub>sat,3</sub> 0.40-8.00 mmol/l 20-400 mg/l CaCO <sub>3</sub>	252 087
Aluminium Al	■	14825	0.05-0.40 mg/l Al	250 425
	TP	Al-1 TP	0.002-0.250 mg/l Al	251 400
Ammonia NH <sub>3</sub> *)	●	14544	0.09-3.00 mg/l NH <sub>3</sub>	250 329
	●	14752/1	0.005-0.270 mg/l NH <sub>3</sub>	250 426
	●	14752/2	0.005-0.270 mg/l NH <sub>3</sub>	252 081
	TP	NH <sub>3</sub> -1 TP	0.002-0.092 mg/l NH <sub>3</sub>	251 408
	TC	NH <sub>3</sub> -2 TC	0.005-0.447 mg/l NH <sub>3</sub>	251 997
	TC	NH <sub>3</sub> -3 TC	0.07-9.37 mg/l NH <sub>3</sub>	251 998
*) with pHotoFlex® pH/Turb: subject to pH value and temperature; range given for pH 8.5/25 °C				
Ammonium NH <sub>4</sub>	●	A6/25	0.20-8.00 mg/l NH <sub>4</sub> -N 0.26-10.30 mg/l NH <sub>4</sub> +	252 072
	●	14544	0.5-16.0 mg/l NH <sub>4</sub> -N 0.6-20.6 mg/l NH <sub>4</sub> +	250 329
	■	14752/1	0.02-1.50 mg/l NH <sub>4</sub> -N	250 426
	■	14752/2	0.03-1.93 mg/l NH <sub>4</sub> +	252 081
	TP	NH <sub>4</sub> -1 TP	0.01-0.50 mg/l NH <sub>4</sub> -N 0.013-0.64 mg/l NH <sub>4</sub> +	251 408
	TC	NH <sub>4</sub> -2 TC	0.02-2.50 mg/l NH <sub>4</sub> -N 0.03-3.20 mg/l NH <sub>4</sub> +	251 997
	TC	NH <sub>4</sub> -3 TC	0.4-50.0 mg/l NH <sub>4</sub> -N 0.5-64.4 mg/l NH <sub>4</sub> +	251 998
Arsenic	■	01747	0.002-0.100 mg/l As	252 063
Cadmium Cd	●	14834	0.025-1.000 mg/l Cd	250 314
	■	01745	0.010-0.500 mg/l Cd	252 051
Calcium Ca	■	14815	5-160 mg/l Ca	250 428
Carbon dioxide CO <sub>2</sub> *)	●/■	01758	14-275 mg/l CO <sub>2</sub>	252 087
	*) with pHotoFlex® pH/Turb: subject to pH value and temperature; range given for pH 6.5/18.6 °C			
Chlorine Cl <sub>2</sub>	●	00595	0.05-4.50 mg/l Cl <sub>2</sub>	250 419
	●	00597	0.05-4.50 mg/l Cl <sub>2</sub>	250 420
DEHA/Oxygen scavenger	TP	DEHA-1 TP	0.004-0.450 mg/l DEHA	251 421
Fluoride F	■	00809	0.01-1.80 mg/l F-	252 094
Formaldehyde HCHO	●	14500	0.10-7.00 mg/l HCHO	250406
Gold Au	■	14821	0.5-9.0 mg/l Au	250 436
Hydrazine N <sub>2</sub> H <sub>4</sub>	TR	N <sub>2</sub> H <sub>4</sub> TR	0.004-0.600 mg/l N <sub>2</sub> H <sub>4</sub>	251 416
Iron Fe	●	14549	0.05-3.00 mg/l Fe	250 349
	●	14896	1.0-50.0 mg/l Fe	250 361
	■	14761/1	0.05-3.00 mg/l Fe	250 435
	■	14761/2	0.05-3.00 mg/l Fe	250 439
	TP	Fe-1 TP	0.012-1.800 mg/l Fe	251 404
	TP	Fe-2 TP	0.02-3.00 mg/l Fe	251 405
Lead Pb	■	09717	0.01-5.00 mg/l Pb	252 034
Magnesium Mg	●	00815	5.0-75.0 mg/l Mg	252 043
Manganese Mn	■	14770/1	0.02-9.00 mg/l Mn	250 442
	■	14770/2	0.02-9.00 mg/l Mn	252 084
	●	00816	0.10-5.00 mg/l Mn	252 035
	TP	Mn-1 TP	0.2-20.0 mg/l Mn	251 406
	TP	Mn-2 TP	0.007-0.700 mg/l Mn	251 417
Molybdenum Mo	●	00860	0.02-1.00 mg/l Mo	252 040
	■	19252	0.5-45.0 mg/l Mo	252 090
	TP	Mo-1 TP	0.3-35.0 mg/l Mo	251 407
	TP	Mo-2 TP	0.3-40.0 mg/l Mo	251 418
Nickel Ni	●	14554	0.10-6.00 mg/l Ni	250 409
	■	14785	0.10-3.80 mg/l Ni	250 443
Nitrate NO <sub>3</sub>	●	14556	0.10-2.70 mg/l NO <sub>3</sub> -N 0.44-11.95 mg/l NO <sub>3</sub>	250 411
	●	14542	0.5-14.5 mg/l NO <sub>3</sub> -N 2.2-64.2 mg/l NO <sub>3</sub>	250 410
	■	14942	0.2-13.0 mg/l NO <sub>3</sub> -N 0.9-57.5 mg/l NO <sub>3</sub>	250 422
	TC	NO <sub>3</sub> -1 TC	0.2-30.0 mg/l NO <sub>3</sub> -N 1-133.0 mg/l NO <sub>3</sub>	251 993
Nitrite NO <sub>2</sub>	●	N5/25	0.00-0.50 mg/l NO <sub>2</sub> -N 0.07-1.81 mg/l NO <sub>2</sub>	252 074
	■	14776/1	0.01-0.50 mg/l NO <sub>2</sub> -N	250 445
	■	14776/2	0.03-1.64 mg/l NO <sub>2</sub>	250 440
	TP	NO <sub>2</sub> -1 TP	0.002-0.300 mg/l NO <sub>2</sub> -N	251 409
	TP	NO <sub>2</sub> -3 TP	0.007-0.985 mg/l NO <sub>2</sub>	251 420
	TC	NO <sub>2</sub> -2 TC	0.03-3.00 mg/l NO <sub>2</sub> -N 0.10-9.85 mg/l NO <sub>2</sub>	251 994
Ozone O <sub>3</sub>	■	00607/1	0.01-3.50 mg/l O <sub>3</sub>	252 016
	■	00607/2	0.01-3.50 mg/l O <sub>3</sub>	252 054
Phenol C <sub>6</sub> H <sub>5</sub> OH	●	14551	0.10-2.50 mg/l C <sub>6</sub> H <sub>5</sub> OH	250 412

Parameter	Test-Type	Model	Measuring Range	Order-No.	
Chlorine Cl <sub>2</sub>	TP	Cl-1 TP	0.02-2.00 mg/l Cl <sub>2,free</sub>	251 401	
	TP	Cl-2 TP	0.5-5.00 mg/l Cl <sub>2,free</sub>	251 402	
	TP	Cl-3 TP	0.02-2.00 mg/l Cl <sub>2,total</sub>	251 414	
	TP	Cl-4 TP	0.5-5.00 mg/l Cl <sub>2,total</sub>	251 415	
Chlorine Liquid test kit Cl <sub>2</sub> free+total	●/■	00086 <sup>fig</sup>	0.025-4.50 mg/l Cl <sub>2</sub>	252 077	
		00087 <sup>fig</sup>		252 078	
		00088 <sup>g</sup>		252 079	
		00089 <sup>fig</sup>		252 080	
Chloride Cl	●	14730	5-125 mg/l Cl	250 353	
	■	14897/1	2.5-190 mg/l Cl	250 491	
	■	14897/2	2.5-190 mg/l Cl	252 082	
Chlorine dioxide ClO <sub>2</sub>	■	00608	0.02-7.50 mg/l ClO <sub>2</sub>	252 017	
Chromate Cr	●	14552	0.05-2.00 mg/l Cr	250 341	
COD	●	C3/25	10-150 mg/l COD	252 070	
Chemical oxygen demand O <sub>2</sub>	●	14895	15-300 mg/l COD	250 359	
	●	14690	50-500 mg/l COD	250 304	
Cyanuric acid	●	C4/25	25-1500 mg/l COD	252 071	
	●	14691	300-3500 mg/l COD	250 351	
	●	14555	500-9500 mg/l COD	250 309	
	●	01797	5000-90000 mg/l COD	252 093	
	TC	COD1 TC	3-150 mg/l COD	251 990	
	TC	COD2 TC	20-1500 mg/l COD	251 991	
	TC	COD3 TC	200-15000 mg/l COD	251 992	
	COD Chemical oxygen demand	●	09772	10-150 mg/l COD	250 301
		●	09773	100-1500 mg/l COD	250 306
	Copper Cu	●	14553	0.05-7.50 mg/l Cu	250 408
■		14767	0.04-6.00 mg/l Mg	250 441	
	TP	Cu-1 TP	0.04-5.00 mg/l Mn	251 403	
Cyanide CN	●	14561	0.01-0.30 mg/l CN	250 344	
Cyanuric acid	■	19253	2-160 mg/l Cyanuric acid	252 091	
Phosphate PO <sub>4</sub>	■	00798	1.0-50.0 mg/l PO <sub>4</sub> -P 3.0-153.0 mg/l PO <sub>4</sub>	252 045	
	TP	PO <sub>4</sub> -1 TP	0.007-0.800 mg/l PO <sub>4</sub> -P 0.02-2.45 mg/l PO <sub>4</sub>	251 410	
	TC	PO <sub>4</sub> -2 TC	0.02-1.63 mg/l PO <sub>4</sub> -P 0.06-5.00 mg/l PO <sub>4</sub>	251 989	
	TC	PO <sub>4</sub> -3 TC	0.020-1.141 mg/l PO <sub>4</sub> -P 0.020-1.141 mg/l P <sub>total</sub>	251 988	
TC	PO <sub>4</sub> -4 TC	0.06-3.50 mg/l PO <sub>4</sub>	251 987		
*) not suitable for sea water					
Potassium K	●	14562	5.0-50.0 mg/l K	250 407	
	●	00615	30-300 mg/l K	252 020	
Silicate/Silicic acid Si	■	14794	0.05-5.00 mg/l Si 0.01-10.70 mg/l SiO <sub>2</sub>	250 438	
	■	00857	0.5-50.0 mg/l Si 1.1-107.0 mg/l SiO <sub>2</sub>	252046	
	TP	Si-1 TP	0.005-0.748 mg/l Si 0.01-1.60 mg/l SiO <sub>2</sub>	251 411	
	TP	Si-2 TP	0.3-46.7 mg/l Si 0.7-100 mg/l SiO <sub>2</sub>	251412	
	TP	Si-3 TP	0.5-35.1 mg/l Si 1.0-75 mg/l SiO <sub>2</sub>	251422	
Silver Ag	■	14831	0.25-2.75 mg/l Ag	250448	
Sodium Na	●	00885	10-300 mg/l Na	252 044	
Sulfate SO <sub>4</sub>	●	14548	25-250 mg/l SO <sub>4</sub>	250 414	
	TP	SO <sub>4</sub> -1 TP	0-70 mg/l SO <sub>4</sub>	251 413	
	TP	SO <sub>4</sub> -2 TP	2-70 mg/l SO <sub>4</sub>	251 423	
a-Ten (anionic)	●	14697	0.05-2.00 mg/l a-Ten	250 333	
n-Ten (nonionic)	●	01787	0.10-7.50 mg/l Triton X-100	252 061	
Total Nitrogen N <sub>total</sub>	●	14537	0.5-15.0 mg/l N <sub>ges</sub>	250 358	
	TC	N <sub>total</sub> -1 TC	0.5-25.0 mg/l N <sub>ges</sub>	251 995	
	TC	N <sub>total</sub> -2 TC	10-150 mg/l N <sub>ges</sub>	251 996	
Water hardness, total hardness	●	00961	0.7-30.1 °d, 5-215 mg/l Ca	252 039	
Zinc Zn	●	00861	0.025-1.000 mg/l Zn	252 049	
	●	14566	0.20-5.00 mg/l Zn	250 417	
Phosphate PO <sub>4</sub>	●	P6/25	0.05-3.00 mg/l PO <sub>4</sub> -P 0.05-3.0 mg/l P <sub>total</sub> *) 0.2-9.2 mg/l PO <sub>4</sub>	252 075	
	●	P7/25	0.5-15.0 mg/l PO <sub>4</sub> -P 0.5-15.0 mg/l P <sub>total</sub> *) 1.5-46.0 mg/l PO <sub>4</sub>	252 076	
	●	14546	0.5-25.0 mg/l PO <sub>4</sub> -P 1.5-76.7 mg/l PO <sub>4</sub>	250 413	
	●	00616	1.0-70.0 mg/l PO <sub>4</sub> -P 10-214 mg/l PO <sub>4</sub>	252 021	

a **xylem** brand  
 Let's Solve Water

**The system 181/282/284/2020XT**  
 THE NEW CONTROLLER FOR THE IQ Sensor Net

**The new one – for all IQ sensors**  
 System 282/284 for small and mid-sized wastewater treatment plants



**Online / Real Time Monitoring of ETP/WTP/STP**



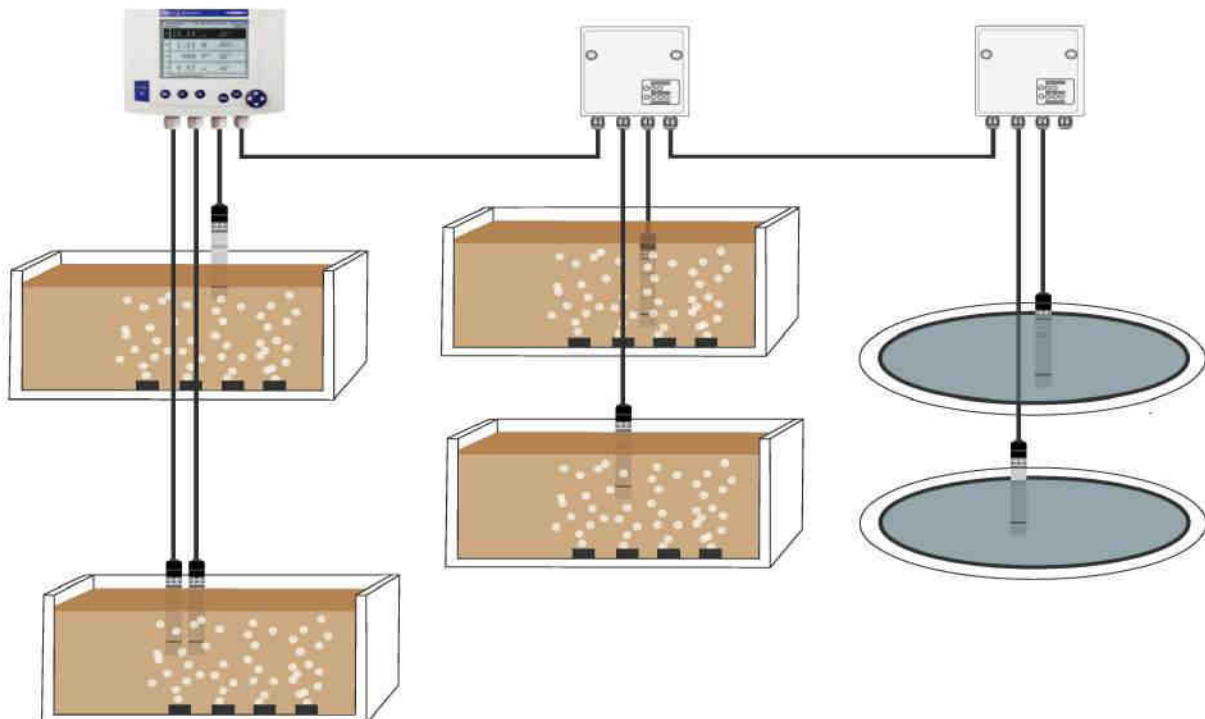
All parameters at a glance



Up-to-date and safe with USB interface and data logger



Convenient and available anytime via internet



# IQ SENSOR NET

CONTINUOUS PROCESS MONITORING & CONTROL



## Sensors

	1 TriOxmatic®	2 FDO®	3 Sensolyt®	4 TetraCon®	5 VisoTurb®	6 ViSolid®	7 NitraVis®	8 CarboVis®	9 NiCaVis®	10 VARION®	11 AmmoLyt®	12 NitraLyt®	13 IFL
<b>Parameters</b>													
Temperature	•	•	•	•	•	•	•	•	•	•	•	•	
DO (electrochemical)	•												
DO (optical)		•											
pH			•										
ORP			•										
Conductivity				•									
Salinity				•									
Turbidity					•								
TSS						•	•	•	•				
Ammonium										•	•		
Nitrate							•		•	•		•	
Potassium										•	•		
Chloride*										•	•		
COD (chemical oxygen demand)								•	•				
TOC (total organic carbon)								•	•				
BOD (biochemical oxygen demand)								•	•				
DOC (dissolved organic carbon share of TOC)								•	•				
SAC (spectral absorption coefficient)								•	•				
Interface (Sludge) Level Measurement**													•

\*Chloride is used as compensation only and is not a visible parameter on the IQSN system. Please contact us for more information.

\*\* For use with the 2020 XT and MC2 modules.



**pH, DO, EC**  
Portable type



pH100A System Specifications		
Temperature	Range	-10 to +120°C (14 to 248°F)
	Resolution	0.1°C
	Accuracy	±0.3°C ±1 digit
pH	Range	-2 to 16 units
	Resolution	0.01 unit
	Accuracy	±0.1% ±2 digit
mV	Range	-1999 to +1999 mV
	Resolution	1 mV
	Accuracy	±0.1% ±1 digit

DO100A System Specifications		
Temperature	Range	-6 to 46°C (21.2 to 114.8°F)
	Resolution	0.1°C
	Accuracy	±0.3°C ±1 digit
Dissolved Oxygen % Saturation	Range	0 to 200%
	Resolution	0.1% air saturation
	Accuracy	±2% of the reading or ±2% air saturation
Dissolved Oxygen ppm (mg/L)	Range	0 to 20 ppm
	Resolution	0.01 ppm
	Accuracy	±2% of the reading or ±0.2 ppm

EC100A System Specifications		
Temperature	Range	-10 to +90°C (14 to 194°F)
	Resolution	0.1°C
	Accuracy	±0.2°C or ±0.4%, whichever is greater
Conductivity	Range	0.0 µS to 200 mS, with auto ranging
	Resolution	Accuracy (meter & probe)
	Range	0 to 499.9 µS/cm
	Resolution	0.1 µS/cm
	Accuracy	±(1% of reading + 2 µS/cm)
	Range	0 to 499.9 µS/cm
	Resolution	1 µS/cm
	Accuracy	±(1% of reading + 5 µS/cm)
	Range	0 to 49.99 mS/cm
	Resolution	0.01 mS/cm
	Accuracy	±(1% of reading + 0.05 mS/cm)
	Range	0 to 200.0 mS/cm
	Resolution	0.1 mS/cm
	Accuracy	±(2.5% of reading + 0.5 mS/cm)

**pH, ORP, EC**  
Pen type



pH10A System Specifications		
pH	Range	0.00 to 14.00 units
	Resolution	0.01 units
	Accuracy	±0.1 unit within 10 °C of calibration; ±0.2 unit within 20 °C
Temperature	Range	0.0 to 100.0 °C (32.0 to 212 °F)
	Resolution	0.1 °C (0.2 °F)
	Accuracy	±0.3 °C (±0.6 °F)

ORP15A System Specifications		
ORP	Range	-1100 to +1100 mV
	Resolution	1 mV
	Accuracy	1 mV ±1 LSD
Temperature	Range	-10 to 100 °C (14.0 to 212 °F)
	Resolution	0.1 °C (0.2 °F)
	Accuracy	±0.3 °C (±0.6 °F)
Operating Range	0 to 50.0 °C (32.0 to 122.0 °F)	
Water Resistance	IP-67 waterproof case	

EC100A System Specifications		
Conductivity	Range	0.0 µS to 19.90 mS, with manual or auto ranging
	Resolution	0 to 1990 µS/cm 5 µS/cm 2.00 to 19.90 mS/cm 0.05 mS/cm
	Accuracy	±1% FS
Temperature	Range	0.0 to 99.5 °C (32.0 to 212.0 °F)
	Resolution	0.5 °C (1 °F)
	Accuracy	±0.5 °C (1 °F)
TDS	Range	0 mg/L to 10.00 g/L
	Resolution	0 to 1000 mg/L 5 mg/L 1.00 to 10.00 g/L 0.05 g/L
	Accuracy	±1% FS

**Colorimeter YSI 910 COD**



910 COD Colorimeter General Specifications		
Power Supply	4 alkaline AAA batteries; approximately 17 continuous hours or 5,000 tests	
Auto Shut-off	20 minutes after last key press; audible signal	
Operating Range	5° to 40°C (41° to 104°F); 30-90% relative humidity	
Display	Backlit LCD	
Memory Capacity	16 data sets with date and time stamp; automatic 260 g (0.5 lbs)	
Dimensions	15.9 L x 7.6 W x 3.8 H cm (6.1 L x 3 W x 1.5 H in)	
Interfaces	Infrared interface with the 900 Series Data Hub (optional) for data transfer	
Operation	Acid/solvent resistant case; touch-sensitive keypad with audible feedback; factory calibrated; user calibration possible; reset to factory cal	
Certifications	CE; IP68 waterproof rating (1 hour at 0.1 meter); floats 0.01 A (absorbance)	
Colorimetric Resolution	3% FS (T = 20° to 25°C) (68° to 77°F)	
Photometric Accuracy*	±1 nm	
Wavelength Accuracy	±1 nm	

910 COD Colorimeter Technical Specifications		
COD Low Range	Range	0 to 150 mg/L
	Method	Dichromate/H <sub>2</sub> SO <sub>4</sub> 430
COD Mid Range	Range	0 to 1,500 mg/L
	Method	Dichromate/H <sub>2</sub> SO <sub>4</sub> 610
COD High Range	Range	0 to 15,000 mg/L
	Method	Dichromate/H <sub>2</sub> SO <sub>4</sub> 610

**Multi-parameter Professional Plus Multi-parameter**  
Water quality



Professional Plus System Specifications (Cables & Sensors)												
Dissolved Oxygen (%) (temp comp range -5 to 45°C)	Sensor Type	Potentiographic or Galvanic	Range	0 to 500%	Accuracy	0 to 200% (±2% of reading or 2% air saturation, whichever is greater)	Resolution	1% or 0.1% air saturation (user)	Units	%	Calibration	1 or 2-points with zero
	Dissolved Oxygen (mg/L) (temp comp range -5 to 45°C)	Sensor Type	Potentiographic or Galvanic	Range	0 to 50 mg/L	Accuracy	0 to 20 mg/L (±2% of reading or 0.2 mg/L, whichever is greater)	Resolution	0.1 or 0.01 mg/L (user selectable); 0.1% air saturation	Units	mg/L, ppm	Calibration
Temperature (field rugged cables)		Range	-5 to 70°C	Accuracy	±0.2°C (±0.3°C cables over 45-meters)	Resolution	0.1°C	Units	°C, °F, K			
	Temperature (Lab-grade)*	Range	0 to 40°C	Accuracy	±0.35°C	Resolution	0.1°C	Units	°C, °F, K			

**Multi-parameter ProDSS**  
Water quality



ProDSS General Specifications		
Size	Instrument:	8.3 cm width x 21.6 cm length x 5.6 cm depth (3.27 in x 8.5 in x 2.21 in)
	4 port bulkhead with sensor guard, no depth:	42.82 cm (16.86 in) length and 4.75 cm (1.87 in) outer diameter
	4 port bulkhead with sensor guard, with depth: ODO/CT assembly with sensor guard:	45.36 cm (17.86 in) length and 4.75 cm (1.87 in) outer diameter 26.14 cm (10.29 in) length and 2.46 cm (0.97 in) outer diameter
Handheld weight with batteries	567 grams (1.25 lbs)	
Power	Rechargeable lithium-ion battery pack provides ~48 hours with the handheld only and ~20 hours with the handheld, 4 port cable and 4 smart sensors; battery recharge time is ~9 hours with the AC power adapter The instrument can also be powered via AC or external power pack through the USB port	
Instrument operating temperature	0 to 50 °C (32 to 122 °F)	
Instrument storage temperature	0 to 45 °C (32 to 113 °F) with battery installed; 0 to 60 °C (32 to 140 °F) without battery installed	
Display	Color, LCD graphic display; 3.9 cm width x 6.5 cm height	
USB port	Built-in micro USB On-The-Go port for PC connection, recharging/powering the ProDSS and connecting directly to a USB stick	
Cables	ProDSS 4 port, ProDSS ODO/CT, and ProODO field cables available in 1, 4, 10, 20, 30, 40, 50, 60, 70, 80, 90, and 100-meters; ProDSS 4 port cables feature an optional depth sensor; ProODO cable assemblies are also compatible	
Sensor ports	4 port cables feature universal sensor ports that can accept any ProDSS sensor; other compatible cables feature integral sensors	
Warranty	3-year instrument; 2-year bulkhead, cable assembly, sensors, and extended warranty ODO sensor cap (627180); 1-year pH and pH/ORP sensor modules, ODO sensor caps, and Li-ion battery pack; 6-months ammonium, nitrate, and chloride sensor modules	
Memory	> 100,000 data sets	
Logging modes	Single point or continuous with autostable feature	
GLP compliance	Yes; 400 detailed GLP records can be stored and are available to view, download, and print.	
Languages	English, Spanish, German, French, Italian, Norwegian, Portuguese, Japanese, Chinese (Simplified & Traditional), Korean, Thai	
Certifications	CEC, CE; RoHS; IP-67; WEEE; FCC; UN Part III, Section 38.3, Test methods for lithium-ion batteries (Class 9)	
GPS	Optional internal GPS; coordinates are stored with measurement data and site lists	
Sites and data ID	100 user-defined sites and 100 user-defined data ID tags; site pictures can be sent to the handheld via KordSS	

- Parameters:**
- Dissolved Oxygen (Optical)
  - Turbidity
  - pH
  - ORP/Redox
  - Conductivity
  - Specific Conductance
  - Salinity
  - Total Dissolved Solids (TDS)
  - Resistivity
  - Seawater Density
  - Total Suspended Solids (TSS)
  - Depth
  - GPS Coordinates
  - Ammonium
  - Ammonia
  - Chloride
  - Nitrate
  - Temperature
  - Barometric Pressure

**Biochemistry Analyzer**  
 2900D, 2900M, 2950D & 2940-2980



Model: 2900D, 2900M, 2950D & 2940-2980

**Features:**

YSI has earned a reputation as the Gold Standard in bio-analytical instruments with highly accurate sensors and rapid results.

- Analyte specific results in 60 seconds or less
- Proprietary immobilized enzyme electrodes
- Unique fluidics resist clogging
- Trusted measurement technology
- Automated sample handling

**Technical Data:**

Benchtop	Yes
Certifications	RoHS, ETL, CE
Compliance	21 CFR, Part 11 GAMP® 5
Connectivity / Communications	Ethernet, USB
Graphic Display	Yes
Measurement Range	Glucose: 0.05-25 g/L, Lactate: 0.05-2.70 g/L, Glutamate: 15-1460 mg/L, Glutamine: 30-1169 mg/L, Glycerol: 0.75-40 g/L, Xylose: 0.5-30 g/L, Choline: 5-450 mg/L, Hydrogen Peroxide: 3-300 mg/L, Sucrose: 0.1-25 g/L, Ethanol: 0.04-3.2 g/L, Ethanol-HC: 0.5-40 g/L, Methanol: 0.1-2.5 g/L, Lactose: 0.05-25 g/L, Galactose: 0.1-25 g/L
Memory	Yes
Operating Temperature	15-35°C
Parameters Measured	Glucose, Lactate, Glutamate, Glutamine, Glycerol, Xylose, Choline, Hydrogen Peroxide, Sucrose, Ethanol, Methanol, Lactose, Galactose
Power	50-60 Hz, 100-240 VAC
Precision	Application specific, typical CV <2%
Unit of Measure	mmol/L, %, mg/L, g/L, mg/dL

**Accessories:**

- Printer accessory for 2900 Series Analyzers
- IQ/OQ Documentation Package for 2900 Series Analyzers
- 16mm Test Tube Rack
- 12mm Test Tube Rack
- 12mm Glass Vial Tray
- Capped Vial Tray
- Preventive Maintenance Kit

## ➤ Karl Fischer Titrator



Titroline-7500-KF



Titroline-7500-KF-trace

### The new universal titrator TitroLine® 7750

- Highly visible full color display, that can be easily viewed from a distance and extreme angles
- With new interchangeable modules which all relevant reagent and unit data can be stored
- Thanks to the 2 x USB-host, 1 x USB-PC and 2 x RS232 ports very expandable. Connectable are e.g. USB keyboard, USB printer, barcode reader, USB flash drives, balances, PC and further SI Analytics devices such as piston burettes and sample changers
- Storage of results using via USB port (PDF – and CSV -format) including method transfer
- With standard methods for potentiometric and KF titration



TitroLine® 7750 KF

### Specifications:

	TitroLine® 7500 KF	TitroLine® 7500 KF trace
Measuring range	10 ppm – 100 %	1 ppm – 5 % (10 µg – 100 mg)
Accuracy	Dosing accuracy: < 0.15 %	0.3 % at 1 mg water
Number of user methods	50	50
Applications	KF volumetry, dead-stop-titrations (SO <sub>2</sub> , bromine number)	KF coulometry, bromine number
Online curve	yes	yes
Printer	HP PCL, Seiko DPU S 445, PDF	HP PCL, Seiko DPU S 445, PDF
Balance connection	RS232	RS232
Intelligent interchangeable modules	yes	no
Interfaces	2 x USB-A, 1 x USB-B, 2 x RS232	2 x USB-A, 1 x USB-B, 2 x RS232
Titration stand with integrated pump and stirrer TM 235 KF	yes	Module 2 and 4
PC software:	TitriSoft 3.0	TitriSoft 3.0

### Technical data

Features	TitroLine® 7750
Display	Color graphics 3.5 inches -1/4 VGA TFT display with 320x240 pixels
Measuring input pH/mV with reference electrode input	pH/mV-input with 24 bit transducer Electrode socket according to DIN 19 262 or additional with BNC socket insert RFID receiver for SI Analytics ID electrodes
Measurement range pH / mV Display resolution pH / mV Accuracy pH / mV (without sensor)	- 3.0 ... 18.00 / - 2000 ... 2000 0.001 / 0.1 0.002 / 0.1 mV ± 1 Digit
Measurement input Dead stop (2 x 4 mm socket) Measurement range µA Display resolution µA Accuracy µA (without sensor)	Connector (µA) for double platinum electrodes Polarisation voltage variably adjustable from 40 ... 220 mV 0 ... 100 0.1 0.2 ± 1 digit
Measurement input temperature (2 x 4 mm socket) Measurement range temperature °C Display resolution °C Accuracy °C (without sensor)	Connector for Pt 1000 resistance thermometer - 75 ... 175 0.1 0.2 K ± 1 digit
Interfaces	2 x USB-A, 1 x USB-B 2 x RS232
Balance connection	RS232
Printer (USB-A)	HP PCL, Seiko DPU S445, PDF
Intelligent interchangeable modules (5, 10, 20 and 50 ml)	Valve: PTFE/ETFE Cylinder: borosilicate glass 3.3 (DURAN®) Hoses FEP, blue
Burette resolution (steps)	10000
Dosing accuracy according DIN EN ISO 8655, part 3	Accuracy : 0.15 % Precision: 0.05 - 0.07 % (Depending on the used interchangeable unit)
Manual titration	■
Housing material	Polypropylene
Front keyboard	Polyester coated
Housing dimensions	15.3 x 45 x 29.6 cm (W x H x D), height with interchangeable unit
Weight	2.3 kg for basic unit 3.5 kg for complete device incl. interchangeable unit (with empty reagent bottle, without magnetic stirrer)
Ambient conditions	Ambient temperature: + 10 ... + 40 °C for operation and storage
Solution preparation (manual or automatic when connected to balance)	■
Titration to mV and pH end points	2 EP
Dynamic and linear titration to inflection points (EQ) mV and pH	2 EQ
Particularly suitable for non aqueous titrations	■
Dead-stop-titration	■
pH-stat-titration	■
Water determination according to KF volumetry (10 ppm – 100 %, recommended)	■
Standard methods	■
Number of user methods	50
Connection and control of autosamplers	■
Can be controlled with TitriSoft 3.0	■

## ➤ Karl Fischer with Potentiometric Titrator



Karl Fischer titration system



The universal titrator with IDS<sup>®</sup> technology



Featuring enhanced automation and additional methods

Display	Color graphics 3.5 inches - 1/4 VGA TFT display with 320x240 pixels
Measurement input 1 (analogue) pH/mV with reference electrode input	pH/mV-input with 24 bit transducer Electrode socket according to DIN 19 262 or additional with BNC socket insert
RFID receiver for SI Analytics <sup>®</sup> ID electrodes	-3.0 ... 18.00 / -2000 ... 2000 0.001 / 0,1 0.002 / 0.1 mV ± 1 Digit
Measurement range pH/mV Display resolution pH/mV Accuracy pH/mV (without sensor)	-3.0 ... 18.00 / -2000 ... 2000 0.001 0.1 0.002 0.1 mV ± 1 Digit
Measurement input 2 (IDS) Accuracy +/- 1 digit in dependence from the used IDS-electrode	pH 0.000 ... 14.000 +/- 0.004 pH mV +/- 1200.0 mV +/- 0.2 mV Temperature -5.0 ... 105.0 °C +/- 0.2 °C Conductivity 0.00 ... 2000 mS/cm +/- 0.5 % from m.v.
Calibration pH (analogue and IDS)	2 or 3 - point calibration with DIN/NIST or technical buffers. Own buffers can be programmed.
Calibration conductivity (IDS)	1 point with 0.01 mol/l KCl
Temperature compensation conductivity (IDS)	Automatic/manual nLF non-linear function natural waters according EN 27888 and ultra-pure water function, linear compensation from 0.000... 10.000 %/K
Measurement input Dead stop (2 x 4 mm socket) Measurement range µA Display resolution µA Accuracy µA (without sensor)	Connector (µA) for double platinum electrodes Polarization voltage variably adjustable 40 ... 220 mV 0 ... 100 0.1 0.2 ± 1 digit
Measurement input temperature (2 x 4 mm socket) Measurement range temperature °C Display resolution °C Accuracy °C (without sensor)	For Pt 1000 resistance thermometer NTC 30 kOhm - 75 ... 175 -40 ... 170 °C 0.1 0.2 K ± 1 digit/0.3 K ± 1 digit
Interfaces	1 x LAN, 2 x USB-A, 1 x USB-B 2 x RS 232
Balance connection	RS 232
Printer (USB-A)	HP PCL, Seiko DPU S445, PDF
Housing material	Polypropylene
Front keyboard	Polyester coated
Housing dimensions	15.3 x 45 x 29.6 cm (W x H x D), height with interchangeable unit
Ambient conditions	Ambient temperature + 10 ... + 40 °C for operation and storage
Weight	2.3 kg for basic unit, 3.5 kg for complete device incl. interchangeable unit (with empty reagent bottle, without magnetic stirrer)
Ambient conditions	Ambient temperature: + 10 ... + 40 °C for operation and storage
Intelligent interchangeable modules (5, 10, 20 and 50 ml)	Valve: PTFE/ETFE Cylinder: borosilicate glass 3.3 (DURAN <sup>®</sup> ) Hoses FEP, blue
Burette resolution (steps)	10,000
Dosing accuracy according DIN EN ISO 8655, part 3	Accuracy : >0.15 % Precision: >0.05 - 0.07 % (Depending on the used interchangeable unit)

Manual titration	■
Measurement pH, mV and cond. single and continuous	■
Measurement parallel (e.g. pH + cond.) single and continuously	■
Solution preparation (manual or automatic when connected to balance)	■
Titration to mV and pH end points	2 EP
Dynamic and linear titration to inflection points (EQ) mV and pH	2 EQ
Particularly suitable for non-aqueous titrations	■
Dead-stop-titration	■
pH-stat-titration	■
Water determination according to KF volumetry (10 ppm – 100 %, recommended)	■
Standard methods	■
Number of user methods	50
Connection and control of autosamplers	■
Can be controlled with TitrSoft 3.2	■

Measurement range/ resolution/ Accuracy (all values ± 1 digit), according to the used ID sensor (IDS * )	pH	0.000 ... 14.000 +/- 0.004 pH
	mV	+/- 1200.0 mV +/- 0.2 mV
	temperature	-5.0 ... 105.0 °C +/- 0.2 °C
Calibration pH	conductivity	0.00 ... 2,000 mS/cm +/- 0.5 % v. Mw.
	calibration points	1-, 2-, 3-point
	stored buffers	SI Analytics <sup>®</sup> technical and DIN buffer
Calibration cell constant cond, according to the used ID sensor (IDS * )	solid	0.475cm-1; 0.100cm-1; 0.010cm-1
	calibratable (1 point)	0.450 to 0.500cm-1, 0.800 ... 0.880 cm-1, standard: 0.01 mol/L KCl
	adjustable	0.250 ... 25.000cm-1; 0.090 ... 0.110 cm-1
Temperature compensation cond, according to the used ID sensor (IDS * )	set-up	automatically/manually
	temperature coefficient	nCond: non-linear function natural waters after EN 27 888 and high-purity water function Linear compensation 0.000 ... 10.000 %/K
		no compensation

## ➤ Potentiometric titrator: TitroLine®7000



### Potentiometer Titrator

TitroLine® 7000 with Basic titration module with pH combination electrode for aqueous titrations (alkalinity, Kjeldahl, strong acids and bases...)

TL 7000-M2/20: TitroLine® 7000 combine with pH electrode for Aqueous

Order No: 285220170

TitroLine® 7000 basic unit with magnetic stirrer TM 235 and 20 ml exchangeable unit WA 20, with brown glass bottle for titrant, GL 45 and S 40-bottle adapter, tubes, drip tube and titration tip. With pH-combination electrode and buffer set.

WA 20: 20 ml exchangeable unit

Order No: 285220320

with integrated chip for reagent data, with brown glass bottle for titrant, GL 45 and S 40-bottle adapter, tubes, drip tube and titration tip

N 6480 Eth: pH electrode for titrations in non-aqueous media

Order No: 285092329

Glass shaft, ground joint-junction, electrolyte L 5034, Ag/AgCl-reference system, sphere membrane, A-glass, length 170 mm, 12 mm Ø, 0...+40 °C, 0...14 pH

TZ 1520: Tapper adapter NS 14.5, PTFE

Order No: 285092329

for electrodes with 12 mm Ø

L 5034: Electrolyte solution in bottles

Order No: 285138308

250 ml DURAN® bottle, ethanol with 1.5 mol/l lithium chloride.

L 1 A: Plug cable combination

Order No: 285122456

Coaxial electrode plug, 1 m coaxial cable, DIN instrument plug

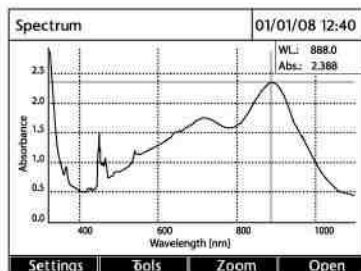
## ➤ UV-VIS Spectrophotometer UviLine 9400



### Spectrophotometer

#### Technical Specifications

	UviLine 9100	UviLine 9400
Wavelength range	320 – 1100 nm	190 – 1100 nm
Light source	Halogen	Xenon
Technique	single beam	
Optical resolution	4 nm	
Wavelength accuracy	±1 nm	
Wavelength repeatability	< ±0,2 nm	
Photometric range	-3.3 to 3.3 A	
Photometric accuracy	0.3 % or ± 0.003 A (from 0 – 0,6 A)	
Photometric linearity	< 1% at 2 Abs between 340 – 900 nm	
Stray light	< 0.1 % at 340 and 400 nm	< 0.1 % at 220, 340 and 400 nm
Display	graphic display with backlight, 320x240 pixel	
Update	via internet und USB Stick	
Interfaces	1 x USB-A, 1 x USB-B, 1 x RS232C	
Power supply	110 – 220 V, 50/60 Hz	
Temperature range	Use: 10 °C to 35 °C / Storage -25 °C to 65 °C	
Dimensions	404 x 197 x 314 mm (W x H x D)	
Weight	4 kg	
Accessories	Sipper, 5+1 cell changer, cell holder (thermostatable), cell holder 100 mm	



### Software

Concentration	From 0 to 10 standards with interpolations. Graphic calibration curve management.
Kinetics	Dynamic graphic curve display, graphic management: zoom, slope calculation, current Abs
Spectrum scanning	Dynamic graphic curve display, graphic management: zoom, derivative, current Abs, Maximum and Minimum values
Multi Wavelength	Up to 10 wavelengths – flexible calculation of results
GLP compliant	User login with 3 levels
Storage capacity	Internal: 100 methods/30 graphics/1000 Data – with USB stick: limited to the size of the USB Stick
Methods	> 100 methods

➤ **pH Meter Bench Type**  
**Lab 845**



Technical data:		Lab 845 pH Meter
Measuring range	pH: 0 ... 14; - 1,999 ... 1,999 mV; Temperature: -10 ... 100 °C	
Resolution	ISE: 0 ... 30,000 ppm 0.01 pH; 1 mV; 0.1 °C	
Accuracy	pH: ± 0.01 (± 2 pH around calibration point), U [mV] ± 0.3, T [°C] ± 0.1 (0...100 °C)	
Temperature compensation	automatic with Pt1000 or fix temperature	
Connectors	BNC, 2 x banana socket (4 mm), 4-pole USB Interface socket	
Calibration	Direct input	
	Temperature offset	
Data storage	Two-point	
	Automatic (DIN19266, TechDIN19267, Merck, Mettler)	
	4.000 Entries with date, time, value 1+2 and temperature	
	Graphic LCD Display, 128 x 64 pixel, backlid	
	USB, isolated	
	-10 ... 55 °C	
	Aluminum IP40	
	145 x 185 x 55 mm (L x W x H)	
	Approximately 1 lb 9 oz (incl. power supply and stand)	
	Acc. EN 61326 class B	

➤ **DO Meter Bench Type**  
**Lab 745**



Technical data:		Lab 745 DO Meter
Measuring range	0 ... 200 %; 0 ... 20 mg/l; temperature: -10 ... 100 °C	
Resolution	1 %; 0.01 mg/l; 0.1 °C	
Temperature compensation	Automatic with NTC30kOhm or fixed temperature	
Accuracy	±1 digit, ± 0.5 % of the measuring range, T [°C] ± 0.1 (5...50 °C)	
Connectors	8-pole sensor socket, 4-pole USB interface socket	
Calibration	Direct input	
	Temperature offset	
Data storage	Single-point	
	Automatic	
	4.000 Entries with date, time, value 1+2 and temperature	
	Graphic LCD Display, 128 x 64 pixel, backlid	
	USB, isolated	
	-10 ... 55 °C	
	Aluminum IP40	
	145 x 185 x 55 mm (L x W x H)	
	Approximately 1 lb 9 oz (incl. power supply and stand)	
	Acc. EN 61326 class B	

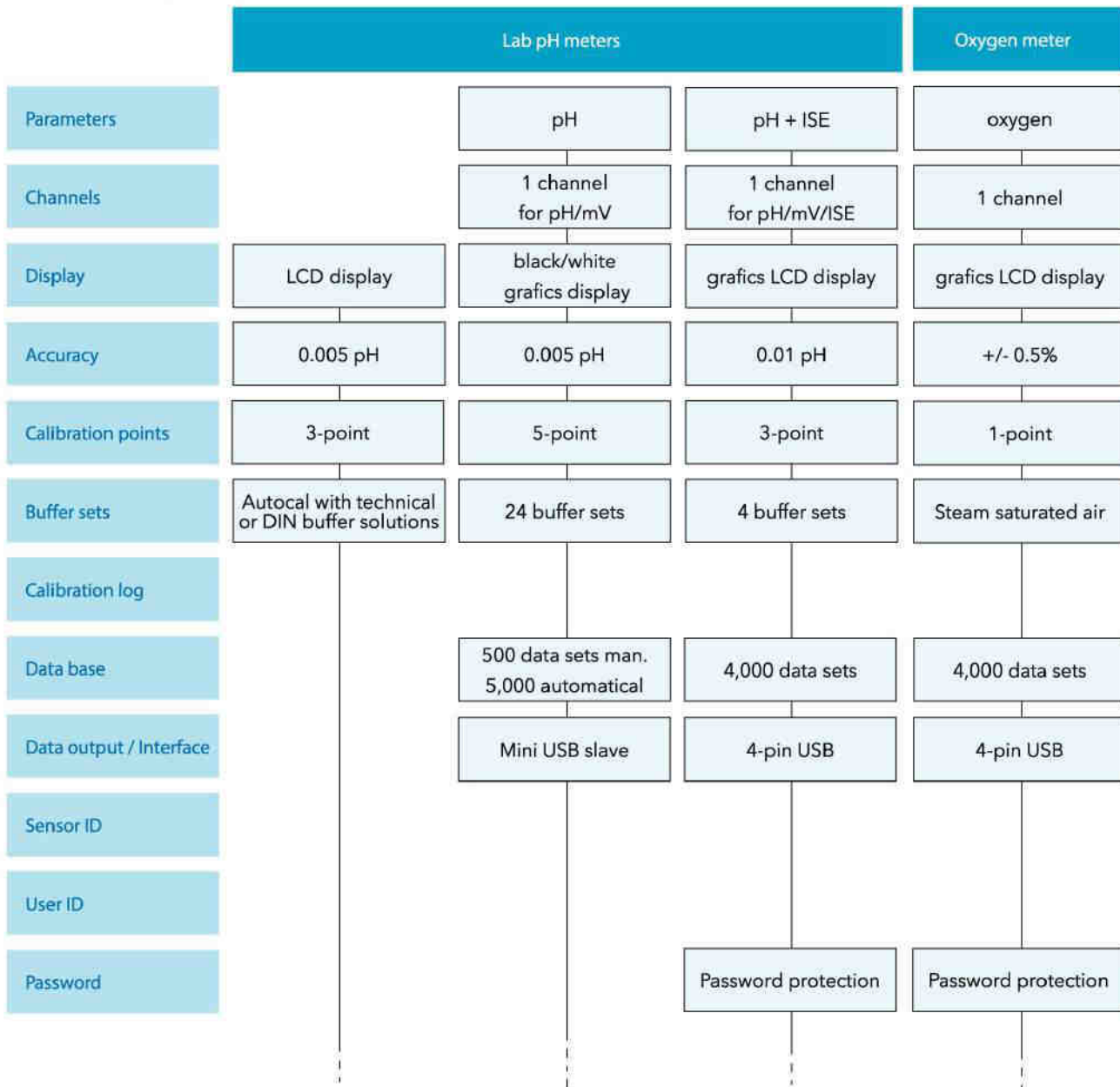
➤ **Conductivity Meter Bench Type**  
**Lab 945**



Technical data:		Lab 945 Conductivity Meter
Measuring range	0 ... 200 µS/cm; 0 ... 2,000 µS/cm; 0 ... 20 mS/cm; 0 ... 500 mS/cm;	
	Automatic range	
Resolution	TDS: 0 ... 200 mg/l; 0 ... 2,000 mg/l; 0 ... 20 g/l; 0 ... 500 g/l	
	Salinity: 0 ... 70 (after IOT)	
Accuracy	Temperature: -10 ... 100 °C	
Resolution	0.1 µS; 1 µS; 0.01 mS; 0.1 mS; 0.1 °C	
Accuracy	±1 digit, ± 0.5 % of the measuring range, T [°C] ± 0.1 (5...50 °C)	
Temperature compensation	Automatic with NTC30kOhm or fixed temperature	
Connectors	8-pol sensor socket, 4-pole USB interface socket	
Calibration	Direct input	
	Temperature offset	
Data storage	Single-Point	
	Automatic	
	4.000 Entries with date, time, value 1+2 and temperature	
	Graphic LCD Display, 128 x 64 pixel, backlid	
	USB, isolated	
	-10 ... 55 °C	
	Aluminum IP40	
	145 x 185 x 55 mm (L x W x H)	
	Approximately 1 lb 9 oz (incl. power supply and stand)	
	Acc. EN 61326 class B	

# Meters decision tree

## Laboratory meters Lab and ProLab series



Lab 855



Lab 865



Lab 845

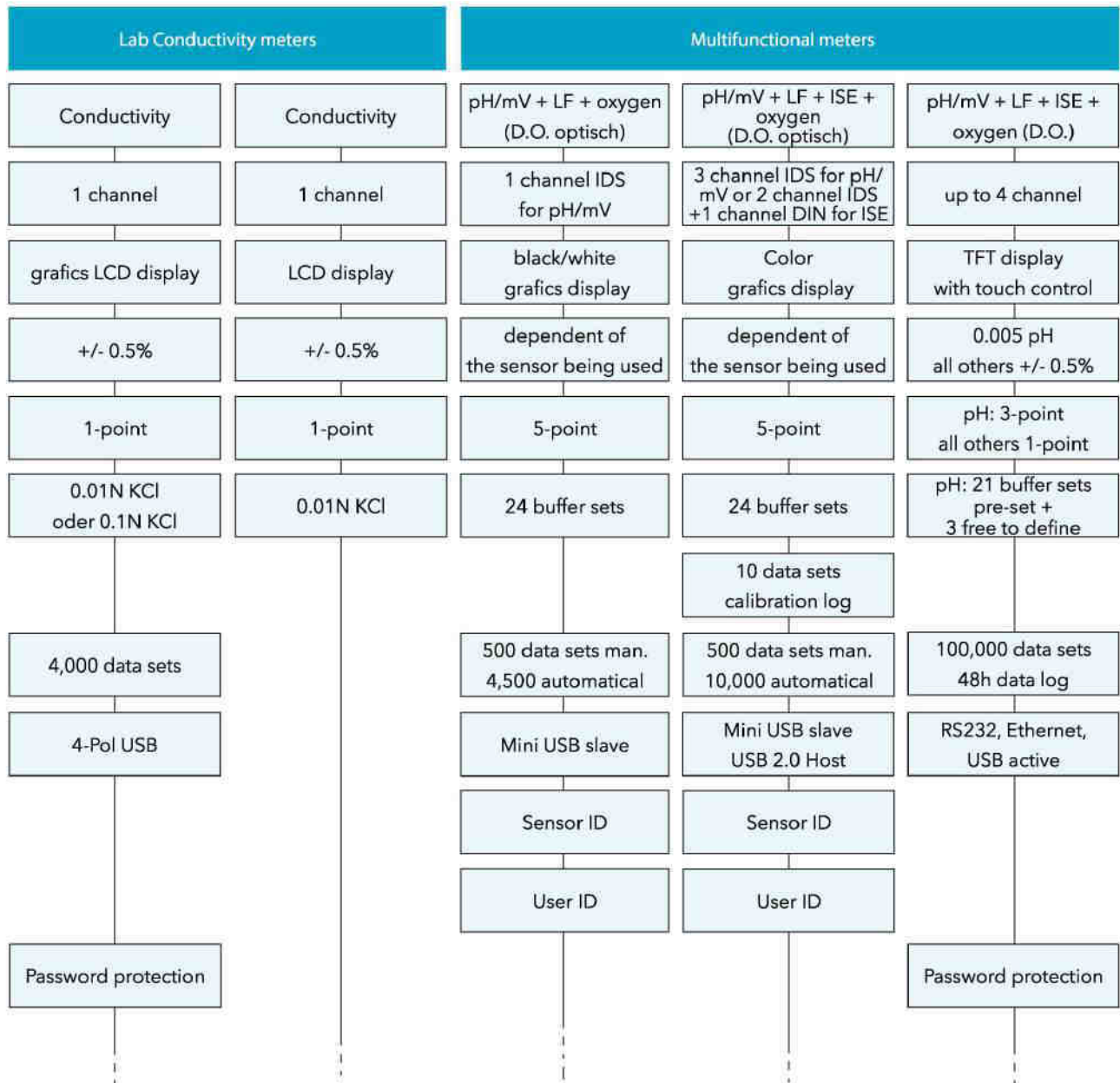


Lab 745

Instrument

# Meters decision tree

## Laboratory meters Lab and ProLab series



Lab 945



Lab 955



Lab 875 (P)



ProLab 2500



ProLab 5000

\*Product pictures are not to scale



➤ pH Meter Portable Type



**HandyLab 700 - Specifications**

Measuring parameters

**Memosens pH (also called ISFET)** Connection: Female connector M8 (4-way) for Memosens laboratory cable  
Display areas<sup>1)</sup> -2.000 ... +16.000 pH  
-2000 ... +2000 mV  
-50 ... +250 °C

**Memosens Redox** Connection: Female connector M8 (4-way) for Memosens laboratory cable  
Display areas<sup>1)</sup> -2000 ... +2000 mV  
-50 ... +250 °C

Sensor adaptation<sup>1)</sup> ORP (Redox) calibration (zero point offset)  
Perm. calibration range ΔmV (Offset) -700 ... +700 mV

**pH/mV (analog)** Connection pH female connector DIN 19 262 (13/4 mm)

Measuring Range pH -2 ... 16  
Decimal places<sup>1)</sup> 2 or 3

Input Resistance 1 x 10<sup>12</sup> Ω (0 ... 35 °C)

Input current 1 x 10<sup>-12</sup> A (with RT, double up every 10 K)

Measuring cycle approx. 1s

Operation measurement deviation<sup>2,3,4)</sup> < 0.01 pH, TK < 0.001 pH/K

Measuring range mV -1300 ... +1300

Measuring cycle approx. 1s

Operation measurement deviation<sup>2,3,4)</sup> < 0.1 % v. M. + 0.3 mVTK < 0.03 mV/K

**Temperature** Connection: 2 x Ø 4 mm for integrated or separate temperature sensor

Measuring ranges NTC 30 kΩ -20 ... +120 °C  
Pt 1000: -40 ... +250 °C

Measuring cycle approx. 1s

Operation measurement deviation<sup>2,3,4)</sup> < 0.2 K (Tamb = 23 °C); TK < 25 ppm/K

**pH Calibration**

**Operating Modes<sup>1)</sup>** AutoCal - Calibration with automatic buffer detection  
Manual - manual calibration while entering individual buffer values  
Data entry - data entry of zero point and incline

**AutoCal Buffer Sets<sup>1)</sup>** Knick CaliMat Ciba (94) Hamilton

NIST-Technical HACH Mettler-Toledo

NIST-Standard SI-Analytics techn. buffer

DIN 19267 Reagecon

**Perm. calibration range** Zero point 6 ... 8 pH

For ISFET: -750 ... +750 mV work point (asymmetrical)

Slope approx. 74 ... 104 %

**Calibration Timer<sup>1)</sup>** Sample interval 1 ... 99 days, can be switched off

**Display - Operation**

**Sensoface** Provides information regarding the sensor status, evaluation of zero point/incline, setting time, calibration interval status display (friendly, neutral, sad).

**Display** LCD STN 7-segment display with three lines and symbols

**Status displays** For battery status

**Notes** Sand timer

**Keyboard** [on/off], [cal], [meas], [set], [▲], [▼], [clock]

**Diagnostic Functions**

Sensor data (Memosens only) Manufacturer, sensor type, serial number, operating time

Calibration data Calibration date, zero point and slope

Device self-test Automatic memory test (FLASH, EEPROM, RAM)

Machine data Device type, software version, hardware version

**Data retention** Parameters, calibration data > 10 years

**Climate - rated operating conditions** Ambient temperature -10 ... +55 °C

Transport/storage temperature -25 ... +70 °C

Relative humidity 0 ... 95 %, short-term dew permitted

**Energy supply** Auxiliary energy Batteries 4x AA (Mignon) alkaline or lithium

Operating time approx. 1,000 h (Alkaline)

**Casing** material PA12 GF30 + TPE

Type of protection IP66/67 with pressure compensation

Dimensions approx. 132 x 156 x 30 mm

Weight approx. 500 g

**Certificates - testing mark - device safety**

**EMV** DIN EN 61326-1 (General Requirements)

Interference Emission Class B (residential)

Interference resistance Industry Branch

DIN EN 61326-2-3 (Special Requirements for Pressure Transducers)

**RoHS Conformity** As per directive 2011/65/EU

## Validation Data Loggers



### EBI 10 High Precision Wireless Data Loggers

**Description:**

- High temperature accuracy up to 0.1 °C
- Extended temperature measurement range from -85 °C up to 400 °C
- Pressure measurement up to 4000 mbar
- Humidity measurement from 0% rH to 100% rH
- Radio communication possible for real-time monitoring
- ATEX approvals in preparation

**Applications:**

- Wireless validation of sterilizers, washer-disinfectors and washer-disinfectors for endoscopes
- F-value and A0 -value calculation
- Process monitoring



### EBI 11 Mini Data Loggers

**Description:**

- High temperature accuracy of 0.1 °C across the full measurement range
- Temperature measurement up to +150 °C (+302 °F)
- Pressure measurement up to 10 bar
- Extra compact design for applications where space is tight

**Applications:**

- Validation of steam sterilizers and autoclaves
- Validation of washer-disinfectors and washer-disinfectors for endoscopes
- Validation at canning etc.



### Complete Validation Sets

**Description:**

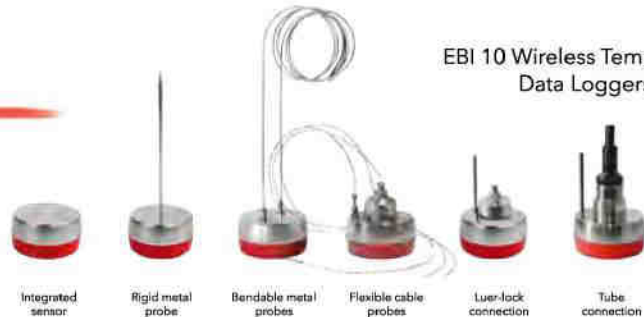
- Validation data loggers with evaluation software and extensive range of accessories
- German TÜV Industrial Services certified
- Software conforms with FDA 21 CFR Part 11

**Applications:**

- Validation of pasteurisation and sterilisation processes
- Validation of steam sterilizers, washer-disinfectors and washer-disinfectors for endoscopes

### Infrared Thermometer TFI 250

Rapid non-intrusive measurement of product temperature is easily achieved using an infrared precision thermometer and ebro offer a choice of models to satisfy this need, including a waterproof model that may be used within harsh working environments as well as others for testing incoming materials or refrigerated goods in storage or on display.



Integrated sensor

Rigid metal probe

Bendable metal probes

Flexible cable probes

Luer-lock connection

Tube connection

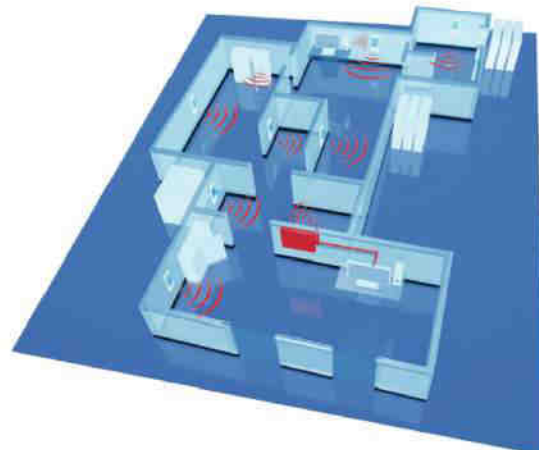


Programming the Data Loggers



Measurement During the Process

### EBI 10 Wireless Temperature Data Loggers



➤ **Digital Hygrometer**



Type	TFH 620	TFH 610
Measurement range: Humidity	0 % rH ... 100 % rH	0 % rH ... 100 % rH
Measurement range: Temperature	0 °C ... +60 °C (32 °F ... 140 °F)	0 °C ... +50 °C (32 °F ... 122 °F)
Accuracy: Humidity	±2 % rH (from 5 % ... 95 %)	±2.5 % rH (from 10 % ... 90 %)
Accuracy: Temperature	±0.3 °C (±0.5 °F)	±0.5 °C (±0.9 °F)
Resolution: Humidity	0.1 %	0.1 %
Resolution: Temperature	0.1 °C (0.2 °F)	0.1 °C (0.2 °F)
Operating temperature	0 °C ... +50 °C (32 °F ... 122 °F)	0 °C ... +50 °C (32 °F ... 122 °F)
Storage temperature	-25 °C ... +60 °C (-13 °F ... 140 °F)	-25 °C ... +60 °C (-13 °F ... 140 °F)
Protection class	IP 67 (device without probe)	IP 40
Dimensions (L x W x H)	115 x 54 x 22 mm	115 x 54 x 22 mm
Housing material	ABS	ABS
Weight	Approximately 90 g	Approximately 90 g
Display	LCD	LCD
Humidity sensor	Capacitive sensor	Capacitive
Temperature sensor	Pt 1000	Thermistor
Sensor position	External, removable probe	Internal
Probe connection	-	Fixed connection
Channels	2	2
Battery	Lithium battery 3.0 V / 1000 mAh	Lithium battery 3.0 V, 1000 mAh
Battery lifetime	Up to 5 years	Up to 5 years
Sampling rate	1 s to 15 s	1 s to 15 s
Certificate	Factory calibration certificate	-

➤ **Temperature / Humidity Logger**



Type	EBI 20-TH1
Measurement range temperature	-30 °C ... +60 °C (-22 °F ... 140 °F)
Measurement range humidity	0% rH ... 100% rH
Accuracy temperature	±0.5 °C at -20 °C ... +40 °C (±0.9 °F at -4 °F ... 104 °F) ±0.8 °C (±1.4 °F) for the remaining measurement range
Accuracy humidity	±3% rH (10% rH ... 90% rH)
Resolution temperature	0.1 °C (0.2 °F)
Resolution humidity	0.1 % rH
Memory	40,000 measurements
Channels	Channel 1: temperature Channel 2: relative humidity
Sensor	NTC, capacitive humidity sensor
Operating temperature	-30 °C ... +60 °C (-22 °F ... 140 °F)
Sampling rate	1 min ... 24h
Memory mode	• Endless measurement • Start immediately until end of memory • Start/ stop measurement • Start with key press
Battery	3V lithium (CR2450), user replaceable
Battery lifetime	Up to 24 months, at at measurement rate of 15 min. at +25 °C (77 °F)
Protection class	IP 52
Housing material	ABS
Dimensions (L x W x H)	69 x 48 x 22 mm
Certificate	Factory calibration certificate

➤ **Temperature / Humidity Logger**



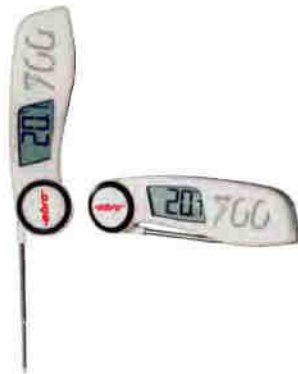
Type	EBI 300	EBI 310
Operating temperature	- 30 °C ... + 60 °C	- 30 °C ... + 75 °C
Accuracy	± 0.5 °C (- 20 °C ... + 40 °C), ± 0.2 °C (-30 °C ... +30 °C)	± 0.8 °C for the remainder ± 0.5 °C for the remainder
Resolution	0.1 °C	0.1 °C
Sensor	NTC	PT 1000
Memory Capacity	40,000	120,000
Sample Rate	1 min ... 24 h	1 s ... 60 min
Maximum Start Delay	72 h	72 h
Dimensions (L x W x H)	80 x 34 x 14 mm	80 x 34 x 14 mm
Protection class	IP 65	IP 65
Display	value Min, Max, time till memory full	value Min, Max, time till memory full,
Alarm	Alarm on/off	Alarm on/off
Material	2 limits	6 ranges / MKT
PDF creation	Polycarbonate	Polycarbonate
LED	PDF	PDF/A 1b
	Yes (red)	Yes (Red and yellow)
<b>TPH 400 External capacitive humidity probe</b>		
Measurement/operating range	Humidity: 0% rF ... 100% rH Temperature: 0 °C ... +70 °C (+32 °F ... +158 °F)	
Humidity accuracy	± 3% between 10% rH ... 90% rH (at +25 °C / +77 °F) ± 5% for the remaining measurement range	
Temperature accuracy	± 0.5 °C at +20 °C ... +40 °C (+68 °F ... +104 °F) ± 1 °C for the remaining measurement range	
Probe	Capacitive humidity sensor	
Protection class	IP 20	

## ↘ Laboratory Thermometer with Probe TFX 410-1 / TFX 420



Type	TFX 410-1/TFX 420
Measurement range TFX 410-1	-50 °C ... +300 °C
Measurement range TFX 420	-50 °C ... +400 °C
Accuracy	±0.3 °C
Resolution	0.1 °C
Sensor	Pt 1000 (different probe types available, see page 23)
Sensor connection	Lemosa size 0
Operating temperature	-25 °C ... +50 °C
Storage temperature	-30 °C ... +70 °C
Battery	3.0 V Lithium, replaceable
Battery lifetime	Approximately 5 years
Dimensions (L x W x H)	54 x 22 x 109 mm (without probe)
Housing material	ABS
Weight	Approximately 90 g
Protection class	IP 67
Extra functions TFX 420	Hold, MIN / MAX
Certificate	3-point factory calibration
Deactivation	Automatic after 2 hours, deactivatable

## ↘ Thermometer



Type	TLC 700
Temperature measurement range	-40 °C ... +250 °C
Accuracy	±0.5 °C (at -20 °C ... +150 °C), ±1.0 °C for the remaining measurement range
Resolution	0.1 °C
Operating temperature	0 °C ... +50 °C
Battery	Lithium button cell (CR 2032)
Dimensions (L x W x H)	116 x 38 x 20 mm
Certificate	Factory calibration certificate

## ↘ Infrared Thermometer



Type	TFI 250	TFI 54
Measurement range	-60 °C ... +550 °C (-76 °F... 1,022 °F)	-60 °C ... +550 °C (-76 °F ... +1,022 °F)
Accuracy	±1.5 °C or 2.5 % (larger value is applicable)	±1.5 °C or 1.5 % (larger value is applicable)
Resolution	±1.5 °C	±0.1 °C
Operating temperature	0 °C ... +50 °C (+32 °F ... 122 °F)	0 °C ... +50 °C (+32 °F ... +122 °F)
Response time	1 s	1 s
Emissivity factor	0.95 fixed (0.1 ... 1.0 possible)	0.95 fixed (0.1 ... 1.0 possible)
Distance : spot ratio	12:1	12:1
Battery	2xAAA	2 x AAA
Battery life time	Approximately 14 h of continuous use	Approximately 14 h of continuous use
Housing material	ABS	Rubberized
Dimensions (L x W x H)	153 x 115 x 48 mm	144 x 117 x 43 mm
Weight	177 g with batteries	180 g (with batteries)
Protection class	IP 20	IP 54
Certificate	Factory calibration certificate	Factory calibration certificate

Type	TFI 550	NiCr-Ni probe measurement
Measurement range	-60 °C ... +550 °C (-76 °F ... 1,022 °F)	Measurement range
Accuracy	±2 °C at -18 °C ... +23 °C (±3.6 °F at 0 °F ... 73 °F) ±1 % of measurement ±1 °C (whichever is larger) at +23 °C ... +510 °C ±1.8 °F (whichever is larger) at 73 °F ... 950 °F	Accuracy
Resolution	0.1 °C at -9.9 °C ... +199 °C, otherwise 1 °C (0.2 °F at 14 °F ... 391 °F, otherwise 1.8 °F)	Accuracy
Response time (t <sub>99</sub> )	Approximately 1s	Battery lifetime
Emissivity factor	0.1 ... 1.0	Typically 180h
Distance : spot ratio	30:1	Operating temperature
		0 °C ... +50 °C (32 °F ... 122 °F)
		Storage temperature
		-20° C ... +65 °C (-4 °F ... 149 °F)
		Housing material
		ABS
		Protection class
		IP 20
		Weight
		Approximately 180 g (including battery)
		Certificate
		6-point factory calibration

## ↗ Polarimeter ADP 430 & ADP 450



### Technical Data:

Model	ADP430	ADP450 with XPC technology
<b>Measuring mode</b>	Optical Rotation, °Z, Specific Rotation, Concentration, % Inversion of Sucrose, % Change of product with time. User defined (100)	Optical Rotation, °Z, Specific Rotation, Concentration, % Inversion of Sucrose, % Change of product with time. User defined (100)
<b>Measuring range</b>	±355°A, ±225 °Z	±355°A, ±225 °Z
<b>Temperature correction</b>	Yes	Yes
<b>Resolution</b>	0.01°A/0.001°A, 0.01 °Z/0.001 °Z	0.01°A/0.001°A, 0.01 °Z/0.001 °Z
<b>Reproducibility</b>	0.002°A, 0.005 °Z	0.002°A, 0.005 °Z
<b>Accuracy</b>	±0.01°A, ±0.03 °Z	±0.01°A, ±0.03 °Z
<b>Measurement principle</b>	Continuous read or single shot using polaroid elements and photodiode technology	Continuous read or single shot using polaroid elements and photodiode technology
<b>Display - user interface</b>	Numeric keypad	Numeric keypad
<b>Display - type/size</b>	High resolution colour - 4" (10cm)	High resolution colour - 4" (10cm)
<b>Display - pixels</b>	480 x 272 LCD	480 x 272 LCD
<b>Display - brightness</b>	Adjustable LED-backlit	Adjustable LED-backlit
<b>Data storage</b>	8000	8000
<b>Temperature probe range</b>	0-80 °C	0-80 °C
<b>Temperature range</b>	5-40 °C	15-35 °C
<b>Temperature accuracy</b>	±0.1 °C	±0.1 °C
<b>Temperature control (standard)</b>	None/ATC/Waterbath	Peltier
<b>Temperature control (optional)</b>	Water-jacketed tubes	No
<b>Temperature contact sensor</b>	Yes	Yes
<b>Peltier System stability</b>	Waterbath dependent	±0.2 °C
<b>Measurement time</b>	4 - 30 seconds (selectable)	4 - 30 seconds (selectable)
<b>Optical density (max.)</b>	3.0	3.0
<b>Tube type</b>	standard glass	standard metal (rel. low cost)
<b>Tube Length</b>	10 to 200 mm	10 to 200mm
<b>Calibration</b>	Zero, Span	Zero, Span
<b>Light source</b>	LED	LED
<b>Light source - life span (avg.)</b>	100,000 hours	100,000 hours
<b>Interface - USB ports</b>	1 (expandable)	1 (expandable)
<b>Interface - RS232/parallel</b>	via adaptor	via adaptor
<b>Interface - Ethernet</b>	1	1
<b>21 CFR Part II compliant</b>	Yes	Yes
<b>Password protection</b>	Yes	Yes
<b>Wavelength (standard)</b>	589nm	589nm
<b>Wavelength (optional)</b>	No	No
<b>Wavelength (user defined)</b>	No	No
<b>Wavelength selection (standard)</b>	No	No
<b>Wavelength selection (optional)</b>	No	No
<b>Real time clock</b>	Yes	Yes
<b>IQOQPQ documentation</b>	Yes	Yes
<b>USB/Key features</b>	Yes	Yes
<b>Special features</b>	Measurement delay function (temp. stability). Autosense for automatically reading new sample when in single shot mode. Methods. View logs. PHR-MEAN. Print to Secure PDF. Audit Trails. Electronic signatures. Meets operational requirement of FDA 21 CFR pt. 10	Smart temperature stability. Autosense for automatically reading new sample when in single shot mode. Methods. View logs. PHR-MEAN. Print to Secure PDF. Audit Trails. Electronic signatures. Meets operational requirement of FDA 21 CFR pt. 11. Standard tubes offer low cost when using more than one tube in comparison to special tubes unique to a manufacturer
<b>Conformance</b>	GLP, USP, EP, BP, JP	GLP, USP, EP, BP, JP
<b>Available software</b>	GLP, USP, EP, BP, JP	GLP, USP, EP, BP, JP
<b>Available software</b>	Remote Operation Program	Remote Operation Program
<b>Available software</b>	Data Acquisition	Data acquisition

## Refractometers

### RFM900-T



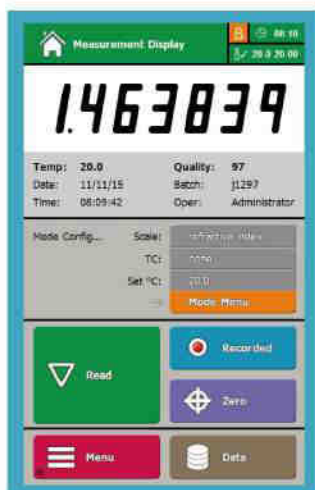
#### Features:

- 7" High definition touchscreen display
- Wide Measuring range: 1.30 - 1.70 RI
- Six decimal place precision
- Peltier temperature control stability:  $\pm 0.02^\circ\text{C}$
- US/EP/BP/JP compliant
- Supports FDA regulation 21 CFR Part 11
- PHR-MEAN & ASTM D 2140 Methods
- USB & Ethernet connectivity

#### Latest Software Features

- Save over 4000 readings
- Reading, user & config audit trails
- Print to secure PDF
- Simple USB "Back-up & Clone"
- User maintenance prompts
- Remote diagnostics & control

## RFM900-T Series of high precision refractometers with 7" touchscreen and Peltier temperature control



#### Specifications

	RFM960-T	RFM970-T
<b>Scales</b>		
Refractive Index	1.30 - 1.70	1.30 - 1.70
Sugar (%Brix)	0 - 100	0 - 100
User Defined	100	100
<b>Resolution</b>		
Refractive Index	0.0001	0.000001 (selectable up to 6 d.p.)
Sugar (%Brix)	0.1	0.01 / 0.001
<b>Accuracy</b>		
Refractive Index	$\pm 0.0001$	$\pm 0.00002$
Sugar (%Brix)	$\pm 0.1$	$\pm 0.02$
<b>Precision</b>		
Refractive Index	$\pm 0.00005$	$\pm 0.000005$ (6 d.p.)
Sugar (%Brix)	$\pm 0.05$	$\pm 0.005$
<b>User Scale Library</b>	20+ pre-programmed scales including HFCS (3), sugar (4), sucrose SG (3), ASTM D 2140, PHR-MEAN, Urea and more; plus customer programmable user scales via PC.	
<b>Reading Time</b>	Minimum 4 seconds (dependant on precision required)	
<b>Measuring Temperature Range</b>	0°C or 10°C below ambient whichever is greater to 80°C	
<b>Temperature Sensor Accuracy</b>	$\pm 0.03^\circ\text{C}$	
<b>Sample Temperature Stability</b>	$\pm 0.02^\circ\text{C}$	
<b>Temperature Compensation</b>		
Sucrose (%Brix)	5 - 80 °C	
AG Fluid	5 - 40 °C	
User Defined	Simple coefficient (units/°C) or polynomial function	
<b>Temperature Stability Checks</b>	None/delay time/repeatability/ Smart (independently selectable by Method)	
<b>Sample Illumination</b>	Light Emitting Diode 589nm (100,000+ hours)	
<b>Prism / Dish</b>	Artificial Sapphire / Stainless Steel 316 / PEEK (spill barrier)	
<b>Prism Seal</b>	Kalrez®	
<b>Interfaces</b>	3 x USB (A), 1 x USB (B), 1 x Ethernet, 1 x Serial (RS232)	
<b>Power</b>	Instrument: 24 V DC, $\pm 5\%$ , <2A External PSU: 100-240V, 50-60Hz (supplied)	
<b>Humidity Range</b>	<90% RH (non condensing)	

## Abbe 5 Refractometer



### Features:

- Dual Scale
- Refractive Index & 0-95 Brix
- Dispersion Measurement
- Optional Light Source

### Specifications

Scale	0-95 °Brix / 1.30 - 1.70 RI
Resolution	0.1 / 0.0001
Operating temperature	5-70 °C
Temperature resolution	0.1°C
Ambient temperature	5-40°C
Power supply (temperature)	Battery (1 x 1.5V AA alkaline). Approx. life 12 months continual use

## Digital Refractometers



### General Specifications

Resolution (Brix/RI)	0.1 / 0.0001 (or scale equivalent)
Accuracy (Brix / RI)	+/- 0.2 / 0.0001 (or scale equivalent)
Temperature Compensation (ATC)	ICUMSA / App. Specific / None
Ambient Temperature Range	5-40°C
Battery Life	10,000 readings (2 x AAA/LR03)



### OPTi+ Single Scale Models

Code	Type	Scale	Range	Resolution	Accuracy	ATC
38-A1	Brix 95+	Sugar % (°Brix)	0-95	0.1	±0.2	Bx
38-A2	RI 1.54+	Refractive Index (RI)	1.33-1.54	0.0001	±0.0003	Bx
38-H1	HFCS 42+	42 HFCS	0-95	0.1	±0.2	Bx
38-H2	HFCS 55+	55 HFCS	0-95	0.1	±0.2	Bx
38-H3	HFCS 90+	90 HFCS	0-95	0.1	±0.2	Bx
38-B8	Brix 95+ NTC	Sugar % (°Brix)	0-95	0.1	±0.2	NONE
38-B9	RI 1.54+ NTC	Refractive Index (RI)	1.33-1.54	0.0001	±0.0003	NONE

### OPTi+ Duo Scale Models

Code	Type	Scale	Range	Resolution	Accuracy	ATC
38-A3	Brix 95/Honey+	A Sugar % (°Brix) B Water in Honey %	0-95 10-30	0.1 0.1	±0.2 ±0.2	Bx Honey
38-B1	Brix 95/RI 1.54+	A Sugar % (°Brix) B Refractive Index (RI)	0-95 1.33-1.54	0.1 0.0001	±0.2 ±0.0003	Bx Bx
38-H4	HFCS 42/55+	A 42 HFCS B 55 HFCS	0-95 0-95	0.1 0.1	±0.2 ±0.2	Bx Bx
38-H5	HFCS 55/90+	A 55 HFCS B 90 HFCS	0-95 0-95	0.1 0.1	±0.2 ±0.2	Bx Bx
38-H6	Brix 95/HFCS 42+	A Sugar % (°Brix) B 42 HFCS	0-95 0-95	0.1 0.1	±0.2 ±0.2	Bx Bx
38-H7	Brix 95/HFCS 55+	A Sugar % (°Brix) B 55 HFCS	0-95 0-95	0.1 0.1	±0.2 ±0.2	Bx Bx
38-H8	Brix 95/HFCS 90+	A Sugar % (°Brix) B 90 HFCS	0-95 0-95	0.1 0.1	±0.2 ±0.2	Bx Bx

### OPTi High Range Models (for more new models, please visit our website)

Code	Type	Scale	Range	Resolution	Accuracy	ATC
38-04	Jam 75	Sugar % (°Brix)	20-75	0.1	±0.2	Bx
38-10	Honey/Brix	A Water in Honey % B Sugar % (°Brix)	10-30 50-95	0.1 0.1	±0.2 ±0.2	Honey Bx
38-11	HFCS Hi 42/55	A 42 HFCS B 55 HFCS	50-95 50-95	0.1 0.1	±0.2 ±0.2	Bx Bx
38-12	HGCS Hi 55/90	A 55 HFCS B 90 HFCS	50-95 50-95	0.1 0.1	±0.2 ±0.2	Bx Bx



1 Fill the dish with sample



2 Press READ



3 Press ZERO for temperature



4 Hold ZERO then READ to change scale (Duo models only)

## Standard Models

Code	Description	Scale Division
44-801	0-10 Sugar % (°Brix)	0.1
44-802	0-18 Sugar % (°Brix)	0.1
44-803	0-32 Sugar % (°Brix)	0.2
44-804	28-62 Sugar % (°Brix)	0.2
44-805	45-82 Sugar % (°Brix)	0.5
44-812	10-30 Water-in-Honey (%)	0.1

## Special Application Models

44-808	E-line Aquatic 0-100 ‰ Saline 1.000-1.070 Saline (SG)	1 0.001
44-820	E-line Glycol Heat Transfer 0-70 EG/PG % vol/vol 0 to -50 EG/PG °C Protection	5 5
44-821	E-line Automotive 0 to -50 EG/PG Protection (°C) 1.1 to 1.4 Battery (SG) 0 to -40 Windscreen (°C)	5 0.05 0.2
44-825	E-line Veterinary 1.33-1.360 RI 1.000-1.050 Urine (SG) 0-12 Serum Protein g/100ml	0.0005 0.005 0.2
44-828	1.3330-1.3848 RI	0.0001
44-829	1.435-1.520 RI	0.001

## Wine Models

44-809	0-40 % Mass (°Brix) 0-25 Alcohol Probable (AP)	0.2 0.2
44-817	0-32 % Mass (°Brix) 0-140 Oechsle (German)	0.2 1
44-818	0-140 Oechsle 0-27 Babo (KMW) 0-32 % Mass (°Brix)	1 0.2 0.2
44-819	0-20 Baume 0-25 Alcohol Probable (AP)	0.2 0.2

## E-line Economy Optical Refractometers

The E-Line Automatic Temperature Compensation (ATC) Range of hand-held refractometers offers versatility at a low price. They are ideal for use in many applications including: fruit, beverage, sugar, food and industrial applications where concentration measurements are required within a light industrial environment.

- Low cost model
- All metal construction
- Rubber handgrip for insulation

Spare Illuminator Flaps (5)

Code 44-881



## E-Line 80 Refractometer

The E-line 80 refractometer offers a relatively wide measuring range when compared to conventional hand held refractometers and so facilitates the measurement of a wider range of samples without the need to carry multiple instruments. The instrument has two optical inputs that allows measurement in transmitted or, for solid samples, reflected modes and is supplied with conversion tables for refractive index measurement.



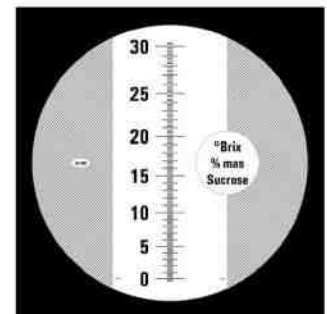
### Specifications E-Line 80

Code 44-807

Range: Scale One 0-50 °Brix  
Scale Two 50-80 °Brix

Scale Division 1

ATC type Manual



High definition easy to read scale.

## Instrument Selection Guide

	Portable	Fruit	Beverage	Food	Sugar	Confectionery	Edible Oil	Petrochem	Pharma	Industrial	Education	Polymers	Solids
Eclipse/E-line	✓	✓	✓	✓	✓	✓							
DR Digital Handheld	✓	✓	✓	✓	✓	✓							
Abbe 5		✓	✓	✓	✓	✓		✓		✓	✓	✓	✓
Abbe 60 ED/LR								✓	✓		✓		✓
RFM700		✓	✓	✓	✓	✓							
RFM340+		✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	
RFM900								✓	✓		✓		
ADP440+				✓	✓	✓		✓			✓		





**TOC Analyzer**  
Total Organic Carbon Analyzer



Specifications	Aurora 1030C	Aurora 1030W
Operating Principle	High temperature (680 °C) catalytic combustion	Heated sodium persulfate oxidation
Measurement Technique	Non-dispersive infrared (NDIR) detection	Non-dispersive infrared (NDIR) detection
Measurement Range	100 ppb C – 30,000 ppm C (multiple calibration ranges or dilution required)	10 ppb C – 30,000 ppm C (multiple calibration ranges or dilution required)
Instrument Detection Limit (IDL)	50 ppb C	2 ppb C
Operator Interface	Color LCD touchscreen display with Windows® CE-based software	Color LCD touchscreen display with Windows® CE-based software
Operating Modes	Standalone (Windows® CE), PC-controlled, or LAN/LIMS network connectivity	Standalone (Windows® CE), PC-controlled, or LAN/LIMS network connectivity
Basic Software	Single instrument operation with data transfer to PC	Single instrument operation with data transfer to PC
Optional A <sub>TOC</sub> Software	Network LAN/LIMS operation for data collection, management and custom report generation	Network LAN/LIMS operation, data management, custom reports, and 21CFR11 compliance
Autosampler	88 position rotary autosampler designed to fit directly underneath Aurora 1030C analyzer	88 position rotary autosampler designed to fit directly underneath Aurora 1030W analyzer
Sample Injection	Manual syringe, sipper tube, autosampler, or multi-stream at-line sampling module	Manual syringe, sipper tube, autosampler, or multi-stream at-line sampling module
Certification	CE, EMC: EN61326 / Safety: IEC 61010-11 2001	CE, EMC: EN61326 / Safety: IEC 61010-11 2001
Reagents Required	Hydrochloric acid, rinsewater	Sodium persulfate, 5% phosphoric acid, rinsewater
Sample Injection Volume	10µL – 0.8 mL	10µL – 10mL
Method TC	680 °C Pt catalyst, 900 °C non-catalyst packing	Acid and persulfate reaction
Method TIC	Acidification and sparging	Acidification with Phosphoric acid and sparging
Method TOC	NPOC, combustion of TIC-free sample, TOC-TIC	NPOC by heated persulfate oxidation or TC-TIC
Furnace Temperature	Adjustable, 680 – 950 °C in 1 °C increments	Adjustable to 100 °C in 1 °C increments
Repeatability	3.0%	2.0% or 2 ppb, whichever is greater
Accuracy	±2% FS or 2% relative, whichever is greater	±1% FS or 2% relative, whichever is greater
Sample pathway	Color coded Teflon® tubing	Color coded Teflon® tubing
Sample handling	Syringe with isolation loop to prevent contamination	Syringe with isolation loop to prevent contamination
Gas Supply	Zero-grade air, or O <sub>2</sub> (99.998%)	N <sub>2</sub> (99.998%), zero-grade air, or O <sub>2</sub> (99.998%)
Power Supply	Variable voltage, 100-240VAC, 50/60 Hz, 950W	Variable voltage, 100-240VAC, 50/60 Hz, 950W
Dimensions – Aurora 1030	42.5 cm H x 49.5 cm W x 41.9 cm D (16.75 in. H x 19.5 in. W x 16.5 in. D)	42.5 cm H x 49.5 cm W x 41.9 cm D (16.75 in. H x 19.5 in. W x 16.5 in. D)
Dimensions – Aurora 1030 + 1088 Autosampler	26.75 in. H x 19.5 in. W x 23 in. D	26.75 in. H x 19.5 in. W x 23 in. D
Weight – Aurora 1030 + 1088 Autosampler	15.4 kg (34 lbs.), 34.5 kg (76 lbs.) 1030W + 1088	15.4 kg (34 lbs.), 34.5 kg (76 lbs.) 1030W + 1088

## Automatic Melting-Point Meters M5000



### Features

- Fully automatic measuring instrument
- Digital temperature control via LCD-display in 0.1 °C steps
- Sealed keyboard for easy cleaning
- Alarm function when reaching the melting point
- Digital display of all important data
- Short instruction on the instrument
- Automatic quick cooling by integrated fan
- Incl. instrument protective cover and 100 melting point tubes
- With RS-232 interface for printe

### Specifications

Measuring range	: 25-400 °C
Accuracy	: ± 0.3 °C (25-200 °C) ± 0.5 °C (200-400 °C)
Reproducibility	: ± 0.2 °C
Safety class	: IP 20
Dimensions	: L 230 x B 210 x H 110 mm
Heating-rate	: up to 300 °C approx. 4 min up to 400 °C approx. 7.5 min
Weight	: approx. 1.8 kg
Capillary-Ø	: 1.4 mm
Capillary intake	: 1
Power supply	: 85-264 V, 47-440 Hz

## Melting-Point Meters KSP1N and KSP1D



### Features

- Digital temperature control
- Sealed keyboard for easy cleaning
- Error status in plain language (English+German)
- Sample control by illuminated magnifier
- Automatic quick cooling by integrated fan
- Short instruction on the instrument (English+German)
- KSP1D with printer

### Specifications

Temperature range	: 30 - 360 °C
Accuracy	: 30 - 200 °C / ±0.3 °C 200 - 360 °C / ±0.5 °C
Max temperature	: more than 300 °C
Heating rate	: 1 °C / minute
magnification optic	: 10x
No. of capillary tubes	: three
Voltage	: 90 – 264 V, 40 W
Safety classified	: IP20
Capillary	: 80 mm / 1.4 mm / 0.8 mm
Interface	: RS-232
weight	: 2.3 kg



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[www.falcinstruments.it](http://www.falcinstruments.it)

## Melting Point Apparatus



### Features:

Simple and easy to use, with an excellent range of measurement and a digital display with a resolution of 0,1°C. Designed to measure two samples at the same time.

The internal LED light, the magnified lens and the inclination given by the hind legs, allow you to have a broader and clear view of samples.

The two different speeds of ascent allow a faster and convenient measurement.

### Technical Specifications:

Model	360 D	
Temperature range	°C	Ambient ÷ +300
Temperature accuracy at 20°C	°C	± 1,0
Temperature accuracy at 300°C	°C	± 2,5
Display		N°4 digit with 8 step
Display resolution	°C	0,1
Readout hold		Si
Numbers of samples	n°	2
Fast stage Ramp rate	°C/min	20 fixed
Slow ramp rates	°C/min	Da 1 a 10
Power	W	75
External dimensions LxPxH	mm	160x220x170
Weight	Kg	1,8
Code		621.0000.22

## Microbalance

Touch Screen



UYA 4Y



MYA 4Y



Automatically opened weighing chamber



Proximity sensors

### Functions

Parts counting	Percent weighing	Statistical quality control	Proximity sensors	Multilingual menu	Formulations	Checkweighing	GLP procedures
Dosing	Statistics	Autotest	Ambient conditions measurement	Replaceable unit	Differential weighing	Automatic sliding door	Moveable range

Technical Specifications	MYA 11.4Y	MYA 11/52.4Y	MYA 21.4Y
Maximum capacity [Max]	11 g	11 g / 52 g	21 g
Minimum load	50 µg	50 µg / 500 µg	50 µg
Readability [d]	1 µg	1 µg / 10 µg	1 µg
Verification scale interval [e]	1 mg	1 µg	1 mg
Tare range	-11 g	-52 g	-21 g
Repeatability*	1.2 µg (Rt ≤ 2 g) 2 µg (2 g < Rt ≤ 5 g) 2.5 µg (5 g < Rt ≤ 11 g)	2 µg (Rt ≤ 2 g) 2.5 µg (2 g < Rt ≤ 11 g) 3 µg (11 g < Rt ≤ 21 g) 5 µg (21 g < Rt ≤ 31 g) 10 µg (31 g < Rt ≤ 52 g)	1.2 µg (Rt ≤ 1g) 2 µg (1 g < Rt ≤ 5 g) 2.5 µg (5 g < Rt ≤ 11 g) 3 µg (11 g < Rt ≤ 21 g)
Linearity	±6 µg	±10 µg / ±30 µg	±7 µg
Eccentric load deviation	6 µg	6 µg / 10 µg	7 µg
Sensitivity temperature drift**	$1 \times 10^{-6} / ^\circ\text{C} \times \text{Rt}$	$1 \times 10^{-6} / ^\circ\text{C} \times \text{Rt}$	$1 \times 10^{-6} / ^\circ\text{C} \times \text{Rt}$
Sensitivity time drift	$1 \times 10^{-6} / \text{Year} \times \text{Rt}$	$1 \times 10^{-6} / \text{Year} \times \text{Rt}$	$1 \times 10^{-6} / \text{Year} \times \text{Rt}$
Minimum weight (U=1%, k=2)	0.24 mg	0.4 mg	0.24 mg
Minimum weight (USP)	2.4 mg	4 mg	2.4 mg
Stabilization time	max 10 s	max 10 s	max 10 s
Adjustment	internal	internal	internal
Verification	Yes	Yes	Yes
OIML Class	I	I	I
Indicator fastening	35 cm cable, wireless connection (option)***	35 cm cable, wireless connection (option)***	35 cm cable, wireless connection (option)***
Display	5.7" colour, resistive touch screen	5.7" colour, resistive touch screen	5.7" colour, resistive touch screen
Keypad	8 keys	8 keys	8 keys
Protection class	IP 43	IP 43	IP 43
Databases	19	19	19
Touch-free operation	2 programmable proximity sensors	2 programmable proximity sensors	2 programmable proximity sensors
USB-A	2	2	2
Ethernet	10 / 100 Mbit	10 / 100 Mbit	10 / 100 Mbit
RS 232	2	2	2
Wireless connection	802.11 b/g/n	802.11 b/g/n	802.11 b/g/n
IN/OUT	4 × IN, 4 × OUT	4 × IN, 4 × OUT	4 × IN, 4 × OUT
Power supply	13.5 ÷ 16 V DC	13.5 ÷ 16 V DC	13.5 ÷ 16 V DC
Power consumption	10 W	10 W	10 W
Operating temperature	+10 ÷ +40 °C	+10 ÷ +40 °C	+10 ÷ +40 °C
Atmospheric humidity****	40 ÷ 80%	40 ÷ 80%	40 ÷ 80%
Transport and storage temperature	-10 ÷ +50 °C	-10 ÷ +50 °C	-10 ÷ +50 °C
Weighing pan dimensions	ø 26 mm	ø 40 mm, ø 26 mm	ø 26 mm
Net weight	9.1 kg	9.1 kg	9.1 kg

## Analytical Balances

Touch Screen



XA 4Y d = 0,01 mg



XA 4Y, d = 0,1 mg



Automatic control of the level



Intuitive operation and touch screen

### Functions

 Parts counting	 Percent weighing	 Statistical quality control	 Proximity sensors	 Multilingual menu	 Formulations	 Checkweighing	 GLP procedures	 Cooperation with titrators
 Dosing	 Statistics	 Autotest	 Ambient conditions measurement	 Replaceable unit	 Differential weighing	 Pipettes calibration	 Moveable range	 Density determination

Technical Specifications	XA 210.4Y	XA 220.4Y	XA 310.4Y
Maximum capacity [Max]	210 g	220 g	310 g
Minimum load	1 mg	10 mg	10 mg
Readability [d]	0.01 mg	0.1 mg	0.1 mg
Verification scale interval [e]	1 mg	1 mg	1 mg
Tare range	-210 g	-220 g	-310 g
Repeatability*	0.01 mg (Rt ≤ 20 g) 0.02 mg (20 g < Rt ≤ 50 g) 0.025 mg (50 g < Rt ≤ 82 g) 0.03 mg (82 g < Rt ≤ 100 g) 0.04 mg (100 g < Rt ≤ 210 g)	0.08 mg (Rt ≤ 100 g) 0.12 mg (100g < Rt ≤ 220 g)	0.08 mg (Rt ≤ 100 g) 0.12 mg (100 g < Rt ≤ 220 g) 0.2 mg (220 g < Rt ≤ 310 g)
Linearity	±0.1 mg	±0.2 mg	±0.3 mg
Eccentric load deviation	0.1 mg	0.2 mg	0.3 mg
Sensitivity temperature drift**	1 × 10 <sup>-6</sup> / °C × Rt	1 × 10 <sup>-6</sup> / °C × Rt	1 × 10 <sup>-6</sup> / °C × Rt
Sensitivity time drift	1 × 10 <sup>-6</sup> / Year × Rt	1 × 10 <sup>-6</sup> / Year × Rt	1 × 10 <sup>-6</sup> / Year × Rt
Minimum weight (U=1%, k=2)	2 mg	16 mg	16 mg
Minimum weight (USP)	20 mg	160 mg	160 mg
Stabilization time	~ 4 s	~ 2.5 s	~ 2.5 s
Adjustment	Internal	Internal	Internal
Moveable range	—	—	—
Verification	Yes	Yes	Yes
OIML Class	I	I	I
Indicator fastening	35 cm cable. wireless connection (option)***	35 cm cable. wireless connection (option)***	35 cm cable. wireless connection (option)***
Display	5.7" colour, resistive touch screen	5.7" colour, resistive touch screen	5.7" colour, resistive touch screen
Keypad	8 keys	8 keys	8 keys
Protection class	IP 43	IP 43	IP 43
Databases	19	19	19
Touch-free operation	2 programmable proximity sensors	2 programmable proximity sensors	2 programmable proximity sensors
USB-A	2	2	2
Ethernet	10 / 100 Mbit	10 / 100 Mbit	10 / 100 Mbit
RS 232	2	2	2
Wireless connection	802.11 b/g/n	802.11 b/g/n	802.11 b/g/n
IN/OUT	4 × IN. 4 × OUT	4 × IN. 4 × OUT	4 × IN. 4 × OUT
Power supply	13.5 ÷ 16 V DC	13.5 ÷ 16 V DC	13.5 ÷ 16 V DC
Power consumption	10 W	10 W	10 W
Operating temperature	+10 ÷ +40 °C	+10 ÷ +40 °C	+10 ÷ +40 °C
Atmospheric humidity****	40 ÷ 80%	40 ÷ 80%	40 ÷ 80%
Transport and storage temperature	-20 ÷ +50 °C	-20 ÷ +50 °C	-20 ÷ +50 °C
Weighing pan dimensions	ø 90 mm open-work ø 85 mm standard (option)*****	ø 100 mm standard	ø 100 mm standard
Weighing chamber dimensions	168 × 160 × 228 mm	168 × 160 × 228 mm	168 × 160 × 228 mm
Weighing device dimensions	542 × 206 × 303 mm	542 × 206 × 303 mm	542 × 206 × 303 mm
Net weight	9.8 kg	9.8 kg	9.8 kg
Gross weight	14.3 kg	14.3 kg	14.3 kg
Packaging dimensions	720 × 385 × 485 mm	720 × 385 × 485 mm	720 × 385 × 485 mm

## Analytical Balances (AS X2)

Touch Screen



d = 0.01 mg



d = 0.1 mg



Communication interfaces



5" colour touch screen with customized keys layout

### Functions

- Parts counting
- Percent weighing
- Density determination
- GLP procedures
- Ambient conditions measurement
- Checkweighing
- Animal weighing
- Peak hold
- Multilingual menu
- Dosing
- Statistics
- Under hook weighing
- Proximity sensors
- Replaceable unit
- Formulation
- Autotest
- Cooperation with titrators

Technical Specifications	AS 82/220.X2	AS 220.X2	AS 310.X2
Maximum capacity [Max]	82 g / 220 g	220 g	310 g
Minimum load	1 mg	10 mg	10 mg
Readability [d]	0.01 mg / 0.1 mg	0.1 mg	0.1 mg
Verification scale interval [e]	1 mg	1 mg	1 mg
Tare range	-220 g	-220 g	-310 g
Repeatability*	0.015 mg (Rt ≤ 2 g) 0.02 mg (2 g < Rt ≤ 50 g) 0.03 mg (50 g < Rt ≤ 82 g) 0.1 mg (82 g < Rt ≤ 220 g)	0.1 mg (Rt ≤ 220 g)	0.1 mg (Rt ≤ 220 g) 0.2 mg (220 g < Rt ≤ 310 g)
Linearity	± 0.06 mg / ± 0.2 mg	± 0.2 mg	± 0.3 mg
Sensitivity temperature drift**	1 × 10 <sup>-6</sup> / °C × Rt	1 × 10 <sup>-6</sup> / °C × Rt	1 × 10 <sup>-6</sup> / °C × Rt
Minimum weight (U=1%, k=2)	3 mg	20 mg	20 mg
Minimum weight (USP)	30 mg	200 mg	200 mg
Stabilization time	6 s / 3.5 s	3.5 s	3.5 s
Adjustment	internal	internal	internal
Verification	Yes	Yes	Yes
OIML Class	I	I	I
Display	5" capacitive colour touch screen	5" capacitive colour touch screen	5" capacitive colour touch screen
Keypad	6 keys	6 keys	6 keys
Protection class	IP 43	IP 43	IP 43
Databases	7	7	7
Touch-free operation	2 programmable proximity sensors	2 programmable proximity sensors	2 programmable proximity sensors
USB-A	1	1	1
USB-B	1	1	1
RS 232	2	2	2
Wireless connection	802.11 b/g/n	802.11 b/g/n	802.11 b/g/n
IN/OUT	4 × IN / 4 × OUT	4 × IN / 4 × OUT	4 × IN / 4 × OUT
Power supply	12 ÷ 16 V DC	12 ÷ 16 V DC	12 ÷ 16 V DC
Power consumption	10 W	10 W	10 W
Operating temperature	+10 ÷ +40 °C	+10 ÷ +40 °C	+10 ÷ +40 °C
Atmospheric humidity***	40 ÷ 80%	40 ÷ 80%	40 ÷ 80%
Transport and storage temperature	-20 ÷ +50 °C	-20 ÷ +50 °C	-20 ÷ +50 °C
Weighing pan dimensions	ø 90 mm open-work ø 85 mm standard (option)****	ø 100 mm	ø 100 mm
Weighing chamber dimensions	160 × 168 × 223 mm	160 × 168 × 227 mm	160 × 168 × 227 mm
Weighing device dimensions	333 × 206 × 355 mm	333 × 206 × 355 mm	333 × 206 × 355 mm
Net weight	5.3 kg	5.3 kg	5.3 kg

## ↗ Analytical Balances (AS R2)



AS.R, d = 0,01 mg



AS.R, d = 0,1 mg



Communication interfaces



Large LCD display with text information section

### Functions

 Parts counting	 Statistics	 Density determination	 Totalizing	 Alibi memory	 Checkweighing	 Autotest	 Ambient conditions measurement
 Dosing	 Animal weighing	 Under hook weighing	 GLP procedures	 Replaceable unit	 Formulations	 Peak hold	 Multilingual menu

Technical Specifications	AS 82/220.R2	AS 220.R2	AS 310.R2
Maximum capacity [Max]	82 g / 220 g	220 g	310 g
Minimum load	1 mg	10 mg	10 mg
Readability [d]	0.01 mg / 0.1 mg	0.1 mg	0.1 mg
Verification scale interval [e]	1 mg	1 mg	1 mg
Tare range	-220 g	-220 g	-310 g
Repeatability*	0.015 mg (Rt ≤ 2 g) 0.02 mg (2 g < Rt ≤ 50 g) 0.03 mg (50 g < Rt ≤ 82 g) 0.1 mg (82 g < Rt ≤ 220 g)	0.1 mg (Rt ≤ 220 g)	0.1 mg (Rt ≤ 220 g) 0.2 mg (220 g < Rt ≤ 310 g)
Linearity	± 0.06 mg / ± 0.2 mg	± 0.2 mg	± 0.3 mg
Sensitivity temperature drift**	1 × 10 <sup>-6</sup> / °C × Rt	1 × 10 <sup>-6</sup> / °C × Rt	1 × 10 <sup>-6</sup> / °C × Rt
Minimum weight (U=1%, k=2)	3 mg	20 mg	20 mg
Minimum weight (USP)	30 mg	200 mg	200 mg
Stabilization time	6 s / 3.5 s	3.5 s	3.5 s
Adjustment	internal	internal	internal
Verification	Yes	Yes	Yes
OIML Class	I	I	I
Display	LCD (with backlight)	LCD (with backlight)	LCD (with backlight)
Keypad	14 keys	14 keys	14 keys
Protection class	IP 43	IP 43	IP 43
Databases	5	5	5
USB-A	1	1	1
USB-B	1	1	1
RS 232	2	2	2
Wireless connection (option)***	802.11 b/g/n	802.11 b/g/n	802.11 b/g/n
IN/OUT	4 × IN, 4 × OUT	4 × IN, 4 × OUT	4 × IN, 4 × OUT
Power supply	12 ÷ 16 V DC	12 ÷ 16 V DC	12 ÷ 16 V DC
Power consumption	10 W	10 W	10 W
Operating temperature	+10 ÷ +40 °C	+10 ÷ +40 °C	+10 ÷ +40 °C
Atmospheric humidity****	40% ÷ 80%	40 ÷ 80%	40 ÷ 80%
Transport and storage temperature	-20 ÷ +50 °C	-20 ÷ +50 °C	-20 ÷ +50 °C
Weighing pan dimensions	ø 90 mm open-work ø 85 mm standard (option)*****	ø 100 mm	ø 100 mm
Weighing chamber dimensions	160 × 168 × 227 mm	160 × 168 × 227 mm	160 × 168 × 227 mm
Weighing device dimensions	333 × 206 × 325 mm	333 × 206 × 355 mm	333 × 206 × 355 mm
Net weight	5.3 kg	5.3 kg	5.3 kg

## Precision Balances (PS X2)

Touch Screen



PS X2, d = 1 mg



PS X2, d = 10 mg



PS X2, d = 10 mg, Max > 6000 g



Draft shield for balances with Max > 6000 g



Single-point support for balance with Max > 6000 g

### Functions

Parts counting	Percent weighing	Density determination	Peak hold	Checkweighing	Animal weighing	GLP procedures	Replaceable unit
Dosing	Statistics	Under hook weighing	Ambient conditions measurement	Formulations	Autotest	Proximity sensors	Multilingual menu

Technical Specifications	PS 210.X2	PS 360.X2	PS 600.X2	PS 750.X2	PS 1000.X2
Maximum capacity [Max]	210 g	360 g	600 g	750 g	1000 g
Minimum load	0.02 g	0.02 g	0.02 g	0.02 g	0.02 g
Readability [d]	0.001 g	0.001 g	0.001 g	0.001 g	0.001 g
Verification scale interval [e]	0.01 g	0.01 g	0.01 g	0.01 g	0.01 g
Tare range	-210 g	-360 g	-600 g	-750 g	-1000 g
Repeatability*	0.001 g	0.001 g	0.0015 g	0.0015 g	0.0015 g
Linearity	±0.002 g	±0.002 g	±0.003 g	±0.003 g	±0.003 g
Sensitivity temperature drift**	$2 \times 10^{-6} / ^\circ\text{C} \times \text{Rt}$	$2 \times 10^{-6} / ^\circ\text{C} \times \text{Rt}$	$2 \times 10^{-6} / ^\circ\text{C} \times \text{Rt}$	$2 \times 10^{-6} / ^\circ\text{C} \times \text{Rt}$	$2 \times 10^{-6} / ^\circ\text{C} \times \text{Rt}$
Minimum weight (U=1%, k=2)	0.1 g	0.1 g	0.1 g	0.1 g	0.1 g
Minimum weight (USP)	1 g	1 g	1 g	1 g	1 g
Stabilization time	2 s	2 s	2 s	2 s	2 s
Adjustment	internal	internal	internal	internal	internal
Verification	Yes	Yes	Yes	Yes	Yes
OIML Class	II	II	II	II	II
Display	5" capacitive colour touch screen	5" capacitive colour touch screen	5" capacitive colour touch screen	5" capacitive colour touch screen	5" capacitive colour touch screen
Keypad	6 keys	6 keys	6 keys	6 keys	6 keys
Protection class	IP 43	IP 43	IP 43	IP 43	IP 43
Databases	7	7	7	7	7
Touch-free operation	2 programmable proximity sensors	2 programmable proximity sensors	2 programmable proximity sensors	2 programmable proximity sensors	2 programmable proximity sensors
USB-A	1	1	1	1	1
USB-B	1	1	1	1	1
RS 232	2	2	2	2	2
Wireless connection	802.11 b/g/n	802.11 b/g/n	802.11 b/g/n	802.11 b/g/n	802.11 b/g/n
IN/OUT	10 / 100 Mbit	10 / 100 Mbit	10 / 100 Mbit	10 / 100 Mbit	10 / 100 Mbit
Power supply	12 ÷ 16 V DC	12 ÷ 16 V DC	12 ÷ 16 V DC	12 ÷ 16 V DC	12 ÷ 16 V DC
Power consumption	4 W	4 W	4 W	4 W	4 W
Operating temperature	+10 ÷ +40 °C	+10 ÷ +40 °C	+10 ÷ +40 °C	+10 ÷ +40 °C	+10 ÷ +40 °C
Atmospheric humidity***	40 ÷ 80%	40 ÷ 80%	40 ÷ 80%	40 ÷ 80%	40 ÷ 80%
Transport and storage temperature	-20 ÷ +50 °C	-20 ÷ +50 °C	-20 ÷ +50 °C	-20 ÷ +50 °C	-20 ÷ +50 °C
Weighing pan dimensions	128 × 128 mm	128 × 128 mm	128 × 128 mm	128 × 128 mm	128 × 128 mm
Weighing device dimensions	333 × 206 × 100 mm	333 × 206 × 100 mm	333 × 206 × 100 mm	333 × 206 × 100 mm	333 × 206 × 100 mm
Net weight	3.7 kg	3.7 kg	3.9 kg	3.9 kg	3.9 kg

## Precision Balances (PS X2)

Touch Screen



PS X2, d = 10 mg



PS X2, d = 1 mg



Draft shield for balances with Max > 6000 g



PS X2, d = 10 mg, Max > 6000 g



Single-point support for balance with Max > 6000 g

### Functions

 Parts counting	 Percent weighing	 Density determination	 Peak hold	 Checkweighing	 Animal weighing	 GLP procedures	 Replaceable unit
 Dosing	 Statistics	 Under hook weighing	 Ambient conditions measurement	 Formulations	 Autotest	 Proximity sensors	 Multilingual menu

Technical Specifications	PS 1200.X2	PS 2100.X2	PS 3500.X2	PS 4500.X2	PS 6000.X2	PS 6001.X2
Maximum capacity [Max]	1200 g	2100 g	3500 g	4500 g	6000 g	6000 g
Minimum load	0.5 g	0.5 g	0.5 g	0.5 g	0.5 g	0.5 g
Readability [d]	0.01 g	0.01 g	0.01 g	0.01 g	0.01 g	0.1 g
Verification scale interval [e]	0.1 g	0.1 g	0.1 g	0.1 g	0.1 g	0.1 g
Tare range	-1200 g	-2100 g	-3500 g	-4500 g	-6000 g	-6000 g
Repeatability*	0.01 g	0.01 g	0.01 g	0.01 g	0.015 g	0.1 g
Linearity	±0.02 g	±0.02 g	±0.02 g	±0.2 g	±0.3 g	±0.1 g
Sensitivity temperature drift**	2 × 10 <sup>-6</sup> / °C × Rt	2 × 10 <sup>-6</sup> / °C × Rt	2 × 10 <sup>-6</sup> / °C × Rt	2 × 10 <sup>-6</sup> / °C × Rt	2 × 10 <sup>-6</sup> / °C × Rt	2 × 10 <sup>-6</sup> / °C × Rt
Minimum weight (U=1%, k=2)	1 g	1 g	1 g	1 g	1 g	1 g
Minimum weight (USP)	10 g	10 g	10 g	10 g	10 g	10 g
Stabilization time	1.5 s	1.5 s	1.5 s	1.5 s	1.5 s	1.5 s
Adjustment	internal	internal	internal	internal	internal	internal
Verification	Yes	Yes	Yes	Yes	Yes	Yes
OIML Class	II	II	II	II	II	II
Display	5" capacitive colour touch screen	5" capacitive colour touch screen	5" capacitive colour touch screen	5" capacitive colour touch screen	5" capacitive colour touch screen	5" capacitive colour touch screen
Keypad	6 keys	6 keys	6 keys	6 keys	6 keys	6 keys
Protection class	IP 43	IP 43	IP 43	IP 43	IP 43	IP 43
Databases	7	7	7	7	7	7
Touch-free operation	2 programmable proximity sensors	2 programmable proximity sensors	2 programmable proximity sensors	2 programmable proximity sensors	2 programmable proximity sensors	2 programmable proximity sensors
USB-A	1	1	1	1	1	1
USB-B	1	1	1	1	1	1
RS 232	2	2	2	2	2	2
Wireless connection	802.11 b/g/n	802.11 b/g/n	802.11 b/g/n	802.11 b/g/n	802.11 b/g/n	802.11 b/g/n
IN/OUT	10 / 100 Mbit	10 / 100 Mbit	10 / 100 Mbit	10 / 100 Mbit	10 / 100 Mbit	10 / 100 Mbit
Power supply	12 ÷ 16 V DC	12 ÷ 16 V DC	12 ÷ 16 V DC	12 ÷ 16 V DC	12 ÷ 16 V DC	12 ÷ 16 V DC
Power consumption	4 W	4 W	4 W	4 W	4 W	4 W
Operating temperature	+10 ÷ +40 °C	+10 ÷ +40 °C	+10 ÷ +40 °C	+10 ÷ +40 °C	+10 ÷ +40 °C	+10 ÷ +40 °C
Atmospheric humidity***	40 ÷ 80%	40 ÷ 80%	40 ÷ 80%	40 ÷ 80%	40 ÷ 80%	40 ÷ 80%
Transport and storage temperature	-20 ÷ +50 °C	-20 ÷ +50 °C	-20 ÷ +50 °C	-20 ÷ +50 °C	-20 ÷ +50 °C	-20 ÷ +50 °C
Weighing pan dimensions	195 × 195 mm	195 × 195 mm	195 × 195 mm	195 × 195 mm	195 × 195 mm	195 × 195 mm
Weighing device dimensions	333 × 206 × 100 mm	333 × 206 × 100 mm	333 × 206 × 100 mm	333 × 206 × 100 mm	333 × 206 × 100 mm	333 × 206 × 100 mm
Net weight	4.3 kg	4.3 kg	4.5 kg	4.5 kg	4.8 kg	4.8 kg



## Precision Balances (PS R2)



PS R2, d = 1 mg



PS R2, d = 10 mg



Single-point support for balance with Max > 6000 g



PS R2, d = 10 mg, Max > 6000 g



Large LCD display with text information section

### Functions

Parts counting	Percent weighing	Autotest	Peak hold	Alibi memory	Checkweighing	Under hook weighing	Multilingual menu
Dosing	Statistics	Density determination	GLP procedures	Replaceable unit	Animal weighing	Ambient conditions measurement	

Technical Specifications	PS 210.R2	PS 360.R2	PS 600.R2	PS 750.R2	PS 1000.R2
Maximum capacity [Max]	210 g	360 g	600 g	750 g	1000 g
Minimum load	0.02 g	0.02 g	0.02 g	0.02 g	0.02 g
Readability [d]	0.001 g	0.001 g	0.001 g	0.001 g	0.001 g
Verification scale interval [e]	0.001 g	0.001 g	0.01 g	0.01 g	0.01 g
Tare range	-210 g	-360 g	-600 g	-750 g	-1000 g
Repeatability*	0.001 g	0.001 g	0.0015 g	0.0015 g	0.0015 g
Linearity	±0.002 g	±0.002 g	±0.003 g	±0.003 g	±0.003 g
Sensitivity temperature drift**	$2 \times 10^{-6} / ^\circ\text{C} \times \text{Rt}$	$2 \times 10^{-6} / ^\circ\text{C} \times \text{Rt}$	$2 \times 10^{-6} / ^\circ\text{C} \times \text{Rt}$	$2 \times 10^{-6} / ^\circ\text{C} \times \text{Rt}$	$2 \times 10^{-6} / ^\circ\text{C} \times \text{Rt}$
Minimum weight (U=1%, k=2)	0.1 g	0.1 g	0.1 g	0.1 g	0.1 g
Minimum weight (USP)	1 g	1 g	1 g	1 g	1 g
Stabilization time	2 s	2 s	2 s	2 s	2 s
Adjustment	internal	internal	internal	internal	internal
Verification	Yes	Yes	Yes	Yes	Yes
OIML Class	II	II	II	II	II
Display	LCD (with backlight)	LCD (with backlight)	LCD (with backlight)	LCD (with backlight)	LCD (with backlight)
Keypad	14 keys	14 keys	14 keys	14 keys	14 keys
Protection class	IP 43	IP 43	IP 43	IP 43	IP 43
Databases	5	5	5	5	5
USB-A	1	1	1	1	1
USB-B	1	1	1	1	1
RS 232	2	2	2	2	2
Wireless connection (option)***	802.11 b/g/n	802.11 b/g/n	802.11 b/g/n	802.11 b/g/n	802.11 b/g/n
Power supply	12 ÷ 16 V DC	12 ÷ 16 V DC	12 ÷ 16 V DC	12 ÷ 16 V DC	12 ÷ 16 V DC
Power consumption	4 W	4 W	4 W	4 W	4 W
Operating temperature	+10 ÷ +40 °C	+10 ÷ +40 °C	+10 ÷ +40 °C	+10 ÷ +40 °C	+10 ÷ +40 °C
Atmospheric humidity****	40 ÷ 80 %	40 ÷ 80 %	40 ÷ 80 %	40 ÷ 80 %	40 ÷ 80 %
Transport and storage temperature	-20 ÷ +50 °C	-20 ÷ +50 °C	-20 ÷ +50 °C	-20 ÷ +50 °C	-20 ÷ +50 °C
Weighing pan dimensions	128 × 128 mm	128 × 128 mm	128 × 128 mm	128 × 128 mm	128 × 128 mm
Weighing device dimensions	333 × 208 × 100 mm	333 × 208 × 100 mm	333 × 206 × 100 mm	333 × 206 × 100 mm	333 × 206 × 100 mm
Net weight	3.7 kg	3.7 kg	3.9 kg	3.9 kg	3.9 kg

## Precision Balances (PS R2)



PS R2, d = 10 mg



PS R2, d = 1 mg



Single-point support for balance with Max > 6000 g





PS R2, d = 10 mg, Max > 6000 g



Large LCD display with text information section

### Functions

 Parts counting	 Percent weighing	 Autotest	 Peak hold	 Alibi memory	 Checkweighing	 Under hook weighing	 Multilingual menu
 Dosing	 Statistics	 Density determination	 GLP procedures	 Replaceable unit	 Animal weighing	 Ambient conditions measurement	

Technical Specifications	PS 1200.R2	PS 2100.R2	PS 3500.R2	PS 4500.R2	PS 6000.R2	PS 6001.R2
Maximum capacity [Max]	1200 g	2100 g	3500 g	4500 g	6000 g	6000 g
Minimum load	0.5 g	0.5 g	0.5 g	0.5 g	0.5 g	0.5 g
Readability [d]	0.01 g	0.01 g	0.01 g	0.01 g	0.01 g	0.01 g
Verification scale interval [e]	0.1 g	0.1 g	0.1 g	0.1 g	0.1 g	0.1 g
Tare range	-1200 g	-2100 g	-3500 g	-4500 g	-6000 g	-6000 g
Repeatability*	0.01 g	0.01 g	0.01 g	0.01 g	0.015 g	0.1 g
Linearity	±0.02 g	±0.02 g	±0.02 g	±0.02 g	±0.03 g	±0.1 g
Sensitivity temperature drift**	2 × 10 <sup>-6</sup> / °C × Rt	2 × 10 <sup>-6</sup> / °C × Rt	2 × 10 <sup>-6</sup> / °C × Rt	2 × 10 <sup>-6</sup> / °C × Rt	2 × 10 <sup>-6</sup> / °C × Rt	2 × 10 <sup>-6</sup> / °C × Rt
Minimum weight (U=1%, k=2)	1 g	1 g	1 g	1 g	1 g	1 g
Minimum weight (USP)	10 g	10 g	10 g	10 g	10 g	10 g
Stabilization time	1.5 s	1.5 s	1.5 s	1.5 s	1.5 s	1.5 s
Adjustment	internal	internal	internal	internal	internal	internal
Verification	Yes	Yes	Yes	Yes	Yes	Yes
OIML Class	II	II	II	II	II	II
Display	LCD (with backlight)	LCD (with backlight)	LCD (with backlight)	LCD (with backlight)	LCD (with backlight)	LCD (with backlight)
Keypad	14 keys	14 keys	14 keys	14 keys	14 keys	14 keys
Protection class	IP 43	IP 43	IP 43	IP 43	IP 43	IP 43
Databases	5	5	5	5	5	5
USB-A	1	1	1	1	1	1
USB-B	1	1	1	1	1	1
RS 232	2	2	2	2	2	2
Wireless connection (option)***	802.11 b/g/n	802.11 b/g/n	802.11 b/g/n	802.11 b/g/n	802.11 b/g/n	802.11 b/g/n
Power supply	12 ÷ 16 V DC	12 ÷ 16 V DC	12 ÷ 16 V DC	12 ÷ 16 V DC	12 ÷ 16 V DC	12 ÷ 16 V DC
Power consumption	4 W	4 W	4 W	4 W	4 W	4 W
Operating temperature	+10 ÷ +40 °C	+10 ÷ +40 °C	+10 ÷ +40 °C	+10 ÷ +40 °C	+10 ÷ +40 °C	+10 ÷ +40 °C
Atmospheric humidity****	40 ÷ 80%	40 ÷ 80%	40 ÷ 80%	40 ÷ 80%	40 ÷ 80%	40 ÷ 80%
Transport and storage temperature	-20 ÷ +50 °C	-20 ÷ +50 °C	-20 ÷ +50 °C	-20 ÷ +50 °C	-20 ÷ +50 °C	-20 ÷ +50 °C
Weighing pan dimensions	195 × 195 mm	195 × 195 mm	195 × 195 mm	195 × 195 mm	195 × 195 mm	195 × 195 mm
Weighing device dimensions	333 × 206 × 100 mm	333 × 206 × 100 mm	333 × 206 × 100 mm	333 × 206 × 100 mm	333 × 206 × 100 mm	333 × 206 × 100 mm
Net weight	4.3 kg	4.3 kg	4.5 kg	4.5 kg	4.8 kg	4.8 kg
Gross weight	5.8 kg	5.8 kg	6 kg	6 kg	6.4 kg	6.4 kg
Packaging dimensions	470 × 380 × 336 mm	470 × 380 × 336 mm	470 × 380 × 336 mm	470 × 380 × 336 mm	470 × 380 × 336 mm	470 × 380 × 336 mm

## Moisture Analyzers (MA R)



Communication interfaces



Large LCD screen with text information line

### Functions

Moisture content analysis	Drying modes	GLP procedures	Replaceable unit	Multilingual menu	Dry mass determination
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Technical Specifications	MA 50/1.R	MA 50.R	MA 110.R	MA 210.R
Maximum capacity [Max]	50 g	50 g	110 g	210 g
Readability [d]	0.1 mg	1 mg	1 mg	1 mg
Tare range	-50 g	-50 g	-110 g	-210 g
Maximum sample weight	50 g	50 g	110 g	210 g
Drying temperature range	max. 160°C, max. 250°C (option)*	max. 160°C, max. 250°C (option)*	max. 160°C, max. 250°C (option)*	max. 160°C, max. 250°C (option)*
Moisture content readability	0.0001%	0.001%	0.001%	0.001%
Moisture content repeatability	0.05% (ca. 2 g sample), 0.01% (ca. 10 g sample)	0.05% (ca. 2 g sample), 0.01% (ca. 10 g sample)	0.05% (ca. 2 g sample), 0.01% (ca. 10 g sample)	0.05% (ca. 2 g sample), 0.01% (ca. 10 g sample)
Adjustment	external	external	external	external
Display	LCD (backlit)	LCD (backlit)	LCD (backlit)	LCD (backlit)
Keypad	14 keys	14 keys	14 keys	14 keys
Heating module	IR emitter halogen lamp (option)** metal heater (option)**	IR emitter halogen lamp (option)** metal heater (option)**	IR emitter halogen lamp (option)** metal heater (option)**	IR emitter halogen lamp (option)** metal heater (option)**
Databases	6	6	6	6
Drying profiles	standard, fast, step, mild	standard, fast, step, mild	standard, fast, step, mild	standard, fast, step, mild
Finish mode	manual, automatic, time-defined, user-defined	manual, automatic, time-defined, user-defined	manual, automatic, time-defined, user-defined	manual, automatic, time-defined, user-defined
Additional functions	sample traceability	sample traceability	sample traceability	sample traceability
USB-A	1	1	1	1
USB-B	1	1	1	1
RS 232	1	1	1	1
Wireless connection (option)***	802.11 b/g/n	802.11 b/g/n	802.11 b/g/n	802.11 b/g/n
Power supply	230 V	230 V	230 V	230 V
Power consumption	4 W (during weighing) and max 450 W (during drying)			
Heating module power	450 W	450 W	450 W	450 W
Operating temperature	+10 ÷ +40 °C	+10 ÷ +40 °C	+10 ÷ +40 °C	+10 ÷ +40 °C
Atmospheric humidity****	40 ÷ 80%	40 ÷ 80%	40 ÷ 80%	40 ÷ 80%
Transport and storage temperature	-20 ÷ +50 °C	-20 ÷ +50 °C	-20 ÷ +50 °C	-20 ÷ +50 °C
Maximum sample height	h= 20 mm	h= 20 mm	h= 20 mm	h= 20 mm
Weighing pan dimensions	ø 90 mm, h= 8 mm	ø 90 mm, h= 8 mm	ø 90 mm, h= 8 mm	ø 90 mm, h= 8 mm
Weighing device dimensions	333 × 206 × 190 mm	333 × 206 × 190 mm	333 × 206 × 190 mm	333 × 206 × 190 mm
Net weight	4.8 kg	4.8 kg	4.8 kg	4.8 kg

\* optional design with halogen lamp – max temperature 250° C  
 \*\* optional design with preferable heating module: halogen lamp – WH version, metal heater – NS version  
 \*\*\* option: moisture analyzer with a Wireless Connection module  
 \*\*\*\* non-condensing conditions

## Moisture Analyzers (MA X2.A)

Touch Screen



Automatic drying chamber's lid opening and closing



Dynamic control of sample mass – maximum capacity bar graph



5" touch screen with customized buttons layout

### Functions

Moisture content analysis	Drying modes	GLP procedures	Automatic lid opening	Multilingual menu	Dry mass determination	Result forecast	Proximity sensors	Replaceable unit
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Technical Specifications	MA 50/1.X2.A MA 50/1.X2.IC.A	MA 50.X2.A MA 50.X2.IC.A	MA 110.X2.A MA 110.X2.IC.A	MA 210.X2.A MA 210.X2.IC.A
Maximum capacity [Max]	50 g	50 g	110 g	210 g
Readability [d]	0.1 mg	1 mg	1 mg	1 mg
Tare range	-50 g	-50 g	-110 g	-210 g
Maximum sample weight	50 g	50 g	110 g	210 g
Drying temperature range	max. 160 °C, max. 250 °C (option†)	max. 160 °C, max. 250 °C (option†)	max. 160 °C, max. 250 °C (option†)	max. 160 °C, max. 250 °C (option†)
Moisture content readability	0.0001%	0.001%	0.001%	0.001%
Moisture content repeatability	0.05% (ca. 2 g sample), 0.01% (ca. 10 g sample)	0.05% (ca. 2 g sample) 0.01% (ca. 10 g sample)	0.05% (ca. 2 g sample) 0.01% (ca. 10 g sample)	0.05% (ca. 2 g sample) 0.01% (ca. 10 g sample)
Adjustment	external (MA.X2.A) internal (MA.X2.IC.A)	external (MA.X2.A) internal (MA.X2.IC.A)	external (MA.X2.A) internal (MA.X2.IC.A)	external (MA.X2.A) internal (MA.X2.IC.A)
Display	5" capacitive colour touch screen	5" capacitive colour touch screen	5" capacitive colour touch screen	5" capacitive colour touch screen
Keypad	6 keys	6 keys	6 keys	6 keys
Heating module	IR emitter halogen lamp (option)** metal heater (option)**	IR emitter halogen lamp (option)** metal heater (option)**	IR emitter halogen lamp (option)** metal heater (option)**	IR emitter halogen lamp (option)** metal heater (option)**
Databases	8	8	8	8
Drying profiles	standard, fast, step, mild	standard, fast, step, mild	standard, fast, step, mild	standard, fast, step, mild
Finish mode	manual, automatic, time-defined, user-defined	manual, automatic, time-defined, user-defined	manual, automatic, time-defined, user-defined	manual, automatic, time-defined, user-defined
Touch-free operation	2 programmable proximity sensors	2 programmable proximity sensors	2 programmable proximity sensors	2 programmable proximity sensors
Additional functions	control of sample mass prior the drying process, automatic drying chamber's lid opening and closing	control of sample mass prior the drying process, automatic drying chamber's lid opening and closing	control of sample mass prior the drying process, automatic drying chamber's lid opening and closing	control of sample mass prior the drying process, automatic drying chamber's lid opening and closing
USB-A	1	1	1	1
USB-B	1	1	1	1
RS 232	1	1	1	1
Wireless connection	802.11 b/g/n	802.11 b/g/n	802.11 b/g/n	802.11 b/g/n
Ethernet	10 / 100 Mbit	10 / 100 Mbit	10 / 100 Mbit	10 / 100 Mbit
Power supply	230 V	230 V	230 V	230 V
Power consumption	6 W (during weighing) and max 450 W (during drying)	6 W (during weighing) and max 450 W (during drying)	6 W (during weighing) and max 450 W (during drying)	6 W (during weighing) and max 450 W (during drying)
Heating module power	450 W	450 W	450 W	450 W
Operating temperature	+10 ÷ +40 °C	+10 ÷ +40 °C	+10 ÷ +40 °C	+10 ÷ +40 °C
Atmospheric humidity***	40 ÷ 80%	40 ÷ 80%	40 ÷ 80%	40 ÷ 80%
Transport and storage temperature	-20 ÷ +50 °C	-20 ÷ +50 °C	-20 ÷ +50 °C	-20 ÷ +50 °C
Maximum sample height	h= 20 mm	h= 20 mm	h= 20 mm	h= 20 mm
Weighing pan dimensions	ø 90 mm, h= 8 mm	ø 90 mm, h= 8 mm	ø 90 mm, h= 8 mm	ø 90 mm, h= 8 mm
Weighing device dimensions	338 × 206 × 197mm	338 × 206 × 197mm	338 × 206 × 197mm	338 × 206 × 197mm
Net weight	5.2 kg (MA.X2.A) 5.3 kg (MA.X2.IC.A)	5.2 kg (MA.X2.A) 5.3 kg (MA.X2.IC.A)	5.2 kg (MA.X2.A) 5.3 kg (MA.X2.IC.A)	5.2 kg (MA.X2.A) 5.4 kg (MA.X2.IC.A)

\* optional design with halogen lamp – max temperature 250° C  
\*\* optional design with preferable heating module: halogen lamp – WH version, metal heater – NS version  
\*\*\* non-condensing conditions

## Moisture Analyzers (MA 3Y)

Touch Screen



Drying programs and finish modes database



Drying process visualization



5.7" colour touch screen assuring intuitive operation

### Functions



Technical Specifications	MA 60.3Y	MA 200.3Y
Maximum capacity [Max]	60 g	200 g
Readability [d]	0.1 mg	1 mg
Tare range	-60 g	-200 g
Maximum sample weight	60 g	200 g
Drying temperature range	max. 160 °C, max. 250 °C (option†)	max. 160 °C, max. 250 °C (option†)
Moisture content readability	0.0001%	0.001%
Moisture content repeatability	0.05% (ca. 2 g sample), 0.01% (ca. 10 g sample)	0.05% (ca. 2 g sample) 0.01% (ca. 10 g sample)
Adjustment	external	external
Display	5.7" colour, resistive touch screen	5.7" colour, resistive touch screen
Keypad	8 keys	8 keys
Heating module	IR emitter halogen lamp (option)** metal heater (option)**	IR emitter halogen lamp (option)** metal heater (option)**
Databases	10	10
Drying profiles	standard, fast, step, mild	standard, fast, step, mild
Finish mode	manual, automatic, time-defined, user-defined	manual, automatic, time-defined, user-defined
Touch-free operation	2 programmable proximity sensors	2 programmable proximity sensors
Additional functions	sample traceability, drying process graph	sample traceability, drying process graph
USB-A	2	2
RS 232	1	1
Wireless connection	802.11 b/g/n	802.11 b/g/n
Ethernet	10 / 100 Mbit	10 / 100 Mbit
IN/OUT	4 × IN, 4 × OUT	4 × IN, 4 × OUT
Power supply	230 V	230 V
Power consumption	8 W (during weighing) and max 450 W (during drying)	8 W (during weighing) and max 450 W (during drying)
Heating module power	450 W	450 W
Operating temperature	+10 ÷ +40 °C	+10 ÷ +40 °C
Atmospheric humidity***	40 ÷ 80%	40 ÷ 80%
Transport and storage temperature	-20 ÷ +50 °C	-20 ÷ +50 °C
Maximum sample height	h= 20 mm	h= 20 mm
Weighing pan dimensions	ø 90 mm, h= 8 mm	ø 90 mm, h= 8 mm
Weighing device dimensions	436 × 250 × 190 mm	436 × 250 × 190 mm
Net weight	6 kg	6 kg

\* optional design with halogen lamp – max temperature 250° C

\*\* optional design with preferable heating module: halogen lamp – WH version, metal heater – NS version

\*\*\* non-condensing conditions

## Precision Balances WLC X2



WLC X2, d = 0.001 g



WLC X2, d = 0.01 g



WLC X2, d = 0.1 g



Communication interfaces

### Functions

 Parts counting	 Percent weighing	 Density determination	 GLP procedures	 Alibi memory	 Checkweighing	 Animal weighing	 Peak hold	 Multilingual menu
 Dosing	 Statistics	 Under hook weighing	 Proximity sensors	 Replaceable unit	 Formulations	 Autotest	 Ambient conditions measurement	

Technical Specifications	WLC 0.6.X2	WLC 1/10.X2	WLC 2.X2	WLC 6.X2	WLC 10.X2	WLC 20.X2
Maximum capacity [Max]	0.6 kg	1 kg / 10 kg	2 kg	6 kg	10 kg	20 kg
Minimum load	—	—	—	—	—	—
Readability [d]	0.01 g	0.01 g / 0.1 g	0.01 g	0.1 g	0.1 g	0.1 g
Verification scale interval [e]	—	—	—	—	—	—
Tare range	-0.6 kg	-10 kg	-2 kg	-6 kg	-10 kg	-20 kg
Repeatability*	0.008 g	0.015 g / 0.08 g	0.015 g	0.1 g	0.08 g	0.1 g
Linearity	±0.03 g	±0.03 g / ±0.3 g	±0.03 g	±0.3 g	±0.3 g	±0.3 g
Stabilization time	2 s	~ 4 s / 2 s	2 s	2 s	2 s	3 s
Adjustment	internal	external	internal	internal	external	external
Verification	—	—	—	—	—	—
OIML Class	—	—	—	—	—	—
Display	5" capacitive colour touch screen	5" capacitive colour touch screen	5" capacitive colour touch screen	5" capacitive colour touch screen	5" capacitive colour touch screen	5" capacitive colour touch screen
Keypad	6 keys	6 keys	6 keys	6 keys	6 keys	6 keys
Protection class	IP 43	IP 43	IP 43	IP 43	IP 43	IP 43
Touch-free operation	2 programmable proximity sensors	2 programmable proximity sensors	2 programmable proximity sensors	2 programmable proximity sensors	2 programmable proximity sensors	2 programmable proximity sensors
USB-A	1	1	1	1	1	1
USB-B	1	1	1	1	1	1
RS 232	2	2	2	2	2	2
Wireless Connection	802.11 b/g/n	802.11 b/g/n	802.11 b/g/n	802.11 b/g/n	802.11 b/g/n	802.11 b/g/n
Ethernet	10 / 100 Mbit	10 / 100 Mbit	10 / 100 Mbit	10 / 100 Mbit	10 / 100 Mbit	10 / 100 Mbit
Power consumption	12 ÷ 16 V DC	12 ÷ 16 V DC	12 ÷ 16 V DC	12 ÷ 16 V DC	12 ÷ 16 V DC	12 ÷ 16 V DC
Power supply	4 W	4 W	4 W	4 W	4 W	4 W
Operating temperature	+10 ÷ +40 °C	+10 ÷ +40 °C	+10 ÷ +40 °C	+10 ÷ +40 °C	+10 ÷ +40 °C	+10 ÷ +40 °C
Atmospheric humidity**	40 ÷ 80 %	40 ÷ 80 %	40 ÷ 80 %	40 ÷ 80 %	40 ÷ 80 %	40 ÷ 80 %
Weighing pan dimensions	128 × 128 mm	195 × 195 mm	195 × 195 mm	195 × 195 mm	195 × 195 mm	195 × 195 mm
Weighing device dimensions	333 × 206 × 100 mm	333 × 206 × 100 mm	333 × 206 × 100 mm	333 × 206 × 100 mm	333 × 206 × 100 mm	333 × 206 × 100 mm
Net weight	2.2 kg	2.2 kg	2.2 kg	2.2 kg	2.2 kg	2.2 kg

## Precision Balances WLC A2



WLC A2



WLC F1/R  
direct indicator-platform connection



WLC F1/K  
1 m cable connection



WLC C2/R  
direct indicator-platform connection



WLC C2/K  
2.5 m cable connection

### Functions



Parts counting



Percent weighing



Totalizing



In-built battery



Replaceable unit



+/- Control



Animal weighing



Peak hold

Technical Specifications	WLC 1/A2	WLC 2/A2	WLC 6/A2	WLC 10/A2	WLC 20/A2
Maximum capacity [Max]	1 kg	2 kg	6 kg	10 kg	20 kg
Minimum load	—	—	5 g	—	—
Readability [d]	0.01 g	0.01 g	0.1 g	0.1 g	0.1 g
Verification scale interval [e]	—	—	1 g	—	—
Tare range	-1 kg	-2 kg	-6 kg	-10 kg	-20 kg
Repeatability*	0.01 g	0.01 g	0.1 g	0.1 g	0.1 g
Linearity	±0.03 g	±0.03 g	±0.2 g	±0.3 g	±0.3 g
Stabilization time	3 s	3 s	3 s	3 s	3 s
Adjustment	external (2 stages)	external (2 stages)	—	external (2 stages)	external (2 stages)
Verification	—	—	Yes	—	—
OIML Class	—	—	II	—	—
Display	LCD (with backlight)	LCD (with backlight)	LCD (with backlight)	LCD (with backlight)	LCD (with backlight)
Keypad	6 keys	6 keys	6 keys	6 keys	6 keys
Protection class	IP 43	IP 43	IP 43	IP 43	IP 43
RS 232	1	1	1	1	1
Power consumption	6 W	6 W	6 W	6 W	6 W
Power supply	100 ÷ 240 V AC 50 ÷ 60 Hz / 12 V DC + battery	100 ÷ 240 V AC 50 ÷ 60 Hz / 12 V DC + battery	100 ÷ 240 V AC 50 ÷ 60 Hz / 12 V DC + battery	100 ÷ 240 V AC 50 ÷ 60 Hz / 12 V DC + battery	100 ÷ 240 V AC 50 ÷ 60 Hz / 12 V DC + battery
Operating temperature	+15 ÷ +30 °C	+15 ÷ +30 °C	+15 ÷ +30 °C	+15 ÷ +30 °C	+15 ÷ +30 °C
Atmospheric humidity**	10 ÷ 85% RH	10 ÷ 85% RH	10 ÷ 85% RH	10 ÷ 85% RH	10 ÷ 85% RH
Weighing pan dimensions	195 × 195 mm	195 × 195 mm	195 × 195 mm	195 × 195 mm	195 × 195 mm
Weighing device dimensions	333 × 206 × 97 mm	333 × 206 × 97 mm	333 × 206 × 97 mm	333 × 206 × 97 mm	333 × 206 × 97 mm
Net weight	2.8 kg	2.8 kg	2.8 kg	2.8 kg	2.8 kg

## Precision Balances WLC F1



WLC F1/R  
direct indicator-platform connection



WLC A2



WLC F1/K  
1 m cable connection



WLC C2/R  
direct indicator-platform connection



WLC C2/K  
2.5 m cable connection

### Functions



Parts counting



Percent weighing



Totalizing



In-built battery



Replaceable unit



+/- Control



Animal weighing



Peak hold

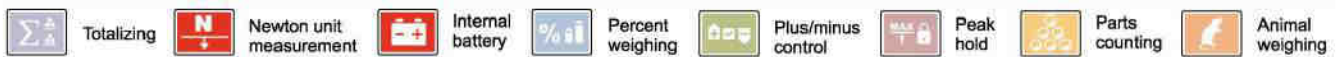
Technical Specifications	WLC 6/F1/K	WLC 12/F1/K	WLC 30/F1/K	WLC 60/C2/K	WLC 120/C2/K
	WLC 6/F1/R	WLC 12/F1/R	WLC 30/F1/R	WLC 60/C2/R	WLC 120/C2/R
Maximum capacity [Max]	6 kg	12 kg	30 kg	60 kg	120 kg
Minimum load	5 g	—	—	50 g	—
Readability [d]	0.1 g	0.2 g	0.5 g	1 g	2 g
Verification scale interval [e]	1 g	—	—	10 g	—
Tare range	-6 kg	-12 kg	-30 kg	-60 kg	-1 20 kg
Repeatability*	0.1 g	0.2 g	0.5 g	1 g	2 g
Linearity	±0.2 g	±0.6 g	±1.5 g	±2 g	±6 g
Stabilization time	3 s	3 s	3 s	3 s	3 s
Adjustment	—	external (2 stages)	external (2 stages)	—	external (2 stages)
Verification	Yes	—	—	Yes	—
OIML Class	II	—	—	II	—
Display	LCD (with backlight)	LCD (with backlight)	LCD (with backlight)	LCD (with backlight)	LCD (with backlight)
Indicator fastening	1 m cable connection (K), direct connection (R)	1 m cable connection (K), direct connection (R)	1 m cable connection (K), direct connection (R)	2.5 m cable connection (K), direct connection (R)	2.5 m cable connection (K), direct connection (R)
Keypad	5 keys	5 keys	5 keys	5 keys	5 keys
Protection class	IP 43	IP 43	IP 43	IP 43	IP 43
RS 232	1	1	1	1	1
Power consumption	6 W	6 W	6 W	6 W	6 W
Power supply	100 ÷ 240 V AC 50 ÷ 60 Hz / 12 V DC + battery	100 ÷ 240 V AC 50 ÷ 60 Hz / 12 V DC + battery	100 ÷ 240 V AC 50 ÷ 60 Hz / 12 V DC + battery	100 ÷ 240 V AC 50 ÷ 60 Hz / 12 V DC + battery	100 ÷ 240 V AC 50 ÷ 60 Hz / 12 V DC + battery
Operating temperature	+15 ÷ +30 °C	+15 ÷ +30 °C	+15 ÷ +30 °C	+15 ÷ +30 °C	+15 ÷ +30 °C
Atmospheric humidity**	10 ÷ 85% RH	10 ÷ 85% RH	10 ÷ 85% RH	10 ÷ 85% RH	10 ÷ 85% RH
Weighing pan dimensions	300 × 300 mm	300 × 300 mm	300 × 300 mm	400 × 500 mm	400 × 500 mm
Weighing device dimensions	445 × 300 × 70 mm	445 × 300 × 70 mm	445 × 300 × 70 mm	547 × 502 × 103 mm	547 × 502 × 103 mm
Net weight	5.2 kg	5.2 kg	5.2 kg	12.5 kg	12.5 kg



## Platform Scales



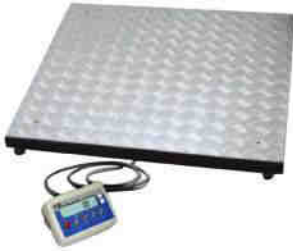
### Functions



Technical data:	WPT 6 F1/NV	WPT 12 F1/NV	WPT 30 F1/NV	WPT 30 C2/NV
	WPT 6 F1/K/NV	WPT 12 F1/K/NV	WPT 30 F1/K/NV	WPT 30 C2/K/NV
	WPT 6 F1/R/NV	WPT 12 F1/R/NV	WPT 30 F1/R/NV	WPT 30 C2/R/NV
Max capacity	6 kg	12 kg	30 kg	30 kg
Minimum load	40 g	100 g	200 g	200 g
Readability	0,1 g	0,2 g	0,5 g	0,5 g
Tare range	-6 kg	-12 kg	-30 kg	-30 kg
Pan size	300 × 300 mm			400 × 500 mm
Working temperature	-10° + +40 °C			
Relative atmospheric humidity	10 + 85 % RH no condensation			
Output signal	RS 232			
IP rating	IP 65 - platform, IP 43 - indicator			
Power supply	100 + 240 V AC 50 + 60 Hz / 12 V DC and battery			
Operation time on batteries	~ 35 h			
Display	LCD (backlit)			
Net weight / Gross weight	5,2 / 6 kg			15,5 / 17,8 kg
Packaging size	570×390×170 mm			720×580×220 mm

Technical data:	WPT 60 C2/NV	WPT 120 C2/NV	WPT 300 C2/NV	WPT 120 C3/NV
	WPT 60 C2/K/NV	WPT 120 C2/K/NV	WPT 300 C2/K/NV	WPT 120 C3/K/NV
	WPT 60 C2/R/NV	WPT 120 C2/R/NV	-	-
Max capacity	60 kg	120 kg	300 kg	120 kg
Minimum load	400 g	1 kg	2 kg	1 kg
Readability	1 g	2 g	5 g	2 g
Tare range	-60 kg	-120 kg	-300 kg	-120 kg
Pan size	400 × 500 mm			500 × 700 mm
Working temperature	-10° + +40 °C			
Relative atmospheric humidity	10 + 85 % RH no condensation			
Output signal	RS 232			
IP rating	IP 65 - platform, IP 43 - indicator			
Power supply	100 + 240 V AC 50 + 60 Hz / 12 V DC and battery			
Operation time on batteries	~ 35 h			
Display	LCD (backlit)			
Net weight / Gross weight	15,5 / 17,8 kg			20,5 / 26,8 kg

## Platform Scales 4 Load cell



### Technical data:

	WPT/4 300 H6	WPT/4 600 H6	WPT/4 300 H7	WPT/4 600 H7	WPT/4 1500 H7	WPT/4 1500 H8	WPT/4 3000 H8
Max capacity	300 kg	600 kg	300 kg	600 kg	1500 kg	1500 kg	3000 kg
Readability	100 g	200 g	100 g	200 g	500 g	500 g	1000 g
Tare range	-300 kg	-600 kg	-300 kg	-600 kg	-1500 kg	-1500 kg	-3000 kg
Pan size	800×800 mm	800×800 mm	1000×1000 mm	1000×1000 mm	1000×1000 mm	1200×1200 mm	1200×1200 mm
Working temperature	-10° - +40 °C						
Output signal	RS 232						
IP rating	IP 68 construction, IP 66/67 indicator						
Power supply	230V / 11V AC or 120V / 11V AC and internal accumulator						
Operation time on accumulators	~ 45 h (average)						
Display	LCD (backlit)						
Scale weight with indicator	59 kg	59 kg	84 kg	84 kg	94 kg	125 kg	130 kg
Platform height	88 mm	88 mm	88 mm	88 mm	88 mm	88 mm	111 mm



### Technical data:

	WPT/4 1500 H8/9	WPT/4 3000 H8/9	WPT/4 1500 H9	WPT/4 3000 H9	WPT/4 3000 H10	WPT/4 6000 H10
Max capacity	1500 kg	3000 kg	1500 kg	3000 kg	3000 kg	6000 kg
Readability	500 g	1000 g	500 g	1000 g	1000 g	2000 g
Tare range	-1500 kg	-3000 kg	-1500 kg	-3000 kg	-3000 kg	-6000 kg
Pan size	1200×1500 mm	1200×1500 mm	1500×1500 mm	1500×1500 mm	1500×2000 mm	1500×2000 mm
Working temperature	-10° - +40 °C					
Output signal	RS 232					
IP rating	IP 68 construction, IP 66/67 indicator					
Power supply	230V / 11V AC or 120V / 11V AC and internal accumulator					
Time on accumulators	~45 h (average)					
Display	LCD (backlit)					
Scale weight with indicator	158 kg	165 kg	190 kg	200 kg	285 kg	350 kg
Platform height	88 mm	111 mm	88 mm	111 mm	111 mm	166 mm



## Automatic Feeder



### Technical data:

	PA-02/H
Diameter of filled object	Ø 3 + 10 mm
Feeder diameter	Ø 180 mm
Height of feeder's vibrating element	70 mm
Filling speed	1 + 15 pcs / min
Operating temperature	+5 ° + +40 °C
Power consumption	8 W
IP rating	IP 34
Power supply	110 + 230 VAC 50 / 60 Hz
Control	external from balance level
Interface	RS 232
Net weight	22,3 kg
Dimensions	265 × 255 × 230 mm

## Standard Weights E1, E2, F1, F2, M1 Class



Nominal value	Quantity	Total weight
		in g
1 mg - 500 mg	12	1,11
1 mg - 5 g	16	6,11
1 mg - 50 g	20	111,11
1 mg - 100 g	21	211,11
1 mg - 200 g	23	611,11
1 mg - 500 g	24	1111,11
1 mg - 1 kg	25	2111,11
1 mg - 2 kg	27	6,111,11
1 mg - 5 kg	28	11111,11
1 mg - 10 kg	29	21111,11

Wooden/Plastic box

RADWAG PCA certificate

Nominal value	Tolerance	Nominal value	Tolerance
	+/- mg		+/- mg
1 g	0,1	500 g	2,5
2 g	0,12	1 kg	5
5 g	0,16	2 kg	10
10 g	0,2	5 kg	25
20 g	0,25	10 kg	50
50 g	0,3	20 kg	100
100 g	0,5	50 kg	250
200 g	1	* 1g - 50g in plastic box	

Automatic Mass Comparator



Technical specification:

	UMA 5	UMA 100	UMA 1000
E1	1 mg ± 5 g	1 g ± 100 g	100 g ± 1000 g
E2	1 mg ± 5 g	1 g ± 100 g	10 g ± 1000 g
F1	1 mg ± 5 g	1 g ± 100 g	10 g ± 1000 g
F2	1 mg ± 5 g	1 g ± 100 g	10 g ± 1000 g
M1	1 mg ± 5 g	1 g ± 100 g	10 g ± 1000 g
M2	1 mg ± 5 g	1 g ± 100 g	10 g ± 1000 g
Max capacity	5,1 g	110 g	1060 g
Readability d	0,1 µg	0,001 mg	0,005 mg
* Repeatability at low load	0,2 µg (1 mg ± 1 g) 0,3 µg (1 g ± 2 g)	0,002 mg (1 g)	0,012 mg (10 g)
* Repeatability at nominal load	0,4 µg (2 g ± 5 g)	0,002 mg (100 g)	0,012 mg (1000 g)
Electric compensation range	0 ÷ 5,1 g	- 1 g ± 10 g	- 10 g ± +60 g
Supplementary weights internal	-	automatic	automatic
Eccentricity (tested load)	0 µg	0 mg	0 mg
Stabilization time	30 s	30 s	30 s
Adjustment/calibration	internal	internal	external
Magazine positions	36	36	16
<b>Ambient conditions:</b>			
Working temperature	(15 ± 30) °C	(15 ± 30) °C	(15 ± 30) °C
Change rate of working temperatures	± 0,5 °C / 12 h (± 0,3 °C / 4 h)	± 0,5 °C / 12 h (± 0,3 °C / 4 h)	± 0,5 °C / 12 h (± 0,3 °C / 4 h)
Atmospheric humidity	(40 ± 60) %	(40 ± 60) %	(40 ± 60) %
Change rate of atmospheric humidity	± 2 % / 4 h	± 2 % / 4 h	± 2 % / 4 h
<b>Dimensions</b>			
Pan size	ø 20 mm	ø 20 mm	ø 50 mm
Weighing unit dimensions	950 × 590 × 540 mm	700 × 585 × 720 mm	700 × 585 × 720 mm
Control unit dimensions	460 × 250 × 195 mm	460 × 250 × 195 mm	460 × 250 × 195 mm
Net weight/Gross weight	55 kg / 75 kg	60 kg / 80 kg	60 kg / 80 kg
Control packaging size	420 × 370 × 420 mm	420 × 370 × 420 mm	420 × 370 × 420 mm
Weighing packaging size	1200 × 800 × 950 mm	1200 × 1000 × 1200 mm	1200 × 1000 × 1200 mm

\* Repeatability is expressed as a standard deviation determined for 6 ABBA cycles.

## Dot-Matrix printer EPSON



EPSON impact printers (dot-matrix), also known as receipt printers, are applicable for printing on paper 58, 70 or 76 mm in width. They are designed for printing receipt in cooperation with weighing systems (counting and labelling systems). Epson impact printers are connectable to all RADWAG scales equipped with RS232 interface.

### Model

Needle printer Epson TM-U220A  
 Needle printer Epson TM-U220B  
 Needle printer Epson TM-U220D

## Thermal receipt printer EPSON



Epson's cost-effective TM-T20II Point-of-Sale (POS) thermal receipt printer is the latest addition to Epson's line of energy-efficient POS printers. Based on Epson's advanced printing technology, TM-T20II was designed specifically to meet the needs of low volume retailers with basic POS printing functionality, high reliability and ease-of-use features.

Interface: USB 2.0, Serial RS-232, Ethernet

Paper dimensions: 3.13" ± 0.02" x 3.27" diameter (79.5 ± 0.5(W) x 83.0mm)

2.26" ± 0.02" x 3.27" diameter (57.5 ± 0.5(W) x 83mm)

Overall dimensions: 5.51" x 7.83" x 5.75" (140 x 199 x 146 mm) (W x D x H)

### Model

TM-T20II POS Receipt Printer

## UL - RADWAG Laboratory Holders for Analytical Balances



Radwag Laboratory Holders have been designed for faster and more convenient weighing. They ensure perfect and secure fixing of small vessels, both typical and non-standard shapes.

Product highlights:

- Full ergonomics of weighing
- Direct dosing of a sample into a vessel
- High work efficiency, lower costs (minimizing possible loss of samples resulting from moving)
- Direct dosing of samples into various samples (test tubes, round flasks, flat flasks, plastic test-tubes, titration vessels)

Laboratory holders are compatible with all analytical balances made by Radwag: XA.4Y, AS.3Y.



### Model

UL-01  
 UL-02  
 UL-03  
 UL-04

### Application

glass and plastic tubes, filters, various vessels  
 glass and plastic tubes ø8, ø10, ø12 mm  
 round bottom measuring flask 50ml, 100ml, 250 ml  
 flat bottom measuring flask 50ml, 100 ml



- Max 250 °C
- Constant Temperature Controller
- Timer On / Off
- RS-232C Serial Computer Interface
- PC Program Controller with PC Control Software

### ↳ Forced Convection Oven

	J5OF-050	J5OF-100	J5OF-150	J5OF-250
Chamber Volume (Capacity)	48 L	100 L	151 L	252 L
Dimensions Inner	400 x 300 x 400	500 x 400 x 500	560 x 450 x 600	600 x 600 x 700
W x D x H mm Outer	560 x 605 x 710	660 x 705 x 810	720 x 755 x 910	760 x 905 x 1010
Window	W150 x H290	W150 x H360	W150 x H410	W150 x H460
Temperature Range	ambient +10 °C to 250 °C			
Accuracy at 120°C	± 0.2 °C	± 0.3 °C	± 0.3 °C	± 0.3 °C
Uniformity at 120°C	± 1.0 °C	± 1.3 °C	± 1.5 °C	± 1.8 °C
Heat up time to 120°C	10 min.	10 min.	10 min.	10 min.
No. of Shelves / Maximum No.	2 / 12	2 / 16	2 / 20	3 / 24
No. of Ventilation damper	1	1	1	1
Heater Capacity	1.0 kW	1.5 kW	1.7 kW	2.5 kW
Power Rating	4.7 Amp	7.0 Amp	7.9 Amp	11.5 Amp
Power Plug	CEE 7/7 Schuko			



- Max 250 °C
- Constant Temperature Controller
- Timer On / Off
- RS-232C Serial Computer Interface
- PC Program Controller with PC Control Software

### ↳ Natural Convection Oven

	J5ON-050	J5ON-100	J5ON-150	J5ON-250
Chamber Volume (Capacity)	48 L	100 L	151 L	252 L
Dimensions Inner	400 x 300 x 400	500 x 400 x 500	560 x 450 x 600	600 x 600 x 700
W x D x H mm Outer	560 x 525 x 710	660 x 625 x 810	720 x 675 x 910	760 x 825 x 1010
Window	W150 x H290	W150 x H360	W150 x H410	W150 x H460
Temperature Range	ambient +10 °C to 250 °C			
Accuracy at 120°C	± 0.3 °C	± 0.3 °C	± 0.5 °C	± 0.5 °C
Uniformity at 120°C	± 2.0 °C	± 3.0 °C	± 3.0 °C	± 4.0 °C
Heat up time to 120°C	10 min.	10 min.	15 min.	20 min.
No. of Shelves / Maximum No.	2 / 12	2 / 14	2 / 16	3 / 24
No. of Ventilation damper	1	2	2	2
Heater Capacity	1.2 kW	1.5 kW	1.7 kW	2.5 kW
Power Rating	5.5 Amp	6.8 Amp	7.7 Amp	11.3 Amp
Power Plug	CEE 7/7 Schuko			



- Max 250 °C
- Constant Temperature Controller
- Timer On / Off

### ↳ Dry Heat Sterilizer

	J5OF-030S	J5OF-050S	J5ON-030S	J5ON-050S
Air Circulation	Forced Convection		Gravity Convection	
Chamber Volume (Capacity)	33 L	48 L	33 L	48 L
Dimensions Inner	350 x 270 x 350	400 x 300 x 400	350 x 270 x 350	400 x 300 x 400
W x D x H mm Outer	510 x 570 x 660	560 x 585 x 710	510 x 490 x 660	560 x 505 x 710
Temperature Range	ambient +10 °C to 250 °C			
Accuracy at 180°C	± 0.2 °C	± 0.2 °C	± 0.3 °C	± 0.3 °C
Uniformity at 180°C	± 1.0 °C	± 1.0 °C	± 2.0 °C	± 2.0 °C
Heat up time to 180°C	15 min.	15 min.	15 min.	15 min.
No. of Shelves / Maximum No.	2 / 10	2 / 12	2 / 10	2 / 12
No. of Ventilation damper	1	1	1	1
Heater Capacity	800 W	1.0 kW	800 W	1.2 kW
Power Rating	3.8 Amp	4.7 Amp	3.8 Amp	5.5 Amp
Power Plug	CEE 7/7 Schuko			



- Vacuum 760 mmHg
- Max 250 °C
- Constant Temperature Controller
- Timer On / Off

### ↳ Vacuum Oven

	J5VO-30T	J5VO-60T
Chamber Volume (Capacity)	27 L	64 L
Dimensions Inner	300 x 300 x 300	400 x 400 x 400
W x D x H mm Outer	665 x 470 x 535	765 x 575 x 635
Temperature Range	ambient +10 °C to 250 °C	
Accuracy at 120°C	± 2.0 °C	
Uniformity at 120°C	± 3.0 °C	
Glass Window	W265 x H285	W350 x H350
Maximum Vacuum	15 mm Thick Tempered Safety Glass	
Fitting	760 mmHg	
Valves	Vacuum / Vent Φ 9 mm Hose Barb	
No. of Aluminum Shelf included	Vacuum/Lock : 2-Way Valve Vent : Needle Valve	
Heater Capacity	2 x 1.0 kW	4 x 700 W
Power Rating	9.2 Amp	12.9 Amp
Power Plug	CEE 7/7 Schuko	



- Max 350 °C
- Constant Temperature Controller
- Timer On / Off
- (optional) RS-232C Serial Computer Interface
- (optional) Program Controller with PC Control Software

### 350 °C Hi-Temp Oven

	JSOF-030H	JSOF-100H	JSOF-150H
Chamber Volume (Capacity)	27 L	96 L	150 L
Dimensions Inner	300 x 300 x 300	400 x 400 x 600	500 x 500 x 600
W x D x H mm Outer	745 x 460 x 580	845 x 560 x 880	945 x 660 x 880
Temperature Range	ambient +10 °C to 350 °C		
Accuracy at 200°C	± 0.2 °C	± 0.3 °C	± 0.3 °C
Uniformity at 200°C	± 1.0 °C	± 1.5 °C	± 1.5 °C
Heat up time to 200°C	8 min.	10 min.	10 min.
No. of Shelves / Maximum No.	2 / 14	2 / 20	2 / 20
No. of Ventilation damper	1	1	1
Heater Capacity	2.0 kW	2.5 kW	3.0 kW
Power Rating	9.3 Amp	11.5 Amp	13.8 Amp
Power Plug		CEE 7/7 Schuko	



- Heavy Duty Industrial Scale
- Max 250 °C
- Constant Temperature Controller
- Timer On / Off
- (optional) RS-232C Serial Computer Interface
- (optional) Program Controller with PC Control Software

### Heavy Duty Industrial Oven

	JSIO-400T	JSIO-960T	JSIO-1400T
Chamber Volume (Capacity)	410 L	960 L	1386 L
Dimensions Inner	650 x 600 x 1050	1000 x 800 x 1200	1100 x 1050 x 1200
W x D x H mm Outer	935 x 835 x 1810	1285 x 1035 x 1960	1385 x 1285 x 1960
Clearance	935 x 845 x 1820	1285 x 1045 x 1970	1385 x 1245 x 1970
Temperature Range	ambient +5 °C to 250 °C		
Accuracy at 120°C	± 0.3 °C	± 0.5 °C	± 0.5 °C
Uniformity at 120°C	± 5.0 °C	± 6.0 °C	± 8.0 °C
Heat up time to 120°C	20 min.	25 min.	25 min.
No. of Shelves / Maximum No.	3 / 8	3 / 8	3 / 8
No. of Ventilation damper	1	1	1
Electric Requirement	220 VAC 50/60Hz 1P or 380 VAC 50/60Hz 3P 4W		
Heater Capacity	4.5 kW	7.5 kW	10.5 kW
Power Rating	-	-	-
Power Plug	30 Amp	30 Amp	30 Amp



- Max 250 °C
- (optional) Program Controller with PC Control Software
- (optional) RS-232C Serial Computer Interface
- HEPA Filtered Laminar Air Flow

### HEPA Filter Clean Air Oven

	JSCO-150T	JSCO-300T	JSCO-1200T
Chamber Volume (Capacity)	168 L	336 L	1200 L
Dimensions Inner	600 x 560 x 500	600 x 560 x 1000	1000 x 1000 x 1200
W x D x H mm Outer	845 x 1100 x 1240	845 x 1100 x 1740	1245 x 1540 x 1940
Clearance	845 x 1110 x 1250	845 x 1110 x 1750	1245 x 1550 x 1950
Temperature Range	ambient +10 °C to 250 °C		
Accuracy at 120°C	± 0.3 °C	± 0.3 °C	± 0.5 °C
Uniformity at 120°C	± 5.0 °C	± 5.0 °C	± 8.0 °C
HEPA Filter	H14 (ISO Class 5) HI-TEMP HEPA Filter Efficiency 99.995% > 0.3 um Particles		
No. of Shelves / Maximum No.	2 / 14	3 / 36	4 / 36
Heater Capacity	2 x 1.0 kW	2 x 2.0 kW	3 x 2.5 kW
Electric Requirement	220 VAC 50/60Hz 1P	220 VAC 50/60Hz 1P	220 VAC 1P or 380 VAC 3P 4W
Power Rating	11.0 Amp	20.2 Amp	
Power Plug	CEE 7/7 Schuko	30 Amp	30 Amp



- Max 250 °C
- Constant Temperature Controller
- Timer On / Off
- (optional) RS-232C Serial Computer Interface
- (optional) Program Controller with PC Control Software

### Upright Convection Oven

	JSOF-250T	JSOF-400T	JSOF-700T
Chamber Volume (Capacity)	250 L	372 L	655 L
Dimensions Inner	500 x 500 x 1000	610 x 610 x 1000	710 x 710 x 1300
W x D x H mm Outer	895 x 675 x 1360	1005 x 785 x 1360	1105 x 885 x 1660
Window	W150 x H460	W150 x H460	W150 x H615
Temperature Range	ambient +10 °C to 250 °C		
Accuracy at 120°C	± 0.3 °C	± 0.3 °C	± 0.3 °C
Uniformity at 120°C	± 1.5 °C	± 2.0 °C	± 3.0 °C
Heat up time to 120°C	10 min.	15 min.	15 min.
No. of Shelves / Maximum No.	3 / 36	4 / 36	6 / 48
No. of Ventilation damper	1	1	1
Heater Capacity	2 x 1.5 kW	2 x 1.7 kW	2 x 2.5 kW
Power Rating	13.8 Amp	15.6 Amp	22.9 Amp
Power Plug	CEE 7/7 Schuko	30 Amp	30 Amp



- Heated: amb.+5°C - 50°C
- Constant Temperature Controller
- Timer On / Off

### Compact Incubator

	JSGI-10T	JSGI-30T
Heating	Gravity Convection	Forced Convection
Chamber Volume (Capacity)	9.3 L	31.5 L
Dimensions Inner	210 x 210 x 210	300 x 300 x 350
W x D x H mm Outer	315 x 370 x 435	425 x 460 x 590
Inner Glass Door	no	yes
Temperature Range	ambient+5 °C to 50 °C	
Accuracy at 37.0°C	± 0.2 °C	± 0.2 °C
Uniformity at 37.0°C	± 0.5 °C	± 0.5 °C
Number of shelves	2	2
Heater Capacity	60 W	100 W
Power Rating	0.3 Amp	0.5 Amp
Power Plug	CEE 7/7 Schuko	



- Heated: amb.+5°C - 50°C
- Constant Temperature Controller
- Timer On / Off
- RS-232C Serial Computer Interface
- Program Controller with PC Control Software

### General Incubator

	JSGI-050T	JSGI-100T	JSGI-150T	JSGI-250T	JSGI-250DT
Chamber Volume (Capacity)	48 L	96 L	150 L	250 L	250 L x 2 Chamber
Dimensions Inner	400 x 300 x 400	400 x 400 x 600	500 x 500 x 600	500 x 500 x 1000	500 x 500 x 1000
W x D x H mm Outer	580 x 535 x 720	580 x 635 x 920	680 x 735 x 920	680 x 735 x 1320	1365 x 735 x 1400
Temperature Range	ambient+5 °C to 70 °C				
Accuracy at 37.0°C	± 0.2 °C	± 0.2 °C	± 0.2 °C	± 0.3 °C	± 0.3 °C
Uniformity at 37.0°C	± 0.5 °C	± 0.5 °C	± 1.0 °C	± 1.5 °C	± 1.5 °C
Heat up time to 37.0°C	15 min.	15 min.	15 min.	20 min.	20 min.
Number of shelves / Maximum No.	2 / 12	2 / 20	2 / 20	3 / 36	6 / 36
No. of Access Port	1	1	1	1	2
Heater Capacity	150 W	200 W	250 W	400 W	2 x 400 W
Power Rating	0.7 Amp	1.0 Amp	1.2 Amp	2.0 Amp	2 x 2.0 Amp
Power Plug	CEE 7/7 Schuko				



- Cooled: +0°C to 70°C
- Constant Temperature Controller
- Timer On / Off
- RS-232C Serial Computer Interface

### Cooled Incubator

	JSBI-050C	JSBI-100C
Chamber Volume (Capacity)	50 L	100 L
Dimensions Inner	400 x 350 x 360	450 x 450 x 500
W x D x H mm Outer	580 x 600 x 770	630 x 700 x 910
Temperature Range	+0 °C to 70 °C	
Accuracy at 20.0°C	± 0.2 °C	
Uniformity at 20.0°C	± 0.5 °C	
Number of shelves / Maximum No.	2 / 20	2 / 16
Heater Capacity	500 Watt	700 Watt
Refrigeration System	CFC-Free Air Cooled Compressor	
Power Rating	5.5 Amp	6.0 Amp
Power Plug	CEE 7/7 Schuko	



- Cooled: +0°C to 70°C
- Constant Temperature Controller
- Timer On / Off
- RS-232C Serial Computer Interface

### Cooled Incubator

	JSBI-150C	JSBI-250C	JSBI-420C	JSBI-840C
Chamber Volume (Capacity)	150 L	250 L	420 L	840 L
Dimensions Inner	500 x 500 x 600	500 x 500 x 1000	700 x 600 x 1000	1400 x 600 x 1000
W x D x H mm Outer	680 x 825 x 1370	680 x 825 x 1770	880 x 925 x 1770	1580 x 925 x 1770
Temperature Range	+0 °C to 70 °C			
Accuracy at 20.0°C	± 0.2 °C	± 0.2 °C	± 0.2 °C	± 0.2 °C
Uniformity at 20.0°C	± 0.5 °C	± 0.5 °C	± 0.5 °C	± 1.0 °C
Number of shelves / Maximum No.	2 / 20	3 / 25	3 / 25	6 / 50
Heater Capacity	900 W	1.0 kW	1.5 kW	2 x 1.5 kW
Refrigeration System	CFC-Free Air Cooled Compressor			
Power Rating	7.1 Amp	7.6 Amp	10.3 Amp	22 Amp
Power Plug	CEE 7/7 Schuko			

### ➤ Digital Water Bath



- Heated: amb. +5 °C - 99 °C
- Constant Temperature Controller
- Timer On / Off

	JSWB-06T	JSWB-11T	JSWB-22T	JSWB-30T
Bath Volume (Capacity)	6 L	11 L	22 L	30 L
Dimensions Inner	300 x 155 x 150	300 x 240 x 150	500 x 300 x 150	500 x 300 x 200
W x D x H mm Usable	300 x 155 x 110	300 x 240 x 110	500 x 300 x 110	500 x 300 x 160
Outer	340 x 200 x 270	340 x 285 x 270	545 x 345 x 270	545 x 345 x 320
Temperature Range	ambient +5 °C - 99 °C			
Accuracy at 37.0°C	± 0.2 °C	± 0.2 °C	± 0.2 °C	± 0.2 °C
Uniformity at 37.0°C	± 0.8 °C	± 0.8 °C	± 0.8 °C	± 1.0 °C
Drain Valve	none	none	yes	yes
Heater Capacity	600 W	1.0 kW	1.5 kW	2.0 kW
Power Rating	2.7 Amp	4.6 Amp	6.8 Amp	9.2 Amp
Power Plug	CEE 7/7 Schuko			

### ➤ Digital Circulation Water Bath



- Circulation Pump
- Heated: amb. -5 °C - 99 °C
- Timer On / Off
- Constant Temperature Controller

	JSIB-11T	JSIB-22T
Bath Volume (Capacity)	11 L	22 L
Dimensions Inner	300 x 240 x 150	495 x 290 x 150
W x D x H mm Usable	120 x 240 x 150	325 x 290 x 150
Outer	365 x 300 x 410	560 x 350 x 410
Temperature Range	ambient +5 °C - 99 °C	
Accuracy at 37.0°C	± 0.1 °C	
Uniformity at 37.0°C	± 0.2 °C	
Drain Valve	yes	
Inlet / Outlet Fitting	Φ 9 mm hose barb	
Heater Capacity	850 W	1.3 kW
Power Rating	3.9 Amp	5.9 Amp
Power Plug	CEE 7/7 Schuko	

### ➤ Digital Circulation Water Bath



- Circulation Pump
- Heated: amb. -5 °C - 99 °C
- Timer On / Off
- Constant Temperature Controller

	JSIB-50T	JSIB-100T
Bath Volume (Capacity)	50 L	100 L
Dimensions Inner	300 x 400 x 400	400 x 500 x 500
W x D x H mm Usable	300 x 400 x 350	400 x 500 x 450
Outer	385 x 665 x 685	485 x 765 x 785
Temperature Range	ambient +5 °C - 99 °C	
Accuracy at 37.0°C	± 0.2 °C	
Uniformity at 37.0°C	± 0.5 °C	
Drain Valve	yes	
Inlet / Outlet Fitting	Φ 9 mm hose barb	
Heater Capacity	3.0 kW	5.0 kW
Power Rating	14.0 Amp	23.0 Amp
Power Plug	CEE 7/7 Schuko	30 Amp

### ➤ Digital Shaking Water Bath



- Reciprocal Shaking
- Heated: amb. -5 °C - 99 °C
- Timer On / Off
- Constant Temperature Controller

	JSSB-30T	JSSB-50T
Bath Volume (Capacity)	30 L	50 L
Dimensions Inner	500 x 300 x 190	600 x 380 x 220
W x D x H mm Outer	760 x 370 x 400	870 x 450 x 430
Spring Rack	350 x 210 x 140	470 x 250 x 140
Temperature Range	ambient +5 °C - 99 °C	
Accuracy at 37.0°C	± 0.2 °C	
Uniformity at 37.0°C	± 0.5 °C	
Shaking Speed Range	20 - 120 rpm / 25mm stroke	
Accuracy	± 1 rpm	
Heater Capacity	2.0 kW	3.0 kW
Power Rating	9.2 Amp	13.8 Amp
Power Plug	CEE 7/7 Schuko	





- Circulation Pump
- Cooled -30 °C to 120 °C
- Timer On / Off
- Constant Temperature Controller

➤ Refrigerated Bath Circulation

	JSRC-06C	JSRC-13C	JSRC-22C	JSRC-30C
Bath Volume (Capacity)	7.0 L	11 L	20 L	30 L
Dimensions Inner	155 x 300 x 150	240 x 300 x 150	300 x 330 x 200	300 x 500 x 200
W x D x H mm Usable	155 x 90 x 150	240 x 120 x 150	300 x 150 x 200	295 x 315 x 200
W x D x H mm Outer	290 x 470 x 670	370 x 450 x 670	430 x 480 x 720	430 x 670 x 720
Temperature Range	-20 °C - 120.0 °C			
Accuracy at -10.0 °C	± 0.1 °C			
Uniformity at -10.0 °C	± 0.3 °C			
Heater Capacity	700 Watt	800 Watt	1.2 kW	1.6 kW
Refrigeration System	CFC Free Air Cooled Compressor			
Power Rating	6.7 Amp	7.1 Amp	8.9 Amp	10.5 Amp
Power Plug	CEE 7/7 Schuko			



- Circulation Pump
- Cooled -40 °C to 120 °C
- Timer On / Off
- Constant Temperature Controller

➤ Refrigerated Bath Circulation

	JSRC-06CL	JSRC-13CL	JSRC-22CL	JSRC-30CL
Bath Volume (Capacity)	7.0 L	11 L	20 L	30 L
Dimensions Inner	155 x 300 x 150	240 x 300 x 150	300 x 330 x 200	300 x 500 x 200
W x D x H mm Usable	155 x 90 x 150	240 x 120 x 150	300 x 150 x 200	295 x 315 x 200
W x D x H mm Outer	290 x 470 x 730	370 x 450 x 730	430 x 480 x 780	430 x 670 x 780
Temperature Range	-40 °C - 120.0 °C			
Accuracy at -10.0 °C	± 0.1 °C			
Uniformity at -10.0 °C	± 0.3 °C			
Heater Capacity	700 Watt	800 Watt	1.2 kW	1.6 kW
Refrigeration System	CFC Free Air Cooled Compressor			
Power Rating	6.7 Amp	8.0 Amp	9.8 Amp	11.6 Amp
Power Plug	CEE 7/7 Schuko			



- Heated amb.+10 °C - 250 °C
- Timer On / Off
- Constant Temperature Controller

➤ Digital Oil Bath

	JSOB-100T	JSOB-200T	JSOB-300T
Bath Volume (Capacity)	11 L	20 L	33 L
Dimensions Inner	300 x 220 x 170	400 x 300 x 170	430 x 300 x 260
W x D x H mm Usable	300 x 220 x 130	400 x 300 x 130	430 x 300 x 210
W x D x H mm Outer	550 x 310 x 340	650 x 390 x 360	680 x 390 x 450
Temperature Range	ambient +10 °C - 250 °C		
Accuracy at 120.0 °C	± 1.0 °C	± 1.0 °C	± 1.0 °C
Uniformity at 120.0 °C	± 3.0 °C	± 3.0 °C	± 5.0 °C
Heater Capacity	2.0 kW	3.0 kW	3.0 kW
Power Rating	9.1 Amp	13.6 Amp	13.6 Amp
Power Plug	CEE 7/7 Schuko		



- Multi-Port Extraction
- Heated amb.+5 °C - 99.9 °C
- Timer On / Off
- Constant Temperature Controller

➤ Extraction COD Bath

	JSEB-60T	JSEB-62T	JSEB-82T	JSEB-102T
Number of Extraction Ports	6	2 x 3	2 x 4	2 x 5
Dimensions Inner	920 x 162 x 150	490 x 322 x 150	650 x 322 x 150	850 x 322 x 150
W x D x H mm Outer	980 x 265 x 300	665 x 395 x 300	815 x 395 x 300	965 x 395 x 300
Temperature Range	ambient +5 °C - 99.9 °C			
Accuracy at 60.0 °C	± 0.5 °C			
Uniformity at 60.0 °C	± 1.0 °C			
Standard Accessories	Stainless Steel Frame Set, 4ea x PHH-X01 Pipe Holder			
Heater Capacity	3.0 kW	3.0 kW	4.0 kW	5.0 kW
Power Rating	13.6 Amp	13.6 Amp	18.2 Amp	23.0 Amp
Power Plug	CEE 7/7 Schuko	CEE 7/7 Schuko	30 Amp	30 Amp



- Circulation Pump
- Heated amb.+5 °C - 99.9 °C
- Timer On / Off
- Constant Temperature Controller

➤ Visco-Sight Bath

	JSEB-60T	JSEB-62T	JSEB-82T	JSEB-102T
Number of Extraction Ports	6	2 x 3	2 x 4	2 x 5
Dimensions Inner	920 x 162 x 150	490 x 322 x 150	650 x 322 x 150	850 x 322 x 150
W x D x H mm Outer	980 x 265 x 300	665 x 395 x 300	815 x 395 x 300	965 x 395 x 300
Temperature Range	ambient +5 °C - 99.9 °C			
Accuracy at 60.0 °C	± 0.5 °C			
Uniformity at 60.0 °C	± 1.0 °C			
Standard Accessories	Stainless Steel Frame Set, 4ea x PHH-X01 Pipe Holder			
Heater Capacity	3.0 kW	3.0 kW	4.0 kW	5.0 kW
Power Rating	13.6 Amp	13.6 Amp	18.2 Amp	23.0 Amp
Power Plug	CEE 7/7 Schuko	CEE 7/7 Schuko	30 Amp	30 Amp



- Max. 121 °C 0.12 Mpa
- Timer On / Off
- Safety Door Lock

### Autoclave / Steam Sterilizer

	JSAT-45	JSAT-65	JSAT-85	JSAT-105
Chamber Volume (Capacity)	45 L	65 L	85 L	105 L
Dimensions Inner	Φ350 x H490	Φ350 x H680	Φ450 x H535	Φ450 x H665
W x D x H mm Usable	Φ350 x H410	Φ350 x H620	Φ450 x H480	Φ450 x H610
Outer	555 x 670 x 955	555 x 670 x 1105	655 x 780 x 1010	655 x 780 x 1110
Basket x 2 ea	Φ330 x H195	Φ330 x H280	Φ430 x H220	Φ430 x H270
Temperature Range	up to 123 °C			
Accuracy	± 0.5 °C			
Uniformity	± 2.0 °C			
Heater Capacity	2.0 kW	3.0 kW	4.0 kW	5.0 kW
Power Rating	9.2 Amp	13.7 Amp	18.2 Amp	22.8 Amp
Electric	220VAC 50/60Hz 1P			
Power Plug	CEE 7/7 Schuko	CEE 7/7 Schuko	30 Amp	30 Amp



### Automatic Water Distillator

	JSWS-04	JSWS-08
Output Distilled	4.5 liter / hr	8.5 liter / hr
Reservoir Tank Capacity	12.0 liter	18.0 liter
Heater Capacity	3.0 kW	6.0 kW
Cooling Water Requirement	approx. 50.0 liter / hr	approx. 60.0 liter / hr
Inlet Water Pressure	1.0 - 3.0 kg / cm <sup>2</sup>	
Inlet Water Filter	Sediment Filter (Optional : Carbon Filter, Mixed Bed Ion Exchange Resin Filter)	
Material	Stainless Steel 304 (Boiler Tank & Reservoir Tank)	
Outer Dimensions (W x D x H)	350 x 650 x 510 mm	350 x 650 x 610 mm
Electrical Requirement	220 VAC, 50/60 Hz, 1-Phase	
Power Rating	13.6 Amp	27.3 Amp
Plug Configuration	CEE 7/7 Schuko or BS 1363	32 Amp 3 Pin for 250 VAC



- Max 1200 °C
- Program Controller 2 Patterns Memory

### Electric Muffle Furnace

	JSMF-30T	JSMF-45T	JSMF-120T	JSMF-140T	JSMF-270T
Temperature Maximum / General Operating	1,000 / 800 °C				
	JSMF-30H	JSMF-45H	JSMF-120H	JSMF-140H	JSMF-270H
	1,100 / 1,000 °C				
	JSMF-30HT	JSMF-45HT	JSMF-120HT	JSMF-140HT	JSMF-270HT
	1,200 / 1,100 °C				
Accuracy at 500°C	± 3.0 °C	± 4.0 °C	± 5.0 °C	± 6.0 °C	± 7.0 °C
Uniformity at 500°C	± 3.0 °C	± 4.0 °C	± 5.0 °C	± 6.0 °C	± 7.0 °C
Heat-up Time to 800°C	30 min	30 min	30 min	30 min	35 min
Chamber Volume (Capacity)	2.9 L	4.5 L	12.0 L	14.0 L	27.0 L
Dimensions Inner	130 x 250 x 90	150 x 300 x 100	200 x 300 x 200	250 x 350 x 160	300 x 300 x 300
W x D x H mm Outer	435 x 480 x 560	465 x 535 x 580	525 x 565 x 690	575 x 605 x 650	625 x 605 x 790
Heater Capacity	1.4 kW	1.6 kW	3.3 kW	4.0 kW	4.6 kW
Power Rating	6.5 Amp	7.4 Amp	15.2 Amp	18.3 Amp	20.2 Amp
Power Plug	CEE 7/7 Schuko	CEE 7/7 Schuko	30 AMP	30 AMP	30 AMP



- Interchangeable Blocks
- Max 180 °C
- Constant Temperature Controller
- Timer On / Off

### Dry Block Heater

	JSBL-01T	JSBL-02T	JSBL-04T
Modular Block Capacity	1 Block	2 Blocks	4 Blocks
Dimensions Inner	90 x 65 x 50	130 x 90 x 50	130 x 180 x 50
W x D x H mm Outer	180 x 245 x 110	220 x 270 x 110	220 x 360 x 50
Single Block Dims.	90 x 65 x 50		
Temperature Range	ambient +5 °C to 180 °C		
Accuracy at 60°C	± 0.5 °C		
Uniformity at 60°C	± 3.0 °C		
Heat up time to 60°C	8 min.	10 min.	14 min.
Heater Capacity	150 Watt	200 Watt	400 Watt
Power Rating	0.7 Amp	0.9 Amp	1.8 Amp
Power Plug	CEE 7/7 Schuko		



- Timer Off
- 20 - 350 rpm  
Orbital or Reciprocal
- Max. Load: 15-33 kgs

➤ **Orbital Shaker**

		JSOS-300	JSOS-500
		9 x 250ml (Flask)	25 x 250ml (Flask)
Shaking	Motion	Orbital	Orbital and Reciprocal
	Speed / Stroke	20 - 350 rpm	20 - 350 rpm
Dimensions	Platform	W275 x D345 mm	W495 x D495 mm
	Oversized Platform	none	W700 x D650 mm
W x D x H mm	Outer	350 x 520 x 165	545 x 565 x 350
	Max. Load	15 kgs	35 kgs
Motor Capacity		25 Watt	30 Watt
Power Rating		1.0 Amp	2.0 Amp
Power Plug		CEE 7/7 Schuko	



- Heated: amb.+5°C - 70°C
- Cooled: +10°C to 70°C
- Timer Off
- 20 - 350 rpm Orbital
- Max. Load: 25 kgs

➤ **Shaking Incubator**

		JSSI-070T	JSSI-070C
Chamber Volume (Capacity)		62 L	
Dimensions	Inner	505 x 400 x 310	
	Outer	550 x 700 x 660	
	Platform	W410 x D380 mm	
Temperature	Range	ambient +5°C - 70°C	+10°C - 70°C
	Accuracy	± 0.2°C at 37°C	± 0.2°C at 25°C
	Uniformity	± 1.0°C at 37°C	± 1.0°C at 25°C
Shaking	Motion	Orbital	
	Speed / Stroke	20 - 350 rpm / 20mm	
Working Light		25 Watt Bulb	
Heater Capacity		300 Watt	500 Watt
Refrigeration System		None	CFC Free Air Cooled Compressor
Power Rating		3.2 Amp	4.5 Amp
Electric		220VAC 50/60Hz 1P	
Power Plug		CEE 7/7 Schuko	



- Heated: amb.+5°C - 70°C
- Cooled: +10°C to 70°C
- Timer Off
- 20 - 350 rpm  
Orbital or Reciprocal
- Max. Load: 25 kgs

➤ **Shaking Incubator**

		JSSI-100T	JSSI-100C
Chamber Volume (Capacity)		110 L	
Dimensions	Inner	545 x 585 x 345	
	Outer	770 x 715 x 790	
	Platform	W500 x D465 mm	
Temperature	Range	ambient +5°C - 70°C	+10°C - 70°C
	Accuracy	± 0.2°C at 37°C	± 0.2°C at 25°C
	Uniformity	± 1.0°C at 37°C	± 1.0°C at 25°C
Shaking	Motion	Orbital or Reciprocal	
	Speed / Stroke	20 - 350 rpm / 20mm	
Working Light		25 Watt Bulb	
Heater Capacity		400 Watt	700 Watt
Refrigeration System		None	CFC Free Air Cooled Compressor
Power Rating		2.2 Amp	5.8 Amp
Electric		220VAC 50/60Hz 1P	
Power Plug		CEE 7/7 Schuko	



- Heated: amb.+5°C - 70°C
- Cooled: +10°C to 70°C
- Timer Off
- 20 - 350 rpm  
Orbital or Reciprocal
- Photoperiodic Control
- Max. Load: 35 kgs

➤ **Shaking Incubator**

		JSSI-300T	JSSI-300C	JSSI-300CL
Chamber Volume (Capacity)		204 L		
Dimensions	Inner	760 x 715 x 375		
	Outer	1080 x 875 x 975		
	Platform	W700 x D650 mm		
Temperature	Range	ambient +5°C - 70°C	+10°C - 70°C	+10°C - 70°C
	Accuracy		± 0.2°C at 25°C (Lamp Off)	
	Uniformity		± 1.0°C at 25°C (Lamp Off)	
Shaking	Motion	Orbital or Reciprocal		
	Speed / Stroke	20 - 350 rpm / 20mm		
Illumination		none	none	20 Watt FL x 4 ea / 24 hr Timer
Working Light		25 Watt Bulb	25 Watt Bulb	25 Watt Bulb
Heater Capacity		700 Watt	1.5 kW	1.5 kW
Refrigeration System		None	CFC Free Air Cooled Compressor	CFC Free Air Cooled Compressor
Power Rating		3.2 Amp	10.0 Amp	10.5 Amp
Power Plug		CEE 7/7 Schuko		



- Temperature Range  
+0°C - 70°C
- Humidity Range  
30% - 85% RH
- Constant Temperature Controller
- Touch Screen  
5.6" Color TFT Display  
120 Patterns 1200 Segments
- RS-232C or 485 Serial Interface  
Multi-Drop up to 31 Instruments
- Temp. & Humidity  
Trend Data Recording

### Stability Chamber

	JSBS-520C	JSDS-300C	JSDS-420C	JSDS-960C
Chamber Volume (Capacity)	520 L	300 L	432 L	964 L
Dimensions Inner	650 x 850 x 1000	500 x 500 x 1200	600 x 600 x 1200	1200 x 600 x 1200
W x D x H mm Outer	850 x 1155 x 1760	690 x 835 x 1985	790 x 935 x 1985	1390 x 935 x 1985
Temperature Range	+0°C - 70°C		+10°C - 70°C	
Accuracy	± 0.2 °C at 25.0°C		± 0.3 °C at 20.0°C 60% RH	
Uniformity	± 0.5 °C at 25.0°C		± 1.0 °C at 20.0°C 60% RH	
Humidity Range	-		30 - 85% RH	
Accuracy	-		± 3.0 % RH at 20.0°C 60% RH	
Uniformity	-		± 6.0 % RH at 20.0°C 60% RH	
Chamber Observation Light	-	3 x 36W FPL	3 x 36W FPL	4 x 36W FPL
Controller	Digital PID Controller		Digital PID Control	
Sensors	Class A Pt-100 Ω Sensor		Class A Pt-100 Ω Sensor / Electronic Humidity Sensor	
Construction	Glass window W400 x H500 mm Inner Glass Door		Two side observation window Double layer vacuum sealed Inner Glass Door	
No. of Shelves / Maximum No.	Sliding Rack	3 / 35	3 / 35	6 / 70
Heater Rating	1.5 kW	3.1 kW	3.5 kW	6.0 kW
Refrigeration System			CFC Free Air Cooled Compressor	
Power Rating	20 Amp	21 Amp	25 Amp	43 Amp
Plug Configuration	CEE 7/7 Schuko	30 Amp	30 Amp	50 Amp



- Temp. +0°C - 60°C
- Humidity 30 - 85% RH
- Lighting 0 - 40,000 Lux
- CO2 Conc. amb. - 5000 ppm (5)
- Program Controller
- Timer On / Off
- Photoperiodic Control

### Growth Chamber

	JSGC-420C	JSGC-960C	JSGC-1500C
Chamber Volume (Capacity)	432L	972L	1512L
Dimensions Inner	600 x 600 x 1200	900 x 900 x 1200	1400 x 900 x 1200
W x D x H mm Outer	1180 x 850 x 2080	1480 x 1150 x 2080	1865 x 1250 x 2100
Temperature Range		Light Off : +0°C - 60°C	Light On : +10°C - 60°C w/o Humidity Control
Accuracy		± 0.3 °C at 20.0°C 60% RH (Light Off)	
Uniformity		± 1.0 °C at 20.0°C 60% RH (Light Off)	
Humidity Range		30 - 98% RH (Sensor Range)	30 - 85% RH (Control Range)
Accuracy		± 3.0 % RH at 20.0°C 60% RH	
Uniformity		± 6.0 % RH at 20.0°C 60% RH	
Illumination Range / Steps	6 Step	7 Step	8 Step
Lamp Configuration	2 x 150W HQI 4 x 55W FPL	3 x 150W HQI 4 x 55W FPL	4 x 150W HQI 8 x 36W FPL
CO2 Conc. Range		ambient - 5,000 ppm (ambient - 20%)	
Accuracy		± 50 ppm	
Controller		Programmable PID Control 11 Segment 999 Cycle Repeat	
Sensors		Class A Pt-100 Ω Sensor / Electronic Humidity Sensor / Lux Meter / NDIR Diffusion CO2 Sensor	
No. of Shelves / Maximum No.	3 / 20	6 / 20	8 / 20
Heater Rating	4.0 kW	6.0 kW	8.0 kW
Refrigeration System		CFC Free Air Cooled Compressor	
Electric Requirement		220 VAC 50/60Hz 1P	
Power Rating	25 Amp	36 Amp	53 Amp
Plug Configuration	30 AMP	50 AMP	60 AMP ELB Mains



- Temp. +0°C - 60°C
- Humidity 30 - 85% RH
- Lighting 0 - 50,000 Lux
- CO2 Conc. amb. - 5000 ppm (5)
- Program Controller
- Timer On / Off
- Photoperiodic Control

### Growth Chamber 3-D Illumination

	JSPG-1500C
Chamber Volume (Capacity)	1512L
Dimensions Inner	1400 x 900 x 1200
W x D x H mm Outer	1880 x 1390 x 2065
Temperature Range	Light Off : +0°C - 60°C
Accuracy	Light On : +10°C - 60°C w/o Humidity Control
Uniformity	± 0.3 °C at 20.0°C 60% RH (Light Off)
	± 1.0 °C at 20.0°C 60% RH (Light Off)
Humidity Range	30 - 98% RH (Sensor Range)
Accuracy	30 - 85% RH (Control Range)
Uniformity	± 3.0 % RH at 20.0°C 60% RH
	± 6.0 % RH at 20.0°C 60% RH
Illumination Range / Steps	0 - 50,000 Lux by 8-Step Combination
Lamp Configuration	Top : 6 x 150W HQI Side : 4 x 70W HQI, 8 x 55W FPL
CO2 Conc. Range	ambient - 5,000 ppm (ambient - 20%)
Accuracy	± 50 ppm
Controller	Programmable PID Control 11 Segment 999 Cycle Repeat
Sensors	Class A Pt-100 Ω Sensor / Electronic Humidity Sensor / Lux Meter / NDIR Diffusion CO2 Sensor
No. of Shelves / Maximum No.	6 / 20
Heater Rating	10.0 kW
Refrigeration System	CFC Free Air Cooled Compressor
Power Rating	220 VAC 50/60Hz 1P 55 Amp
Plug Configuration	Direct connect to 60 Amp ELB Mains



- Temp: +0°C - 60°C
- Humidity 30 - 98% RH
- Lighting 0 - 30,000 Lux
- CO<sub>2</sub> Conc. amb. - 5000 ppm (k)
- Program Controller
- Timer On / Off
- Photoperiodic Control

**➤ Growth Chamber 3-Side Illumination**

		JSPC-200C	JSPC-300C	JSPC-420C	JSPC-960C
Chamber Volume (Capacity)		200L	300L	432L	864L
Dimensions Inner		600 x 600 x 600	500 x 500 x 1200	600 x 600 x 1200	1200 x 600 x 1200
W x D x H mm Outer		790 x 935 x 1385	690 x 835 x 1985	790 x 935 x 1985	1400 x 920 x 2000
Temperature Range		Light Off : +0°C - 60°C Light On : +10°C - 60°C w/o Humidity Control			
Accuracy		± 0.3 °C at 20.0°C 60% RH (Light Off)			
Uniformity		± 1.0 °C at 20.0°C 60% RH (Light Off)			
Humidity Range		30 - 98% RH (Sensor Range) 30 - 85% RH (Control Range)			
Accuracy		± 3.0 % RH at 20.0°C 60% RH			
Uniformity		± 6.0 % RH at 20.0°C 60% RH			
Illumination Range / Steps		0 - 30,000 Lux by 8-Step Combination			
Lamp Configuration		10 x 36W FPL	14 x 36W FPL	14 x 36W FPL	20 x 36W FPL
CO <sub>2</sub> Conc. Range		ambient - 5,000 ppm (ambient - 20%)			
Accuracy		± 50 ppm			
Controller		Programmable PID Control 11 Segment 999 Cycle Repeat			
Sensors		Class A Pt-100 Ω Sensor / Electronic Humidity Sensor / Lux Meter / NDIR Diffusion CO <sub>2</sub> Sensor			
No. of Shelves / Maximum No.		2 / 18	3 / 35	3 / 35	3 / 35
Heater Rating		3.0 kW	3.1 kW	3.5 kW	6.0 kW
Refrigeration System		CFC Free Air Cooled Compressor			
Power Rating		20 Amp	21 Amp	25 Amp	43 Amp
Plug Configuration		30 AMP	30 Amp	30 Amp	50 Amp



- Cooled +0°C to 10°C
- Constant Temperature Controller
- Timer On / Off
- RS-232C Serial Computer Interface
- Inflow Chart Recorder

**➤ Cold Lab Chamber - Laboratory Refrigerator**

		JSSC-700C	JSSC-1200C
Chamber Volume (Capacity)		686 L	1176 L
Dimensions Inner		700 x 700 x 1400	1200 x 700 x 1400
W x D x H mm Outer		900 x 900 x 1980	1410 x 900 x 1980
Temperature Range		+0°C - 10°C (General Operation at 4°C)	
Accuracy		± 2.0 °C ON/OFF Control	
Uniformity		± 1.6 °C at 4°C	± 2.0 °C at 4°C
Number of shelves / Maximum No.		4 / 25	8 / 50
Heater Capacity		-	-
Refrigeration System		CFC-Free Air Cooled Compressor	
Power Rating		3.0 Amp	4.0 Amp
Power Plug		CEE 7/7 Schuko Plug	



- Cold Trap
- Ultra-Low -35°C or -85°C
- Digital Temperature On/Off Controller

**➤ Ultra Low Temp. Cold Trap Bath - Cold Trap Bath**

		JSCT-35C	JSCT-55ULT	JSCT-85ULT
Bath Volume (Capacity)			7.2 L	
Dimensions Inner			Φ 200 x H230	
W x D x H mm Outer		370 x 460 x 640	370 x 470 x 730	370 x 470 x 730
Temperature Range		- 35.0 °C / 30 min.	- 55.0 °C / 30 min.	- 85.0 °C / 60 min.
On/Off Control		± 2.0 °C	± 2.0 °C	± 2.0 °C
Refrigeration System		ULT Technology CFC Free Air Cooled Compressor		
Power Rating		3.1 Amp	4.1 Amp	4.1 Amp
Power Plug		CEE 7/7 Schuko		



- Cold Trap
- Ultra-Low -35°C or -85°C
- Digital Temperature On/Off Controller

**➤ Ultra Low Temp. Tabletop Cold Trap Bath - Cold Trap Bath**

		JSTC-55ULT	JSTC-85ULT
Bath Volume (Capacity)			2.8 L
Dimensions Inner			110 x 110 x 230
W x D x H mm Outer			380 x 560 x 520
Temperature Range		- 55.0 °C / 20 min.	- 85.0 °C / 60 min.
Accuracy at -40.0°C		± 2.0 °C	± 2.0 °C
Refrigeration System		CFC Free Air Cooled Compressor	
Power Rating		3.1 Amp	4.1 Amp
Power Plug		CEE 7/7 Schuko	



- Biological Safety Cabinet Class II Type A2
- HEPA Filter 99.993 % for 0.3 um particles
- ULPA Filter 99.999% for 0.12 um particles
- 9 Step Air Velocity Control 0.3 m/sec - 0.6 m/sec
- Cold White Fluorescent Work Lamp
- Germicidal UV Lamp /w Timer

➤ Biological Safety Cabinet Class II Type A2

	JSCB-900SB	JSCB-1200SB	JSCB-1500SB	JSCB-1800SB
Working Width mm	830 mm (3 ft)	1205 mm (4 ft)	1490 mm (5 ft)	1790 mm (6 ft)
Dimensions Inner	830 x 526 x 585	1205 x 526 x 585	1490 x 526 x 585	1790 x 526 x 585
W x D x H mm Outer	900 x 792 x 1990	1275 x 792 x 1990	1560 x 792 x 1990	1860 x 792 x 1990
HEPA Filter	0.3um Particle Removal 99.993% - 99.995%			
ULPA Filter Option	0.3um Particle Removal 99.999%			
Air Circulation	70% Re-circulation / 30% Exhaust			
Controller Display	Back Light Digital LCD			
Speed Control	9 Step Air Velocity Control from 0.3m/sec. - 0.6m/sec.			
Control	FL Lamp ON/OFF, UV Lamp ON/OFF, UV Timer / Total Using Time / Filter Replace Alarm			
Working Lamp	FL 20 W x 2 ea	FL 30 W x 2 ea	FL 30 W x 2 ea	FL 36 W x 2 ea
Germicidal UV Lamp	UV 20 W x 1 ea	UV 30 W x 1 ea	UV 30 W x 1 ea	UV 40 W x 1 ea
Utility	2 x Power Consent, 1 x Gas Cock, 1 x Air Cock			
Power Rating	1.0 Amp	1.5 Amp	1.5 Amp	1.6 Amp
Power Plug	CEE 7/7 Schuko			



- Vertical Laminar Flow ISO Class 5 (Class 100)
- HEPA Filter 99.993 % for 0.3 um particles
- ULPA Filter 99.999% for 0.12 um particles
- 9 Step Air Velocity Control 0.3 m/sec - 0.6 m/sec
- Cold White Fluorescent Work Lamp
- Germicidal UV Lamp /w Timer

➤ Vertical Laminar Flow Cabinet Class 5

	JSCB-900SL	JSCB-1200SL	JSCB-1500SL	JSCB-1800SL
Working Width mm	830 mm (3 ft)	1205 mm (4 ft)	1490 mm (5 ft)	1790 mm (6 ft)
Dimensions Inner	830 x 526 x 585	1205 x 526 x 585	1490 x 526 x 585	1790 x 526 x 585
W x D x H mm Outer	900 x 792 x 1990	1275 x 792 x 1990	1560 x 792 x 1990	1860 x 792 x 1990
HEPA Filter	0.3um Particle Removal 99.993% - 99.995%			
ULPA Filter Option	0.3um Particle Removal 99.999%			
Air Circulation	Vertical Laminar Flow			
Controller Display	Back Light Digital LCD			
Speed Control	9 Step Air Velocity Control from 0.3m/sec. - 0.6m/sec.			
Control	FL Lamp ON/OFF, UV Lamp ON/OFF, UV Timer / Total Using Time / Filter Replace Alarm			
Working Lamp	FL 20 W x 2 ea	FL 30 W x 2 ea	FL 30 W x 2 ea	FL 36 W x 2 ea
Germicidal UV Lamp	UV 20 W x 1 ea	UV 30 W x 1 ea	UV 30 W x 1 ea	UV 40 W x 1 ea
Utility	2 x Power Consent, 1 x Gas Cock, 1 x Air Cock			
Power Rating	1.0 Amp	1.5 Amp	1.5 Amp	1.6 Amp
Power Plug	CEE 7/7 Schuko			



➤ Bio-Suction Pump

Model JSBS-5000 Bio-Suction is an economical, compact and portable solution for aspirating tissue culture samples, aqueous solutions, buffers, culture media residual suction.

Two stage oil-free piston pump provides a high flow rate and powerful vacuum aspiration.

4000 cc glass autoclavable collection receiver bottle with over flow protection stopper protects liquid ingested into the pump system which may lead to the valve failing or a diaphragm rupturing. Pump automatically shut down when full and a hydrophobic PTFE inline filter further protects the pump from aerosol ingestion.

Hands free foot pedal switch provides convenient On/ Off operation.

Built-in silencer provides comfortable noise-free operation

➤ Bio-Suction Pump

	JSBS-3000	JSBS-5000
Pumping Capacity	20 liter / min	40 liter / min
Ultimate Vacuum	650 mmHg (-0.08 Mpa ABS)	
Collection Bottle	4000 cc	
Capacity	Glass Bottle /w Cap	
Material	Cap with overflow protection cut-off level sensor	
Utility	Inlet / Outlet Fitting /w Cap	
Pump Control	On / Off / Foot Pedal	
Safety	Φ50 mm Hydrophobic inline PTFE filter protects aerosol ingestion	
Convenience	Automatic pump shut off when bottle is full	
	Built-in Silencer	
	Portable carrying handle	
Accessories included	Main body built-in vacuum pump system	
	Collection receiver bottle	
	Φ50 mm inline PTFE filter	
	Foot Pedal	
	Silencer	
	Silicone Tubing	
Dimensions	240 x 370 x 330 mm	250 x 400 x 330 mm
Electrical Requirement	220 VAC 50 / 60 Hz	

**Drying ovens with Natural air convection** (Powder coated steel/stainless steel housing & acid proof stainless steel interior)

*IQ/OQ/PQ Document, CE, ISO Certified*



SL 15 SL 32 SL 53 SL 115 SL 180 SL 240 SL 400 SL 750 SL 1000

Parameter	SL 15	SL 32	SL 53	SL 115	SL 180	SL 240	SL 400	SL 750	SL 1000	
air convection	natural (SLN) / forced (SLW)				forced (SLW)					
chamber capacity [l]	15	32	56	112	180	245	424	749	1005	
door type	solid			solid/door with viewing window (option)						
temperature range	+5°C above ambient temperature. +300 °C									
temperature resolution [°C]	every 0,1									
controller	microprocessor with external LCD graphic display									
interior	acid-proof stainless steel toDIN 1.4301									
housing	powder coated sheet									
	INOX/G	stainless steel linen finish								
overall dims [mm]	A width	510	590	590	650	650	810	1010	1260	1260
	B height	550	630	700	850	1030	1200	1430	1600	2000
	C depth	440	500	600	700	760	760	750	850	850
internal dims [mm]	D width	320	400	400	460	470	600	800	1040	1040
	E height	230	320	390	540	720	800	1040	1200	1610
	F depth	200	250	360	450	560	510	510	600	600
max shelf workload [kg]	-	10	10	25	25	25	25	25	-	-
	PW version	-	-	50	50	50	100	100	100	100
max unit workload [kg]	-	20	30	40	60	75	90	120	140	-
	W version	-	-	80	120	120	300	300	300	300
nominal power [W]	600	1100	1600	2400	2400	3000	3900	5400	5400	
weight [kg]	27	35	50	65	94	126	174	260	330	
over temperature protection	class 2.0 according to DIN 12880 / class 3.1 (option) / 3.1 in TOP+									
power supply*	230 V 50 Hz						400 3/N			
shelves fitted/max	1/2	1/3	2/5	2/7	3/9	3/10	3/14	5/16	6/22	
manufacturer	POL-EKO-APARATURA									

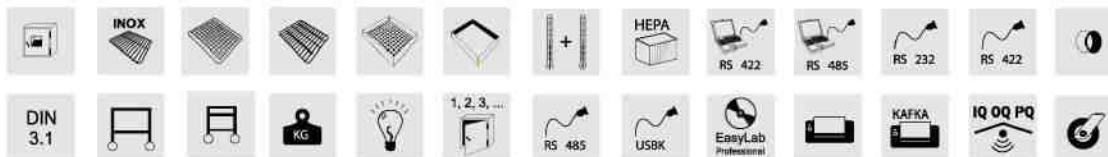
all the above technical data refer to standard units (without optional accessories)

\* - 230V 60Hz, 115V 60Hz also available

- 1 - working capacity of chamber can be smaller
- 2 - depth doesn't include 50 mm of power cable
- 3 - reinforced shelf
- 4 - reinforced version
- 5 - on uniformly loaded surface

All data on temperature stability and uniformity available on [www.pol-eko.eu](http://www.pol-eko.eu).

**Options and accessories** (icon description see pages 56-57)



## ► Laboratory incubators with Natural air convection (Powder coated steel/stainless steel housing & acid proof stainless steel interior)

IQ/OQ/PQ Document, CE, ISO Certified



CL 15 CL 32 CL 53 CL 115 CL 180 CL 240 CL 400 CL 750 CL 1000

Parameter

air convection		natural (CLN) / forced (CLW)					forced (CLW)			
chamber capacity [l]		15	32	56	112	180	245	424	749	1005
door type		double		double/door with viewing window (option)						
temperature range		+5°C above ambient temperature.+100 °C								
temperature resolution [°C]		every 0,1								
controller		microprocessor with external LCD graphic display								
interior		acid-proof stainless steel toDIN 1.4301								
housing	-	powder coated sheet								
	INOX/G	stainless steel linen finish								
overall dims [mm]	A width	510	590	590	650	650	810	1010	1260	1260
	B height	550	630	700	850	1030	1200	1430	1600	2000
	C depth	440	500	600	700	760	760	750	850	850
internal dims [mm]	D width	320	400	400	460	470	600	800	1040	1040
	E height	230	320	390	540	720	800	1040	1200	1610
	F depth	200	250	360	450	560	510	510	600	600
max shelf workload [kg]	-	10	10	25	25	25	25	25	-	-
	PW <sup>1</sup> version	-	-	50	50	50	100	100	100	100
max unit workload [kg]	-	20	30	40	60	75	90	120	140	-
	W <sup>2</sup> version	-	-	80	120	120	300	300	300	300
nominal power [W]		300	300	400	400	850	800	1200	1800	1800
weight [kg]		27	35	50	65	94	126	174	260	330
over temperature protection		class 2.0 according to DIN 12880 / class 3.1 (option) / 3.1 in TOP+								
power supply*		230 V 50 Hz								
shelves fitted/max		1/2	1/3	2/5	2/7	3/9	3/10	3/14	5/16	6/22
manufacturer		POL-EKO-APARATURA								

all the above technical data refer to standard units (without optional accessories)

\* - 230V 60Hz, 115V 60Hz also available

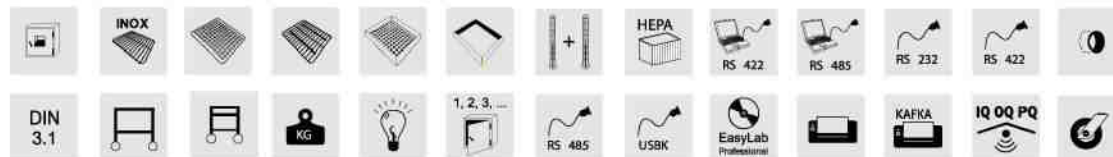
1 - working capacity of chamber can be smaller  
 2 - depth doesn't include 50 mm of power cable

3 - reinforced shelf  
 4 - reinforced version

5 - on uniformly loaded surface

All data on temperature stability and uniformity available on [www.pol-eko.eu](http://www.pol-eko.eu).

### ► Options and accessories (icon description see pages 56-57)





➤ **Cooled (BOD) incubators with Forced air convection** (Powder coated steel/stainless steel housing & acid proof stainless steel interior)

*IQ/OQ/PQ Document, CE, ISO Certified*



ILW 53      ILW 115      ILW 240      ILW 400      ILW 750



Parameter	ILW 53	ILW 115	ILW 240	ILW 400	ILW 750	
air convection	forced					
chamber capacity [l]	56	112	245	424	749	
door type	double/door with viewing window (option)					
temperature range [°C]	-10 (option)/ 0...+70 (+100 for TOP+ version)					
temperature resolution [°C]	every 0,1					
controller	microprocessor with external LCD graphic display					
interior	acid-proof stainless steel to DIN 1.4301					
housing	powder coated sheet					
	INOX/G stainless steel linen finish					
overall dims [mm]	A width	690	660	820	1040	1260
	B height	960	1080	1430	1650	1820
	C depth	600	710	760	740	860
internal dims [mm]	D width	400	460	600	800	1040
	E height	390	540	800	1040	1200
	F depth	360	450	510	510	600
max shelf workload [kg]	-	25	25	25	25	25
	PW version	50	50	100	100	100
max unit workload [kg]	-	40	60	90	120	140
	W version	80	120	300	300	300
nominal power [W]	400	400	800	1200	1800	
weight [kg]	69	90	140	185	275	
over temperature protection	class 2.0 according to DIN 12880 / class 3.3 (option) / 3.3 in TOP+					
power supply*	230 V 50 Hz					
shelves fitted	2/5	2/7	3/10	3/14	5/16	
manufacturer	POL-EKO-APARATURA					

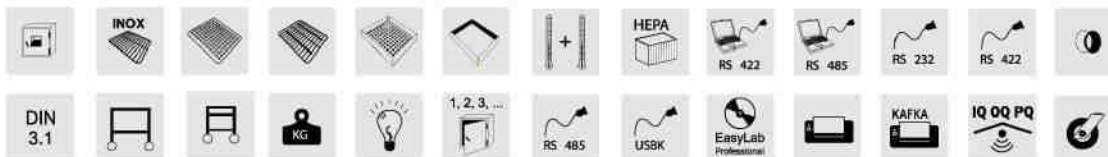
all the above technical data refer to standard units (without optional accessories)

\* - 230V 60Hz, 115V 60Hz also available

- 1 - working capacity of chamber can be smaller      3 - reinforced shelf      5 - on uniformly loaded surface
- 2 - depth doesn't include 50 mm of power cable      4 - reinforced version

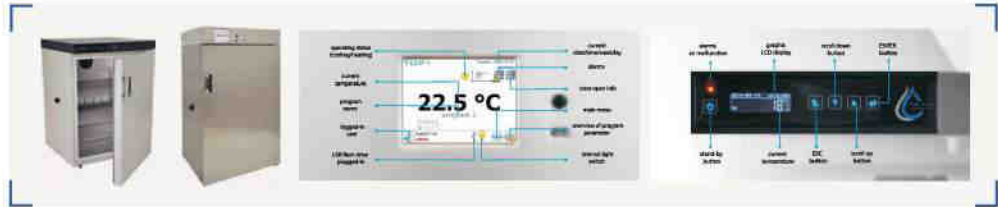
All data on temperature stability and uniformity available on [www.pol-eko.eu](http://www.pol-eko.eu).

➤ **Options and accessories** (icon description see pages 56-57)



➤ **Cooled (BOD) incubators with Forced air convection** (Powder coated steel/stainless steel housing & acid proof stainless steel interior)

*IQ/OQ/PQ Document, CE, ISO Certified*



Parameter	ST 1	ST 2	ST 3	ST 4	ST 5	ST 6	ST 500	ST 700	ST 1200	ST 1450	
air convection	forced										
chamber capacity [l]	70	150	200	250	300	400	500	625	1365	1460	
working capacity [l]	55	122	163	203	243	324	386	450	1229	1307	
door type	solid / glass or double (option)										
temperature range [°C]	+3...+40 / up to +70 (option) / +3...+70 in PREM TOP+										
temperature resolution [°C]	every 0,1										
controller	microprocessor with external LCD graphic display										
interior:	COMF/S	stainless steel to DIN 1.4016									
	PREM (TOP+)	stainless steel to DIN 1.4301									
	PREM/S (TOP+)	stainless steel to DIN 1.4301									
housing	COMF/S	polished stainless steel									
	PREM (TOP+)	powder coated sheet									
	PREM/S (TOP+)	polished stainless steel									
overall dim <sup>s</sup> [mm]	A width	570	620	620	620	620	620	660	750	1480	1450
	B height	600	860	1060	1260	1460	1860	1990	1990	1990	1970
	C depth	680	650	650	650	650	650	810	860	860	950
	D width	430	480	480	480	480	480	430	480	2x480	2x490
	D' width	470	520	520	520	520	520	510	600	1310	1340
	E height	430	660	860	1060	1260	1660	1510	1510	1510	1460
	F depth	300	420	420	420	420	420	650	690	690	750
	F' depth	360	480	480	480	480	480	-	-	-	-
	G depth	-	320	320	320	320	320	-	-	-	-
internal dim <sup>s</sup> [mm]	H height	-	440	640	840	1050	1440	-	-	-	-
	I height	-	-	-	-	-	-	1380	1360	1360	1300
	max shelf workload [kg]	-	10	10	10	10	10	20	30	30	30
	Pw <sup>2</sup> version	-	on request					100	100	100	100
max unit workload [kg]	-	20	30	40	50	60	60	100	150	300	300
	W <sup>1</sup> version	-	on request								
nominal power [W]	160	170	170	330	330	330	400	400	550	550	
weight [kg]	32	54	59	69	75	90	105	115	185	200	
over temperature protection	class 1.0 to DIN 12880 / class 3.3 (option) / class 3.3 in PREM TOP+										
power supply*	230V 50 Hz										
shelves fitted/max	2/2	3/4	3/4	4/6	4/7	4/10	3/11	3/11	2 x 3/1 f <sup>1</sup>	2 x 3/1 f <sup>1</sup>	
manufacturer	POL-EKO-APARATURA										

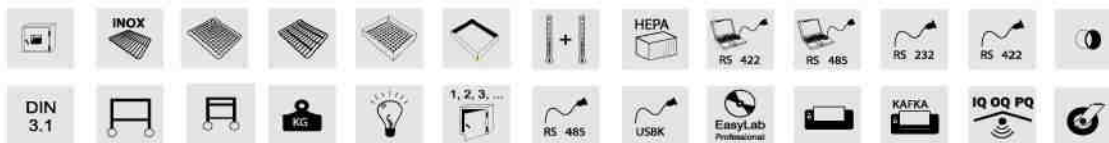
all the above technical data refer to standard units (without optional accessories)

- \* - 230V 60Hz, 115V 60Hz also available
- 1 - additional internal glass door
- 2 - ST 1-6 in TOP+ version are 60 mm high depth doesn't include 50 mm of power cable
- 3 - dims of units with double door can be smaller
- 4 - on uniformly loaded surface

- 5 - reinforced shelf
- 6 - reinforced version
- 7 - for units in BASIC version with solid door
- 8 - two columns with 3 shelves each

All data on temperature stability and uniformity available on [www.pol-eko.eu](http://www.pol-eko.eu).

➤ **Options and accessories** (icon description see pages 56-57)



## Laboratory Refrigerator (Fully steel/stainless steel housing)

IQ/OQ/PQ Document, CE, ISO Certified



Parameter	CHL 1	CHL 2	CHL 3	CHL 4	CHL 5	CHL 6	CHL 500	CHL 700	CHL 1200	CHL 1450	
air convection	forced										
chamber capacity [l]	70	150	200	250	300	400	500	625	1365	1460	
working capacity [l]	55	122	163	203	243	324	386	450	1229	1307	
door type	solid / glass or double (option)										
temperature range [°C]	0...+15					0...+15 / -10...+15 (option)					
temperature resolution [°C]	every 0,1										
controller	microprocessor with external LCD graphic display										
interior	COMF/S	stainless steel to DIN 1.4016									
	PREM (TOP+)	stainless steel to DIN 1.4301									
	PREM/S (TOP+)	stainless steel to DIN 1.4301									
housing	COMF/S	polished stainless steel									
	PREM (TOP+)	powder coated sheet									
	PREM/S (TOP+)	polished stainless steel									
overall dim <sup>2</sup> [mm]	A width	570	620	620	620	620	620	660	750	1480	1450
	B height	600	860	1060	1260	1460	1860	1990	1990	1990	1970
	C depth	680	650	650	650	650	650	810	860	860	950
	D width	430	480	480	480	480	480	430	480	2x480	2x490
	D' width	470	520	520	520	520	520	510	600	1310	1340
	E height	430	660	860	1060	1260	1660	1510	1510	1510	1460
	F depth	300	420	420	420	420	420	650	690	690	750
	F' depth	360	480	480	480	480	480	-	-	-	-
	G depth	-	320	320	320	320	320	-	-	-	-
	H height	-	440	640	840	1050	1440	-	-	-	-
max shelf workload [kg]	-	10	10	10	10	10	20	30	30	30	
	Pw <sup>3</sup> version	on request					100	100	100	100	100
max unit workload [kg]	-	20	30	40	50	60	60	100	150	300	
	W <sup>4</sup> version	on request									
nominal power [W]	160	170	170	330	330	330	400	400	550	550	
weight [kg]	32	54	59	69	75	90	105	115	185	200	
over temperature protection	class 1.0 to DIN 12880 / class 3.2 (option) / class 3.2 in PREM TOP+										
power supply*	230 V 50 Hz										
shelves fitted/max	2/2	3/4	3/4	4/6	4/7	4/10	3/11	3/11	2 x 3/11 <sup>†</sup>	2 x 3/11 <sup>†</sup>	
manufacturer	POL-EKO-APARATURA										

all the above technical data refer to standard units (without optional accessories)

- \* - 230V 60Hz, 115V 60Hz also available
- 1 - additional internal glass door
- 2 - depth doesn't include 50 mm of power cable
- 3 - dims of units with double door can be smaller
- 4 - on uniformly loaded surface
- 5 - reinforced shelf
- 6 - reinforced version
- 7 - for units in BASIC version with solid door

All data on temperature stability and uniformity available on www.pol-eko.eu.

### Options and accessories (icon description see pages 56-57)

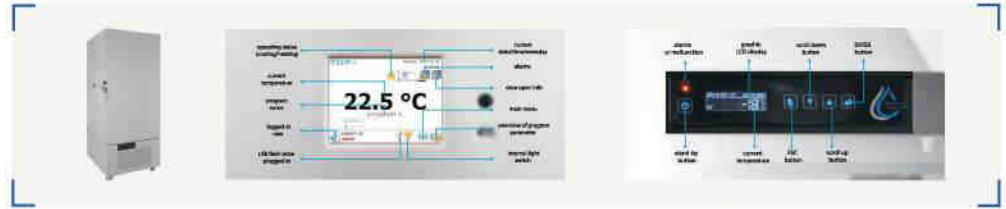


## ↗ Laboratory Freezer (Fully steel/stainless steel housing)

*IQ/OQ/PQ Document, CE, ISO Certified*



Laboratory freezers can freeze and store frozen samples.



ZLN 85      ZLN-T 125      ZLN-T 200      ZLN-T 300      **new!** ZLW-200      **new!** ZLW-300



Parameter		ZLN 85	ZLN-T 125	ZLN-T 200	ZLN-T 300	ZLW-200	ZLW-300	
air convection		natural				forced		
chamber capacity [l]		95	130	210	310	210	310	
working capacity [l]		76	109	180	262	140	213	
door type		solid						
temperature range [°C]		-25...0		-40...0				
temperature resolution [°C]		every 0,1						
controller		microprocessor with external LCD graphic display						
interior	COMF	stainless steel to DIN 1.4016						
	COMF/S	stainless steel to DIN 1.4016						
	PREM	stainless steel to DIN 1.4301						
	PREM/S	stainless steel to DIN 1.4301						
housing	COMF	powder coated sheet						
	COMF/S	polished stainless steel						
	PREM	powder coated sheet						
	PREM/S	polished stainless steel						
overall dims [mm]	A width	610	660	760	760	760	760	
	B height	880	1190	1380	1730	1380	1730	
	C depth	650	800	800	800	800	800	
	D width	380	370	450	450	450	450	
	D+ width	420	420	520	520	520	520	
	E height	590	600	770	1120	770	1120	
internal dims [mm]	F depth	400	520	520	520	520	520	
	F+ depth	440	530	530	530	530	530	
	G depth	230	-	-	-	-	-	
	I depth	210	-	-	-	-	-	
	J depth	-	-	-	-	600	910	
	max shelf workload [kg]	-	10	10	10	10	-	-
		Pw <sup>1</sup> version	-	50	50	50	-	-
max unit workload [kg]	-	30	50	65	80	-	-	
	W <sup>2</sup> version	-	100	130	160	160	160	
nominal power [W]		200	450	470	470	500	500	
weight [kg]		60	90	120	185	120	185	
power supply*		230 V 50 Hz						
shelves fitted/max		2/4	2/3	2/4	3/6	2/4	3/6	
manufacturer		POL-EKO-APARATURA						

all the above technical data refer to standard units (without optional accessories)

\* - 230V 60Hz, 115V 60Hz also available

1 - depth doesn't include 50 mm of power cable

2 - on uniformly loaded surface

3 - reinforced shelf

4 - reinforced version

All data on temperature stability and uniformity available on [www.pol-eko.eu](http://www.pol-eko.eu).

### Options and accessories (icon description see pages 56-57)



## Ultra-Low Freezer (Fully steel/stainless steel housing)

*IQ/OQ/PQ Document, CE, ISO Certified*

### Controller advantages

- temperature range -86...-40°C
- full stainless steel shelves with hole
- quality control protocol (-80°C)
- English instruction manual
- available menu languages: Czech, English, Estonian, French, German, Italian, Latvian, Polish, Portuguese, Russian, Spanish
- access port: Ø20 mm
- door lock
- external solid door and internal solid door for each chamber
- wheels
- controller spare batteries in case of power failure - alarm output
- additional port for installation of CO<sub>2</sub> & Pt100 backup



ZLN-UT 200 **New!** ZLN-UT 300



Parameter

air convection		natural
chamber capacity [l]		237 326
number of boxes 133x133x50mm [pcs]		108 144
door type		solid
temperature range [°C]		-86...-40
temperature resolution [°C]		every 0,1
cooling time from +20°C to -80°C [h]		3,5 3,5
heating time in case of power failure -80 °C to -60 °C [h]		1,5 1,5
controller		microprocessor with external LCD graphic display
interior	COMF	stainless steel to DIN 1.4016
	PREM	stainless steel to DIN 1.4001
housing		powder coated sheet
overall dims [mm]	A width	850 850
	B height	1620 1910
	C depth	950 950
	D width	520 520
	E height	830 1140
	F depth	550 550
	G height	240 240
internal dims [mm]		
max unit workload[kg]		65 80
max shelf workload[kg]		10 10
nominal power [W]		670 670
energy consumption 24h [kWh]t -80°C		16 18
weight [kg]		180 200
power supply*		230 V 50 Hz
number of internal chambers		3 4
manufacturer		POL-EKO-APARATURA



all the above technical data refer to standard units (without optional accessories)

\* - 230V 60Hz, 115V 60Hz also available

1 - depth doesn't include 50 mm of power cable

All data on temperature stability and uniformity available on [www.pol-eko.eu](http://www.pol-eko.eu).

### Options and accessories (icon description see pages 56-57)



## ▶ Laboratory Sterilizer (Powder coated steel/stainless steel housing & acid proof stainless steel interior)

*IQ/OQ/PQ Document, CE, ISO Certified*



### ▶ Sterilizers are equipped with the following features:

- factory preset sterilizing programs
- door locked automatically while sterilizing
- air-flap closed automatically after launching the program
- 20 user programs memory

Sterilizers are available in the STD version only.



Parameter	SR 53	SR 115	SR 240	SR 400	SR 750	SR 1000	
air convection	natural (SRN) / forced (SRW)		forced (SRW)				
chamber capacity [l]	56	112	245	424	749	1005	
door type	solid / door with viewing window (option)						
temperature range	5°C above ambient temperature. +250°C						
temperature resolution [°C]	every 0,1						
controller	microprocessor with external LCD graphic display						
interior	acid-proof stainless steel to DIN 1.4301						
housing	-	powder coated sheet					
	INOX/G	stainless steel linen finish					
overall dim <sup>2</sup> [mm]	A width	590	650	810	1010	1260	1260
	B height	700	850	1200	1430	1600	2000
	C depth	600	700	760	750	850	850
	D width	400	460	600	800	1040	1040
internal dims [mm]	E height	390	540	800	1040	1200	1610
	F depth	360	450	510	510	600	600
	-	25	25	25	25	-	-
max shelf workload [kg]	PW <sup>1</sup> version	50	50	100	100	100	100
max unit workload [kg]		40	60	90	120	140	-
nominal power [W]		1600	2400	3000	3900	5400	5400
weight [kg]		50	65	126	174	260	330
over temperature protection	class 2.0 to DIN 12880 / class 3.1 (option)						
power supply*	230 V 50 Hz			400 3/N			
shelves fitted/max	2/5	2/7	3/10	3/14	5/16	6/22	
manufacturer	POL-EKO-APARATURA						

all the above technical data refer to standard units (without optional accessories)

\* 230V 60Hz, 3P 230V 60Hz also available

- 1 - working capacity of chamber can be smaller      3 - reinforced shelf  
 2 - depth doesn't include 50 mm of power cable      4 - on uniformly loaded surface

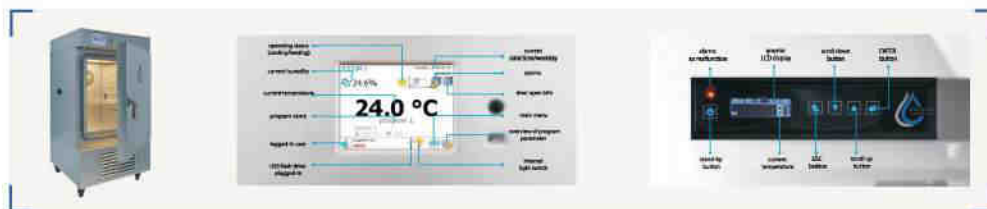
All data on temperature stability and uniformity available on [www.pol-eko.eu](http://www.pol-eko.eu).

### ▶ Options and accessories (icon description see pages 56-57)



## Stability / Climatic Chamber (Powder coated steel/stainless steel housing & acid proof stainless steel interior)

*IQ/OQ/PQ Document, CE, ISO Certified*



KK 115    KK 240    KK 350    KK 400    KK 500    KK 700    KK 750    KK 1200    KK 1450



Parameter

air convection		forced								
chamber capacity [l]		112	245	335	424	493	625	749	1365	1467
working capacity [l]		112	245	335	424	386	450	749	1229	1307
door type		double (external solid, internal glass) / external glass (option)								
temperature range [°C]	-	-10...+60								
	FIT version	-10...+60°C (with light on +10...+50 C)								
temperature resolution [°C]		every 0,1								
relative humidity range [%]		30...90 (see working temperature and humidity chart for details on page 64)								
humidity resolution [%]		every 1								
controller		microprocessor with external LCD graphic display								
interior		acid-proof stainless steel to DIN 1.4301								
housing	-	powder coated sheet								
	INOX/G	stainless steel linen finish								
overall dims [mm]	A width	650	810	640	1020	630	730	1250	1460	1440
	B height	1160	1600	2000	1840	1990	2000	2000	1990	1970
	C depth	960	1000	980	1000	1040	1070	1100	1070	1170
	D width	460	600	500	800	510	600	1040	1310	1340
	D' width	-	-	-	-	510	600	-	1310	1340
internal dims [mm]	E height	540	800	1340	1040	1510	1510	1200	1510	1460
	F depth	450	510	500	510	640	690	600	690	750
	I height	-	-	1270	-	1380	1360	-	1360	1300
	max shelf workload [kg]	-	10	10	10	10	20	30	-	30
	PW version	50	100	100	100	100	100	100	100	100
max unit workload [kg]		60	90	100	120	100	150	140	300	300
nominal power [W]	-	1000	1500	1400	2000	1600	1600	2500	2200	2200
	FIT version	1200	1800	2600	2300	2000	2000	2900	3000	3000
weight [kg]		90	140	125	185	130	170	275	220	230
over temperature protection		class 3.3 to DIN 12880								
power supply*		230 V 50 Hz								
shelves fitted/max		2/7	3/10	3/11	3/14	3/11	3/11	5/16	2 x 3/11	2 x 3/11
warranty		24 months								
manufacturer		POL-EKO-APARATURA								

all the above technical data refer to standard units (without optional accessories)

\* - 230V 60Hz, 115V 60Hz also available

1 - external dimensions for units without FIT option, depth doesn't include 50 mm of power cable

2 - on uniformly loaded surface

3 - reinforced shelf

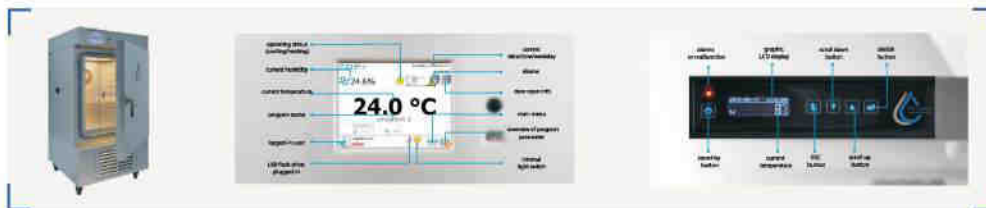
All data on temperature stability and uniformity available on [www.pol-eko.eu](http://www.pol-eko.eu).

### Options and accessories (icon description see pages 56-57)



## ➤ Growth Chambers with phytotron system (Powder coated steel/stainless steel housing & acid proof stainless steel interior)

*IQ/OQ/PQ Document, CE, ISO Certified*



KKS 115      KKS 240      KKS 400      KKS 750

Parameter	KKS 115	KKS 240	KKS 400	KKS 750	
air convection	forced				
chamber capacity [l]	112	245	424	749	
working capacity [l]	112	245	424	749	
door type	double (external solid, internal glass) / external glass (option)				
temperature range [°C]	-10...+100				
FIT version	-10...+60°C (with light on +10...+50 C)				
temperature resolution [°C]	every 0,1				
relative humidity range [%]	10...90 (see working temperature and humidity chart for details on page 64)				
humidity resolution [%]	every 1				
controller	microprocessor with external LCD graphic display				
interior	acid-proof stainless steel to DIN 1.4301				
housing	powder coated sheet				
INOX/G	stainless steel linen finish				
overall dims [mm]	A width	650	810	1020	1250
	B height	1160	1600	1840	2000
	C depth	960	1000	1000	1100
	D width	460	600	800	1040
internal dims [mm]	E height	540	800	1040	1200
	F depth	450	510	510	600
	max shelf workload [kg]	10	10	10	-
PW <sup>3</sup> version	50	100	100	100	
max unit workload [kg]	60	90	120	140	
nominal power [W]	2000	2200	3475	4165	
FIT version	2050	2520	3625	4325	
weight [kg]	103	140	185	275	
over temperature protection	class 3.3 to DIN 12880				
power supply*	230V 50Hz				
shelves fitted/max	2/7	3/10	3/14	5/16	
warranty	24 months				
manufacturer	POL-EKO-APARATURA				

all the above technical data refer to standard units (without optional accessories)

\* - 230V 60Hz, 115V 60Hz also available

1 - external dimensions for units without FIT option, depth doesn't include 50 mm of power cable

2 - on uniformly loaded surface      3 - reinforced shelf

All data on temperature stability and uniformity available on [www.pol-eko.eu](http://www.pol-eko.eu).

### ➤ Options and accessories (icon description see pages 56-57)





## Dot-Matrix printer EPSON



EPSON impact printers (dot-matrix), also known as receipt printers, are applicable for printing on paper 58, 70 or 76 mm in width. They are designed for printing receipt in cooperation with weighing systems (counting and labelling systems). Epson impact printers are connectable to all RADWAG scales equipped with RS232 interface.

### Model

Needle printer Epson TM-U220A  
 Needle printer Epson TM-U220B  
 Needle printer Epson TM-U220D

## Thermal receipt printer EPSON



Epson's cost-effective TM-T20II Point-of-Sale (POS) thermal receipt printer is the latest addition to Epson's line of energy-efficient POS printers. Based on Epson's advanced printing technology, TM-T20II was designed specifically to meet the needs of low volume retailers with basic POS printing functionality, high reliability and ease-of-use features.

Interface: USB 2.0, Serial RS-232, Ethernet

Paper dimensions: 3.13" ± 0.02" x 3.27" diameter (79.5 ± 0.5(W) x 83.0mm)

2.26" ± 0.02" x 3.27" diameter (57.5 ± 0.5(W) x 83mm)

Overall dimensions: 5.51" x 7.83" x 5.75" (140 x 199 x 146 mm) (W x D x H)

### Model

TM-T20II POS Receipt Printer

## UL - RADWAG Laboratory Holders for Analytical Balances



Radwag Laboratory Holders have been designed for faster and more convenient weighing. They ensure perfect and secure fixing of small vessels, both typical and non-standard shapes.

Product highlights:

- Full ergonomics of weighing
- Direct dosing of a sample into a vessel
- High work efficiency, lower costs (minimizing possible loss of samples resulting from moving)
- Direct dosing of samples into various samples (test tubes, round flasks, flat flasks, plastic test-tubes, titration vessels)

Laboratory holders are compatible with all analytical balances made by Radwag: XA.4Y, AS.3Y.



### Model

UL-01  
 UL-02  
 UL-03  
 UL-04

### Application

glass and plastic tubes, filters, various vessels  
 glass and plastic tubes ø8, ø10, ø12 mm  
 round bottom measuring flask 50ml, 100ml, 250 ml  
 flat bottom measuring flask 50ml, 100 ml



- Max 250 °C
- Constant Temperature Controller
- Timer On / Off
- (optional) RS-232C Serial Computer Interface
- (optional) Program Controller with PC Control Software

### ↳ Forced Convection Oven

	JSOF-050	JSOF-100	JSOF-150	JSOF-250
Chamber Volume (Capacity)	48 L	100 L	151 L	252 L
Dimensions Inner	400 x 300 x 400	500 x 400 x 500	560 x 450 x 600	600 x 600 x 700
W x D x H mm Outer	560 x 605 x 710	660 x 705 x 810	720 x 755 x 910	760 x 905 x 1010
Window	W150 x H290	W150 x H360	W150 x H410	W150 x H460
Temperature Range	ambient +10 °C to 250 °C			
Accuracy at 120°C	± 0.2 °C	± 0.3 °C	± 0.3 °C	± 0.3 °C
Uniformity at 120°C	± 1.0 °C	± 1.3 °C	± 1.5 °C	± 1.8 °C
Heat up time to 120°C	10 min.	10 min.	10 min.	10 min.
No. of Shelves / Maximum No.	2 / 12	2 / 16	2 / 20	3 / 24
No. of Ventilation damper	1	1	1	1
Heater Capacity	1.0 kW	1.5 kW	1.7 kW	2.5 kW
Power Rating	4.7 Amp	7.0 Amp	7.9 Amp	11.5 Amp
Power Plug	CEE 7/7 Schuko			



- Max 250 °C
- Constant Temperature Controller
- Timer On / Off
- (optional) RS-232C Serial Computer Interface
- (optional) Program Controller with PC Control Software

### ↳ Natural Convection Oven

	JSON-050	JSON-100	JSON-150	JSON-250
Chamber Volume (Capacity)	48 L	100 L	151 L	252 L
Dimensions Inner	400 x 300 x 400	500 x 400 x 500	560 x 450 x 600	600 x 600 x 700
W x D x H mm Outer	560 x 525 x 710	660 x 625 x 810	720 x 675 x 910	760 x 825 x 1010
Window	W150 x H290	W150 x H360	W150 x H410	W150 x H460
Temperature Range	ambient +10 °C to 250 °C			
Accuracy at 120°C	± 0.3 °C	± 0.3 °C	± 0.5 °C	± 0.5 °C
Uniformity at 120°C	± 2.0 °C	± 3.0 °C	± 3.0 °C	± 4.0 °C
Heat up time to 120°C	10 min.	10 min.	15 min.	20 min.
No. of Shelves / Maximum No.	2 / 12	2 / 14	2 / 16	3 / 24
No. of Ventilation damper	1	2	2	2
Heater Capacity	1.2 kW	1.5 kW	1.7 kW	2.5 kW
Power Rating	5.5 Amp	6.8 Amp	7.7 Amp	11.3 Amp
Power Plug	CEE 7/7 Schuko			



- Max 250 °C
- Constant Temperature Controller
- Timer On / Off

### ↳ Dry Heat Sterilizer

	JSOF-030S	JSOF-050S	JSON-030S	JSON-050S
Air Circulation	Forced Convection		Gravity Convection	
Chamber Volume (Capacity)	33 L	48 L	33 L	48 L
Dimensions Inner	350 x 270 x 350	400 x 300 x 400	350 x 270 x 350	400 x 300 x 400
W x D x H mm Outer	510 x 570 x 660	560 x 585 x 710	510 x 490 x 660	560 x 505 x 710
Temperature Range	ambient +10 °C to 250 °C			
Accuracy at 180°C	± 0.2 °C	± 0.2 °C	± 0.3 °C	± 0.3 °C
Uniformity at 180°C	± 1.0 °C	± 1.0 °C	± 2.0 °C	± 2.0 °C
Heat up time to 180°C	15 min.	15 min.	15 min.	15 min.
No. of Shelves / Maximum No.	2 / 10	2 / 12	2 / 10	2 / 12
No. of Ventilation damper	1	1	1	1
Heater Capacity	800 W	1.0 kW	800 W	1.2 kW
Power Rating	3.8 Amp	4.7 Amp	3.8 Amp	5.5 Amp
Power Plug	CEE 7/7 Schuko			



- Vacuum 760 mmHg
- Max 250 °C
- Constant Temperature Controller
- Timer On / Off

### ↳ Vacuum Oven

	JSVO-30T	JSVO-60T
Chamber Volume (Capacity)	27 L	64 L
Dimensions Inner	300 x 300 x 300	400 x 400 x 400
W x D x H mm Outer	665 x 470 x 535	765 x 575 x 635
Temperature Range	ambient +10 °C to 250 °C	
Accuracy at 120°C	± 2.0 °C	
Uniformity at 120°C	± 3.0 °C	
Glass Window	W265 x H285	W350 x H350
Maximum Vacuum	15 mm Thick Tempered Safety Glass	
Fitting	760 mmHg	
Valves	Vacuum / Vent Φ 9 mm Hose Barb	
No. of Aluminum Shelf included	Vacuum/Lock : 2-Way Valve Vent : Needle Valve	
Heater Capacity	2 x 1.0 kW	4 x 700 W
Power Rating	9.2 Amp	12.9 Amp
Power Plug	CEE 7/7 Schuko	



- Max 350 °C
- Constant Temperature Controller
- Timer On / Off
- (optional) RS-232C Serial Computer Interface
- (optional) Program Controller with PC Control Software

### 350 °C Hi-Temp Oven

	JSOF-030H	JSOF-100H	JSOF-150H
Chamber Volume (Capacity)	27 L	96 L	150 L
Dimensions Inner	300 x 300 x 300	400 x 400 x 600	500 x 500 x 600
W x D x H mm Outer	745 x 460 x 580	845 x 560 x 880	945 x 660 x 880
Temperature Range	ambient +10 °C to 350 °C		
Accuracy at 200°C	± 0.2 °C	± 0.3 °C	± 0.3 °C
Uniformity at 200°C	± 1.0 °C	± 1.5 °C	± 1.5 °C
Heat up time to 200°C	8 min.	10 min.	10 min.
No. of Shelves / Maximum No.	2 / 14	2 / 20	2 / 20
No. of Ventilation damper	1	1	1
Heater Capacity	2.0 kW	2.5 kW	3.0 kW
Power Rating	9.3 Amp	11.5 Amp	13.8 Amp
Power Plug		CEE 7/7 Schuko	



- Heavy Duty Industrial Scale
- Max 250 °C
- Constant Temperature Controller
- Timer On / Off
- (optional) RS-232C Serial Computer Interface
- (optional) Program Controller with PC Control Software

### Heavy Duty Industrial Oven

	JSIO-400T	JSIO-960T	JSIO-1400T
Chamber Volume (Capacity)	410 L	960 L	1386 L
Dimensions Inner	650 x 600 x 1050	1000 x 800 x 1200	1100 x 1050 x 1200
W x D x H mm Outer	935 x 835 x 1810	1285 x 1035 x 1960	1385 x 1285 x 1960
Clearance	935 x 845 x 1820	1285 x 1045 x 1970	1385 x 1245 x 1970
Temperature Range	ambient +5 °C to 250 °C		
Accuracy at 120°C	± 0.3 °C	± 0.5 °C	± 0.5 °C
Uniformity at 120°C	± 5.0 °C	± 6.0 °C	± 8.0 °C
Heat up time to 120°C	20 min.	25 min.	25 min.
No. of Shelves / Maximum No.	3 / 8	3 / 8	3 / 8
No. of Ventilation damper	1	1	1
Electric Requirement	220 VAC 50/60Hz 1P or 380 VAC 50/60Hz 3P 4W		
Heater Capacity	4.5 kW	7.5 kW	10.5 kW
Power Rating	-	-	-
Power Plug	30 Amp	30 Amp	30 Amp



- Max 250 °C
- (optional) Program Controller with PC Control Software
- (optional) RS-232C Serial Computer Interface
- HEPA Filtered Laminar Air Flow

### HEPA Filter Clean Air Oven

	JSCO-150T	JSCO-300T	JSCO-1200T
Chamber Volume (Capacity)	168 L	336 L	1200 L
Dimensions Inner	600 x 560 x 500	600 x 560 x 1000	1000 x 1000 x 1200
W x D x H mm Outer	845 x 1100 x 1240	845 x 1100 x 1740	1245 x 1540 x 1940
Clearance	845 x 1110 x 1250	845 x 1110 x 1750	1245 x 1550 x 1950
Temperature Range	ambient +10 °C to 250 °C		
Accuracy at 120°C	± 0.3 °C	± 0.3 °C	± 0.5 °C
Uniformity at 120°C	± 5.0 °C	± 5.0 °C	± 8.0 °C
HEPA Filter	H14 (ISO Class 5) HI-TEMP HEPA Filter Efficiency 99.995% > 0.3 um Particles		
No. of Shelves / Maximum No.	2 / 14	3 / 36	4 / 36
Heater Capacity	2 x 1.0 kW	2 x 2.0 kW	3 x 2.5 kW
Electric Requirement	220 VAC 50/60Hz 1P	220 VAC 50/60Hz 1P	220 VAC 1P or 380 VAC 3P 4W
Power Rating	11.0 Amp	20.2 Amp	
Power Plug	CEE 7/7 Schuko	30 Amp	30 Amp



- Max 250 °C
- Constant Temperature Controller
- Timer On / Off
- (optional) RS-232C Serial Computer Interface
- (optional) Program Controller with PC Control Software

### Upright Convection Oven

	JSOF-250T	JSOF-400T	JSOF-700T
Chamber Volume (Capacity)	250 L	372 L	655 L
Dimensions Inner	500 x 500 x 1000	610 x 610 x 1000	710 x 710 x 1300
W x D x H mm Outer	895 x 675 x 1360	1005 x 785 x 1360	1105 x 885 x 1660
Window	W150 x H460	W150 x H460	W150 x H615
Temperature Range	ambient +10 °C to 250 °C		
Accuracy at 120°C	± 0.3 °C	± 0.3 °C	± 0.3 °C
Uniformity at 120°C	± 1.5 °C	± 2.0 °C	± 3.0 °C
Heat up time to 120°C	10 min.	15 min.	15 min.
No. of Shelves / Maximum No.	3 / 36	4 / 36	6 / 48
No. of Ventilation damper	1	1	1
Heater Capacity	2 x 1.5 kW	2 x 1.7 kW	2 x 2.5 kW
Power Rating	13.8 Amp	15.6 Amp	22.9 Amp
Power Plug	CEE 7/7 Schuko	30 Amp	30 Amp



- Heated: amb. +5°C - 50°C
- Constant Temperature Controller
- Timer On / Off

### Compact Incubator

	JSGI-10T	JSGI-30T
Heating	Gravity Convection	Forced Convection
Chamber Volume (Capacity)	9.3 L	31.5 L
Dimensions Inner	210 x 210 x 210	300 x 300 x 350
W x D x H mm Outer	315 x 370 x 435	425 x 460 x 590
Inner Glass Door	no	yes
Temperature Range	ambient+5 °C to 50 °C	
Accuracy at 37.0°C	± 0.2 °C	± 0.2 °C
Uniformity at 37.0°C	± 0.5 °C	± 0.5 °C
Number of shelves	2	2
Heater Capacity	60 W	100 W
Power Rating	0.3 Amp	0.5Amp
Power Plug	CEE 7/7 Schuko	



- Heated: amb. +5°C - 50°C
- Constant Temperature Controller
- Timer On / Off
- RS-232C Serial Computer Interface
- Program Controller with PC Control Software

### General Incubator

	JSGI-050T	JSGI-100T	JSGI-150T	JSGI-250T	JSGI-250DT
Chamber Volume (Capacity)	48 L	96 L	150 L	250 L	250 L x 2 Chamber
Dimensions Inner	400 x 300 x 400	400 x 400 x 600	500 x 500 x 600	500 x 500 x 1000	500 x 500 x 1000
W x D x H mm Outer	580 x 535 x 720	580 x 635 x 920	680 x 735 x 920	680 x 735 x 1320	1365 x 735 x 1400
Temperature Range	ambient+5 °C to 70 °C				
Accuracy at 37.0°C	± 0.2 °C	± 0.2 °C	± 0.2 °C	± 0.3 °C	± 0.3 °C
Uniformity at 37.0°C	± 0.5 °C	± 0.5 °C	± 1.0 °C	± 1.5 °C	± 1.5 °C
Heat up time to 37.0°C	15 min.	15 min.	15 min.	20 min.	20 min.
Number of shelves / Maximum No.	2 / 12	2 / 20	2 / 20	3 / 36	6 / 36
No. of Access Port	1	1	1	1	2
Heater Capacity	150 W	200 W	250 W	400 W	2 x 400 W
Power Rating	0.7 Amp	1.0 Amp	1.2 Amp	2.0 Amp	2 x 2.0 Amp
Power Plug	CEE 7/7 Schuko				



- Cooled: +0°C to 70°C
- Constant Temperature Controller
- Timer On / Off
- RS-232C Serial Computer Interface

### Cooled Incubator

	JSBI-050C	JSBI-100C
Chamber Volume (Capacity)	50 L	100 L
Dimensions Inner	400 x 350 x 360	450 x 450 x 500
W x D x H mm Outer	580 x 600 x 770	630 x 700 x 910
Temperature Range	+0 °C to 70 °C	
Accuracy at 20.0°C	± 0.2 °C	
Uniformity at 20.0°C	± 0.5 °C	
Number of shelves / Maximum No.	2 / 20	2 / 16
Heater Capacity	500 Watt	700 Watt
Refrigeration System	CFC-Free Air Cooled Compressor	
Power Rating	5.5 Amp	6.0 Amp
Power Plug	CEE 7/7 Schuko	



- Cooled: +0°C to 70°C
- Constant Temperature Controller
- Timer On / Off
- RS-232C Serial Computer Interface

### Cooled Incubator

	JSBI-150C	JSBI-250C	JSBI-420C	JSBI-840C
Chamber Volume (Capacity)	150 L	250 L	420 L	840 L
Dimensions Inner	500 x 500 x 600	500 x 500 x 1000	700 x 600 x 1000	1400 x 600 x 1000
W x D x H mm Outer	680 x 825 x 1370	680 x 825 x 1770	880 x 925 x 1770	1580 x 925 x 1770
Temperature Range	+0 °C to 70 °C			
Accuracy at 20.0°C	± 0.2 °C	± 0.2 °C	± 0.2 °C	± 0.2 °C
Uniformity at 20.0°C	± 0.5 °C	± 0.5 °C	± 0.5 °C	± 1.0 °C
Number of shelves / Maximum No.	2 / 20	3 / 25	3 / 25	6 / 50
Heater Capacity	900 W	1.0 kW	1.5 kW	2 x 1.5 kW
Refrigeration System	CFC-Free Air Cooled Compressor			
Power Rating	7.1 Amp	7.6 Amp	10.3 Amp	22 Amp
Power Plug	CEE 7/7 Schuko			

➤ Digital Water Bath



- Heated amb. +5 °C - 99 °C
- Constant Temperature Controller
- Timer On / Off

	JSWB-06T	JSWB-11T	JSWB-22T	JSWB-30T
Bath Volume (Capacity)	6 L	11 L	22 L	30 L
Dimensions Inner	300 x 155 x 150	300 x 240 x 150	500 x 300 x 150	500 x 300 x 200
W x D x H mm Usable	300 x 155 x 110	300 x 240 x 110	500 x 300 x 110	500 x 300 x 160
Outer	340 x 200 x 270	340 x 285 x 270	545 x 345 x 270	545 x 345 x 320
Temperature Range	ambient +5 °C - 99 °C			
Accuracy at 37.0°C	± 0.2 °C	± 0.2 °C	± 0.2 °C	± 0.2 °C
Uniformity at 37.0°C	± 0.8 °C	± 0.8 °C	± 0.8 °C	± 1.0 °C
Drain Valve	none	none	yes	yes
Heater Capacity	600 W	1.0 kW	1.5 kW	2.0 kW
Power Rating	2.7 Amp	4.6 Amp	6.8 Amp	9.2 Amp
Power Plug	CEE 7/7 Schuko			

➤ Digital Circulation Water Bath



- Circulation Pump
- Heated amb. -5 °C - 99 °C
- Timer On / Off
- Constant Temperature Controller

	JSIB-11T	JSIB-22T
Bath Volume (Capacity)	11 L	22 L
Dimensions Inner	300 x 240 x 150	495 x 290 x 150
W x D x H mm Usable	120 x 240 x 150	325 x 290 x 150
Outer	365 x 300 x 410	560 x 350 x 410
Temperature Range	ambient +5 °C - 99 °C	
Accuracy at 37.0°C	± 0.1 °C	
Uniformity at 37.0°C	± 0.2 °C	
Drain Valve	yes	
Inlet / Outlet Fitting	Φ9 mm hose barb	
Heater Capacity	850 W	1.3 kW
Power Rating	3.9 Amp	5.9 Amp
Power Plug	CEE 7/7 Schuko	

➤ Digital Circulation Water Bath



- Circulation Pump
- Heated amb. -5 °C - 99 °C
- Timer On / Off
- Constant Temperature Controller

	JSIB-50T	JSIB-100T
Bath Volume (Capacity)	50 L	100 L
Dimensions Inner	300 x 400 x 400	400 x 500 x 500
W x D x H mm Usable	300 x 400 x 350	400 x 500 x 450
Outer	385 x 665 x 685	485 x 765 x 785
Temperature Range	ambient +5 °C - 99 °C	
Accuracy at 37.0°C	± 0.2 °C	
Uniformity at 37.0°C	± 0.5 °C	
Drain Valve	yes	
Inlet / Outlet Fitting	Φ9 mm hose barb	
Heater Capacity	3.0 kW	5.0 kW
Power Rating	14.0 Amp	23.0 Amp
Power Plug	CEE 7/7 Schuko	30 Amp

➤ Digital Shaking Water Bath



- Reciprocal Shaking
- Heated amb. -5 °C - 99 °C
- Timer On / Off
- Constant Temperature Controller

	JSSB-30T	JSSB-50T
Bath Volume (Capacity)	30 L	50 L
Dimensions Inner	500 x 300 x 190	600 x 380 x 220
W x D x H mm Outer	760 x 370 x 400	870 x 450 x 430
Spring Rack	350 x 210 x 140	470 x 250 x 140
Temperature Range	ambient +5 °C - 99 °C	
Accuracy at 37.0°C	± 0.2 °C	
Uniformity at 37.0°C	± 0.5 °C	
Shaking Speed Range	20 - 120 rpm / 25mm stroke	
Accuracy	± 1 rpm	
Heater Capacity	2.0 kW	3.0 kW
Power Rating	9.2 Amp	13.8 Amp
Power Plug	CEE 7/7 Schuko	



- Circulation Pump
- Cooled -30 °C to 120 °C
- Timer On / Off
- Constant Temperature Controller

➤ Refrigerated Bath Circulation

	JSRC-06C	JSRC-13C	JSRC-22C	JSRC-30C
Bath Volume (Capacity)	7.0 L	11 L	20 L	30 L
Dimensions Inner	155 x 300 x 150	240 x 300 x 150	300 x 330 x 200	300 x 500 x 200
W x D x H mm Usable	155 x 90 x 150	240 x 120 x 150	300 x 150 x 200	295 x 315 x 200
W x D x H mm Outer	290 x 470 x 670	370 x 450 x 670	430 x 480 x 720	430 x 670 x 720
Temperature Range	-20 °C - 120.0 °C			
Accuracy at -10.0 °C	± 0.1 °C			
Uniformity at -10.0 °C	± 0.3 °C			
Heater Capacity	700 Watt	800 Watt	1.2 kW	1.6 kW
Refrigeration System	CFC Free Air Cooled Compressor			
Power Rating	6.7 Amp	7.1 Amp	8.9 Amp	10.5 Amp
Power Plug	CEE 7/7 Schuko			



- Circulation Pump
- Cooled -40 °C to 120 °C
- Timer On / Off
- Constant Temperature Controller

➤ Refrigerated Bath Circulation

	JSRC-06CL	JSRC-13CL	JSRC-22CL	JSRC-30CL
Bath Volume (Capacity)	7.0 L	11 L	20 L	30 L
Dimensions Inner	155 x 300 x 150	240 x 300 x 150	300 x 330 x 200	300 x 500 x 200
W x D x H mm Usable	155 x 90 x 150	240 x 120 x 150	300 x 150 x 200	295 x 315 x 200
W x D x H mm Outer	290 x 470 x 730	370 x 450 x 730	430 x 480 x 780	430 x 670 x 780
Temperature Range	-40 °C - 120.0 °C			
Accuracy at -10.0 °C	± 0.1 °C			
Uniformity at -10.0 °C	± 0.3 °C			
Heater Capacity	700 Watt	800 Watt	1.2 kW	1.6 kW
Refrigeration System	CFC Free Air Cooled Compressor			
Power Rating	6.7 Amp	8.0 Amp	9.8 Amp	11.6 Amp
Power Plug	CEE 7/7 Schuko			



- Heated amb.+10 °C - 250 °C
- Timer On / Off
- Constant Temperature Controller

➤ Digital Oil Bath

	JSOB-100T	JSOB-200T	JSOB-300T
Bath Volume (Capacity)	11 L	20 L	33 L
Dimensions Inner	300 x 220 x 170	400 x 300 x 170	430 x 300 x 260
W x D x H mm Usable	300 x 220 x 130	400 x 300 x 130	430 x 300 x 210
W x D x H mm Outer	550 x 310 x 340	650 x 390 x 360	680 x 390 x 450
Temperature Range	ambient +10 °C - 250 °C		
Accuracy at 120.0 °C	± 1.0 °C	± 1.0 °C	± 1.0 °C
Uniformity at 120.0 °C	± 3.0 °C	± 3.0 °C	± 5.0 °C
Heater Capacity	2.0 kW	3.0 kW	3.0 kW
Power Rating	9.1 Amp	13.6 Amp	13.6 Amp
Power Plug	CEE 7/7 Schuko		



- Multi-Port Extraction
- Heated amb.+5 °C - 99.9 °C
- Timer On / Off
- Constant Temperature Controller

➤ Extraction COD Bath

	JSEB-60T	JSEB-62T	JSEB-82T	JSEB-102T
Number of Extraction Ports	6	2 x 3	2 x 4	2 x 5
Dimensions Inner	920 x 162 x 150	490 x 322 x 150	650 x 322 x 150	850 x 322 x 150
W x D x H mm Outer	980 x 265 x 300	665 x 395 x 300	815 x 395 x 300	965 x 395 x 300
Temperature Range	ambient +5 °C - 99.9 °C			
Accuracy at 60.0 °C	± 0.5 °C			
Uniformity at 60.0 °C	± 1.0 °C			
Standard Accessories	Stainless Steel Frame Set, 4ea x PHH-X01 Pipe Holder			
Heater Capacity	3.0 kW	3.0 kW	4.0 kW	5.0 kW
Power Rating	13.6 Amp	13.6 Amp	18.2 Amp	23.0 Amp
Power Plug	CEE 7/7 Schuko	CEE 7/7 Schuko	30 Amp	30 Amp



- Circulation Pump
- Heated amb.+5 °C - 99.9 °C
- Timer On / Off
- Constant Temperature Controller

➤ Visco-Sight Bath

	JSEB-60T	JSEB-62T	JSEB-82T	JSEB-102T
Number of Extraction Ports	6	2 x 3	2 x 4	2 x 5
Dimensions Inner	920 x 162 x 150	490 x 322 x 150	650 x 322 x 150	850 x 322 x 150
W x D x H mm Outer	980 x 265 x 300	665 x 395 x 300	815 x 395 x 300	965 x 395 x 300
Temperature Range	ambient +5 °C - 99.9 °C			
Accuracy at 60.0 °C	± 0.5 °C			
Uniformity at 60.0 °C	± 1.0 °C			
Standard Accessories	Stainless Steel Frame Set, 4ea x PHH-X01 Pipe Holder			
Heater Capacity	3.0 kW	3.0 kW	4.0 kW	5.0 kW
Power Rating	13.6 Amp	13.6 Amp	18.2 Amp	23.0 Amp
Power Plug	CEE 7/7 Schuko	CEE 7/7 Schuko	30 Amp	30 Amp



- Max. 121 °C 0.12 Mpa
- Timer On / Off
- Safety Door Lock

### Autoclave / Steam Sterilizer

	JSAT-45	JSAT-65	JSAT-85	JSAT-105
Chamber Volume (Capacity)	45 L	65 L	85 L	105 L
Dimensions Inner	Φ350 x H490	Φ350 x H680	Φ450 x H535	Φ450 x H665
W x D x H mm Usable	Φ350 x H410	Φ350 x H620	Φ450 x H480	Φ450 x H610
Outer	555 x 670 x 955	555 x 670 x 1105	655 x 780 x 1010	655 x 780 x 1110
Basket x 2 ea	Φ330 x H195	Φ330 x H280	Φ430 x H220	Φ430 x H270
Temperature Range	up to 123 °C			
Accuracy	± 0.5 °C			
Uniformity	± 2.0 °C			
Heater Capacity	2.0 kW	3.0 kW	4.0 kW	5.0 kW
Power Rating	9.2 Amp	13.7 Amp	18.2 Amp	22.8 Amp
Electric	220VAC 50/60Hz 1P			
Power Plug	CEE 7/7 Schuko	CEE 7/7 Schuko	30 Amp	30 Amp



### Automatic Water Distillator

	JSWS-04	JSWS-08
Output Distilled	4.5 liter / hr	8.5 liter / hr
Reservoir Tank Capacity	12.0 liter	18.0 liter
Heater Capacity	3.0 kW	6.0 kW
Cooling Water Requirement	approx. 50.0 liter / hr	approx. 60.0 liter / hr
Inlet Water Pressure	1.0 - 3.0 kg / cm <sup>2</sup>	
Inlet Water Filter	Sediment Filter (Optional : Carbon Filter, Mixed Bed Ion Exchange Resin Filter)	
Material	Stainless Steel 304 (Boiler Tank & Reservoir Tank)	
Outer Dimensions (W x D x H)	350 x 650 x 510 mm	350 x 650 x 610 mm
Electrical Requirement	220 VAC, 50/60 Hz, 1-Phase	
Power Rating	13.6 Amp	27.3 Amp
Plug Configuration	CEE 7/7 Schuko or BS 1363	32 Amp 3 Pin for 250 VAC



- Max 1200 °C
- Program Controller 2 Patterns Memory

### Electric Muffle Furnace

	JSMF-30T	JSMF-45T	JSMF-120T	JSMF-140T	JSMF-270T
Temperature Maximum / General Operating	1,000 / 800 °C				
	JSMF-30H	JSMF-45H	JSMF-120H	JSMF-140H	JSMF-270H
	1,100 / 1,000 °C				
	JSMF-30HT	JSMF-45HT	JSMF-120HT	JSMF-140HT	JSMF-270HT
	1,200 / 1,100 °C				
Accuracy at 500°C	± 3.0 °C	± 4.0 °C	± 5.0 °C	± 6.0 °C	± 7.0 °C
Uniformity at 500°C	± 3.0 °C	± 4.0 °C	± 5.0 °C	± 6.0 °C	± 7.0 °C
Heat-up Time to 800°C	30 min	30 min	30 min	30 min	35 min
Chamber Volume (Capacity)	2.9 L	4.5 L	12.0 L	14.0 L	27.0 L
Dimensions Inner	130 x 250 x 90	150 x 300 x 100	200 x 300 x 200	250 x 350 x 160	300 x 300 x 300
W x D x H mm Outer	435 x 480 x 560	465 x 535 x 580	525 x 565 x 690	575 x 605 x 650	625 x 605 x 790
Heater Capacity	1.4 kW	1.6 kW	3.3 kW	4.0 kW	4.6 kW
Power Rating	6.5 Amp	7.4 Amp	15.2 Amp	18.3 Amp	20.2 Amp
Power Plug	CEE 7/7 Schuko	CEE 7/7 Schuko	30 AMP	30 AMP	30 AMP



- Interchangeable Blocks
- Max 180 °C
- Constant Temperature Controller
- Timer On / Off

### Dry Block Heater

	JSBL-01T	JSBL-02T	JSBL-04T
Modular Block Capacity	1 Block	2 Blocks	4 Blocks
Dimensions Inner	90 x 65 x 50	130 x 90 x 50	130 x 180 x 50
W x D x H mm Outer	180 x 245 x 110	220 x 270 x 110	220 x 360 x 50
Single Block Dims.	90 x 65 x 50		
Temperature Range	ambient +5 °C to 180 °C		
Accuracy at 60°C	± 0.5 °C		
Uniformity at 60°C	± 3.0 °C		
Heat up time to 60°C	8 min.	10 min.	14 min.
Heater Capacity	150 Watt	200 Watt	400 Watt
Power Rating	0.7 Amp	0.9 Amp	1.8 Amp
Power Plug	CEE 7/7 Schuko		



- Timer Off
- 20 - 350 rpm  
Orbital or Reciprocal
- Max. Load: 15-33 kgs

➤ **Orbital Shaker**

		JSOS-300	JSOS-500
		9 x 250ml (Flask)	25 x 250ml (Flask)
Shaking	Motion	Orbital	Orbital and Reciprocal
	Speed / Stroke	20 - 350 rpm	20 - 350 rpm
Dimensions	Platform	W275 x D345 mm	W495 x D495 mm
	Oversized Platform	none	W700 x D650 mm
W x D x H mm	Outer	350 x 520 x 165	545 x 565 x 350
	Max. Load	15 kgs	35 kgs
Motor Capacity		25 Watt	30 Watt
Power Rating		1.0 Amp	2.0 Amp
Power Plug		CEE 7/7 Schuko	



- Heated: amb.+5°C - 70°C
- Cooled: +10°C to 70°C
- Timer Off
- 20 - 350 rpm Orbital
- Max. Load: 25 kgs

➤ **Shaking Incubator**

		JSSI-070T	JSSI-070C
Chamber Volume (Capacity)		62 L	
Dimensions	Inner	505 x 400 x 310	
	Outer	550 x 700 x 660	
	Platform	W410 x D380 mm	
Temperature	Range	ambient +5°C - 70°C	+10°C - 70°C
	Accuracy	± 0.2°C at 37°C	± 0.2°C at 25°C
	Uniformity	± 1.0°C at 37°C	± 1.0°C at 25°C
Shaking	Motion	Orbital	
	Speed / Stroke	20 - 350 rpm / 20mm	
Working Light		25 Watt Bulb	
Heater Capacity		300 Watt	500 Watt
Refrigeration System		None	CFC Free Air Cooled Compressor
Power Rating		3.2 Amp	4.5 Amp
Electric		220VAC 50/60Hz 1P	
Power Plug		CEE 7/7 Schuko	



- Heated: amb.+5°C - 70°C
- Cooled: +10°C to 70°C
- Timer Off
- 20 - 350 rpm  
Orbital or Reciprocal
- Max. Load: 25 kgs

➤ **Shaking Incubator**

		JSSI-100T	JSSI-100C
Chamber Volume (Capacity)		110 L	
Dimensions	Inner	545 x 585 x 345	
	Outer	770 x 715 x 790	
	Platform	W500 x D465 mm	
Temperature	Range	ambient +5°C - 70°C	+10°C - 70°C
	Accuracy	± 0.2°C at 37°C	± 0.2°C at 25°C
	Uniformity	± 1.0°C at 37°C	± 1.0°C at 25°C
Shaking	Motion	Orbital or Reciprocal	
	Speed / Stroke	20 - 350 rpm / 20mm	
Working Light		25 Watt Bulb	
Heater Capacity		400 Watt	700 Watt
Refrigeration System		None	CFC Free Air Cooled Compressor
Power Rating		2.2 Amp	5.8 Amp
Electric		220VAC 50/60Hz 1P	
Power Plug		CEE 7/7 Schuko	



- Heated: amb.+5°C - 70°C
- Cooled: +10°C to 70°C
- Timer Off
- 20 - 350 rpm  
Orbital or Reciprocal
- Photoperiodic Control
- Max. Load: 35 kgs

➤ **Shaking Incubator**

		JSSI-300T	JSSI-300C	JSSI-300CL
Chamber Volume (Capacity)		204 L		
Dimensions	Inner	760 x 715 x 375		
	Outer	1080 x 875 x 975		
	Platform	W700 x D650 mm		
Temperature	Range	ambient +5°C - 70°C	+10°C - 70°C	+10°C - 70°C
	Accuracy		± 0.2°C at 25°C (Lamp Off)	
	Uniformity		± 1.0°C at 25°C (Lamp Off)	
Shaking	Motion	Orbital or Reciprocal		
	Speed / Stroke	20 - 350 rpm / 20mm		
Illumination		none	none	20 Watt FL x 4 ea / 24 hr Timer
Working Light		25 Watt Bulb	25 Watt Bulb	25 Watt Bulb
Heater Capacity		700 Watt	1.5 kW	1.5 kW
Refrigeration System		None	CFC Free Air Cooled Compressor	CFC Free Air Cooled Compressor
Power Rating		3.2 Amp	10.0 Amp	10.5 Amp
Power Plug		CEE 7/7 Schuko		





- Temperature Range  
+0°C - 70°C
- Humidity Range  
30% - 85% RH
- Constant Temperature Controller
- Touch Screen  
5.6" Color TFT Display  
120 Patterns 1200 Segments
- RS-232C or 485 Serial Interface  
Multi-Drop up to 31 Instruments
- Temp. & Humidity  
Trend Data Recording

### Stability Chamber

	JSBS-520C	JSDS-300C	JSDS-420C	JSDS-960C
Chamber Volume (Capacity)	520 L	300 L	432 L	964 L
Dimensions Inner	650 x 850 x 1000	500 x 500 x 1200	600 x 600 x 1200	1200 x 600 x 1200
W x D x H mm Outer	850 x 1155 x 1760	690 x 835 x 1985	790 x 935 x 1985	1390 x 935 x 1985
Temperature Range	+0°C - 70°C		+10°C - 70°C	
Accuracy	± 0.2 °C at 25.0°C		± 0.3 °C at 20.0°C 60% RH	
Uniformity	± 0.5 °C at 25.0°C		± 1.0 °C at 20.0°C 60% RH	
Humidity Range	-		30 - 85% RH	
Accuracy	-		± 3.0 % RH at 20.0°C 60% RH	
Uniformity	-		± 6.0 % RH at 20.0°C 60% RH	
Chamber Observation Light	-	3 x 36W FPL	3 x 36W FPL	4 x 36W FPL
Controller	Digital PID Controller		Digital PID Control	
Sensors	Class A Pt-100 Ω Sensor		Class A Pt-100 Ω Sensor / Electronic Humidity Sensor	
Construction	Glass window W400 x H500 mm Inner Glass Door		Two side observation window Double layer vacuum sealed Inner Glass Door	
No. of Shelves / Maximum No.	Sliding Rack	3 / 35	3 / 35	6 / 70
Heater Rating	1.5 kW	3.1 kW	3.5 kW	6.0 kW
Refrigeration System			CFC Free Air Cooled Compressor	
Power Rating	20 Amp	21 Amp	25 Amp	43 Amp
Plug Configuration	CEE 7/7 Schuko	30 Amp	30 Amp	50 Amp



- Temp. +0°C - 60°C
- Humidity 30 - 85% RH
- Lighting 0 - 40,000 Lux
- CO2 Conc. amb. - 5000 ppm (5)
- Program Controller
- Timer On / Off
- Photoperiodic Control

### Growth Chamber

	JSGC-420C	JSGC-960C	JSGC-1500C
Chamber Volume (Capacity)	432L	972L	1512L
Dimensions Inner	600 x 600 x 1200	900 x 900 x 1200	1400 x 900 x 1200
W x D x H mm Outer	1180 x 850 x 2080	1480 x 1150 x 2080	1865 x 1250 x 2100
Temperature Range		Light Off : +0°C - 60°C	Light On : +10°C - 60°C w/o Humidity Control
Accuracy		± 0.3 °C at 20.0°C 60% RH (Light Off)	
Uniformity		± 1.0 °C at 20.0°C 60% RH (Light Off)	
Humidity Range		30 - 98% RH (Sensor Range)	30 - 85% RH (Control Range)
Accuracy		± 3.0 % RH at 20.0°C 60% RH	
Uniformity		± 6.0 % RH at 20.0°C 60% RH	
Illumination Range / Steps	6 Step	7 Step	8 Step
Lamp Configuration	2 x 150W HQI 4 x 55W FPL	3 x 150W HQI 4 x 55W FPL	4 x 150W HQI 8 x 36W FPL
CO2 Conc. Range		ambient - 5,000 ppm (ambient - 20%)	
Accuracy		± 50 ppm	
Controller		Programmable PID Control 11 Segment 999 Cycle Repeat	
Sensors		Class A Pt-100 Ω Sensor / Electronic Humidity Sensor / Lux Meter / NDIR Diffusion CO2 Sensor	
No. of Shelves / Maximum No.	3 / 20	6 / 20	8 / 20
Heater Rating	4.0 kW	6.0 kW	8.0 kW
Refrigeration System		CFC Free Air Cooled Compressor	
Electric Requirement		220 VAC 50/60Hz 1P	
Power Rating	25 Amp	36 Amp	53 Amp
Plug Configuration	30 AMP	50 AMP	60 AMP ELB Mains



- Temp. +0°C - 60°C
- Humidity 30 - 85% RH
- Lighting 0 - 50,000 Lux
- CO2 Conc. amb. - 5000 ppm (5)
- Program Controller
- Timer On / Off
- Photoperiodic Control

### Growth Chamber 3-D Illumination

	JSPG-1500C
Chamber Volume (Capacity)	1512L
Dimensions Inner	1400 x 900 x 1200
W x D x H mm Outer	1880 x 1390 x 2065
Temperature Range	Light Off : +0°C - 60°C
Accuracy	Light On : +10°C - 60°C w/o Humidity Control
Uniformity	± 0.3 °C at 20.0°C 60% RH (Light Off)
	± 1.0 °C at 20.0°C 60% RH (Light Off)
Humidity Range	30 - 98% RH (Sensor Range)
Accuracy	30 - 85% RH (Control Range)
Uniformity	± 3.0 % RH at 20.0°C 60% RH
	± 6.0 % RH at 20.0°C 60% RH
Illumination Range / Steps	0 - 50,000 Lux by 8-Step Combination
Lamp Configuration	Top : 6 x 150W HQI Side : 4 x 70W HQI, 8 x 55W FPL
CO2 Conc. Range	ambient - 5,000 ppm (ambient - 20%)
Accuracy	± 50 ppm
Controller	Programmable PID Control 11 Segment 999 Cycle Repeat
Sensors	Class A Pt-100 Ω Sensor / Electronic Humidity Sensor / Lux Meter / NDIR Diffusion CO2 Sensor
No. of Shelves / Maximum No.	6 / 20
Heater Rating	10.0 kW
Refrigeration System	CFC Free Air Cooled Compressor
Power Rating	220 VAC 50/60Hz 1P 55 Amp
Plug Configuration	Direct connect to 60 Amp ELB Mains



- Temp: +0°C - 60°C
- Humidity 30 - 85% RH
- Lighting 0 - 30,000 Lux
- CO<sub>2</sub> Conc. amb. - 5000 ppm (k)
- Program Controller
- Timer On / Off
- Photoperiodic Control

**➤ Growth Chamber 3-Side Illumination**

		JSPC-200C	JSPC-300C	JSPC-420C	JSPC-960C
Chamber Volume (Capacity)		200L	300L	432L	864L
Dimensions Inner		600 x 600 x 600	500 x 500 x 1200	600 x 600 x 1200	1200 x 600 x 1200
W x D x H mm	Outer	790 x 935 x 1385	690 x 835 x 1985	790 x 935 x 1985	1400 x 920 x 2000
Temperature	Range	Light Off : +0°C - 60°C Light On : +10°C - 60°C w/o Humidity Control			
	Accuracy	± 0.3 °C at 20.0°C 60% RH (Light Off)			
	Uniformity	± 1.0 °C at 20.0°C 60% RH (Light Off)			
Humidity	Range	30 - 98% RH (Sensor Range) 30 - 85% RH (Control Range)			
	Accuracy	± 3.0 % RH at 20.0°C 60% RH			
	Uniformity	± 6.0 % RH at 20.0°C 60% RH			
Illumination	Range / Steps	0 - 30,000 Lux by 8-Step Combination			
	Lamp Configuration	10 x 36W FPL	14 x 36W FPL	14 x 36W FPL	20 x 36W FPL
CO <sub>2</sub> Conc.	Range	ambient - 5,000 ppm (ambient - 20%)			
	Accuracy	± 50 ppm			
Controller		Programmable PID Control 11 Segment 999 Cycle Repeat			
Sensors		Class A Pt-100 Ω Sensor / Electronic Humidity Sensor / Lux Meter / NDIR Diffusion CO <sub>2</sub> Sensor			
No. of Shelves / Maximum No.		2 / 18	3 / 35	3 / 35	3 / 35
Heater Rating		3.0 kW	3.1 kW	3.5 kW	6.0 kW
Refrigeration System		CFC Free Air Cooled Compressor			
Power Rating		20 Amp	21 Amp	25 Amp	43 Amp
Plug Configuration		30 AMP	30 Amp	30 Amp	50 Amp



- Cooled -0°C to 10°C
- Constant Temperature Controller
- Timer On / Off
- RS-232C Serial Computer Interface
- Screen Chart Recorder

**➤ Cold Lab Chamber - Laboratory Refrigerator**

		JSSC-700C	JSSC-1200C
Chamber Volume (Capacity)		686 L	1176 L
Dimensions Inner		700 x 700 x 1400	1200 x 700 x 1400
W x D x H mm	Outer	900 x 900 x 1980	1410 x 900 x 1980
Temperature	Range	+0°C - 10°C (General Operation at 4°C)	
	Accuracy	± 2.0 °C ON/OFF Control	
	Uniformity	± 1.6 °C at 4°C	± 2.0 °C at 4°C
Number of shelves / Maximum No.		4 / 25	8 / 50
Heater Capacity		-	-
Refrigeration System		CFC-Free Air Cooled Compressor	
Power Rating		3.0 Amp	4.0 Amp
Power Plug		CEE 7/7 Schuko Plug	



- Cold Trap
- Ultra-Low -35°C or -85°C
- Digital Temperature On/Off Controller

**➤ Ultra Low Temp. Cold Trap Bath - Cold Trap Bath**

		JSCT-35C	JSCT-55ULT	JSCT-85ULT
Bath Volume (Capacity)			7.2 L	
Dimensions Inner			Φ 200 x H230	
W x D x H mm	Outer	370 x 460 x 640	370 x 470 x 730	370 x 470 x 730
Temperature	Range	- 35.0 °C / 30 min.	- 55.0 °C / 30 min.	- 85.0 °C / 60 min.
	On/Off Control	± 2.0 °C	± 2.0 °C	± 2.0 °C
Refrigeration System		ULT Technology CFC Free Air Cooled Compressor		
Power Rating		3.1 Amp	4.1 Amp	4.1 Amp
Power Plug		CEE 7/7 Schuko		



- Cold Trap
- Ultra-Low -35°C or -85°C
- Digital Temperature On/Off Controller

**➤ Ultra Low Temp. Tabletop Cold Trap Bath - Cold Trap Bath**

		JSTC-55ULT	JSTC-85ULT
Bath Volume (Capacity)			2.8 L
Dimensions Inner			110 x 110 x 230
W x D x H mm	Outer		380 x 560 x 520
Temperature	Range	- 55.0 °C / 20 min.	- 85.0 °C / 60 min.
	Accuracy at -40.0°C	± 2.0 °C	± 2.0 °C
Refrigeration System		CFC Free Air Cooled Compressor	
Power Rating		3.1 Amp	4.1 Amp
Power Plug		CEE 7/7 Schuko	



-  Biological Safety Cabinet Class II Type A2
-  HEPA Filter 99.993% for 0.3 um particles
-  ULPA Filter 99.999% for 0.12 um particles
-  9 Step Air Velocity Control 0.3 m/sec - 0.6 m/sec
-  Cold White Fluorescent Work Lamp
-  Germicidal UV Lamp /w Timer

➤ Biological Safety Cabinet Class II Type A2

	JSCB-900SB	JSCB-1200SB	JSCB-1500SB	JSCB-1800SB
Working Width mm	830 mm (3 ft)	1205 mm (4 ft)	1490 mm (5 ft)	1790 mm (6 ft)
Dimensions Inner	830 x 526 x 585	1205 x 526 x 585	1490 x 526 x 585	1790 x 526 x 585
W x D x H mm Outer	900 x 792 x 1990	1275 x 792 x 1990	1560 x 792 x 1990	1860 x 792 x 1990
HEPA Filter	0.3um Particle Removal 99.993% - 99.995%			
ULPA Filter Option	0.3um Particle Removal 99.999%			
Air Circulation	70% Re-circulation / 30% Exhaust			
Controller Display	Back Light Digital LCD			
Speed Control	9 Step Air Velocity Control from 0.3m/sec. - 0.6m/sec.			
Control	FL Lamp ON/OFF, UV Lamp ON/OFF, UV Timer / Total Using Time / Filter Replace Alarm			
Working Lamp	FL 20 W x 2 ea	FL 30 W x 2 ea	FL 30 W x 2 ea	FL 36 W x 2 ea
Germicidal UV Lamp	UV 20 W x 1 ea	UV 30 W x 1 ea	UV 30 W x 1 ea	UV 40 W x 1 ea
Utility	2 x Power Consent, 1 x Gas Cock, 1 x Air Cock			
Power Rating	1.0 Amp	1.5 Amp	1.5 Amp	1.6 Amp
Power Plug	CEE 7/7 Schuko			



-  Vertical Laminar Flow ISO Class 5 (Class 100)
-  HEPA Filter 99.993% for 0.3 um particles
-  ULPA Filter 99.999% for 0.12 um particles
-  9 Step Air Velocity Control 0.3 m/sec - 0.6 m/sec
-  Cold White Fluorescent Work Lamp
-  Germicidal UV Lamp /w Timer

➤ Vertical Laminar Flow Cabinet Class 5

	JSCB-900SL	JSCB-1200SL	JSCB-1500SL	JSCB-1800SL
Working Width mm	830 mm (3 ft)	1205 mm (4 ft)	1490 mm (5 ft)	1790 mm (6 ft)
Dimensions Inner	830 x 526 x 585	1205 x 526 x 585	1490 x 526 x 585	1790 x 526 x 585
W x D x H mm Outer	900 x 792 x 1990	1275 x 792 x 1990	1560 x 792 x 1990	1860 x 792 x 1990
HEPA Filter	0.3um Particle Removal 99.993% - 99.995%			
ULPA Filter Option	0.3um Particle Removal 99.999%			
Air Circulation	Vertical Laminar Flow			
Controller Display	Back Light Digital LCD			
Speed Control	9 Step Air Velocity Control from 0.3m/sec. - 0.6m/sec.			
Control	FL Lamp ON/OFF, UV Lamp ON/OFF, UV Timer / Total Using Time / Filter Replace Alarm			
Working Lamp	FL 20 W x 2 ea	FL 30 W x 2 ea	FL 30 W x 2 ea	FL 36 W x 2 ea
Germicidal UV Lamp	UV 20 W x 1 ea	UV 30 W x 1 ea	UV 30 W x 1 ea	UV 40 W x 1 ea
Utility	2 x Power Consent, 1 x Gas Cock, 1 x Air Cock			
Power Rating	1.0 Amp	1.5 Amp	1.5 Amp	1.6 Amp
Power Plug	CEE 7/7 Schuko			



➤ Bio-Suction Pump

Model JSBS-5000 Bio-Suction is an economical, compact and portable solution for aspirating tissue culture samples, aqueous solutions, buffers, culture media residual suction.

Two stage oil-free piston pump provides a high flow rate and powerful vacuum aspiration.

4000 cc glass autoclavable collection receiver bottle with over flow protection stopper protects liquid ingested into the pump system which may lead to the valve failing or a diaphragm rupturing. Pump automatically shut down when full and a hydrophobic PTFE inline filter further protects the pump from aerosol ingestion.

Hands free foot pedal switch provides convenient On/ Off operation.

Built-in silencer provides comfortable noise-free operation

➤ Bio-Suction Pump

	JSBS-3000	JSBS-5000
Pumping Capacity	20 liter / min	40 liter / min
Ultimate Vacuum	650 mmHg (-0.08 Mpa ABS)	
Collection Bottle	4000 cc	
Capacity	Glass Bottle /w Cap	
Material	Cap with overflow protection cut-off level sensor	
Utility	Inlet / Outlet Fitting /w Cap	
Pump Control	On / Off / Foot Pedal	
Safety	Φ50 mm Hydrophobic inline PTFE filter protects aerosol ingestion	
Convenience	Automatic pump shut off when bottle is full	
	Built-in Silencer	
	Portable carrying handle	
Accessories included	Main body built-in vacuum pump system	
	Collection receiver bottle	
	Φ50 mm inline PTFE filter	
	Foot Pedal	
	Silencer	
	Silicone Tubing	
Dimensions	240 x 370 x 330 mm	250 x 400 x 330 mm
Electrical Requirement	220 VAC 50 / 60 Hz	

**Drying ovens with Natural air convection** (Powder coated steel/stainless steel housing & acid proof stainless steel interior)

*IQ/OQ/PQ Document, CE, ISO Certified*



SL 15 SL 32 SL 53 SL 115 SL 180 SL 240 SL 400 SL 750 SL 1000

Parameter	SL 15	SL 32	SL 53	SL 115	SL 180	SL 240	SL 400	SL 750	SL 1000	
air convection	natural (SLN) / forced (SLW)				forced (SLW)					
chamber capacity [l]	15	32	56	112	180	245	424	749	1005	
door type	solid			solid/door with viewing window (option)						
temperature range	+5°C above ambient temperature. +300 °C									
temperature resolution [°C]	every 0,1									
controller	microprocessor with external LCD graphic display									
interior	acid-proof stainless steel toDIN 1.4301									
housing	powder coated sheet									
	INOX/G	stainless steel linen finish								
overall dims [mm]	A width	510	590	590	650	650	810	1010	1260	1260
	B height	550	630	700	850	1030	1200	1430	1600	2000
	C depth	440	500	600	700	760	760	750	850	850
internal dims [mm]	D width	320	400	400	460	470	600	800	1040	1040
	E height	230	320	390	540	720	800	1040	1200	1610
	F depth	200	250	360	450	560	510	510	600	600
max shelf workload [kg]	-	10	10	25	25	25	25	25	-	-
	PW version	-	-	50	50	50	100	100	100	100
max unit workload [kg]	-	20	30	40	60	75	90	120	140	-
	W version	-	-	80	120	120	300	300	300	300
nominal power [W]	600	1100	1600	2400	2400	3000	3900	5400	5400	
weight [kg]	27	35	50	65	94	126	174	260	330	
over temperature protection	class 2.0 according to DIN 12880 / class 3.1 (option) / 3.1 in TOP+									
power supply*	230 V 50 Hz						400 3/N			
shelves fitted/max	1/2	1/3	2/5	2/7	3/9	3/10	3/14	5/16	6/22	
manufacturer	POL-EKO-APARATURA									

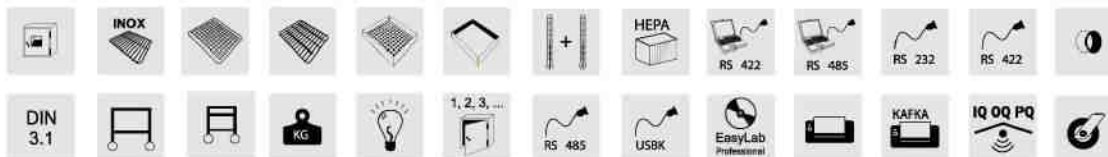
all the above technical data refer to standard units (without optional accessories)

\* - 230V 60Hz, 115V 60Hz also available

- 1 - working capacity of chamber can be smaller
- 2 - depth doesn't include 50 mm of power cable
- 3 - reinforced shelf
- 4 - reinforced version
- 5 - on uniformly loaded surface

All data on temperature stability and uniformity available on [www.pol-eko.eu](http://www.pol-eko.eu).

**Options and accessories** (icon description see pages 56-57)



## ► Laboratory incubators with Natural air convection (Powder coated steel/stainless steel housing & acid proof stainless steel interior)

*IQ/OQ/PQ Document, CE, ISO Certified*



CL 15    CL 32    CL 53    CL 115    CL 180    CL 240    CL 400    CL 750    CL 1000

Parameter

air convection		natural (CLN) / forced (CLW)					forced (CLW)			
chamber capacity [l]		15	32	56	112	180	245	424	749	1005
door type		double		double/door with viewing window (option)						
temperature range		+5°C above ambient temperature.+100 °C								
temperature resolution [°C]		every 0,1								
controller		microprocessor with external LCD graphic display								
interior		acid-proof stainless steel toDIN 1.4301								
housing	-	powder coated sheet								
	INOX/G	stainless steel linen finish								
overall dims [mm]	A width	510	590	590	650	650	810	1010	1260	1260
	B height	550	630	700	850	1030	1200	1430	1600	2000
	C depth	440	500	600	700	760	760	750	850	850
internal dims [mm]	D width	320	400	400	460	470	600	800	1040	1040
	E height	230	320	390	540	720	800	1040	1200	1610
	F depth	200	250	360	450	560	510	510	600	600
max shelf workload [kg]	-	10	10	25	25	25	25	25	-	-
	PW <sup>1</sup> version	-	-	50	50	50	100	100	100	100
max unit workload [kg]	-	20	30	40	60	75	90	120	140	-
	W <sup>2</sup> version	-	-	80	120	120	300	300	300	300
nominal power [W]		300	300	400	400	850	800	1200	1800	1800
weight [kg]		27	35	50	65	94	126	174	260	330
over temperature protection		class 2.0 according to DIN 12880 / class 3.1 (option) / 3.1 in TOP+								
power supply*		230 V 50 Hz								
shelves fitted/max		1/2	1/3	2/5	2/7	3/9	3/10	3/14	5/16	6/22
manufacturer		POL-EKO-APARATURA								

all the above technical data refer to standard units (without optional accessories)

\* - 230V 60Hz, 115V 60Hz also available

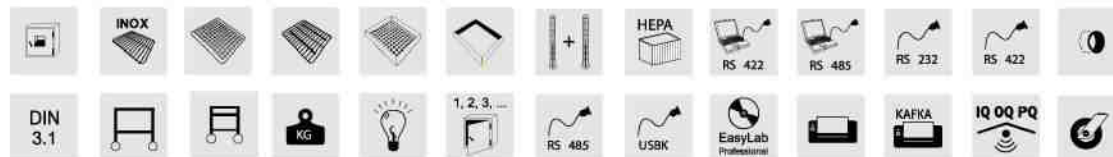
1 - working capacity of chamber can be smaller  
 2 - depth doesn't include 50 mm of power cable

3 - reinforced shelf  
 4 - reinforced version

5 - on uniformly loaded surface

All data on temperature stability and uniformity available on [www.pol-eko.eu](http://www.pol-eko.eu).

### ► Options and accessories (icon description see pages 56-57)



➤ **Cooled (BOD) incubators with Forced air convection** (Powder coated steel/stainless steel housing & acid proof stainless steel interior)

IQ/OQ/PQ Document, CE, ISO Certified



ILW 53      ILW 115      ILW 240      ILW 400      ILW 750



Parameter	ILW 53	ILW 115	ILW 240	ILW 400	ILW 750	
air convection	forced					
chamber capacity [l]	56	112	245	424	749	
door type	double/door with viewing window (option)					
temperature range [°C]	-10 (option)/ 0...+70 (+100 for TOP+ version)					
temperature resolution [°C]	every 0,1					
controller	microprocessor with external LCD graphic display					
interior	acid-proof stainless steel to DIN 1.4301					
housing	powder coated sheet					
	INOX/G stainless steel linen finish					
overall dims [mm]	A width	690	660	820	1040	1260
	B height	960	1080	1430	1650	1820
	C depth	600	710	760	740	860
internal dims [mm]	D width	400	460	600	800	1040
	E height	390	540	800	1040	1200
	F depth	360	450	510	510	600
max shelf workload [kg]	-	25	25	25	25	25
	PW version	50	50	100	100	100
max unit workload [kg]	-	40	60	90	120	140
	W version	80	120	300	300	300
nominal power [W]	400	400	800	1200	1800	
weight [kg]	69	90	140	185	275	
over temperature protection	class 2.0 according to DIN 12880 / class 3.3 (option) / 3.3 in TOP+					
power supply*	230 V 50 Hz					
shelves fitted	2/5	2/7	3/10	3/14	5/16	
manufacturer	POL-EKO-APARATURA					

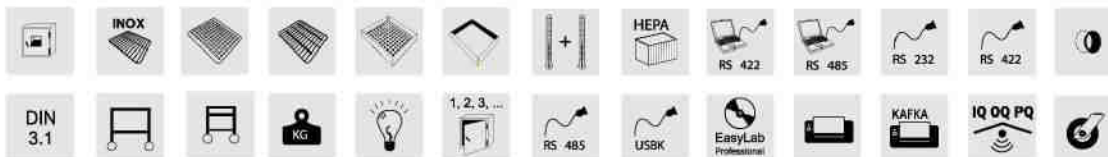
all the above technical data refer to standard units (without optional accessories)

\* - 230V 60Hz, 115V 60Hz also available

- 1 - working capacity of chamber can be smaller      3 - reinforced shelf      5 - on uniformly loaded surface
- 2 - depth doesn't include 50 mm of power cable      4 - reinforced version

All data on temperature stability and uniformity available on [www.pol-eko.eu](http://www.pol-eko.eu).

➤ **Options and accessories** (icon description see pages 56-57)



➤ **Cooled (BOD) incubators with Forced air convection** (Powder coated steel/stainless steel housing & acid proof stainless steel interior)

*IQ/OQ/PQ Document, CE, ISO Certified*



Parameter	ST 1	ST 2	ST 3	ST 4	ST 5	ST 6	ST 500	ST 700	ST 1200	ST 1450	
air convection	forced										
chamber capacity [l]	70	150	200	250	300	400	500	625	1365	1460	
working capacity [l]	55	122	163	203	243	324	386	450	1229	1307	
door type	solid / glass or double (option)										
temperature range [°C]	+3...+40 / up to +70 (option) / +3...+70 in PREM TOP+										
temperature resolution [°C]	every 0,1										
controller	microprocessor with external LCD graphic display										
interior:	COMF/S	stainless steel to DIN 1.4016									
	PREM (TOP+)	stainless steel to DIN 1.4301									
	PREM/S (TOP+)	stainless steel to DIN 1.4301									
housing	COMF/S	polished stainless steel									
	PREM (TOP+)	powder coated sheet									
	PREM/S (TOP+)	polished stainless steel									
overall dim <sup>s</sup> [mm]	A width	570	620	620	620	620	620	660	750	1480	1450
	B height	600	860	1060	1260	1460	1860	1990	1990	1990	1970
	C depth	680	650	650	650	650	650	810	860	860	950
	D width	430	480	480	480	480	480	430	480	2x480	2x490
	D' width	470	520	520	520	520	520	510	600	1310	1340
	E height	430	660	860	1060	1260	1660	1510	1510	1510	1460
	F depth	300	420	420	420	420	420	650	690	690	750
	F' depth	360	480	480	480	480	480	-	-	-	-
	G depth	-	320	320	320	320	320	-	-	-	-
internal dim <sup>s</sup> [mm]	H height	-	440	640	840	1050	1440	-	-	-	-
	I height	-	-	-	-	-	-	1380	1360	1360	1300
	max shelf workload [kg]	-	10	10	10	10	10	20	30	30	30
	Pw <sup>2</sup> version	-	on request					100	100	100	100
max unit workload [kg]	-	20	30	40	50	60	60	100	150	300	300
	W <sup>1</sup> version	-	on request								
nominal power [W]	160	170	170	330	330	330	400	400	550	550	
weight [kg]	32	54	59	69	75	90	105	115	185	200	
over temperature protection	class 1.0 to DIN 12880 / class 3.3 (option) / class 3.3 in PREM TOP+										
power supply*	230V 50 Hz										
shelves fitted/max	2/2	3/4	3/4	4/6	4/7	4/10	3/11	3/11	2 x 3/1 f <sup>1</sup>	2 x 3/1 f <sup>1</sup>	
manufacturer	POL-EKO-APARATURA										

all the above technical data refer to standard units (without optional accessories)

\* - 230V 60Hz, 115V 60Hz also available

1 - additional internal glass door

2 - ST 1-6 in TOP+ version are 60 mm high depth doesn't include 50 mm of power cable

3 - dims of units with double door can be smaller

4 - on uniformly loaded surface

5 - reinforced shelf

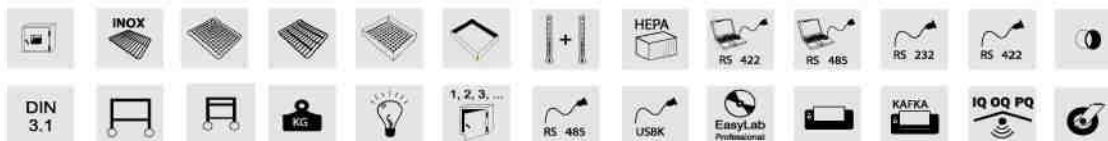
6 - reinforced version

7 - for units in BASIC version with solid door

8 - two columns with 3 shelves each

All data on temperature stability and uniformity available on [www.pol-eko.eu](http://www.pol-eko.eu).

➤ **Options and accessories** (icon description see pages 56-57)



## Laboratory Refrigerator (Fully steel/stainless steel housing)

IQ/OQ/PQ Document, CE, ISO Certified



Parameter	CHL 1	CHL 2	CHL 3	CHL 4	CHL 5	CHL 6	CHL 500	CHL 700	CHL 1200	CHL 1450	
air convection	forced										
chamber capacity [l]	70	150	200	250	300	400	500	625	1365	1460	
working capacity [l]	55	122	163	203	243	324	386	450	1229	1307	
door type	solid / glass or doublé (option)										
temperature range [°C]	0...+15					0...+15 / -10...+15 (option)					
temperature resolution [°C]	every 0,1										
controller	microprocessor with external LCD graphic display										
interior	COMF/S	stainless steel to DIN 1.4016									
	PREM (TOP+)	stainless steel to DIN 1.4301									
	PREM/S (TOP+)	stainless steel to DIN 1.4301									
housing	COMF/S	polished stainless steel									
	PREM (TOP+)	powder coated sheet									
	PREM/S (TOP+)	polished stainless steel									
overall dim <sup>2</sup> [mm]	A width	570	620	620	620	620	620	660	750	1480	1450
	B height	600	860	1060	1260	1460	1860	1990	1990	1990	1970
	C depth	680	650	650	650	650	650	810	860	860	950
	D width	430	480	480	480	480	480	430	480	2x480	2x490
	D' width	470	520	520	520	520	520	510	600	1310	1340
	E height	430	660	860	1060	1260	1660	1510	1510	1510	1460
	F depth	300	420	420	420	420	420	650	690	690	750
	F' depth	360	480	480	480	480	480	-	-	-	-
	G depth	-	320	320	320	320	320	-	-	-	-
	H height	-	440	640	840	1050	1440	-	-	-	-
max shelf workload [kg]	-	10	10	10	10	10	20	30	30	30	
	Pw <sup>o</sup> version	on request					100	100	100	100	100
max unit workload [kg]	-	20	30	40	50	60	60	100	150	300	
	W <sup>o</sup> version	on request									
nominal power [W]	160	170	170	330	330	330	400	400	550	550	
weight [kg]	32	54	59	69	75	90	105	115	185	200	
over temperature protection	class 1.0 to DIN 12880 / class 3.2 (option) / class 3.2 in PREM TOP+										
power supply*	230 V 50 Hz										
shelves fitted/max	2/2	3/4	3/4	4/6	4/7	4/10	3/11	3/11	2 x 3/11 <sup>†</sup>	2 x 3/11 <sup>†</sup>	
manufacturer	POL-EKO-APARATURA										

all the above technical data refer to standard units (without optional accessories)

- \* - 230V 60Hz, 115V 60Hz also available
- 1 - additional internal glass door
- 2 - depth doesn't include 50 mm of power cable
- 3 - dims of units with double door can be smaller
- 4 - on uniformly loaded surface
- 5 - reinforced shelf
- 6 - reinforced version
- 7 - for units in BASIC version with solid door

All data on temperature stability and uniformity available on [www.pol-eko.eu](http://www.pol-eko.eu).

### Options and accessories (icon description see pages 56-57)



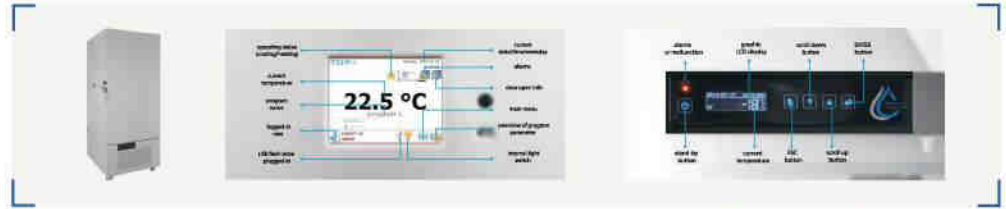


## ↘ Laboratory Freezer (Fully steel/stainless steel housing)

*IQ/OQ/PQ Document, CE, ISO Certified*



Laboratory freezers can freeze and store frozen samples.



ZLN 85      ZLN-T 125      ZLN-T 200      ZLN-T 300      **new!** ZLW-200      **new!** ZLW-300



Parameter		ZLN 85	ZLN-T 125	ZLN-T 200	ZLN-T 300	ZLW-200	ZLW-300
air convection		natural				forced	
chamber capacity [l]		95	130	210	310	210	310
working capacity [l]		76	109	180	262	140	213
door type		solid					
temperature range [°C]		-25...0		-40...0			
temperature resolution [°C]		every 0,1					
controller		microprocessor with external LCD graphic display					
interior	COMF	stainless steel to DIN 1.4016					
	COMF/S	stainless steel to DIN 1.4016					
	PREM	stainless steel to DIN 1.4301					
	PREM/S	stainless steel to DIN 1.4301					
housing	COMF	powder coated sheet					
	COMF/S	polished stainless steel					
	PREM	powder coated sheet					
	PREM/S	polished stainless steel					
overall dims [mm]	A width	610	660	760	760	760	760
	B height	880	1190	1380	1730	1380	1730
	C depth	650	800	800	800	800	800
	D width	380	370	450	450	450	450
	D+ width	420	420	520	520	520	520
internal dims [mm]	E height	590	600	770	1120	770	1120
	F depth	400	520	520	520	520	520
	F+ depth	440	530	530	530	530	530
	G depth	230	-	-	-	-	-
	I depth	210	-	-	-	-	-
	J depth	-	-	-	-	600	910
	-	10	10	10	10	-	-
max shelf workload [kg]	Pw <sup>1</sup> version	-	50	50	50	-	-
	-	30	50	65	80	-	-
max unit workload [kg]	-	-	100	130	160	160	160
	W <sup>2</sup> version	-	-	-	-	-	-
nominal power [W]		200	450	470	470	500	500
weight [kg]		60	90	120	185	120	185
power supply*		230 V 50 Hz					
shelves fitted/max		2/4	2/3	2/4	3/6	2/4	3/6
manufacturer		POL-EKO-APARATURA					

all the above technical data refer to standard units (without optional accessories)

\* - 230V 60Hz, 115V 60Hz also available

1 - depth doesn't include 50 mm of power cable

2 - on uniformly loaded surface

3 - reinforced shelf

4 - reinforced version

All data on temperature stability and uniformity available on [www.pol-eko.eu](http://www.pol-eko.eu).

### Options and accessories (icon description see pages 56-57)



## Ultra-Low Freezer (Fully steel/stainless steel housing)

*IQ/OQ/PQ Document, CE, ISO Certified*

### Controller advantages

- temperature range -86...-40°C
- full stainless steel shelves with hole
- quality control protocol (-80°C)
- English instruction manual
- available menu languages: Czech, English, Estonian, French, German, Italian, Latvian, Polish, Portuguese, Russian, Spanish
- access port: Ø20 mm
- door lock
- external solid door and internal solid door for each chamber
- wheels
- controller spare batteries in case of power failure - alarm output
- additional port for installation of CO<sub>2</sub> & Pt100 backup



ZLN-UT 200 **New!**      ZLN-UT 300



#### Parameter

Parameter		ZLN-UT 200	ZLN-UT 300
air convection		natural	
chamber capacity [l]		237	326
number of boxes 133x133x50mm [pcs]		108	144
door type		solid	
temperature range [°C]		-86...-40	
temperature resolution [°C]		every 0,1	
cooling time from +20°C to -80°C [h]		3,5	3,5
heating time in case of power failure -80 °C to -60 °C [h]		1,5	1,5
controller		microprocessor with external LCD graphic display	
interior	COMF	stainless steel to DIN 1.4016	
	PREM	stainless steel to DIN 1.4001	
housing		powder coated sheet	
overall dims [mm]	A width	850	850
	B height	1620	1910
	C depth	950	950
	D width	520	520
	E height	830	1140
	F depth	550	550
	G height	240	240
internal dims [mm]			
max unit workload[kg]		65	80
max shelf workload[kg]		10	10
nominal power [W]		670	670
energy consumption 24h [kWh]t -80°C		16	18
weight [kg]		180	200
power supply*		230 V 50 Hz	
number of internal chambers		3	4
manufacturer		POL-EKO-APARATURA	



all the above technical data refer to standard units (without optional accessories)

\* - 230V 60Hz, 115V 60Hz also available

1 - depth doesn't include 50 mm of power cable

All data on temperature stability and uniformity available on [www.pol-eko.eu](http://www.pol-eko.eu).

### Options and accessories (icon description see pages 56-57)



## ▶ Laboratory Sterilizer (Powder coated steel/stainless steel housing & acid proof stainless steel interior)

*IQ/OQ/PQ Document, CE, ISO Certified*



### ▶ Sterilizers are equipped with the following features:

- factory preset sterilizing programs
- door locked automatically while sterilizing
- air-flap closed automatically after launching the program
- 20 user programs memory

Sterilizers are available in the STD version only.



Parameter	SR 53	SR 115	SR 240	SR 400	SR 750	SR 1000	
air convection	natural (SRN) / forced (SRW)		forced (SRW)				
chamber capacity [l]	56	112	245	424	749	1005	
door type	solid / door with viewing window (option)						
temperature range	5°C above ambient temperature. +250°C						
temperature resolution [°C]	every 0,1						
controller	microprocessor with external LCD graphic display						
interior	acid-proof stainless steel to DIN 1.4301						
housing	-	powder coated sheet					
	INOX/G	stainless steel linen finish					
overall dim <sup>2</sup> [mm]	A width	590	650	810	1010	1260	1260
	B height	700	850	1200	1430	1600	2000
	C depth	600	700	760	750	850	850
	D width	400	460	600	800	1040	1040
internal dims [mm]	E height	390	540	800	1040	1200	1610
	F depth	360	450	510	510	600	600
	-	25	25	25	25	-	-
max shelf workload [kg]	PW <sup>1</sup> version	50	50	100	100	100	100
max unit workload [kg]		40	60	90	120	140	-
nominal power [W]		1600	2400	3000	3900	5400	5400
weight [kg]		50	65	126	174	260	330
over temperature protection	class 2.0 to DIN 12880 / class 3.1 (option)						
power supply*	230 V 50 Hz			400 3/N			
shelves fitted/max	2/5	2/7	3/10	3/14	5/16	6/22	
manufacturer	POL-EKO-APARATURA						

all the above technical data refer to standard units (without optional accessories)

\* 230V 60Hz, 3P 230V 60Hz also available

- 1 - working capacity of chamber can be smaller      3 - reinforced shelf  
 2 - depth doesn't include 50 mm of power cable      4 - on uniformly loaded surface

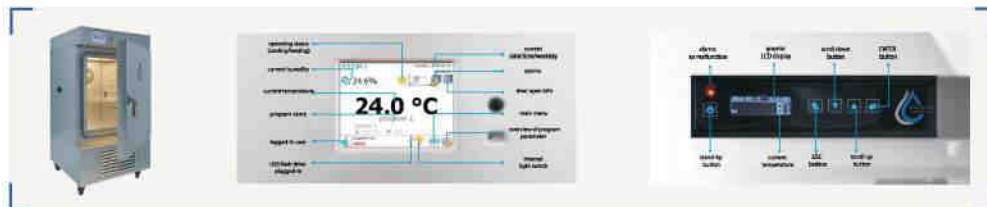
All data on temperature stability and uniformity available on [www.pol-eko.eu](http://www.pol-eko.eu).

### ▶ Options and accessories (icon description see pages 56-57)



## Stability / Climatic Chamber (Powder coated steel/stainless steel housing & acid proof stainless steel interior)

*IQ/OQ/PQ Document, CE, ISO Certified*



Parameter	KK 115	KK 240	KK 350	KK 400	KK 500	KK 700	KK 750	KK 1200	KK 1450	
air convection	forced									
chamber capacity [l]	112	245	335	424	493	625	749	1365	1467	
working capacity [l]	112	245	335	424	386	450	749	1229	1307	
door type	double (external solid, internal glass) / external glass (option)									
temperature range [°C]	-10...+60									
FIT version	-10...+60°C (with light on +10...+50 C)									
temperature resolution [°C]	every 0,1									
relative humidity range [%]	30...90 (see working temperature and humidity chart for details on page 64)									
humidity resolution [%]	every 1									
controller	microprocessor with external LCD graphic display									
interior	acid-proof stainless steel to DIN 1.4301									
housing	powder coated sheet									
INOX/G	stainless steel linen finish									
overall dims [mm]	A width	650	810	640	1020	630	730	1250	1460	1440
	B height	1160	1600	2000	1840	1990	2000	2000	1990	1970
	C depth	960	1000	980	1000	1040	1070	1100	1070	1170
	D width	460	600	500	800	510	600	1040	1310	1340
	D' width	-	-	-	-	510	600	-	1310	1340
	E height	540	800	1340	1040	1510	1510	1200	1510	1460
internal dims [mm]	F depth	450	510	500	510	640	690	600	690	750
	I height	-	-	1270	-	1380	1360	-	1360	1300
	max shelf workload [kg]	10	10	10	10	20	30	-	30	30
PW version	50	100	100	100	100	100	100	100	100	
max unit workload [kg]	60	90	100	120	100	150	140	300	300	
nominal power [W]	-	1000	1500	1400	2000	1600	1600	2500	2200	2200
	FIT version	1200	1800	2600	2300	2000	2000	2900	3000	3000
weight [kg]	90	140	125	185	130	170	275	220	230	
over temperature protection	class 3.3 to DIN 12880									
power supply*	230 V 50 Hz									
shelves fitted/max	2/7	3/10	3/11	3/14	3/11	3/11	5/16	2 x 3/11	2 x 3/11	
warranty	24 months									
manufacturer	POL-EKO-APARATURA									

all the above technical data refer to standard units (without optional accessories)

\* - 230V 60Hz, 115V 60Hz also available

1 - external dimensions for units without FIT option, depth doesn't include 50 mm of power cable

2 - on uniformly loaded surface 3 - reinforced shelf

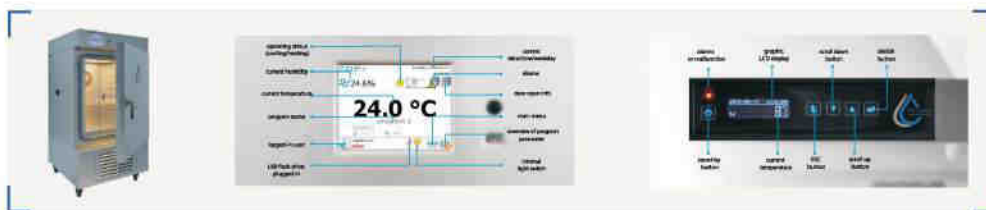
All data on temperature stability and uniformity available on www.pol-eko.eu.

### Options and accessories (icon description see pages 56-57)



## ➤ Growth Chambers with phytotron system (Powder coated steel/stainless steel housing & acid proof stainless steel interior)

*IQ/OQ/PQ Document, CE, ISO Certified*



Parameter	KKS 115	KKS 240	KKS 400	KKS 750	
air convection	forced				
chamber capacity [l]	112	245	424	749	
working capacity [l]	112	245	424	749	
door type	double (external solid, internal glass) / external glass (option)				
temperature range [°C]	-10...+100				
FIT version	-10...+60°C (with light on +10...+50 C)				
temperature resolution [°C]	every 0,1				
relative humidity range [%]	10...90 (see working temperature and humidity chart for details on page 64)				
humidity resolution [%]	every 1				
controller	microprocessor with external LCD graphic display				
interior	acid-proof stainless steel to DIN 1.4301				
housing	powder coated sheet				
INOX/G	stainless steel linen finish				
overall dims [mm]	A width	650	810	1020	1250
	B height	1160	1600	1840	2000
	C depth	960	1000	1000	1100
	D width	460	600	800	1040
internal dims [mm]	E height	540	800	1040	1200
	F depth	450	510	510	600
	max shelf workload [kg]	10	10	10	-
PW <sup>3</sup> version	50	100	100	100	
max unit workload [kg]	60	90	120	140	
nominal power [W]	2000	2200	3475	4165	
FIT version	2050	2520	3625	4325	
weight [kg]	103	140	185	275	
over temperature protection	class 3.3 to DIN 12880				
power supply*	230V 50Hz				
shelves fitted/max	2/7	3/10	3/14	5/16	
warranty	24 months				
manufacturer	POL-EKO-APARATURA				

all the above technical data refer to standard units (without optional accessories)

\* - 230V 60Hz, 115V 60Hz also available

1 - external dimensions for units without FIT option, depth doesn't include 50 mm of power cable

2 - on uniformly loaded surface      3 - reinforced shelf

All data on temperature stability and uniformity available on [www.pol-eko.eu](http://www.pol-eko.eu).

### ➤ Options and accessories (icon description see pages 56-57)



## Fume hood Cabinet

IQ/OQ/PQ Document, CE, ISO Certified



Parameter

		DSM 1200	DSM 1500	DSM 1800
overall dims [mm]	A width	1280	1580	1880
	B height	2325...2575	2325...2575	2325...2575
	C depth	940	940	940
working space dims [mm]	D width	1070	1370	1670
	E height	1100	1100	1100
	F depth	750	750	750
recommended airflow[m <sup>3</sup> /h]		450...650	650...850	850...1350
maximum power consumption [kW]			3,5	
power supply			230V 50HZ	
exit air sub pipe diameter [mm]		O 160	O 200	O 200
water supply			G 1 "	
sewage connection diameter [mm]			O 50	
standard airflow sensor Q-Flow type		yes, conformity with standards PN-EN 14 175-2		
standard equipment		2x electrical socket 230V (IP44) 2x cold water tap 1x sink		
electrical insulation class		class		
permissible work board load [kPa]		2	4	5
manufacturer		POL-EKO-APARATURA		



### Smay Easy

- monitoring of the current flow with visual and acoustic alarms
- operation panel equipped with LEDs signaling diodes
- air flow measurement by the measuring module
- control of light and fan
- alarm indicating that sash window exceeds the maximum opening height
- group alarm signal with possibility to define its components



### Smay SL-HLM

- adjustable air flow
- automatic sash window
- ability to set operation levels
- extended version of SMAY Easy controller



### Q-Flow - air flow sensor

- controlling functions with alarm status indicated by visual and acoustic signal in case of decreased air flow
- alarm indicating that the sash window exceeds the maximum opening height<sup>5</sup>
- display showing current airflow in m<sup>3</sup>/h
- controlled and indicated alarm status
- recognition and optical signaling power failure
- continuous work even after power failure build-in battery
- control offume cupboard illumination



## Laboratory shakers



### Advantages

- orbital movement
- microprocessor control of rotation and time
- orbital diameter: 10...25 mm
- max shaking weight: 10 kg
- variable speed control: 30...300 rpm
- shaking mode: from 1 min to 99 h, or continuous operation
- LCD digital display
- anti-skid mat (option)
- various shaking tables
- can be located inside cooled incubators

### Accessories

- universal shaking table
- separating funnel attachment
- fixing clip support
- dish attachment
- test tube support
- Erlenmeyer flasks (25...2000 ml) attachment
- Anti-skid mat

LS 280



LS 350



LS 500



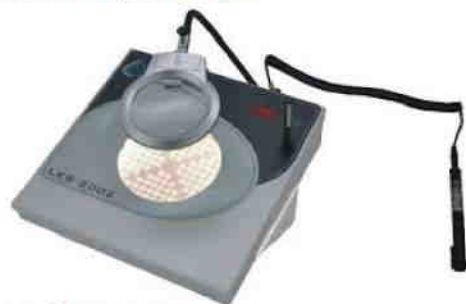
LS 700



### Parameter

movement	orbital					
controller	microprocessor					
display	LCD display					
speed range [rpm]	30 ... 500		30 ... 300			
accuracy [rpm]	10					
amplitude [mm]	5		5 or 10			
max load capacity [kg]	10					
shaking mode	1 min. ... 99 h or continuous operation					
dimensions without / with shaking table [mm]	width	320	390	550	700	
	height	120 / 220	120 / 220	120 / 220	120 / 220	
	depth	330	400	440	420	
fits to cooled incubator	ILW 53	ILW 115	ILW 240	ILW 400		
ambient temperature [W]	60		60			
weight with shaking table [kg]	10		15		22	25
ambient temperature [°C]	+10...+40					
humidity [%]	up to 70					
voltage 50/60Hz [V]	230 V 50 Hz					
warranty	24 months					
manufacturer	POL-EKO-APARATURA					

## Colony Counter



### Standard features

- colony counter
- magnifying glass
- standard marker
- bright and dark background
- Petri plates adapters
- Wolfhuegel scale plate

LKB 2002



### Advantages

- automatic weight compensation of Petri plates
- anti-shock counting technology
- ringlight technology enables even illumination of the counting field
- possibility of working with bright or dark background
- mean value calculation function
- standard marker included
- optional marker ZM 2002 for external counting
- Petri plates adapters (diameter < 120 mm)
- removable Wolfhuegel scale plate
- adjustable push force
- sound and visual counting control
- adjustable position of the magnifying glass
- affordable price

### Parameter

counting field diameter [mm]	120		
display	LED (0...999)		
magnifying glass	2,5 X		
illumination	20 W ringlight		
dims [mm]	width x depth x height	300 x 325 x 90	
weight [kg]	4,9		
nominal power [W]	22		
voltage 50/60 Hz [V]*	230		
warranty	24 months		
manufacturer	POL-EKO-APARATURA		

\* 115V 60Hz also available

Options and Accessories



Internal glass door  
Order number: \*/C

External glass door  
Order number: \*/A

Door with viewing window  
Order number: \*/A

Wire shelf  
Order number: \*/P

INOX  
Stainless steel wire shelf  
Order number: \*/P INOX

Perforated shelf  
Order number: \*/PP

Full shelf with hole  
Order number: \*/PO

Reinforced shelf  
Order number: \*/PW

Stainless steel cuvettes  
Order number: KUW GN\*/\*

ALU  
Aluminum drawer with powder coated slides  
Order number: ST/CHL/SWP ALU

INOX  
Stainless steel drawer with powder coated slides  
Order number: ST/CHL/SWP INOX

INOX/INOX  
Stainless steel drawer with stainless steel slides  
Order number: ST/CHL/SWPN INOX

Pharma organizer  
Order number: ORG-FARM

Wheels  
Order number: QLK\*

Table with wheels  
Order number: \*/S or \*/S INOX

Base on castors  
Order number: \*/ST or \*/ST INOX

AUTO  
Automatic defrosting function  
Order number: \*PLUS

Low temperature version  
Order number: \*/T

+70°C  
Extended temperature range to 70°C  
Order number: ST/70

Reinforced version  
Order number: \*/W

Interior lighting  
Order number: OWW/LED

50...100%  
Fan speed control  
Order number: ST/CHL/WENT

Phytotron system  
Order number: \*/FIT

Photoperiodic system  
Order number: \*/FOT
























90%  
30%  
FIT panels independent control  
Order number: FIT/R3

1, 2, 3, ...  
Door opening counter  
Order number: LOD

	ST		CHL		ZL	CL		IL		SL		SR	KK
	P	TOP+	P	TOP+	P	STD	TOP+	STD	TOP+	STD	TOP+	STD	TOP+
Internal glass door	✓	✓	✓	✓	—	S	S	S	S	—	—	—	S
External glass door	✓	✓	✓	✓	—	—	—	—	—	—	—	—	✓
Door with viewing window	—	—	—	—	—	✓	✓	✓	✓	✓	✓	✓	✓
Wire shelf	✓	—	✓	—	—	—	—	—	—	—	—	—	—
INOX Stainless steel wire shelf	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Perforated shelf	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Full shelf with hole	—	—	—	—	✓	—	—	—	—	—	—	—	—
Reinforced shelf	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Stainless steel cuvettes	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
ALU Aluminum drawer with powder coated slides	✓	✓	✓	✓	—	—	—	—	—	—	—	—	—
INOX Stainless steel drawer with powder coated slides	✓	✓	✓	✓	—	—	—	—	—	—	—	—	—
INOX/INOX Stainless steel drawer with stainless steel slides	✓	✓	✓	✓	—	—	—	—	—	—	—	—	—
Pharma organizer	✓	✓	✓	✓	—	—	—	—	—	—	—	—	—
Wheels	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	S
Table with wheels	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Base on castors	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
AUTO Automatic defrosting function	✓	✓	✓	✓	—	—	—	✓	✓	—	—	—	S
Low temperature version	—	—	✓	✓	—	—	—	✓	✓	—	—	—	—
+70°C Extended temperature range to 70°C	✓	S	—	—	—	—	—	—	—	—	—	—	—
Reinforced version	—	—	—	—	✓	✓	✓	✓	✓	✓	✓	✓	—
Interior lighting	S	S	S	S	✓	✓	✓	✓	✓	✓	✓	✓	—
50...100% Fan speed control	✓	S	✓	S	—	S	S	S	S	S	S	S	S
Phytotron system	—	✓	—	—	—	—	—	—	✓	—	—	—	✓
Photoperiodic system	✓	—	—	—	—	—	—	✓	—	—	—	—	—
90% 30% FIT panels independent control	—	✓	—	—	—	—	—	—	✓	—	—	—	✓
1, 2, 3, ... Door opening counter	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓



## Options and Accessories

	ST		CHL		ZL	CL		IL		SL		SR	KK
	P	TOP+	P	TOP+	P	STD	TOP+	STD	TOP+	STD	TOP+	STD	TOP+
 Additional temperature sensor Order number: PT 100	-	✓	-	✓	-	✓	✓	✓	✓	✓	✓	✓	✓
 Internal socket Order number: GNZ	✓	✓	✓	✓	-	✓	✓	✓	✓	-	-	-	-
 HEPA - fresh air filter Order number: HEPA	-	-	-	-	-	✓	✓	-	-	✓	✓	✓	-
 Humidity measurement Order number: PHR	-	✓	-	✓	-	✓	✓	✓	✓	-	-	-	✓
 Non-standard access port for external sensor Order number: O CZ/N	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
 Container for deionized water Order number: KK/Z	-	-	-	-	-	-	-	-	-	-	-	-	✓
 Container for waste water Order number: KK/K	-	-	-	-	-	-	-	-	-	-	-	-	✓
 Low water level sensor Order number: KK/CP	-	-	-	-	-	-	-	-	-	-	-	-	✓
 RS 422 interface (instead of RS 232) Order number: RS422	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
 RS 485 interface (instead of RS 232) Order number: RS485	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
 RS 232 cable Order number: RSK	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
 RS 422 cable Order number: RSK/422	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
 RS 485 cable Order number: RSK/485	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
 USB cable Order number: USBK	✓	-	✓	-	✓	✓	-	✓	-	✓	-	✓	-
 Dot printer Order number: EPSON	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
 "Kafka" thermal printer Order number: KAFKA	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
 EasyLab - Professional software Order number: EasyLab Professional	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
 Calibration and IQ, OQ, PQ qualification Order number: BRT/*L or IQ/OQ/PQ	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
 Over temperature protection 3.1 class according to DIN 12880 Order number: */3.1	-	-	-	-	-	✓	S	-	-	✓	S	✓	-
 Over temperature protection 3.2 class according to DIN 12880 Order number: */3.2	-	-	✓	S	✓	-	-	-	-	-	-	-	-
 Over temperature protection 3.3 class according to DIN 12880 Order number: */3.3	✓	S	-	-	-	-	-	✓	S	-	-	-	S
 Chart recorder Order number: */RK	✓	✓	✓	✓	-	-	-	-	-	-	-	-	-
 Magnetic door lock Order number: ZKM	✓	✓	✓	✓	-	-	-	-	-	-	-	-	-

✓ - available

- - unavailable

S - standard equipment

P - BASIC, COMFORT, PREMIUM

## ↗ B-150R Series

Biological microscopes with rechargeable battery



### B-150R Series - Technical specifications

Model	Head	Eyepiece	Objectives	Stage	Condenser	Focusing	Illuminator
<b>B-151R</b>	Monocular	WF10x/18mm	Achromatic 4x/10x/40x	Plain stage, 125x120mm with sample clips	0,65 N.A. fixed, with diaphragm	Coaxial coarse and fine focusing mechanism with limit stop	1W LED with rechargeable battery
<b>B-153R</b>	Monocular	WF10x/18mm	Achromatic 4x/10x/40x/60x	Mechanical stage, 125x116mm with specimen holder	1,2 N.A. with diaphragm	Coaxial coarse and fine focusing mechanism with limit stop	1W LED with rechargeable battery
<b>B-155R</b>	Monocular	WF10x/18mm	Achromatic 4x/10x/40x/100x	Mechanical stage, 125x116mm with specimen holder	1,2 N.A. with diaphragm	Coaxial coarse and fine focusing mechanism with limit stop	1W LED with rechargeable battery
<b>B-157R</b>	Binocular	WF10x/18mm	Achromatic 4x/10x/40x/60x	Mechanical stage, 125x116mm with specimen holder	1,2 N.A. with diaphragm	Coaxial coarse and fine focusing mechanism with limit stop	1W LED with rechargeable battery
<b>B-159R</b>	Binocular	WF10x/18mm	Achromatic 4x/10x/40x/100x	Mechanical stage, 125x116mm with specimen holder	1,2 N.A. with diaphragm	Coaxial coarse and fine focusing mechanism with limit stop	1W LED with rechargeable battery
<b>B-150POL-MR</b>	Monocular	WF10x/18mm	Achromatic 4x/10x/40x	Rotatable stage 120mm diameter	1,2 N.A. fixed, with diaphragm	Coaxial coarse and fine focusing mechanism with limit stop	1W LED with rechargeable battery. Rotatable swing-out polarizer, slide-out analyzer
<b>B-150POL-BR</b>	Binocular	WF10x/18mm	Achromatic 4x/10x/40x	Rotatable stage 120mm diameter	1,2 N.A. fixed, with diaphragm	Coaxial coarse and fine focusing mechanism with limit stop	1W LED with rechargeable battery. Rotatable swing-out polarizer, slide-out analyzer
<b>B-150DMR</b>	Monocular	WF10x/18mm	Achromatic 4x/10x/40x	Mechanical stage, 125x116mm with specimen holder	1,2 N.A. with diaphragm	Coaxial coarse and fine focusing mechanism with limit stop	1W LED with rechargeable battery
<b>B-150DBR</b>	Binocular	WF10x/18mm	Achromatic 4x/10x/40x/100x	Mechanical stage, 125x116mm with specimen holder	1,2 N.A. with diaphragm	Coaxial coarse and fine focusing mechanism with limit stop	1W LED with rechargeable battery

## ↗ B-190 Series

Biological microscopes for the next teaching generation



### B-190 Series - Technical specifications

Model	Head	Eyepiece(s)	Nosepiece	Objectives	Stage	Focusing	Illuminator	Condenser	Power supply
<b>B-191</b>	Monocular, 360° rotating, 30° inclined.	Wide Field 10x/18mm	Quadruple, reversed	DIN Achromatic 4x/0,10, 10x/0,25, 40x/0,65, 100x/1,25	Double layer, 125x115 mm with 70x30mm X-Y moving range	Coaxial coarse and fine focusing	X-LED <sup>2</sup> system with adjustable intensity	1,25 N.A. Abbe type with adjustable height and iris diaphragm	100-240 Vac 50-60 Hz external power adapter 7,5Vdc output
<b>B-191s</b>	Monocular, 360° rotating, 30° inclined.	Wide Field 10x/18mm	Quadruple, reversed	DIN Achromatic 4x/0,10, 10x/0,25, 40x/0,65, 60x/0,85	Double layer, 125x115 mm with 70x30mm X-Y moving range	Coaxial coarse and fine focusing	X-LED <sup>2</sup> system with adjustable intensity	1,25 N.A. Abbe type with adjustable height and iris diaphragm	100-240 Vac 50-60 Hz external power adapter 7,5Vdc output
<b>B-192</b>	Binocular 360° rotating, 30° inclined with adjustable interpupillary distance and dioptic compensation	Wide Field 10x/18mm	Quadruple, reversed	DIN Achromatic 4x/0,10, 10x/0,25, 40x/0,65, 100x/1,25	Double layer, 125x115 mm with 70x30mm X-Y moving range	Coaxial coarse and fine focusing	X-LED <sup>2</sup> system with adjustable intensity	1,25 N.A. Abbe type with adjustable height and iris diaphragm	100-240 Vac 50-60 Hz external power adapter 7,5 Vdc output
<b>B-192s</b>	Binocular 360° rotating, 30° inclined with adjustable interpupillary distance and dioptic compensation	Wide Field 10x/18mm	Quadruple, reversed	DIN Achromatic 4x/0,10, 10x/0,25, 40x/0,65, 60x/0,85	Double layer, 125x115 mm with 70x30mm X-Y moving range	Coaxial coarse and fine focusing	X-LED <sup>2</sup> system with adjustable intensity	1,25 N.A. Abbe type with adjustable height and iris diaphragm	100-240 Vac 50-60 Hz external power adapter 7,5 Vdc output
<b>B-193</b>	Trinocular 360° rotating, 30° inclined with adjustable interpupillary distance and dioptic compensation	Wide Field 10x/18mm	Quadruple, reversed	DIN Achromatic 4x/0,10, 10x/0,25, 40x/0,65, 100x/1,25	Double layer, 125x115 mm with 70x30mm X-Y moving range	Coaxial coarse and fine focusing	X-LED <sup>2</sup> system with adjustable intensity	1,25 N.A. Abbe type with adjustable height and iris diaphragm	100-240 Vac 50-60 Hz external power adapter 7,5 Vdc output

## ↗ B-290 Series

Routine laboratory microscopes



### B-290 Series - Technical specifications

Model	Head	Eyepieces	Nosepiece	Objectives	Stage	Focusing	Illuminator	Condenser	Power supply
<b>B-292</b>	Binocular, 360° rotating, 30° inclined.	Wide Field 10x/20mm	Quadruple, reversed	E-PLAN Achromatic 4x/0,10, 10x/0,25, 40x/0,65, 100x/1,25	Double layer, 150x133 mm with X-Y moving range 75x50mm	Coaxial coarse and fine focusing	X-LED <sup>3</sup> system with adjustable intensity	Sliding-in, 1,25 N.A. Abbe type with adjustable height and iris diaphragm	100-240 Vac 50-60 Hz external power adapter 6Vdc output
<b>B-292PLi</b>	Binocular, 360° rotating, 30° inclined.	Wide Field 10x/20mm	Quadruple, reversed	Infinity corrected E-PLAN 4x/0,10, 10x/0,25, 40x/0,65, 100x/1,25	Double layer, 150x133 mm with X-Y moving range 75x50mm	Coaxial coarse and fine focusing	X-LED <sup>3</sup> system with adjustable intensity	Sliding-in, 1,25 N.A. Abbe type with adjustable height and iris diaphragm	100-240 Vac 50-60 Hz external power adapter 6Vdc output
<b>B-293</b>	Trinocular, 360° rotating, 30° inclined	Wide Field 10x/20mm	Quadruple, reversed	E-PLAN Achromatic 4x/0,10, 10x/0,25, 40x/0,65, 100x/1,25	Double layer, 150x133 mm with X-Y moving range 75x50mm	Coaxial coarse and fine focusing	X-LED <sup>3</sup> system with adjustable intensity	Sliding-in 1,25 N.A. Abbe type with adjustable height and iris diaphragm	100-240 Vac 50-60 Hz external power adapter 6Vdc output

## ↗ B-380 Series

Advanced biological microscopes for teachers



### B-380 Series - Technical specifications

Model	Head	Eyepieces	Objectives	Nosepiece	Stage	Focusing	Condenser	Illuminator
<b>B-382PL-ALC</b>	Binocular 360°rotating 30° inclined	Wide Field 10X/20 mm	E-PLAN 4x, 10x, 40x, 100x (oil)	Quintuple nosepiece, reversed	Double layer mechanical sliding stage, 160x140mm, moving range 78x54mm	Coaxial coarse and fine focusing with limit stop	Abbe condenser, sliding-in, N.A. 1.25 with centering system	X-LED <sup>3</sup> , with <b>Automatic Light Control</b>
<b>B-383PL</b>	Trinocular 360°rotating 30° inclined	Wide Field 10X/20 mm	E-PLAN 4x, 10x, 40x, 100x (oil)	Quintuple nosepiece, reversed	Double layer mechanical sliding stage, 160x140mm, moving range 78x54mm	Coaxial coarse and fine focusing with limit stop	Abbe condenser, sliding-in, N.A. 1.25 with centering system.	X-LED <sup>3</sup> , with manual brightness control
<b>B-382PLI-ALC</b>	Binocular 360°rotating 30° inclined	Wide Field 10X/20 mm	IOS E-PLAN 4x, 10x, 40x, 100x (oil)	Quintuple nosepiece, reversed	Double layer mechanical sliding stage, 216x150mm, moving range 78x54mm, <b>Belt-drive</b> in X direction	Coaxial coarse and fine focusing with limit stop	Abbe condenser, sliding-in, N.A. 1.25 with centering system.	X-LED <sup>3</sup> , with <b>Automatic Light Control</b>
<b>B-383PLI</b>	Trinocular 360°rotating 30° inclined	Wide Field 10X/20 mm	IOS E-PLAN 4x, 10x, 40x, 100x (oil)	Quintuple nosepiece, reversed	Double layer mechanical sliding stage, 216x150mm, moving range 78x54mm, <b>Belt-drive</b> in X direction	Coaxial coarse and fine focusing with limit stop	Abbe condenser, sliding-in, N.A. 1.25 with centering system.	X-LED <sup>3</sup> , with manual brightness control
<b>B-382PH-ALC</b>	Binocular 360°rotating 30° inclined	Wide Field 10X/20 mm	PLAN 4x, 10xPh, 40xPh, 100xPh (oil)	Quintuple nosepiece, reversed	Double layer mechanical sliding stage, 160x140mm, moving range 78x54mm	Coaxial coarse and fine focusing with limit stop	Phase condenser (10x/20x, 40x, 100x) with darkfield (dry) and brightfield	X-LED <sup>3</sup> , with <b>Automatic Light Control</b>
<b>B-383PH</b>	Trinocular 360°rotating 30° inclined	Wide Field 10X/20 mm	PLAN 4x, 10xPh, 40xPh, 100xPh (oil)	Quintuple nosepiece, reversed	Double layer mechanical sliding stage, 160x140mm, moving range 78x54mm	Coaxial coarse and fine focusing with limit stop	Phase condenser (10x/20x, 40x, 100x) with darkfield (dry) and brightfield	X-LED <sup>3</sup> , with manual brightness control
<b>B-382PHI-ALC</b>	Binocular 360°rotating 30° inclined	Wide Field 10X/20 mm	IOS PLAN 10xPh, 20xPh, 40xPh, 100xPh (oil)	Quintuple nosepiece, reversed	Double layer mechanical sliding stage, 216x150mm, moving range 78x54mm, <b>Belt-drive</b> in X direction	Coaxial coarse and fine focusing with limit stop	Phase condenser (10x/20x, 40x, 100x) with darkfield (dry) and brightfield	X-LED <sup>3</sup> , with <b>Automatic Light Control</b>
<b>B-383PHI</b>	Trinocular 360°rotating 30° inclined	Wide Field 10X/20 mm	IOS PLAN 10xPh, 20xPh, 40xPh, 100xPh (oil)	Quintuple nosepiece, reversed	Double layer mechanical sliding stage, 216x150mm, moving range 78x54mm, <b>Belt-drive</b> in X direction	Coaxial coarse and fine focusing with limit stop	Phase condenser (10x/20x, 40x, 100x) with darkfield (dry) and brightfield	X-LED <sup>3</sup> , with manual brightness control

## ↗ Stereomicroscopes



### LAB Series - Technical specifications

Model	Head	Eyepiece	Objectives	Working Distance	Stand	Illuminator
<b>LAB-10</b>	Binocular	WF 10x/20mm	2x - 4x selectable by rotating	80 mm	Pillar stand with fixed holder	Double incident and transmitted light. High-efficiency LED light sources with separate brightness controls
<b>LAB-20</b>	Binocular	WF 10x/20mm	0,7x...4,5x zoom	85 mm	Pillar stand with fixed holder	Double incident and transmitted light. High-efficiency LED light sources with separate brightness controls

**SZM Series**

Advanced stereomicroscopes for teachers



**SZM Series - Technical specifications**

Model	Head	Eyepiece	Objectives	Working Distance	Stand	Illuminator
<b>SZM-1</b>	Binocular	WF 10x/20mm	0,7x...4,5x zoom	100 mm	Pillar stand	Incident and transmitted 12V/15W halogen
<b>SZM-LED1</b>	Binocular	WF 10x/20mm	0,7x...4,5x zoom	100 mm	Pillar stand	Incident: high power single LED Transmitted: LED diffusing disc
<b>SZM-2</b>	Trinocular	WF 10x/20mm	0,7x...4,5x zoom	100 mm	Pillar stand	Incident and transmitted 12V/15W halogen
<b>SZM-LED2</b>	Trinocular	WF 10x/20mm	0,7x...4,5x zoom	100 mm	Pillar stand	Incident: high power single LED Transmitted: LED diffusing disc
<b>SZM-3</b>	Binocular	WF 10x/20mm	0,7x...4,5x zoom	100 mm	Overhanging stand	Without illuminator
<b>SZM-4</b>	Trinocular	WF 10x/20mm	0,7x...4,5x zoom	100 mm	Overhanging stand	Without illuminator

**B-500 Series**

High quality upright laboratory microscopes



**B-500 Series - Technical specifications**

Model	Optical System	Head	Eyepiece	Objectives	Nosepiece	Stage	Focusing	Condenser	Illuminator
<b>B-500Bsp</b>	<b>InfiniFix</b>	Binocular 360°rotating 30° inclined	Wide Field 10X / 22 mm	S-planachromatic 4x, 10x, 40x, 100x (oil)	Quintuple reversed	2-layer mechanical sliding stage, 175x145 mm	Coaxial coarse and fine control knobs	Swing-out 1.2 N.A., centrabile	High efficiency Halogen 20W dichroic bulb
<b>B-500Tsp</b>	<b>InfiniFix</b>	Trinocular 360°rotating 30° inclined	Wide Field 10X / 22 mm	S-planachromatic 4x, 10x, 40x, 100x (oil)	Quintuple reversed	2-layer mechanical sliding stage, 175x145 mm	Coaxial coarse and fine control knobs	Swing-out 1.2 N.A., centrabile	High efficiency Halogen 20W dichroic bulb
<b>B-500Bpl</b>	<b>InfiniFix</b>	Binocular 360°rotating 30° inclined	Wide Field 10X / 22 mm	Planachromatic 4x, 10x, 40x, 100x (oil)	Quintuple reversed	2-layer mechanical sliding stage, 175x145 mm	Coaxial coarse and fine control knobs	Swing-out 1.2 N.A., centrabile	OPTIKA X-LED <sup>3</sup> illuminator
<b>B-500Tpl</b>	<b>InfiniFix</b>	Trinocular 360°rotating 30° inclined	Wide Field 10X / 22 mm	Planachromatic 4x, 10x, 40x, 100x (oil)	Quintuple reversed	2-layer mechanical sliding stage, 175x145 mm	Coaxial coarse and fine control knobs	Swing-out 1.2 N.A., centrabile	OPTIKA X-LED <sup>3</sup> illuminator
<b>B-500Bi</b>	<b>IOS</b>	Binocular 360°rotating 30° inclined	Wide Field 10X / 22 mm	Infinity Planachromatic 4x, 10x, 40x, 100x (oil)	Quintuple reversed	2-layer mechanical sliding stage, 175x145 mm	Coaxial coarse and fine control knobs	Swing-out 0.90 N.A., centrabile	OPTIKA X-LED <sup>3</sup> illuminator
<b>B-500Ti</b>	<b>IOS</b>	Trinocular 360°rotating 30° inclined	Wide Field 10X / 22 mm	Infinity Planachromatic 4x, 10x, 40x, 100x (oil)	Quintuple reversed	2-layer mechanical sliding stage, 175x145 mm	Coaxial coarse and fine control knobs	Swing-out 0.90 N.A., centrabile	OPTIKA X-LED <sup>3</sup> illuminator
<b>B-500ERGO</b>	<b>InfiniFix</b>	30°-60° ergonomic binocular head 360°rotating	Wide Field 10X / 22 mm	Planachromatic 4x, 10x, 40x, 100x (oil)	Quintuple reversed	2-layer mechanical sliding stage, 175x145 mm	Coaxial coarse and fine control knobs	Swing-out 1.2 N.A., centrabile	OPTIKA X-LED <sup>3</sup> illuminator
<b>B-500ERGO</b>	<b>IOS</b>	30°-60° ergonomic binocular head 360°rotating	Wide Field 10X / 22 mm	Infinity Planachromatic 4x, 10x, 40x, 100x (oil)	Quintuple reversed	2-layer mechanical sliding stage, 175x145 mm	Coaxial coarse and fine control knobs	Swing-out 0.90 N.A., centrabile	OPTIKA X-LED <sup>3</sup> illuminator
<b>B-500BPh</b>	<b>InfiniFix</b>	Binocular 360°rotating 30° inclined	Wide Field 10X / 22 mm	Planachromatic for phase contrast 10x, 20x, 40x, 100x (oil)	Quintuple reversed	2-layer mechanical sliding stage, 175x145 mm	Coaxial coarse and fine control knobs	-PH condenser 1.25 N.A. - Brightfield swing-out 1.2 N.A. - Both with centering system.	OPTIKA X-LED <sup>3</sup> illuminator
<b>B-500TPh</b>	<b>InfiniFix</b>	Trinocular 360°rotating 30° inclined	Wide Field 10X / 22 mm	Planachromatic for phase contrast 10x, 20x, 40x, 100x (oil)	Quintuple reversed	2-layer mechanical sliding stage, 175x145 mm	Coaxial coarse and fine control knobs	-PH condenser 1.25 N.A. - Brightfield swing-out 1.2 N.A. - Both with centering system.	OPTIKA X-LED <sup>3</sup> illuminator
<b>B-500BiPh</b>	<b>IOS</b>	Binocular 360°rotating 30° inclined	Wide Field 10X / 22 mm	Infinity Planachromatic for phase contrast 10x, 20x, 40x, 100x (oil)	Quintuple reversed	2-layer mechanical sliding stage, 175x145 mm	Coaxial coarse and fine control knobs	-PH condenser 1.25 N.A. - Brightfield swing-out 0.90 N.A. - Both with centering system.	OPTIKA X-LED <sup>3</sup> illuminator
<b>B-500TiPh</b>	<b>IOS</b>	Trinocular 360°rotating 30° inclined	Wide Field 10X / 22 mm	Infinity Planachromatic for phase contrast 10x, 20x, 40x, 100x (oil)	Quintuple reversed	2-layer mechanical sliding stage, 175x145 mm	Coaxial coarse and fine control knobs	-PH condenser 1.25 N.A. - Brightfield swing-out 0.90 N.A. - Both with centering system.	OPTIKA X-LED <sup>3</sup> illuminator
<b>B-500TDK</b>	<b>InfiniFix</b>	Trinocular 360°rotating 30° inclined	Wide Field 10X / 22 mm	Planachromatic 4x, 10x, 40x, Special PL100x (oil, with Iris diaphragm)	Quintuple reversed	2-layer mechanical sliding stage, 175x145 mm	Coaxial coarse and fine control knobs	Swing-out 1.2 N.A., centrabile. Extra N.A. 1.36 darkfield type with built-in X-LED	OPTIKA X-LED <sup>3</sup> illuminator
<b>B-500TI-2</b>	<b>IOS</b>	Main Head: trino 360°/30° 1 discussion head: bino 360°/30°	Main head: WF10X/22mm Discussion heads: WF10x/20mm	Infinity Planachromatic 4x, 10x, 40x, 100x (oil)	Quintuple reversed	2-layer mechanical sliding stage, 175x145 mm	Coaxial coarse and fine control knobs	Swing-out 0.90 N.A., centrabile	OPTIKA X-LED <sup>3</sup> illuminator. Discussion laser pointer under the head
<b>B-500TI-3</b>	<b>IOS</b>	Main Head: trino 360°/30° 2 discussion heads: bino 360°/30°	Main head: WF10X/22mm Discussion heads: WF10x/20mm	Infinity Planachromatic 4x, 10x, 40x, 100x (oil)	Quintuple reversed	2-layer mechanical sliding stage, 175x145 mm	Coaxial coarse and fine control knobs	Swing-out 0.90 N.A., centrabile	OPTIKA X-LED <sup>3</sup> illuminator. Discussion laser pointer under the head
<b>B-500TI-5</b>	<b>IOS</b>	Main Head: trino 360°/30° 4 discussion heads: bino 360°/30°	Main head: WF10X/22mm Discussion heads: WF10x/20mm	Infinity Planachromatic 4x, 10x, 40x, 100x (oil)	Quintuple reversed	2-layer mechanical sliding stage, 175x145 mm	Coaxial coarse and fine control knobs	Swing-out 0.90 N.A., centrabile	OPTIKA X-LED <sup>3</sup> illuminator. Discussion laser pointer under the head
<b>B-500ASB</b>	<b>InfiniFix</b>	Trinocular 360° rotating 30° inclined	1 pair: 12.5X Walton-Beckett eyepieces 1 pair: Wide-field 10x/22 mm eyepieces	Planachromatic 4x, 10x, 40x, 40xPH, 100x (oil)	Quintuple reversed	2-layer mechanical sliding stage, 175x145 mm	Coaxial coarse and fine control knobs	- PH condenser 1.25 N.A. for 40xPH - Brightfield swing-out 1.2 N.A. - Both with centering system	OPTIKA X-LED <sup>3</sup> illuminator.

### ↘ B-383 POL Series

Laboratory & research  
 polarizing microscopes



#### POL Series - Technical specifications

Part	Description
<b>Head</b>	Trinocular, 30° inclined, 360° rotating.
<b>Eyepieces</b>	WF10X/20mm with cross hair.
<b>Bertrand lens</b>	Swing-out type; centrable.
<b>Polarizing attachment</b>	0°-90° rotating analyzer filter. Tint plates included: 1° order red ( $\lambda$ ), $\lambda/4$ , quartz wedge.
<b>Nosepiece</b>	4-positions with centering mechanism for all objectives.
<b>Objectives</b>	IOS E-PLAN (Strain-free) 4x/0.10, 10x/0.25, 40x/0.65, 60x/0.80.
<b>Focusing system</b>	Coaxial coarse and fine.
<b>Stage</b>	160mm dia.; 360° rotating with stop knob and 0.1° Vernier.
<b>Condenser</b>	N.A. 1.25, with iris diaphragm, focusable and centrable. With rotating polarizer filter.
<b>Illumination</b>	X-LED <sup>3</sup> , with manual brightness control.

### ↘ B-500 POL Series

Laboratory & research  
 polarizing microscopes



#### POL Series - Technical specifications

Part	Description
<b>Head</b>	Trinocular, 30° inclined, 360° rotating.
<b>Eyepieces</b>	WF10X/22mm
<b>Bertrand lens</b>	Swing-out type; centrable (for Conoscopy/Orthoscopy)
<b>Polarizing attachment</b>	Blue filter, 0°-90° rotating analysing filter, 1 slip (first class red), 1/4 slip, quartz wedge
<b>Nosepiece</b>	4-positions with centering mechanism for all objectives
<b>Objectives</b>	PLAN IOS POL (strain-free) 4x/0.10, 10x/0.25, 40x/0.65, 60x/0.85
<b>Magnifications</b>	40x, 100x, 400x, 600x
<b>Focusing system</b>	Coaxial coarse and fine
<b>Stage</b>	160mm diameter; 360° rotating with stop knob and 0.1° Vernier
<b>Condenser</b>	0,9 N.A., with iris diaphragm, focusable and centrable. With rotating polarizing filter (swing-out type)
<b>Illumination</b>	X-LED <sup>3</sup> illumination system with brightness control

### ↘ B-383FL

Laboratory & research  
 polarizing microscopes



#### B-383FL - Technical specifications

Part	Description
<b>Optical system</b>	Mechanical tube length: IOS - Infinity Optical System; parfocal distance 45 mm.
<b>Head</b>	Trinocular, 30° inclined, 360° rotating. Diopter adjustment; interpupillary distance adjustment 55-75 mm.
<b>Eyepieces</b>	Wide Field 10x/20 mm.
<b>Nosepiece</b>	5-position reversed revolving nosepiece. Ball bearing linear guides.
<b>Objectives</b>	IOS Planachromatic 4x/0.1, 10x/0.25, 20x/0.40, 40x/0.65 and 100x/1.25 (oil).
<b>Specimen stage</b>	Double layer with mechanical sliding stage, 160x142 mm; moving range 76x52 mm.
<b>Focusing system</b>	Rack and pinion mechanism, with coaxial coarse and fine control knobs. Fine adjustment graduation 0.002 mm. Vertical movement range: 20 mm. Tension control on left side; upper stage drive stop on right side.
<b>Condenser</b>	Centrable Abbe condenser with double lens. N.A. 1.25. Fitted with iris diaphragm and filter holder. Height adjustment by a rack and pinion mechanism.
<b>Illumination</b>	X-LED <sup>3</sup> unit for transmitted light. HBO 100W high pressure mercury bulb for epi-fluorescence.

## Measuring Monocular Microscope



<b>Model</b>	XC-100L
<b>Typology</b>	MEASURING MONOCULAR MICROSCOPE
<b>Description</b>	Bench microscope for measuring and surface inspection.
<b>Illumination</b>	Penlight unit with xenon lamp. Powered by batteries (2x AAA 1,5V)
<b>Focusing</b>	By means of a rack and pinion controlled by a pair of knobs placed on both sides of the microscope.
<b>Stand</b>	Compound microscope 230 mm height
<b>Eyepiece</b>	WF10x/18 with field number 18. Micrometric with 0,1 mm division.
<b>Objective</b>	Achromatic 10X

## Monocular Microscope



B-20R



B-20C



B-20 Solar



B-100FLed

Model	Head	Eyepiece	Objectives	Stage	Focusing	Illuminator
<b>B-20</b>	Monocular	WF10x/16mm	Achromatic 4x, 10x, 40x	Movable, 360° rotating, 90mm diameter, with sample clips	Separate coarse and fine control knobs	LED
<b>B-20C</b>	Monocular	WF10x/18mm	Achromatic 4x, 10x, 40x	Mechanical stage, 105x95mm with specimen holder	Coaxial coarse and fine control knobs	LED with rechargeable battery
<b>B-20R</b>	Monocular	WF10x/16mm	Achromatic 4x, 10x, 40x	Movable, 360° rotating, 90mm diameter, with sample clips	Separate coarse and fine control knobs	LED with rechargeable battery
<b>B-20 SOLAR</b>	Monocular	WF10x/16mm	Achromatic 4x, 10x, 40x	Movable, 360° rota- ting, 90mm diameter, with sample clips	Separate coarse and fine control knobs	LED powered by solar panel
<b>M-100FL</b>	Monocular	WF10x/18mm	Achromatic DIN 4x, 10x, 40x	Fixed stage, 120x110 mm with sample clips	Separate coarse and fine control knobs	20W tungsten
<b>M-100FL-H</b>	Monocular	WF10x/18mm	Achromatic DIN 4x, 10x, 40x	Fixed stage, 120x110 mm with sample clips	Separate coarse and fine control knobs	10W halogen

↘ **DM Series**  
 Digital biological microscopes



**DM Series - Technical specifications**

	<b>DM-5</b>	<b>B-150DM</b>	<b>B-150DB</b>	<b>DM-26</b>
<b>Resolution</b>	640x480 pixels	1280x1024 pixels (1.3Mp)	2048x1536 pixels (3.14Mp)	2048x1536 pixels (3.14Mp)
<b>Sensor</b>	1/4" CMOS	1/3,2" CMOS	1/2,5" CMOS	1/2" CMOS
<b>Pixel size</b>	7,9x7,9 µm	2,8x2,8 µm	2,2x2,2 µm	3,18x3,18 µm
<b>Resolution &amp; Frame Rate</b>	640x480 25 fps	1280x1024 15 fps	2048x1536 4 fps	
		640x480 30 fps	1280x1024 8 fps	640x480 25fps
<b>Digital camera resolution</b>				2048x1536 3,14Mpixels
<b>Sensitivity</b>	2.0 V/Lux-sec	1.0 V/Lux-sec	1.0 V/Lux-sec	1.0 V/Lux-sec
<b>White Balance</b>	Auto / Manual	Auto / Manual	Auto / Manual	Auto / Manual
<b>S/N Ratio</b>	≥ 50 dB	≥ 42 dB	≥ 40 dB	≥ 52 dB
<b>Dynamic Range</b>	≥ 60 dB	≥ 71 dB	≥ 66 dB	≥ 60 dB
<b>Digital Port</b>	USB 2.0	USB 2.0	USB 2.0	USB 2.0
<b>Imaging Software</b>	OPMIAS	OPTIKA Vision Lite	OPTIKA Vision Lite	OPTIKA Vision Lite
<b>System Requirements</b>	Operating system: Windows XP, Vista, Win7, Win8, 32-64 bit			

↘ **Video And Photo Applications**

**Video and photo cameras - Technical specifications**

OPTIKAM B1



OPTIKAM B5



Special model designed for trinocular microscopes only. This camera does not include any optical adapter for biological microscopes or stereomicroscopes. Especially designed for heavy applications, the Optikam B-2 is very robust and does not need the installation of any driver in your computer.

<b>OPTIKAM B1</b>	<b>C-mount and Eyepiece Camera</b>
<b>Sensor</b>	CMOS 1/3"
<b>Resolution</b>	1280 x 1024 pixels (1,3 Mpixels)
<b>Frame Rate at Full Resolution</b>	15 frames/sec
<b>Frame Rate 640x480</b>	55 frames/sec
<b>Optical Format</b>	1/3"
<b>Aspect Ratio</b>	4:3
<b>S/N Ratio</b>	44 dB
<b>Dynamic Range</b>	71 dB
<b>Sensitivity</b>	1,0 V/Lux-second
<b>C-Mount:</b>	Yes
<b>Optical adapter</b>	0,45x (for 23mm eyepiece tube)
<b>Adapters for stereomicroscopes</b>	30 and 30,5 mm diameter
<b>Calibration slide</b>	76x24mm micrometric calibration slide
<b>System Requirements</b>	Windows XP/Vista, Win7, Win8, 32-64 bit, USB port 2.0
<b>Software</b>	Optika Vision Lite / OPTIKA View
<b>Capture Features</b>	Continuous auto white balance, continuous auto exposure
<b>Accessories included</b>	1.8 m USB cable, installation manual, CD-Rom
<b>OPTIKAM B2</b>	<b>C-mount Camera</b>
<b>Sensor</b>	CMOS 1/3,2"
<b>Resolution</b>	1600 x 1200 pixels (2 Mpixels)
<b>Frame Rate at Full Resolution</b>	10 frames/sec
<b>Frame Rate at 640x480</b>	30 frames/sec
<b>Optical Format</b>	1/3,2"
<b>Aspect Ratio</b>	4:3
<b>S/N Ratio</b>	42,3 dB
<b>Dynamic Range</b>	71 dB
<b>Sensitivity</b>	1,0 V/Lux-second
<b>C-Mount:</b>	Yes
<b>Optical adapter</b>	None
<b>Adapters for stereomicroscopes</b>	None
<b>Calibration slide</b>	76x24mm micrometric calibration slide
<b>System Requirements</b>	Windows XP/Vista, Win7, Win8, 32-64 bit, USB port
<b>Software</b>	Optika Vision Lite / OPTIKA MIPRO
<b>Capture Features</b>	Continuous auto white balance, continuous auto exposure
<b>Accessories included</b>	1.8 m USB cable, installation manual, CD-Rom

Video And Photo Applications



Video and photo cameras - Technical specifications:

<b>OPTIKAM B3</b>	<b>C-mount and Eyepiece Camera</b>
Sensor	CMOS 1/2"
Resolution	2048 x 1536 pixels (3,14 Mpixels)
Frame Rate at Full Resolution	6,5 frames/sec
Frame Rate at 640x480	55 frames/sec
Optical Format	1/2"
Aspect Ratio	4:3
S/N Ratio	43 dB
Dynamic Range	61 dB
Sensitivity	1,0 V/Lux-second
C-Mount	Yes
Optical adapter	0,5x (for eyepiece tube)
Adapters for stereomicroscopes	30 and 30,5 mm diameter
Calibration slide	76x24mm micrometric calibration slide
System Requirements	Windows XP/Vista, Win7, Win8, 32-64 bit, USB port 2.0
Software	Optika Vision Lite / OPTIKA View
Capture Features	Continuous auto white balance, continuous auto exposure
Accessories included	1.8 m USB cable, installation manual, CD-Rom

<b>OPTIKAM B5</b>	<b>C-mount and Eyepiece Camera</b>
Sensor	CMOS 1/2,5"
Resolution	2592 x 1944 pixels (5 Mpixels)
Frame Rate at Full Resolution	7 frames/sec
Frame Rate at 640x480	46 frames/sec
Optical Format	1/2,5"
Aspect Ratio	4:3
S/N Ratio	38 dB
Dynamic Range	70,1 dB
Sensitivity	0,53 V/Lux-second
C-Mount	Yes
Optical adapter	0,45x (for eyepiece tube 23mm)
Adapters for stereomicroscopes	30 and 30,5 mm diameter
Calibration slide	76x24mm micrometric calibration slide
System Requirements	Windows XP/Vista, Win7, Win8, 32-64 bit, USB port 2.0
Software	Optika Vision Lite / OPTIKA View
Capture Features	Continuous auto white balance, continuous auto exposure
Accessories included	1.8 m USB cable, installation manual, CD-Rom

<b>OPTIKAM B9</b>	<b>C-mount and Eyepiece Camera</b>
Sensor	CMOS 1/2,3"
Resolution	3664 x 2740 pixels (10 Mpixels)
Frame Rate at Full Resolution	3 frames/sec
Frame Rate at Middle Resolution(1,3Mp)	25 frames/sec
Frame Rate at 640x480	30 frames/sec
Optical Format	1/2,3"
Aspect Ratio	4:3
S/N Ratio	40,5 dB
Dynamic Range	63 dB
Sensitivity	0,44 V/Lux-second
C-Mount	Yes
Optical adapter	0,45x (for 23mm eyepiece tube)
Adapters for stereomicroscopes	30 and 30,5 mm diameter
Calibration slide	76x24mm micrometric calibration slide
System Requirements	Windows XP/Vista, Win7, Win8, 32-64 bit, USB port 2.0
Software	Optika Vision Lite / OPTIKA View
Capture Features	Continuous auto white balance, continuous auto exposure
Accessories included	1.8 m USB cable, installation manual, CD-Rom



Video And Photo Applications



C-mount cameras for video and still-image capturing with high performances. These cameras are delivered with our complete OPTIKA VISION SOFTWARE PACKAGE.

LT versions do not include any eyepiece adapter.

Ideal for professional trinocular microscopes.



Hi-Performance cameras with advanced software package - Specifications:

	OPTIKAM® PRO 3LT	OPTIKAM® PRO 3	OPTIKAM® PRO 5LT	OPTIKAM® PRO 5
Resolution	2048 x 1536 pixels (3.2 Mpixel)		2560 x 1920 (5.0 Mpixel)	
Sensor	CMOS 1/2"		CMOS 1/2,5"	
Pixel Size	3.2 µm x 3.2 µm		2.2 µm x 2.2 µm	
Image Area	6.55 mm x 4.92 mm		5.70 mm x 4.28 mm	
Frame Rate at Full Resolution	12 frames/sec		3 frames/sec	
Frame Rate at Half Resolution	24 frames/sec		12 frames/sec	
Optical Format	1/2"		1/2"	
Aspect Ratio	4:3		4:3	
S/N Ratio	43 dB max		43 dB max	
ADC	10 bit		10 bit	
Data Output (Uncompressed Video)	3x8 bit		3x8 bit	
Sensitivity	1.0 V/Lux-second		0.53 V/Lux-second	
System Requirements	Windows XP, Vista, Win7, Win8, 32-64bit, USB 2.0 port		Windows XP, Vista, Win7, Win8 32-64bit, USB 2.0 port	
Software	OPTIKA Vision Pro Plus, TWAIN interface, SDK		Optika Vision Pro, TWAIN interface, SDK	
Capture Features	Continuous auto white balance, continuous auto exposure, averaging, subsampling (decimation)		Continuous auto white balance, continuous auto exposure, averaging, subsampling (decimation)	
Optical adapter	None	0,45x with additional ring adapter for stereomicroscopes	None	0,45x with additional ring adapter for stereomicroscopes
Included with the camera	3 m USB cable, 76x24mm micrometric calibration slide, C-mount cap, box		3 m USB cable, 76x24mm micrometric calibration slide, C-mount cap, box	
Max exposure	1 sec		177 msec	
Max extended exposure	26 sec		428 msec	

Video And Photo Applications

**DIGI**



**Video and photo camera - Technical Specifications**

<b>DIGI</b>	<b>Digital Photo and Video Camera</b>
Sensor	5.0 MP 1/2.5" CCD Sensor
Resolution (PHOTO)	8Mp (3200x2400 pixels) 5Mp (2595x1944 pixels) 3Mp (2048x1536 pixels)
Resolution (VIDEO)	1440x1080 (HD 1080p, 30fps) 1280x720 (HD 720p, 60fps) 1280x720 (HD 720p, 30fps) 848x480 (480p, 60fps) 320x240 (QVGA, 30fps)
Lens	3x optical zoom lens
Digital zoom:	4x (2x in 1080p mode)
File format:	JPEG, MOV, WAV
Internal Memory:	32MB
External Memory:	2GB SD card included (up to 32GB SDHC)
LDC display:	2,4"
TV out:	HDTV Component Out, PAL/NTSC system supported
Interface:	USB 2.0
Voice Recorder:	Yes
Microphone:	Internal (stereo), mic jack
Speaker:	Yes
Nightshot:	Yes (both in still image and video modes)
E.I.S.:	Electronic Image Stabilization
C-Mount:	No
Optical adapter	10x (for eyepiece tube)
Adapters for stereomicroscopes	30,0mm diameter
Battery:	Li-Ion rechargeable
Remote Control:	Yes, IR transmission

**OPTIKAM® Pro Cool**



<b>OPTIKAM® Pro Cool 5</b>	<b>CCD Cooled Camera</b>
CCD chip manufacturer, model	Sony, ICX282AQ
CCD scan mode	Interline transfer
CCD size	2/3"
Pixels	3.4mm x 3.4mm
G sensitive	280 mV
Resolution	2580H x 1944V
Filter	RGB
C-mount	Yes
Frame Rate at Max Resolution	3 fps (2580x1944)
Frame Rate at middle Resolution	10 fps (1280x932)
Low-speed readout	Yes
A/D conversion	8/12 bit
Peltier cooling system	30°C below room temperature
Exposure control	Automatic, manual
Exposure time	0.1ms - 6 minutes
Anti "amplifier glow"	Yes
White balance	Automatic, manual
Parameter controls	Image size, brightness, gain, exposure time, white balance
Interface	USB2.0 / 480Mb/s
Dimensions	130mm x 111mm x 54mm
System Requirements	Windows XP / Vista / Win 7 / Win 8, 32-64bit, USB 2.0 port
Software	Optika View

## ↗ TB Series - Tablet PC with camera

"A 2 in1 solution in digital microscopy"

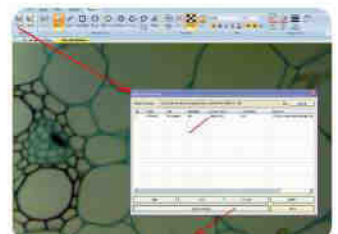
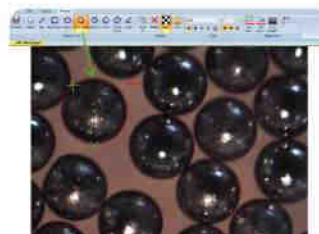
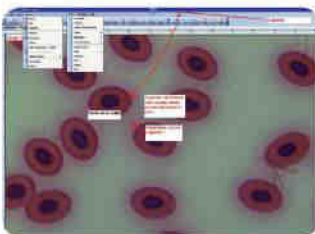
A Tablet PC with 10" LCD touch screen, in combination with 3Mp and 5Mp camera an universal system which can be installed on every trinocular microscope.

### Tablet PC Specifications:

	TB-3W	TB-5W
Model	Acer Iconia W510	
Operating System	Windows 8.1 32-bit	
Language	Multilanguages already installed	
Image capturing software	OPTIKA Vision lite	
CPU	Intel® Atom™ Z2760 (1MB Cache, 1.80 GHz Intel® Burst) , Dual core (2 Core)	
CPU speed	1,50 GHz	
Graphics Card	Intel® GMA 3650 LPDDR2	
Memory	Ram 2,048 GB LPDDR2	
LCD display	LED 10.1" IPS Multi Touch Screen	
LCD resolution	1366 x 768 , 16/9	
Storage	Hdd 64GB	
Network	Wireless IEEE 802.11a/b/g/n Bluetooth 4.0	
Input/output ports	Micro USB Microphone Micro SD card reader Mini HDMI Head-phone	
Control Buttons	Auto rotate off, volume control	
Battery Technology	Lithium-ion battery, 2x cell	
Battery capacity	3540 mAh, about 9 hours	
Max load	18 W	
Dimensions	Thickness 8,8 mm, Height 16,75 cm, Width 25,85 cm	
Weight	580 g	
Cables included	Micro USB to USB, OTG cable, USB Cable	
Also included	Instruction manual, Optika Software CD, Cleaning Cloth	

### Camera Specifications:

	3,14 MegaPixels	5,0 MegaPixels
Digital camera resolution	3,14 MegaPixels	5,0 MegaPixels
Analog camera resolution	NO	NO
Signal output	USB 2.0	USB 2.0
Audio Signal	NO	NO
Sensor Size	1\2"	1\2,5"
Sensor technology	CMOS	CMOS
Image format	4\3	4\3
Full Image size	2048 x 1536	2592 x 1944
Pixel size	3,2 x 3,2 micron	2,2 x 2,2 micron
Frame rate full resolution	6,5 frames/sec (2048x1536)	7 frames/sec (2592 x 1944)
Frame rate other resolutions	28 frame/sec (1024x768) 55 frames/sec (640x480)	46 frames/sec (640x480)
Sensitivity	1,0 V/Lux-second (550 nm)	0,53 V/Lux-second (550 nm)
Signal / noise ratio	43 dB	38 dB
Dynamic range	61 dB	70.1 dB



## Digital Microscope



**B-190TB**



**B-290TB**

### TABLET SPECIFICATION

Model	Tablet 10.1"
Operating System	Windows 10 32-bit
Language	Multilanguages already installed
CPU	Intel® Atom™ Z3735F, Quad core
CPU speed	1,83 GHz
Graphics Card	Intel® HD Graphics 3D Accelerator
Memory	Ram 2,048 GB DDR3L
LCD display	LED 10.1" IPS Multi Touch Screen
LCD resolution	1280x800, 16/10 (WXGA)
Storage	Hdd 32GB
Network	Wireless Bluetooth 4.0
Input/output ports	USB - Microphone - Micro SD card reader - HDMI - Head-phone
Control Buttons	Auto rotate off, volume control
Battery Technology	Lithium-ion battery, 2x cell
Battery capacity	6000 mAh
Max load	18 W
Connection to the Load	Power supply 7,5V 2A
Dimensions	Thickness 10,5 mm, Height 17,4 cm, Width 25,7 cm
Weight	600 g
Cables Included	OTG cable (Micro USB-B to USB-A)
Also included	Instruction manual, Keyboard with touchpad, touch pen.

### MICROSCOPE SPECIFICATIONS

Model	Binocular with double layer stage, objectives 4x 10x 40x 100x
Head	Binocular Digital observation head, inclined 30° and rotatable 360°. Diopter adjustment on left eyepieces. Interpupillary adjustment 48-75 mm.
Observation Modes	Brightfield
Eyeieces	Widfield eyepieces WF10X/18 with field number 18mm.
Nosepiece	Quadruple revolving nosepiece, rotation on ball bearings.
Objectives	Achromatic objectives with mechanical tube length 160 mm, made by following objectives: -) Achromatic DIN 4X, A.N. 0.10, W.D. 18 mm -) Achromatic DIN 10X, A.N. 0.25, W.D. 7 mm -) Achromatic DIN 40X, A.N. 0.65, W.D. 0.53 mm -) Achromatic DIN 100X, A.N. 1.25, W.D. 0.13 mm (oil immersion) All objectives are treated with an anti-fungus treatment.
Stage	Double layer with mechanical sliding stage, size 125x115mm, X-Y movement range 70x30, specimen holder for one slide. Vernier scale on the two axes, accuracy 0,1 mm.
Focusing System	Coaxial coarse and fine focusing mechanism (graduated, 0.002mm) with upper stop, to prevent the contact between objective and specimen. Adjustable tension of coarse focusing knob.
Illumination	Light source type X-LED <sup>3</sup> with white LED; light intensity control using a knob on left side of the frame. LED power 3W, comparable to an halogen bulb 30-35W. Color temperature: 6300K. LED average life time approx. 50.000h. Voltage: external power supply 100/240Vac, 50/60Hz, output: 6 V. Max power required: 7W
Condenser	Abbe condenser, N.A. 1,25 precentered
Dimensions	HEIGHT: 400 mm WIDHT: 235 mm DEPTH: 290 mm WEIGHT: 7,0 kg

### CAMERA SPECIFICATIONS

Digital camera resolution	3.14 MegaPixels
Analog camera resolution	NO
Signal output	USB 2.0
Audio Signal	NO
Sensor Size	1/2.5"
Sensor technology	CMOS
Image format	4/3
Full Image size	2048 x 1536
Pixel size	2,2 x 2,2 micron
Frame rate full resolution	5 frames/sec
Frame rate other resolutions	8 FPS (1280x1024), 30FPS (640x480)
Sensitivity	0,53 V/Lux-second (550 nm)
Signal / noise ratio	40 dB
Dynamic range	66.5 dB
Max Exposure time	1,5 sec
ADC conversion	12 BIT
Color Depth	8 BIT
On camera IR Filter	680 nm
Automatic White Balance	Auto - Man
Automatic Gain Control	Auto - Man
Automatic Back light control	Auto - Man
Exposure control	Auto - Man

## Research Microscope



**Model:**  
**B-800PH**

**Typology:**  
**RESEARCH MICROSCOPE**

**Description:**

Laboratory microscope for routine and research applications.  
 Dye-cast frame, with high stability and ergonomy, for transmitted light observation.



**Model:**  
 IOS Phase Contrast Planachromatic

**Description:**

Objectives for brightfield, darkfield and phase contrast observation

<b>Illumination</b>	<p><b>High-efficiency pure white X-LED.</b>                  Light intensity control using a knob on left side of the frame.                  LED power: 3,6W (comparable to a 50W halogen bulb).                  Color temperature: 6300K.                  LED average lifetime: 50.000h.                  External power supply: Input 100-240Vac 50-60Hz / Output 6Vdc 2,5A                  Max. required power: 7W</p>
<b>Observation Modes</b>	Brightfield, darkfield and phase contrast.
<b>Focusing</b>	<p>Coaxial coarse and fine focusing mechanism (graduated, 0.002mm) with upper stop, to prevent the contact between objective and specimen.                  Adjustable tension of coarse focusing knob.                  Right fine focus knob "flat type" (for use with fingertip).</p>
<b>Stage</b>	<p>Double layer with mechanical sliding stage, size 175x145 mm, X-Y movement range 76x52 mm.                  Specimen holder for two slides.                  Vernier scale on two axes, accuracy 0,1 mm.</p>
<b>Nosepiece</b>	<p>Quintuple revolving nosepiece, rotation on ball bearings.                  Sextuple revolving nosepiece, rotation on ball bearings.</p>
<b>Head</b>	<p>Trinocular observation head, inclined 30° and rotatable 360°.                  Diopter adjustment on left eyepiece.                  Interpupillary adjustment: 55-75 mm.                  Photo port split: 100 (eyepieces) / 0 (camera) and 50 (eyepieces) / 50 (camera).</p> <p>Binocular observation ERGO head, adjustable 30° - 60° and rotatable 360°.                  Diopter adjustment on left eyepiece.                  Interpupillary adjustment 55-75 mm.</p> <p>Trinocular observation ERGO head, adjustable 5°- 35° and rotatable 360°.                  Diopter adjustment on left eyepiece.                  Interpupillary adjustment 48-75 mm.</p>
<b>Eyepieces</b>	Wide field eyepieces WF10X/22 with field number 22.
<b>Objectives</b>	<p>Infinity corrected optical system <b>IOS (Infinity Optical System)</b>.                  IOS Phase Contrast Plan objectives:                  -) Plan-achromatic IOS 10XPh, N.A. 0.25, W.D. 10 mm                  -) Plan-achromatic IOS 20XPh, N.A. 0.40, W.D. 5.1 mm                  -) Plan-achromatic IOS 40XPh, N.A. 0.65, W.D. 0.54 mm                  -) Plan-achromatic IOS 100XPh, N.A. 1.25, W.D. 0.13 mm (oil immersion)                  All objectives are treated with an anti-fungus treatment.</p>
<b>Condenser</b>	Phase contrast condenser (for objectives 10x, 20, 40x, 100x) with Brightfield and Darkfield positions.
<b>Dimensions</b>	<p>HEIGHT: 460 mm                  WIDTH: 250 mm                  DEPTH: 394 mm                  WEIGHT: 10 kg</p>
<b>Accessories</b>	<p>Centering Telescope included.                  Instruction manual and dust cover included.</p>

➤ **Inverted Research Microscope**



Model:  
**IM-3**

Typology:  
**INVERTED RESEARCH MICROSCOPE**

**Description:**  
*Laboratory inverted microscope for research applications. Dye-cast frame, with high stability and ergonomy, for transmitted light observation.*

<b>Illumination</b>	Light source type X-LED <sup>®</sup> with white 8W LED; light intensity control using a knob on left side of the frame. Color temperature: 6300K LED average life time approx. 50.000h Voltage: 110/240Vac, 50/60Hz, 1A ; Fuse: T500mA 250V Max power required: 13W
<b>Observation Modes</b>	Brightfield, phase contrast
<b>Focusing</b>	Coaxial coarse and fine focusing mechanism (graduated, 0.002mm) with upper stop, to prevent the contact between objective and specimen. Adjustable tension of coarse focusing knob.
<b>Stage</b>	Fixed stage, dimensions 250x160 mm. 2 stage insert (glass and metal) with hole for small dimension specimens. <b>OPTIONAL:</b> Mechanical stage mountable on the right side of the stage, total dimension=250x230 mm, X-Y translation range 120x80 mm, metallic interchangeable inserts for slides, Petri dishes, Terasaki, multi-Well plates, etc.
<b>Nosepiece</b>	Quintuple revolving nosepiece, rotation on ball bearings.
<b>Head</b>	Trinocular observation head, inclined 45°. Diopter adjustment on left eyepiece. Interpupillary adjustment 50-75 mm. Splitting ratios eyepieces-photo tube: 100/0, 50/50.
<b>Eyepieces</b>	Wide field eyepieces WF10X/22 with field number 22.
<b>Objectives</b>	Infinity corrected optical system IOS (Infinity Optical System). Plan-achromatic LWD objectives infinity corrected, for thickness 1.2 mm, made by following objectives: -) Plan-achromatic IOS LWD 10XPh, N.A. 0.25, W.D. 7.94 mm -) Plan-achromatic IOS LWD 20XPh, N.A. 0.40, W.D. 7.66 mm -) Plan-achromatic IOS LWD 40XPh, N.A. 0.60, W.D. 3.71 mm All objectives are treated with an anti-fungus treatment.
<b>Condenser</b>	LWD condenser, N.A. 0.30, working distance 72 mm. The condenser can be removed to extend the working distance up to 150 mm. Precentered slider with phase rings 4X/10X and 20X/40X.
<b>Dimensions</b>	HEIGHT: 495 mm WIDTH: 230 mm      WIDTH WITH OPTIONAL MECHANICAL STAGE: 300 mm DEPTH: 540 mm WEIGHT: 9 kg
<b>Accessories</b>	Green filters (IF550), instruction manual and dust cover included.

## ↳ Inverted Research Microscope



Model:  
**IM-3FL / IM-3FL4**

Typology:  
**INVERTED RESEARCH MICROSCOPE**

**Description:**  
*Laboratory inverted microscope for research applications.  
 Dye-cast frame, with high stability and ergonomy, for transmitted light  
 and and reflected fluorescence observation.*

<b>Illumination</b>	<p><b>Transmitted Light:</b>                  Light source type X-LED<sup>®</sup> with white 8W LED; light intensity control using a knob on left side of the frame.                  Color temperature: 6300K                  LED average life time approx. 50.000h                  Voltage: 110/240Vac, 50/60Hz, 1A ; Fuse: T500mA 250V                  Max power required: 13W</p> <p><b>Reflected Light:</b>                  Mercury burner 100W HBO, light control based on external power supply.                  Bulb average life time approx. 300 hours.                  Voltage: 10/240Vac, 50/60Hz, 1A ; Fuse: F8AL 250V.                  Max power required: 125W</p>
<b>Observation Modes</b>	<p>Fluorescence B: EX 460-490, DM 500, EM 520LP;                  Fluorescence G: EX 480-550, DM 570, EM 590LP;                  Fluorescence UV (optional): EX 325-375, DM 400, EM 420LP;                  Fluorescence V (optional): EX 385-425, DM 440, EM 455LP.</p>
<b>Filter Set</b>	<p><b>IM-3FL4: version with 4 positions fluorescence filter holder.</b>  <b>IM-3FL: version with 2 positions fluorescence filter holder.</b></p> <p><b>Excitation B:</b> Acridine Yellow, Acridine Orange, Auramine, DiO, DTAF, FITC, GFP, YFP, ecc.  <b>Excitation G:</b> DiI; Blu Evans, Feulgen, Rhodamine, Texas Red, TRITC, PI, ecc.  <b>Excitation UV (optional):</b>                  AMCA, AutoFluorescence, BAO, BFP, Blu Cascade, DANS, DAPI, Hoechst, Indo-1, SITA, ecc.  <b>Excitation V (optional):</b> ANS, Fluorescamine, Catecholamine, ecc.</p>
<b>Focusing</b>	Coaxial coarse and fine focusing mechanism (graduated, 0.002mm) with upper stop, to prevent the contact between objective and specimen. Adjustable tension of coarse focusing knob.
<b>Stage</b>	<p>Fixed stage, dimensions 250x160 mm.                  2 stage insert (glass and metal) with hole for small dimension specimens.</p> <p><b>OPTIONAL:</b>                  Mechanical stage mountable on the right side of the stage, total dimension=250x230 mm, X-Y translation range 120x80 mm, with metallic interchangeable inserts for slides, Petri dishes, Terasaki, multi-Well plates, etc.                  Pair of side extensions to expand the surface of the stage.</p>
<b>Nosepiece</b>	Quintuple revolving nosepiece, rotation on ball bearings.
<b>Head</b>	<p>Trinocular observation head, inclined 45°.                  Diopter adjustment on left eyepiece.                  Interpupillary adjustment 50-75 mm.                  Splitting ratios eyepieces-photo tube: 100/0, 0/100</p>
<b>Eyepieces</b>	Wide field eyepieces WF10X/22 with field number 22.
<b>Objectives</b>	<p>Infinity corrected optical system IOS (Infinity Optical System).                  Plan-achromatic LWD objectives infinity corrected, for thickness 1.2 mm, made by following objectives:                  -) Plan-achromatic IOS FLUO LWD 10X, N.A. 0.30, W.D. 10.0 mm                  -) Plan-achromatic IOS FLUO LWD 20X, N.A. 0.45, W.D. 5.1 mm                  -) Plan-achromatic IOS FLUO LWD 40X, N.A. 0.65, W.D. 2.6 mm                  All objectives are treated with an anti-fungus treatment.</p>
<b>Condenser</b>	<p>LWD condenser, N.A. 0.30, working distance 72 mm.                  The condenser can be removed to extend the working distance up to 150 mm.</p>
<b>Dimensions</b>	<p>HEIGHT: 495 mm                  WIDTH: 230 mm                      WIDTH WITH OPTIONAL MECHANICAL STAGE: 300 mm                  DEPTH: 730 mm                  WEIGHT: 10 kg</p>
<b>Accessories</b>	<p>Green filters (IF550).                  Instruction manual and dust cover included.</p>

## ↘ Magnetic Stirrers with Heating (Analogue)



HS12



HS15



HS33



- Space-saving design with compact and light weight(HS12, HS15)
- Portable & ideal for heating and stirring of the small vessels(HS12, HS15)
- Various sizes of the top plate

- Ceramic coated top plate
- Analog temperature controller
- Uniform heat distribution on the heating plate
- Precise speed by electronic feedback control
- Max. speed : 1500 rpm

## Features

- Various sizes of the top plate and flexible choice
- Ceramic coated top plate provides excellent chemical resistance, thermal-proof, and corrosion resistance
- Reflective, bright white color ceramic coated plate enhances sample visibility
- Heating temperature is controlled by analog temperature controller (Built-in K type sensor)
- High-heat conductivity of top plate provides thermal uniformity over the entire heating surface
- Electronic feedback control maintains a precise speed
- Smooth acceleration of stirring speed ensures no spillage.

## Specifications

Model		HS12	HS15	MS300HS	HS33
Type		Hot plate & Magnetic Stirrer			
Temperature	Range	Max.380°C			Max.350°C
	Display	Scale (temperature)			
	Controller	Analog temperature controller			
Heater Power		350W	480W	680W	1400W
Stirring	Speed	100~1500rpm			100~1300rpm
	Speed display	Scale (rpm)			
	Capacity(H <sub>2</sub> O)	up to 1L	up to 2L	up to 5L	up to 15L
Speed Controller		Feedback control			
Top Plate		Ceramic coated top plate			
Dimensions	Plate area(mm)	120x120	150x150	180x180	300x300
	Overall(WxDx H)(mm)	160x280x107	160x280x107	200x310x107	310x430x120
Electrical Supply		220V 50/60Hz or 110V 50/60Hz			
Weight		2.5Kg	2.6Kg	3.6Kg	6.8Kg



## ↘ Magnetic Stirrers with Heating (Digital)



HSD180



HSD120



HSD150



HSD330

- Accurate temperature control by PID auto-tuning function, built-in timer
- Uniform heat distribution on the heating plate
- Max. temperature : 380°C
- Max. temperature : 350°C (HSD330)
- Various sizes of the top plate and flexible choice
- Speed display by digital
- Electronic feedback control maintains a precise speed
- Max. speed : 1500 rpm

### Features

- ❑ By use of the temperature controller with function of the built-in digital PID auto-tuning, control temperature accurately and confirm set temperature and actual temperature at the same time
- ❑ Temperature controller with built-in timer function (99hr 59min.)
- ❑ High-heat conductivity of top plate provides thermal uniformity over the entire heating surface
- ❑ Ceramic coated top plate provides excellent chemical resistance, thermal-proof, and corrosion resistance
- ❑ Possible to control the temperature of the sample with external sensor (Option)
- ❑ Electronic feedback control maintains a precise speed
- ❑ Smooth acceleration of stirring speed ensures no spillage.
- ❑ Speed display by digital

### Specifications

Model		HSD120	HSD150	HSD180	HSD330
Type		Hot plate & magnetic stirrer			
Temperature	Range	Max.380			Max.350
	Accuracy	±1			
	Controller	Digital PID auto-tuning			
Timer		99hr 59min			
Heater Power		350W	480W	680W	1400W
Stirring	Speed	100~1500rpm			100~1300rpm
	Speed display	Digital			
	Capacity(H x O)	up to 1L	up to 2L	up to 5L	up to 15L
Speed Controller		Feedback control			
Top Plate		Ceramic coated top plate			
Dimensions	Plate area(mm)	120x120	150x150	180x180	300x300
	Overall(WxDx H)(mm)	160x280x107	160x280x107	200x310x107	310x430x120
Electrical Supply		220V 50/60Hz or 110V 50/60Hz			
Weight		2.7Kg	2.8Kg	3.8Kg	7Kg

## Multi-position Magnetic stirrers with heating (Analogue)



HS15-26P



HS12-03P



HS12-06P



HS15-03P

- "Three-In-One" and "Six-In-One" Hot plate stirrers
- Individually controlled stirring and heating positions
- Ideal for several applications at one time
- Multiple type and compact design
- Max. Temperature : 380°C
- Max. speed : 1500rpm
- Feedback speed control
- Precise speed control by feedback control

### Features

- ❑ It is possible to use stir only, heat only, or heat and stir same time
- ❑ It is individually controlled stirring and heating positions that let you perform different applications simultaneously
- ❑ Ceramic coated top plate provides excellent chemical resistance, thermal-proof, and corrosion resistance
- ❑ Bright white color lets you easily view stirring processes
- ❑ High-heat conductivity of top plate provides thermal uniformity over the entire heating surface
- ❑ Heating temperature controlled by the electronic energy regulator(Time proportional ON/OFF auto control)
- ❑ Electronic feedback control maintains a precise speed
- ❑ Smooth acceleration of stirring speed ensures no spillage.

### Specifications

Model		HS12-03P	HS15-03P	HS12-06P	HS15-26P
Heating & Stirring Positions		3 Positions			6 Positions
Temperature	Range	Max.380°C			
	Display	Scale(Temperature)			
	Controller	Analog temperature controller			
Heater Power		350W×3	480W×3	350W×6	480W×6
Stirring	Speed	100~1500rpm			
	Speed display	Scale(rpm)			
	Capacity(H : 0)	up to 1L	up to 2L	up to 1L	up to 2L
Speed Controller		Feedback control			
Top Plate		Ceramic coated top plate			
Dimensions	Plate area(mm)	Each 120×120	Each 150×150	Each 120×120	Each 150×150
	Overall(W×D×H) (mm)	410×250×125	500×280×125	830×250×125	540×450×125
Electrical Supply		220V 50/60Hz or 110V 50/60Hz			
Weight		6.3Kg	7.7Kg	12Kg	13.5Kg

## Multi-position Magnetic stirrers with heating (Digital)



HSD120-03P



HSD150-03P

- Three-In-One Hot plate stirrers
- Individually controlled stirring and heating positions with digital display
- Max. temperature : 380°C
- Max. speed : 1500rpm
- Precise temperature control by PID auto-tuning, built-in timer
- Feedback speed control with digital display
- Excellent precision and accuracy of the temperature and speed control
- Ideal for several applications at one time
- Multiple type and compact design

### Features

- ☒ It is individually controlled stirring and heating positions
- ☒ It is possible to change stirring speed and heating temperature on same and different condition
- ☒ By use of the temperature controller with function of the built-in digital PID auto-tuning, control temperature accurately and confirm set temperature and actual temperature at the same time
- ☒ Temperature controller with built-in timer function (99hr 59min.)
- ☒ Possible to control the temperature of the sample with external sensor (Option)
- ☒ Digital display of stirring speed and precise speed by feedback control
- ☒ It is individually controlled stirring and heating positions that let you perform different applications simultaneously
- ☒ Ceramic coated top plate provides excellent chemical resistance, thermal-proof, and corrosion resistance
- ☒ Bright white color lets you easily view stirring processes
- ☒ High-heat conductivity of top plate provides thermal uniformity over the entire heating surface
- ☒ Smooth acceleration of stirring speed ensures no spillage.

### Specifications

Model		HSD120-03P	HSD150-03P
Heating & Stirring Positions		3 Positions	
Temperature	Range	Max.380°C	
	Accuracy	±1°C	
	Controller	Digital PID auto-tuning	
	Times	99hr 59min	
Heater Power		350W×3	480W×3
Stirring	Speed	100~1500rpm	
	Speed display	Digital	
	Capacity	up to 1L	up to 2L
Speed Controller		Feedback control	
Top Plate		Ceramic coated top plate	
Dimensions	Plate area(mm)	Each 120×120	Each 150×150
	Overall(W×D× H)(mm)	480×260×125	510×300×125
Electrical Supply		220V 50/60Hz or 110V 50/60Hz	
Weight		7.3Kg	8.3Kg

Over Head Stirrer (Digital)



MS3040D



MS3040

MS3040, MS3040D : (High Speed, Low Viscosity) Stirrer for the low viscosity materials, at the general experiment room, in the basis of water, stirring up to 10L, max. torque of 2kg -cm(19.6Ncm) and stirring speed range of 200-3000rpm.



MS280D



MS280

MS280, MS280D : (Piercing shaft, high speed & low viscosity) Stirrer for the low viscosity materials at the general experiment room, stirring up to 10L, in the basis of water, max. torque of 2kg -cm(19.6Ncm) and stirring speed range of 200-3000 rpm.

Features

- ☑ Maintain the uniform torque and accurate rotation speed by feedback control of the microprocessor.
- ☑ No speed variation in the rating torque even though change of viscosity during stirring.
- ☑ Small type, light weight & air-tight construction designed safety and less noise.
- ☑ Narrow width design for use of the effective space.
- ☑ Smooth acceleration allows unit to reach set rpm without spillage.
- ☑ Easy to control in up and down of stirring shaft.
- ☑ Clear LED indicating screen (digital).

Specifications

Model	MS3040	MS3040D	MS280	MS280D
Stirring Capacity (H 2O)	10L		10L	
Viscosity (Max.)	7,000mPas (low)		7,000mPas (low)	
Motor (output)	DC motor 60W		DC motor 60W	
Torque (Max.)	2kg-cm (19.6Ncm)		2kg-cm (19.6Ncm)	
Speed Range	200~3000rpm		200~3000rpm	
Speed Controller	Feedback control		Feedback control	
Speed Display	Scale	Digital	Scale	Digital
Chuck Range	Ø1~10mm			
Dimensions (WxDxH)	70x140x159mm	70x140x185mm	78x180x170mm	
Weight	2.5Kg	2.6Kg	3.2Kg	
Electrical Supply	220V 50/60Hz		220V 50/60Hz	

Note : Set Stirrer + Impeller(PR350) + Stand(HS320) + Clamp(CH 320)

## Over Head Stirrer (Digital)



MS3010D, MS3020D

- MS3020, MS3020D : Stirrer for the low viscosity materials at the general experiment room, in the basis of water, stirring up to 20L, max. torque of 3kg-cm(29.4Ncm) and stirring speed range of 150-2000 rpm.
- MS3010, MS3010D : Stirrer for the medium and low viscosity materials at the general experiment room, in the basis of water, the small volume of medium viscosity, stirring up to 30L, max. torque of 6kg-cm(58.8Ncm) and stirring speed range of 70-1000 rpm.

### Features

- ☑ Maintain the uniform torque and accurate rotation speed by feedback control of the microprocessor.
- ☑ No speed variation in the rating torque even though change of viscosity during stirring.
- ☑ Small type, light weight & air-tight construction designed safety and less noise.
- ☑ Narrow width design for use of the effective space.
- ☑ Smooth acceleration allows unit to reach set rpm without spillage.
- ☑ Easy to control in up and down of stirring shaft
- ☑ Clear LED indicating screen (digital).



MS3010, MS3020

### Specifications

Model	MS3020	MS3020D	MS3010	MS3010D
Stirring Capacity (H 20)	20L		30L	
Viscosity (Max.)	10,000mPas (low)		20,000mPas (low, medium)	
Motor (output)	DC motor 60W		DC motor 60W	
Torque (Max.)	3kg-cm (29.4Ncm)		6kg-cm (58.8Ncm)	
Speed Range	150~2000rpm		70~1000rpm	
Speed Controller	Feedback control		Feedback control	
Speed Display	Scale	Digital	Scale	Digital
Chuck Range	Ø1~10mm		Ø1~10mm	
Dimensions (WxDxH)	78x180x170mm		78x180x170mm	
Weight	3.2Kg		3.2Kg	
Electrical Supply	220V 50/60Hz		220V 50/60Hz	

Note : Set ☒Stirrer + Impeller(PR70) + Stand(HS320) + Clamp(CH3 20)

## Over Head Stirrer (Digital)

Digital, positive rotation, reverse rotation, automatic positive/reverse rotation set-in function and time set-in function



BL1020D, BL1010D

- BL1020, BL1020D :  
As experimentally general stirrer for the medium and low viscosity materials, max. torque of 4.8kg-cm(47Ncm), in the basis of water, stirring up to 40L and stirring speed range of 80-2000rpm
- BL1010, BL1010D :  
Experimental stirrer for the medium viscosity, stirring up to 80L for small volume of the medium viscosity, in the basis of water, max. torque of 9.7kg-cm(95Ncm) and stirring speed range of 50-1000rpm

### Features

- ☒ Sparkless, adapting durable and excellent brushless DC motor
- ☒ Feedback control system maintains the accurate speed and uniform torque
- ☒ No speed variation in the rating torque even though changing viscosity
- ☒ Torque indicating lamp by changing viscosity
- ☒ Smooth acceleration allows unit to reach set rpm without spillage.
- ☒ Narrow width designed for the effective application
- ☒ Small, light weight and air-tight construction with less noise and designed in safety
- ☒ Convenient, up and down control of the stirring shaft
- ☒ Electronic safety circuit
- ☒ Protection function on the overloaded torque
- ☒ Speed indicating(Scale) : Torque indicating lamp
- ☒ Speed display(Digital)
  - Digital indicating function
  - Timer set-in function
  - Function of the positive/reverse rotation, automatic positive/reverse rotating direction set-in mode
  - Excellent stirring effect when using the automatic positive/reverse rotation set-in



BL1020, BL1010

### Specifications

Model	BL1020	BL1020D	BL1010	BL1010D
Stirring Capacity (H 2O)	40L		80L	
Viscosity (Max.)	20,000mPas (low, medium)		50,000mPas (medium)	
Motor (output)	Brushless DC motor 100W		Brushless DC motor 100W	
Torque (Max.)	4.8kg-cm (47Ncm)		9.7kg-cm (95Ncm)	
Speed Range	80~2000rpm		50~1000rpm	
Speed Controller	Feedback control		Feedback control	
Speed Display	Scale	Digital	Scale	Digital
Rotations	-	1.Right 2.Left(Operation) 3.Auto reverse (Reverse time setting)	-	1.Right 2.Left(Operation) 3.Auto reverse (Reverse time setting)
Timer	-	99hr 59min	-	99hr 59min
Chuck Range	Ø1~10mm		Ø1~10mm	
Dimensions (WxDxH)	78x190x170mm		78x190x170mm	
Weight	3.2Kg		3.2Kg	
Electrical Supply	220V 50/60Hz		220V 50/60Hz	

Note : Set ☒ Stirrer + Impeller(PR390) + Stand(HS420) + Clamp(CH320)

## Over Head Stirrer (Digital)



MS5020D

- MS5020, MS5020D : Stirrer for the medium and low viscosity materials at the experiment room, in the basis of water, the small volume of medium viscosity, stirring up to 30L, max. torque of 6kg ·cm(58.8Ncm) and stirring speed range of 150-2000 rpm

### Features

- ☒ Maintain the uniform torque and accurate rotation speed by feedback control of the microprocessor.
- ☒ No speed variation in the rating torque even though change of viscosity during stirring.
- ☒ Small type, light weight & air-tight construction designed safety and less noise.
- ☒ Narrow width design for use of the effective space.
- ☒ Smooth acceleration allows unit to reach set rpm without spillage.
- ☒ Easy to control in up and down of stirring shaft
- ☒ Clear LED indicating screen (digital).



MS5020

### Specifications

Model	MS5020	MS5020D
Stirring Capacity (H 20)	30L	
Viscosity (Max.)	20,000mPas (low, medium)	
Motor (output)	DC motor 120W	
Torque (Max.)	6kg·cm (58.8Ncm)	
Speed Range	150~2000rpm	
Speed Controller	Feedback control	
Speed Display	Scale	Digital
Chuck Range	Ø1~10mm	
Dimensions (WxDxH)	78×190×190mm	
Weight	4.4Kg	
Electrical Supply	220V 50/60Hz	

Note : Set ☒Stirrer + Impeller(PR70) + Stand(HS420) + Clamp(CH3 20)

## ▶ Homo Mixer (Digital)



Homo mixer

∅Fixing clamp (option)

### Features

- ☒ High speed mixer for the research & experiment purpose of emulsification dispersion, homogeneity and dissolution
  - ☒ Suitable in various fields such as medical, science, cosmetics and foods
  - ☒ High speed disperser for using the uniform dispersion ideally and easy to exchange the stirrer blade
  - ☒ Speed of 1000-12000 rpm
  - ☒ Suitable for the sample of low viscosity
  - ☒ Constant speed by feedback control
  - ☒ Digital display
- \*Fixing clamp(option)

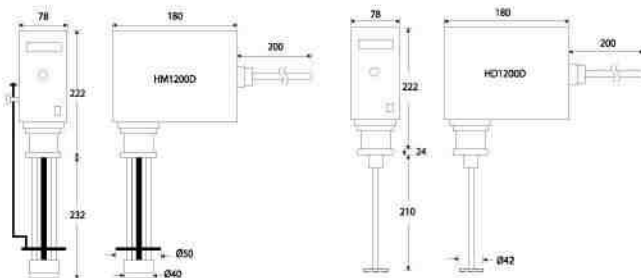


Homo disper

∅Fixing clamp (option)

HD1200D

HM1200D



### Specifications

Model	HM1200D	HD1200D
Motor(output)	142W	
Working Capacity	500~2000ml	500~5000ml
Speed Range	1000~11000rpm	1000~12000rpm
Speed Controller	Feedback control	
Speed Display	Digital	
Dimensions (WxDxH)	70x180x170mm	
Weight	3.2Kg	2.8Kg
Electrical Supply	AC 220V 50/60Hz	

Note : Set ∅Mixer or Disper + Stand(PS80) + Clamp(CH320)



## Homogenizer (Digital)



### Features

- ☒ Homogenizer of rotor/stator type and possible to do quick Homogeneous and dispersion
- ☒ Sample inserted into the rotor inside is circulated repeatedly through the narrow slit between rotor and stator, and emulsified, homogenized, mixed and pulverized thru dispersion by strong rotor.
- ☒ Easy to change various rotor and stator by a driver only what you want to use
- ☒ High quality tools dispersed durability (Stainless steel 316L)
- ☒ easy to stick and take off for cleaning

\*Fixing clamp(option)

SR30

### Specifications

Model	SR30
Motor(input/output)	670/340W
Working Capacity	10~2000ml
Speed Range	3700~27000rpm
Speed Adjustment	Stepless
Speed Display	Scale
Dimensions (WxDxH)	75x75x255mm
Weight	1.9Kg
Electrical Supply	AC 220V 50/60Hz

☒Note : set ☒ Homogenizer(SR30) + Tool(Ø20 Standard) + Stand(PS80) + Clamp(CH 320)

### Dispensing tools

Model	Shaft Ø	Price
T8SF	Ø8mm	
T10SF	Ø10mm	
T20SC, T20CC, T20MC	Ø20mm	
T20SF, T20CF, T20MF, T20EF		
T30SC, T30CC, T30MC	Ø30mm	
T30SF, T30CF, T30MF, T30EF		
Rotor	Ø20mm (Only)	
Rotor	Ø30mm (Only)	

## Beaker Heating Mantles Analogue



MS-EB



MS-EBH



- Heating mantles for beaker
- Ceramic fiber with strong thermal resistance
- Max. temperature 450
- Analog temperature controller
- Heating mantles for reaction flask (cylindrical type)

### Features

- Heating mantle of the standard type with built-in temperature controller and easy to use
- Heating temperature is controlled by analog temperature controller and controlled effectively from low temperature to high temperature.
- "power on" and "Heater On" Indicating lamp
- Inner mantle part of the heating element consists of soft glass fiber, protected from damage of the glass and excellent contact between the heating element and glass and heating effectiveness is excellent
- Ceramic fiber with strong thermal-resistance has excellent thermal insulation and double housing design (EB101~EB107) maintains low temperature of the mantle surface for user's safety
- With thermal resistance and durability bearing at the inner temperature over 450, strong aluminum housing and powder coating with corrosion-proof

### General Specifications

- Heating Element Temperature : Up to 450 max.
- Temp. Controller : Analog temperature controller. (built-in K type sensor)
- Thermal Insulation : Ceramic fiber
- Material | Mantle : Powder coated aluminum case.  
 | Body : Polypropylene.
- Support rod clamp : For 12.7mm dia. Support rods (with 100ml~5000ml)
- Support rod : Stainless steel Ø 12.7x400mm (option)
- Power supply : 220V or 110V 50/60 Hz

Model	Capacity	Watts	Dimensions W x D x H (mm)	Internal (height : mm)	Weight (Kg)
EB 101	100 ml	80	162x256x134	45	1.2
EB 102	250ml	150	162x256x152	60	1.3
EB 103	500ml	260	162x256x167	80	1.6
EB 104	1000ml	380	192x276x188	100	1.9
EB 105	2000ml	500	214x298x218	130	2.5
EB 106	3000ml	600	248x332x239	150	3.2
EB 107	5000ml	800	274x358x274	185	3.6
EB 108	10000ml	1300	Ø 345xH315		6.4
EB 109	20000ml	2000	Ø 415xH390		9.5
EBH 108	10000ml	1300	Ø 345xH315		6
EBH 109	20000ml	2000	Ø 415xH390		9.1

Note : EBH model is bottom hole type \*EB108, EBH108, EB109, EBH109 Order made

## ↘ Heating Mantles Analogue



MS-EH



MS-E



- ▣ Heating mantles for the round bottom flask
- ▣ Max. temperature : 450°C
- ▣ Analog temperature controller
- ▣ Ceramic fiber with strong thermal resistance

### Features

- ▣ Heating mantle of the standard type with built-in temperature controller and easy to use
- ▣ Heating temperature is controlled by analog temperature controller and controlled effectively from low temperature to high temperature.
- ▣ "Power On" and "Heater On" indicating lamp
- ▣ Inner mantle part of the heating element consists of soft glass fiber, protected from damage of the flask and excellent contact between the heating element and flask and heating effectiveness is excellent

- ▣ Ceramic fiber with strong thermal-resistance has excellent thermal insulation and double housing design (E05~E107) maintains low temperature of the mantle surface for user's safety
- ▣ With thermal resistance and durability bearing at the inner temperature over 450°C, strong aluminum housing and powder coating with corrosion-proof
- ▣ CE certified

### General Specifications

- ▣ Heating Element Temperature : Up to 450°C max.
- ▣ Temp. Controller : Analog temperature controller (Built-in K type sensor)
- ▣ Thermal Insulation : Ceramic fiber effectiveness is excellent
- ▣ Material
  - ▣ Mantle : Powder coated aluminum case.
  - ▣ Body : Polypropylene.
- ▣ Support rod clamp : For 12.7mm dia. Support rod (with 100ml~5000ml)
- ▣ Support rod : stainless steel, Ø12.7 X 400mm (Option)
- ▣ Power supply : 220V or 110V, 50/60HZ

Model	Capacity	Watts	Dimensions WxDxH(mm)	Internal (height : mm)	Weight (Kg)
E 05	50ml	60	162x256x134	45	1.2
E 101	100ml	80	162x256x134	45	1.2
E 102	250ml	150	162x256x147	60	1.3
E 103	500ml	260	192x276x162	75	1.6
E 104	1000ml	380	214x298x172	85	1.9
E 105	2000ml	500	248x332x199	115	2.5
E 106	3000ml	600	274x358x205	125	3.2
E 107	5000ml	800	316x400x229	145	3.6
E 108	10000ml	1300	Ø 395xH265		8
E 109	20000ml	2000	Ø 460xH290		11.4
EH 108	10000ml	1300	Ø 395xH265		7.6
EH 109	20000ml	2000	Ø 460xH290		10.6

Note : EH model is bottom hole type E108, E109, EH108, EH109. Order made.

## Heating Mantles Digital



MS-DM



DM608, DM609

- ❑ Heating mantles for the round bottom flask
- ❑ Max. temperature : 450°C
- ❑ Accurate temperature control by PID auto-tuning function(built-in timer)
- ❑ Ceramic fiber with strong thermal resistance

### Features

- ❑ Heating mantle of the standard type with built-in temperature controller and easy to use
- ❑ By use of the temperature controller with function of the built-in digital PID auto-tuning, control temperature accurately and confirm set temperature and actual temperature at the same time
- ❑ Temperature controller with function of the built-in timer(99hr59min)
- ❑ Inner mantle part of the heating element consists of soft glass fiber, protected from damage of the flask and excellent contact between the heating element and flask and heating effectiveness is excellent

- ❑ Ceramic fiber with strong thermal-resistance has excellent thermal insulation and double housing design (DM601~DM607) maintains low temperature of the mantle surface for user's safety
- ❑ With thermal resistance and durability bearing at the inner temperature over 450°C, strong aluminum housing and powder coating with corrosion-proof
- ❑ External temperature sensor(Option) for the control of the sample temperature and the precise experiment

### General Specifications

- ❑ Heating Element Temperature : Up to 450°C max.
- ❑ Temp. Controller : Digital PID auto-tuning
- ❑ Timer : 99hr59min
- ❑ Temp. Accuracy :  $\pm 1^\circ\text{C}$  (on using external sensor)
- ❑ Sensor : K type
- ❑ Thermal Insulation : Ceramic fiber

- ❑ Material
  - ┌ Mantle : Powder coated aluminum case.
  - └ Body : Polypropylene.
- ❑ Support rod clamp : For 12.7mm dia. Support rod (with 100ml-5000ml)
- ❑ Support rod : Stainless steel,  $\varnothing 12.7 \times 400\text{mm}$  (Option)
- ❑ Power supply : 220V or 110V, 50/60HZ

Model	Capacity	Watts	Dimensions W x D x H (mm)	Internal (height : mm)	Weight (Kg)
DM 601	100 ml	80	162x256x149	45	1.5
DM 602	250ml	150	162x256x162	60	1.6
DM 603	500ml	260	192x276x177	75	1.9
DM 604	1000ml	380	214x298x187	85	2.2
DM 605	2000ml	500	248x332x214	115	2.8
DM 606	3000ml	600	274x358x220	125	3.5
DM 607	5000ml	800	316x400x244	145	3.9
DM 608	10000ml	1300	390x470x250		
DM 609	20000ml	2000	460x540x290		

Note : DM 608, DM 609 ❑ Order made

## Heating Mantles with Stirrer Digital



MS-DMS



DMS638, DMS639



- Stirring mantles for round bottom flask
- Designed with stirring and heating at one body
- Accurate temperature control by PID auto-tuning function(Built-in timer)
- Control speed and temperature independently and separately
- Smooth start/stop function
- Max. temperature : 450°C
- Ceramic fiber with strong thermal resistance

### Features

- ❑ Stirring mantle with built-in digital temperature controller
- ❑ Consist of magnetic stirrer and heating mantle on one body, control temperature and stirring concurrently, control temperature and stirring independently
- ❑ By use of the temperature controller with function of the built-in digital PID auto-tuning, control temperature accurately and confirm set temperature and actual temperature at the same time
- ❑ Temperature controller with function of the built-in timer(99hr59min)
- ❑ Maintain stirring speed accurately and uniformly by feedback control
- ❑ Smooth acceleration of stirring speed ensures no spillage.
- ❑ Inner mantle part of the heating element consists of soft glass fiber, protected from damage of the flask and excellent contact between the heating element and flask and heating effectiveness is excellent
- ❑ Ceramic fiber with strong thermal-resistance has excellent thermal insulation and double housing design (DMS631~DMS637) maintains low temperature of the mantle surface for user's safety
- ❑ With thermal resistance and durability bearing at the inner temperature over 450°C, strong aluminum housing and powder coating with corrosion-proof
- ❑ External temperature sensor(Optional) for the control of the sample temperature and the precise experiment

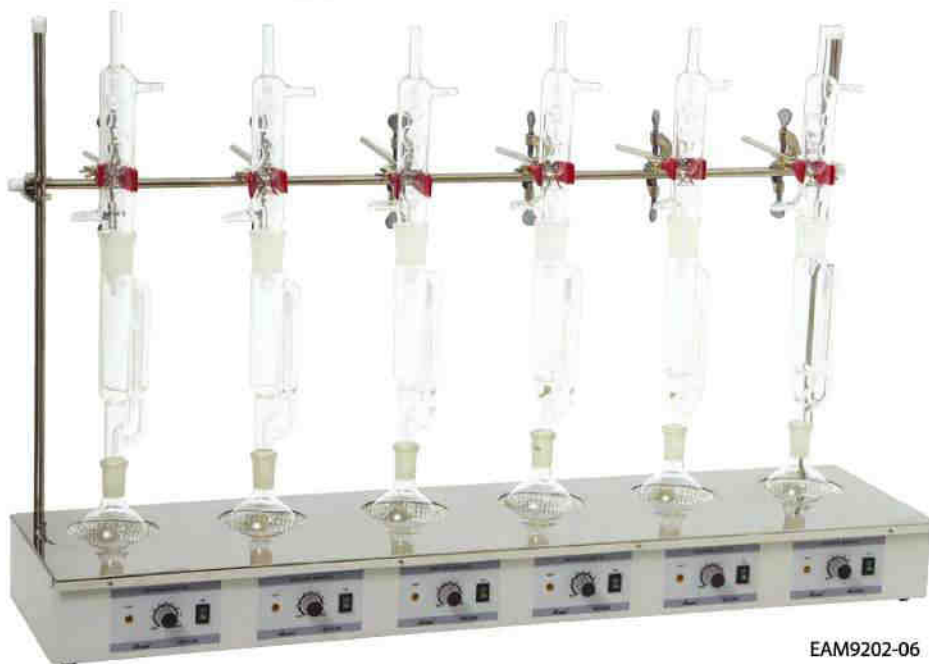
### General Specifications

- ❑ Heating Element Temperature : Up to 450°C max.
- ❑ Temp. Controller : Digital PID auto-tuning
- ❑ Timer : 99hr 59min
- ❑ Temp. Accuracy :  $\pm 1^\circ\text{C}$  (on using external sensor)
- ❑ Sensor Probe : k Type
- ❑ Speed Control : Feedback control
- ❑ Speed Display : Scale (rpm)
- ❑ Stirring Speed : 100 ~ 1500 rpm
- ❑ Thermal Insulation : Ceramic fiber
- ❑ Material : Mantle : Powder coated aluminum case.  
Body : Polypropylene.
- ❑ Support Rod Clamp : For 12.7mm dia. Support rods (with 100ml~5000ml)
- ❑ Support Rod : Stainless steel  $\varnothing$  12.7x400mm (Option)
- ❑ Power Supply : 220V or 110V 50/60 Hz

Model	Capacity	Watts	Dimensions W x D x H (mm)	Internal (height : mm)	Weight (Kg)
DMS 631	100 ml	80	162x256x149	45	2.3
DMS 632	250ml	150	162x256x162	60	2.4
DMS 633	500ml	260	192x276x177	75	2.7
DMS 634	1000ml	380	214x298x187	85	3
DMS 635	2000ml	500	248x332x214	115	3.6
DMS 636	3000ml	600	274x358x220	125	4.3
DMS 637	5000ml	800	316x400x244	145	4.7
DMS 638	10000ml	1300	390x470x300		
DMS 639	20000ml	2000	460x540x340		

Note : DMS 638, DMS 639  Order made

## ➤ Heating Mantles for Extraction Apparatus



EAM9202-06



EAM9202-03

- Ideal for the regulating experiment of extraction, back flowing, and distillation
- Independent and separate control function
- Max. temperature: 450°C
- Ceramic fiber with strong thermal resistance
- Stainless steel top cover with corrosion-proof

### Features

- ❑ Space saving design of the extraction mantle
- ❑ Ideal for the experiment processes for repeated extraction, back flowing, distillation for the fields of foods, fiber, surroundings, petroleum, chemicals
- ❑ Independent and separate temperature control at each different condition
- ❑ Heating temperature is controlled by the electronic energy regulator
- ❑ "Power On" and "Heater On" indicating lamp
- ❑ Inner mantle part of the heating element consists of soft glass fiber, protected from damage of the flask and excellent

contact between the heating element and flask and heating effectiveness is excellent

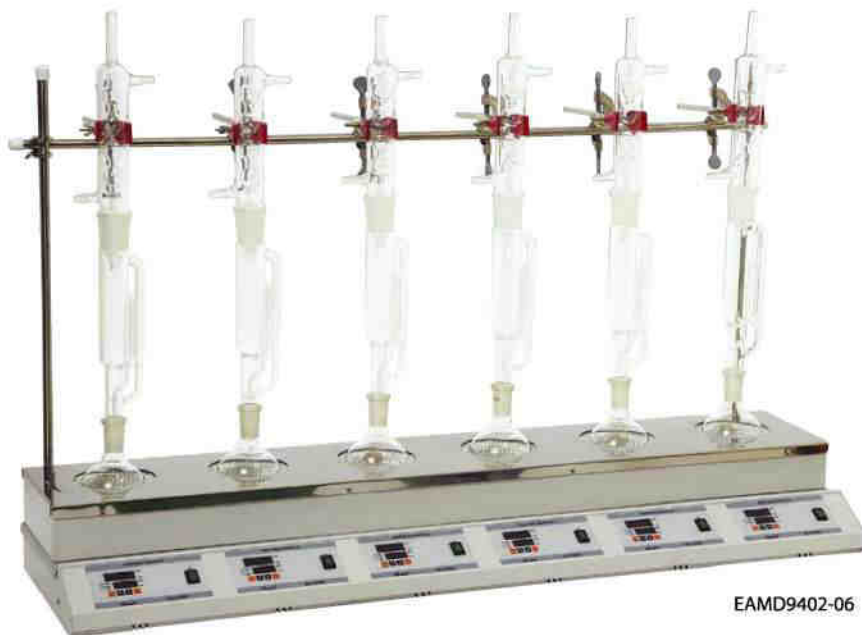
- ❑ Ceramic fiber with strong thermal-resistance has excellent thermal insulation and double housing design maintains low temperature of the mantle surface for user's safety
- ❑ With thermal resistance and durability bearing at the inner temperature over 450°C, strong metal housing and powder coating with corrosion-proof
- ❑ Glassware is not included.

### General Specifications

- ❑ Heating Element Temperature : Up to 450°C max.
- ❑ Temp. Controller : Electronic energy regulator
- ❑ Temp. Display : Scale
- ❑ Thermal Insulation : Ceramic fiber
- ❑ Material : Powder coated metal case
- ❑ Top Surface : Stainless steel
- ❑ Support Rods : Ø12.7mm dia. (standard)
- ❑ Indicator Lamps : Green- "Power on" , Yellow- "Heater on"
- ❑ Power Supply : 220V or 110V 50/60 Hz

Model	Capacity	Watts	Number of positions	Dimensions WxDxH(mm)	Internal (height : mm)	Weight (Kg)
EAM 9201-03	100ml	80W×3	3	450×240×80	45	4.6
EAM 9202-03	250ml	150W×3	3	520×260×95	60	5.8
EAM 9203-03	500ml	260W×3	3	580×280×105	75	6.7
EAM 9204-03	1000ml	380W×3	3	670×310×115	85	7.9
EAM 9201-06	100ml	80W×6	6	950×240×80	45	9.2
EAM 9202-06	250ml	150W×6	6	1040×260×95	60	11.6
EAM 9203-06	500ml	260W×6	6	1150×280×105	75	13.5
EAM 9204-06	1000ml	380W×6	6	1340×310×115	85	15.8

## ➤ Heating Mantles for Extraction Apparatus (with temp. controller)



EAMD9402-06



EAMD9402-03

- Independent and separate control function
- Accurate temperature control by PID auto-tuning function
- Max. temperature: 450°C
- Ceramic fiber with strong thermal resistance
- Stainless steel top cover with corrosion-proof

### Features

- ❖ Extraction mantle with built-in PID controller
- ❖ Ideal for the experiment processes for repeated extraction, back flowing, distillation for the fields of foods, fiber, surroundings, petroleum, chemicals
- ❖ Independent and separate temperature control at each different condition
- ❖ By use of the temperature controller with function of the built-in digital PID auto-tuning, control temperature accurately and confirm set temperature and actual temperature at the same time
- ❖ Temperature controller with function of the built-in timer(99hr59min)

### General Specifications

- ❖ Heating Element Temperature : Up to 450°C max.
- ❖ Temp. Controller : Digital PID auto-tuning
- ❖ Temp. Accuracy : ±1°C (on using external sensor)
- ❖ Timer : 99hr 59min
- ❖ Sensor Probe : k Type

- ❖ Inner mantle part of the heating element consists of soft glass fiber, protected from damage of the flask and excellent contact between the heating element and flask and heating effectiveness is excellent
- ❖ Ceramic fiber with strong thermal-resistance has excellent thermal insulation and double housing design maintains low temperature of the mantle surface for user's safety
- ❖ With thermal resistance and durability bearing at the inner temperature over 450°C, strong metal housing and powder coating with corrosion-proof
- ❖ External temperature sensor(Option) for the control of the sample temperature and the precise experiment
- ❖ Glassware is not included
- ❖ Thermal Insulation : Ceramic fiber
- ❖ Material : Powder coated metal case
- ❖ Top Surface : Stainless steel
- ❖ Support Rods : Ø12.7mm dia. [standard]
- ❖ Power Supply : 220V or 110V 50/60 Hz

Model	Capacity	Watts	Number of positions	Dimensions W×D×H(mm)	Internal (height : mm)	Weight (Kg)
EAMD 9401-03	100ml	80W × 3	3	470×260×140	45	5.8
EAMD 9402-03	250ml	150W ×3	3	520×280×160	60	7.2
EAMD 9403-03	500ml	260W ×3	3	580×300×175	75	8.5
EAMD 9404-03	1000ml	380W ×3	3	670×330×185	85	10.2
EAMD 9401-06	100ml	80W ×6	6	950×260×140	45	11.7
EAMD 9402-06	250ml	150W ×6	6	1040×280×160	60	14.5
EAMD 9403-06	500ml	260W ×6	6	1150×300×175	75	16.7
EAMD 9404-06	1000ml	380W ×6	6	1340×330×185	85	20

## MicroPipette Plus (Single Channel)

### Features

- Fully autoclavable
- Ergonomic design provides excellent operating experience
- Easy-to-read volume display
- The pipettes cover the volume range from 0.1µL to 10mL
- Easy calibration and maintenance
- Manufactured from innovative materials
- Each MicroPette Plus supplied with an individual calibration certificate according to ISO8655

### Specifications

This list is appropriate for MicroPette and MicroPette plus (Adjustable and Fixed volume)

121°  
FULLY  
Autoclave



Single-channel Adjustable Volume Pipettes plus

Volume Range	Increment	Test Volume	Maximum permissible systematic error (Inaccuracy)		Maximum permissible random error (Imprecision)	
			%	µL	%	µL
0.1~2.5µL	0.05µL	2.5µL	2.50%	0.0625	2.00%	0.05
		1.25µL	3.00%	0.0375	3.00%	0.0375
		0.25µL	12.00%	0.03	6.00%	0.015
0.5~10µL	0.1µL	10µL	1.00%	0.1	0.80%	0.08
		5µL	1.50%	0.075	1.50%	0.075
		1µL	2.50%	0.025	1.50%	0.015
2~20µL	0.5µL	20µL	0.90%	0.18	0.40%	0.08
		10µL	1.20%	0.12	1.00%	0.1
		2µL	3.00%	0.06	2.00%	0.04
5~50µL	0.5µL	50µL	0.60%	0.3	0.30%	0.15
		25µL	0.90%	0.225	0.60%	0.15
		5µL	2.00%	0.1	2.00%	0.1
10~100µL	1µL	100µL	0.80%	0.8	0.15%	0.15
		50µL	1.00%	0.5	0.40%	0.2
		10µL	3.00%	0.3	1.50%	0.15
20~200µL	1µL	200µL	0.60%	1.2	0.15%	0.3
		100µL	0.80%	0.8	0.30%	0.3
		20µL	3.00%	0.6	1.00%	0.2
50~200µL	1µL	200µL	0.60%	1.2	0.15%	0.3
		100µL	0.80%	0.8	0.30%	0.3
		50µL	1.00%	0.5	0.40%	0.2
100~1000µL	5µL	1000µL	0.60%	6	0.20%	2
		500µL	0.70%	3.5	0.25%	1.25
		100µL	2.00%	2	0.70%	0.7
200~1000µL	5µL	1000µL	0.60%	6	0.20%	2
		500µL	0.70%	3.5	0.25%	1.25
		200µL	0.90%	1.8	0.30%	0.6
1000~5000µL	50µL	5000µL	0.50%	25	0.15%	7.5
		2500µL	0.60%	15	0.30%	7.5
		1000µL	0.70%	7	0.30%	3
2~10mL	0.1mL	10mL	0.60%	60	0.20%	20
		5mL	1.20%	60	0.30%	15
		2mL	3.00%	60	0.60%	12



## MicroPipette Plus (Multi Channel)

### Features

- Fully autoclavable
- Ergonomic design provides excellent operating experience
- Easy-to-read volume display
- The pipettes cover the volume range from 0.1µL to 10mL
- Easy calibration and maintenance
- Manufactured from innovative materials
- Each MicroPette Plus supplied with an individual calibration certificate according to ISO8655

### Specifications

This list is appropriate for MicroPette and MicroPette plus (Adjustable and Fixed volume)

121°  
FULLY  
Autoclave

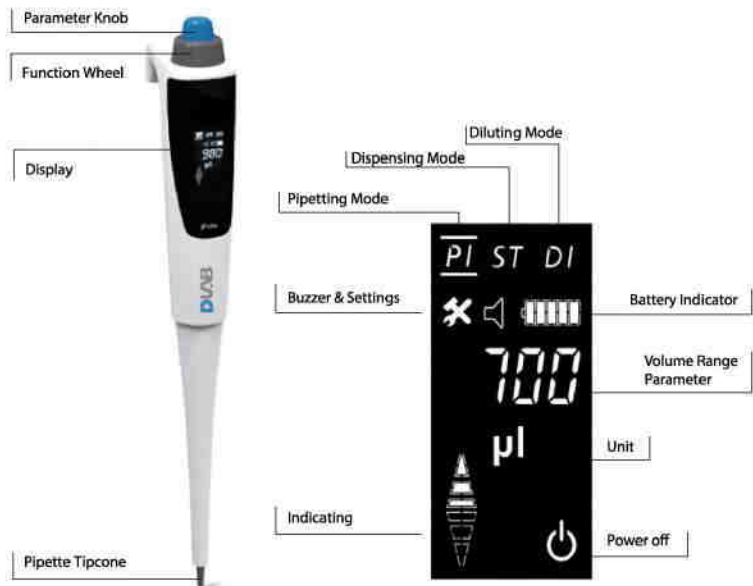


8-channel Adjustable Volume Pipettes							12-channel Adjustable Volume Pipettes						
Volume Range	Increment	Test Volume	Maximum permissible systematic error (Inaccuracy)		Maximum permissible random error (Imprecision)		Volume Range	Increment	Test Volume	Maximum permissible systematic error (Inaccuracy)		Maximum permissible random error (Imprecision)	
			%	µL	%	µL				%	µL		
0.5~10µL	0.1µL	10µL	1.50%	0.15	1.50%	0.15	0.5~10µL	0.1µL	10µL	1.50%	0.15	1.50%	0.15
		5µL	2.50%	0.125	2.50%	0.125			5µL	2.50%	0.125	2.50%	0.125
		1µL	4.00%	0.04	4.00%	0.04			1µL	4.00%	0.04	4.00%	0.04
5~50µL	0.5µL	50µL	1.00%	0.5	0.50%	0.25	5~50µL	0.5µL	50µL	1.00%	0.5	0.50%	0.25
		25µL	1.50%	0.375	1.00%	0.25			25µL	1.50%	0.375	1.00%	0.25
		5µL	3.00%	0.15	2.00%	0.1			5µL	3.00%	0.15	2.00%	0.1
50~300µL	5µL	300µL	0.70%	2.1	0.25%	0.75	50~300µL	5µL	300µL	0.70%	2.1	0.25%	0.75
		150µL	1.00%	1.5	0.50%	0.75			150µL	1.00%	1.5	0.50%	0.75
		50µL	1.50%	0.75	0.80%	0.4			50µL	1.50%	0.75	0.80%	0.4

## Digital MicroPipette

### Features

- A motor drive digital control pipette with multifunction, Pipetting, Mixing, Stepper and Dilution
- 2 buttons handle all operation and setting
- Light weight, ergonomic design, small body dimension for easy handling that guarantees fatigue free pipetting
- High accuracy, high performance stepper motor assures precision and repeatability and eliminates manual pipetting errors
- A wide range of pipetting modules for selection
- Adjustable speeds for aspiration and dispensing
- Li-ion battery and dual charging modes enable longer operation time
- Self calibration – By link it to a PC and a balance with USB connector, user can calibrate dPette by himself. No need to send it to the third party for calibration.



### Specifications

Channels	Volume Range	Increment	Test Volume	Inaccuracy		Imprecision	
	uL			uL	uL	%	s.d.*uL
1	0.5~10	0.01	10	±0.10	±1.00	0.05	0.50
			1	±0.035	±3.50	0.03	3.00
			50	±0.40	±0.80	0.15	0.30
1	5~50	0.1	5	±0.15	±3.00	0.125	2.50
			300	±1.80	±0.60	0.60	0.20
			30	±0.90	±3.00	0.21	0.70
1	30~300	1	1000	±6.00	±0.60	2.00	0.20
			100	±3.00	±3.00	0.60	0.60

\*s.d. = Standard Deviation \*CV = Coefficient of Variation

## Electric Pipette Controller

### Features

- Appropriate for most of the plastic and glass pipettes from 0.1 ~100ml
- Eight speeds of selection for aspiration and dispensing different liquids
- Large LCD display showing low battery warning and speed settings
- Enabling single-handed operation with minimum effort
- Light and ergonomic design providing easy usability
- High capacity Li-ion battery enable long runtime of operation
- Powerful pump fills a 25mL pipette in <5 seconds
- 0.45µm replaceable Hydrophobic filter
- Rechargeable during use

Large LCD display showing low battery warning and speed settings



Select the desired coarse speed by pressing the button +/-

Operating buttons fine-tuned for aspiration and dispensing

Operating button for motor and gravity dispensing



Hydrophobic filter 0.45µm

Silicone adapter for 0.1~100ml pipette tip, fully autoclavable



### Specifications

Aspirate Speeds	25ml < 5s (8 shift)
Dispense Speeds	Motor (8 shift) / Gravity
Battery	Lithium-Ion
Battery Service Life	More than 8 Hours of Intermittence Use
Charging Time	2~3 Hours
Pipette Types	Glass or Plastic Pipette (0.1~100mL), Pasteur Pipettes
Filter	0.45 µm Hydrophobic
Weight	200g

## ↳ Pipette Controllers & Pumps

### Features

- Ease of use
- Precise pipetting control
- Robust and lightweight
- Appropriate for most of the plastic and glass pipettes from 0.1 ~100ml
- 3µm replaceable Hydrophobic filter
- Easy cleaning and maintenance

Levo



Compress the suction bellows before attaching the pipette

Button to expel residual liquid when using blow-out pipette

Aspirating and dispensing comfortably achieved with a sensitive lever

## Levo E Pipette Pump

### Features

- Volume capacity 2mL, 10mL and 25mL
- Colour-coded by volume with green, blue and red
- Thumb wheel guarantees precise operation
- Resistant to acids and alkalis
- Easy for cleaning and maintenance



3µm replaceable Hydrophobic filter

Silicone adapter for 0.1~100ml pipette tip, fully autoclavable

Size: 2 ml, 5 ml, 10 ml & 25 ml

Designed for single-handed operation, Pipette Pump identifies itself with a thumbwheel, allowing precise aspiration or dispensing. The feature of side lever enables liquid dispensing to be emptied completely, without a droplet remaining.



## Digital Titrator

The dTrite Digital Burette provides accurate, precise and convenient bottle-top titration, as well as optimum operator safety.

It combines the magnetic stirrer with the titration process, making it easier for the operator to achieve the satisfactory results in the field of analytical chemistry, food industry, water analysis, etc.

dTrite



### Features

- High quality motor providing excellent precision and accuracy
- Electronic control decreases the repetitive strain injury
- The remote control panel makes the operating process without the manual disturbance
- Build-in magnetic stirrer support

### Specifications

Volume range	0.01mL-99.99mL, Max piston lift is 10mL, resolution is 10µL
Volume accuracy	R=0.2% CV=0.07%
Velocity	16 stages
Operating temperature range	10°C~30°C
Quality control	DIN EN ISO 8655
Control type	External control, including the stirrer and the burette program

## ➤ Digital Burette / Bottle-Top Dispenser

### Features

- Motor operation minimizes the grip force
- Electronic control decreases the repetitive strain injury
- The remote control panel makes the operating process without the manual disturbance
- Two Dispensing modes, dispenser and stepper function options



### Specifications

Volume range	0.1–99.9mL, Max piston lift is 10mL, resolution is 100 $\mu$ L
Volume accuracy	Dispenser: R = 10mL $\pm$ 30 $\mu$ L; CV = 10ml $\pm$ 10 $\mu$ L Stepper: R = 1ml $\pm$ 6 $\mu$ L; CV = 1ML $\pm$ 9 $\mu$ L
Operating temperature range	10°C~30°C
Quality control	DIN EN ISO 8655
Control type	External control

## ▶ Bottle-Top Dispenser

Easy-to-use volume adjustment

Smooth piston design provides effortless dispensing

Adapters allow fitting to standard reagent bottles

Filling tube adjusts easily for different size bottles

Closure cap protects against reagent contact and is easy to attach and remove, without taking glove off.



### Features

- Excellent chemical resistance, components are made of PTFE, FEP, BSG, PP
- Fully autoclavable at 121 °C
- Four ranges of bottle-top dispenser covering a volume range from 0.5mL to 50mL
- Easy for cleaning and maintenance
- The optional flexible discharge tube with safety handle permits fast and precise dispensing
- Vapor pressure Max. 500mbar, viscosity max. 500mPa·s, temperature max. 40 °C, density max. 2.2g/cm<sup>3</sup>
- DispenseMate is supplied with S40, GL32, GL38, GL25, GL28 sized adaptors

### Specifications

Cat. No.	Volume Range mL	Graduation mL	A <sub>s</sub> ±		CV <sub>s</sub>	
			%	µL	%	µL
731100017777	0.5~5	0.1	0.5	25	0.1	5
731100027777	1.0~10	0.2	0.5	50	0.1	10
731100037777	2.5~25	0.5	0.5	125	0.1	25
731100047777	5.0~50	1.0	0.5	250	0.1	50

### Accessories

Cat. No.	Description
17100553	GL45, Adapter, 45mm
17000069	S40, Adapter, 45/40mm
17400017	GL32, Adapter, 45/32mm
17400018	GL38, Adapter, 45/38mm
17400019	GL25, Adapter, 32/25mm
17400020	GL28, Adapter, 32/28mm
17400037	Reagent Bottle (Brown, 1L, Options)
17400021	Filling tube(m)
17100073	Discharge tube(m)

## Thermal Cycler (PCR)

### TC1000-G

Thermal Cycler gradient

### TC1000-S

Thermal Cycler standard

Thermo cyclers are essential laboratory instruments in the field of biotechnology, cloning, genotyping, mutagenesis, etc.

The TC1000-G features gradient function to achieve excellent heating and cooling rates and temperature uniformity in a single run, fulfilling every wish for easy optimization of PCR assays with maximum throughput.

#### Features:

- Reliable heating/cooling elements and innovative temperature control
- High performance DSP and temperature control
- Excellent temperature uniformity
- High precise temperature control
- Fast heating and cooling rate
- 7 inch Large color touch panel screen for easy programming
- Large user program storage



Excellent temperature uniformity



Gradient function



LCD touch panel



Excellent temperature accuracy



#### Specifications

	TC1000-G	TC1000-S
Sample Capacity	96X0.2mL PCR tube, 8X12 PCR plate or 96 well plate	96X0.2mL PCR tube, 8X12 PCR plate or 96 well plate
Heating Temperature Range	4~105 °C	4~105 °C
Lid Temperature Range	30~110 °C	30~110 °C
Temperature Display Accuracy	±0.1 °C	±0.1 °C
Temperature Control Accuracy [at 55 °C]	±0.3 °C	±0.3 °C
Temperature uniformity[at 55 °C]	<0.3 °C	<0.3 °C
Max. Heating/Cooling Rate	3°C/Sec	3°C/Sec
Gradient Temperature Setting Range	30~99 °C	-
Gradient Range	1~42 °C	-
Adapter block material	aluminum	aluminum
Display	7" LCD 800x480	7" LCD 800x480
Input	Touch panel	Touch panel
User defined file system	30 segments 99 cycle max. 16 folder and 16 files each folder max.	30 segments 99 cycle max. 16 folder and 16 files each folder max.
Power off protection	yes	yes
Power Supply	100~120V/200~240V,50/60Hz	100~120V/200~240V,50/60Hz
Dimension[WxDxH]	280x370x250 mm	280x370x250 mm
Weight	11kg	11kg

↘ **Dry Block Heater**



**HB120-S**

Dry bath

Features:

- A wide range of temperature control up to 120°C
- Timer function support is available
- Various types of optional blocks are available
- Overheating protection
- Lid for protection and heat preservation

Specifications

Functions	HB120-S
Temperature range	Room temp.~120°C
Temperature control accuracy	± 0.5°C
Temperature uniformity	± 0.5°C
Max heating rate	5.5°C/min
Timer	1min~99h59min
Screen	LED
Overheating protection	140°C
Adapter block material	aluminum
Voltage, Frequency	100~120V/220~240V,50Hz/60Hz
Power	160W
Dimension[WxDxH]	95x150x50mm
Weight	3kg

Cat.No.

Block types

Capacity

Diameter  
Depth



Adapter block selection

18900218



0.2mLx54

6.4mm  
15mm

18900219



0.5mLx40

8.2mm  
26.4mm



Overheating protection

18900253

(1.5ml)

18900220

(2ml)



1.5mLx40

2mLx40

11mm  
34.7mm



Timer

18900221



5/15mLx28

17mm  
48mm



LED display

18900222



50mLx8

29.8mm  
48mm

18900224



0.2mL+0.5mL+1.5/2mL  
18+18+18

18900223



96 or 384 well plate





## ↘ Dry Block Heating with Cooling



HC110-Pro

### Specifications

Functions	HC110-Pro
Temperature range	Heating&cooling
Temperature control accuracy[@ 20-45°C]	Heating: room temp. ~ 110°C Cooling: room temp. ~ below room temp. 25°C
Temperature uniformity[@ 20-45°C]	± 0.5°C
Max heating rate	Max ± 0.5 °C
Max cooling rate	5.5°C/min
Screen	2.5°C/min (100°C~room temp.) 0.5°C/min (below room temp.)
Program	TFT
Overheating protection	9
Adapter block material	150°C
Voltage, Frequency	aluminum
Power	100-240V,50/60Hz
Dimension[WxDxH] ( without the heating block )	200W
Weight	200x235x120mm
	7.3kg

### Features:

- Precise temperature control for heating and cooling
- Flexible adapter selection
- Programmable
- Compatible with various tubes



Excellent temperature accuracy



Programmable



Adapter self recognition



Cat.No.	Blocks	Speed	Capacity	Diameter x Deep
18900238		1500 RPM	24 x 0.5ml	8.1x26mm
18900237		1500 RPM	24x 1.5ml	10.9x30.8mm
18900239		1500 RPM	24x 2ml	10.9x30.8mm
18900240		1500 RPM	8x 5ml	13.6x42mm
18900241		800 RPM	8x 15ml	16.5x80mm
18900242		600 RPM	4x 50ml	29.6x80mm
18900244		1500 RPM	well plate	-
18900243		1500 RPM	0.2ml x 96 PCR plate	-

## ➤ Digital Rotary Evaporator



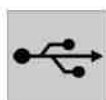
LCD Digital Rotary Evaporator is an essential instrument in chemical laboratories for the efficient and gentle removal of solvents from samples by evaporation. It offers an excellent distilling solution in a wide range of applications.

### Features:

- Digital display for both rotation speed and heating temperature allows for optimal controlling of all distillation processes
- Motor lift automatic release the evaporating flask to a safety position in case of power failure
- Wide temperature range of the 5L heating bath (Room temp. to 180 °C), Overheating protection temperature at 220°C
- Speed range from 20 to 280 rpm, and interval operation in clockwise and anticlockwise directions for drying process
- Patented condenser (cooling surface 1,500 cm<sup>2</sup>) with excellent cooling effect
- Ejection mechanism ensures easy removal of evaporating flask
- Patented double spring sealing ring which made of PTFE provides an excellent sealing performance
- Remote function provides PC control and data transmission



Large LCD display



USB connector



Chemical resistance



Overheating protection



Compatible with all range of glassware

### Specifications

Specifications	RE100-Pro
Motor type	Brushless DC motor
Speed Range	20~280 rpm
Display	LCD(speed,temperature,time)
Clockwise and anti-clockwise	Yes
Heating Temperature Range	Room temp. to 180 °C
Control Accuracy	±1 °C
Heating power	1300 W
Stroke displacement	automatic 150 mm
Timer	Yes
Time Setting Range	1~999 min
Dimension [ D×W×H ]	465×457×583 mm
Weight	15 kg
Permissible Ambient Temperature	5~40 °C
Permissible Relative Humidity	80%
Protection Class	IP20
USB Interface	Yes
Voltage/Frequency	100~120/200~240V 50/60 Hz
Power	1400 W

## ↘ Digital Magnetic Stirrer Hotplate



Overheating protection



External sensor



Wide range of accessory

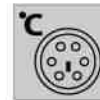


Chemical resistance

### Specifications

	MS7-H550-Pro	MS7-H550-S
Work plate Dimension [W x D]	184x184mm (7 inch)	184x184mm (7 inch)
Work plate material	Glass ceramic	Glass ceramic
Motor type	Brushless DC motor	Shaded pole motor
Motor rating input	18W	15W
Motor rating output	10W	1.5W
Power	1050W	1030W
Heating output	1000W	1000W
Voltage	100~120/200~240V 50/60Hz	100~120/200~240V 50/60Hz
Stirring positions	1	1
Max. stirring quantity, [H <sub>2</sub> O]	20L	10L
Max. magnetic bar [length]	80mm	80mm
Speed range	100~1500rpm resolution ±1rpm	0~1500rpm
Speed display	LCD	Scale
Temperature display	LCD	LED
Heating temperature range	Room Temp.~550°C, increment 1°C	Room temp.~550°C, increment 5°C
Temperature control accuracy	±1°C (<100°C) ±1%(>100°C)	±10°C
Overheating protection	580°C	580°C
Temperature display accuracy	±0.1°C	±1°C
External temperature sensor	PT1000 (accuracy ±0.2)	PT1000 (accuracy ±0.2)
"Hot" warning	50°C	50°C
Data connector	RS232	-
Protection class	IP21	IP21
Dimension [W x D x H]	215x360x112mm	215x360x112mm
Weight	5.3kg	4.5kg
Permissible ambient temperature and humidity	5~40°C 80%	5~40°C 80%

## ➤ Digital Magnetic Stirrer Hotplate



External sensor



Brushless DC motor



Wide range of accessory



RS232 connector



Chemical resistance

### Specifications

	MS-H-PRO <sup>+</sup>	MS-H-PRO <sup>T</sup>	MS-H-S
Work plate Dimension	φ 35mm(5 inch)	φ 35mm(5 inch)	φ 35mm(5 inch)
Work plate material	stainless steel cover with ceramic	stainless steel cover with ceramic	stainless steel cover with ceramic
Motor type	Brushless DC motor	Brushless DC motor	Brushless DC motor
Motor rating input	18W	18W	18W
Motor rating output	10W	10W	10W
Power	550W	550W	530W
Heating output	500W	500W	500W
Voltage	100~120/200~240V 50/60Hz	100~120/200~240V 50/60Hz	100~120/200~240V 50/60Hz
Stirring positions	1	1	1
Max. stirring quantity[H <sub>2</sub> O]	20L	20L	20L
Max. magnetic bar[length]	80mm	80mm	80mm
Speed range	100~1500rpm resolution±1rpm	100~1500rpm resolution±1rpm	0~1500rpm resolution±1rpm
Speed display	LCD	LCD	Scale
Temperature display	LCD	LCD	Scale
Heating temperature range	Room temp.-340 °C, increment 1 °C	Room temp.-340 °C, increment 1 °C	Room temp.-340 °C
Temperature control accuracy	±1°C(<100°C) ±1%(>100°C)	±1°C(<100°C) ±1%(>100°C)	-
Over temperature protection	360°C	360°C	350°C
Temperature display accuracy	±0.1°C	±0.1°C	±0.5°C
External temperature sensor	PT1000 (accuracy ±0.2)	PT1000 (accuracy ±0.2)	-
"Hot" warning	50°C	50°C	-
Timer function	-	1min to 99h 59min	-
Data connector	RS232	RS232	-
Protection class	IP42	IP42	IP42
Dimension [W x D x H]	160x280x85mm	160x280x85mm	160x280x85mm
Weight	2.8kg	2.8kg	2.8kg
Permissible ambient temperature and humidity	5~40°C 80%	5~40°C 80%	5~40°C 80%

## ➤ Magnetic Stirrer Hotplate (10 Position)



Skid resistance



Multiple position



Brushless DC motor

### Specifications

Work plate Dimension [W x D]	
Work plate material	
Motor type	
Motor rating input	
Motor rating output	
Power	
Heating output	
Voltage	
Stirring positions	
Max. stirring quantity	
Max. magnetic bar [length]	
Speed range	
Speed display	
Temperature display	
Heating temperature range	
Overheating protection	
Protection class	
Dimension [W x D x H]	
Weight	
Permissible ambient temperature and humidity	

### MS-H-S10

180x450mm()
Stainless steel with silicone
Brushless DC motor
12W
4W
490W
470W
100~120/200~240V 50/60Hz
10
0.4L x 10
40mm
0~1100rpm
scale
scale
Room temp.~120°C
140°C
IP42
182x622x65mm
3.2kg
5~40°C 80%

## ➤ Ultra-Flat Compact Magnetic Stirrer



Ultrathin



Vibration free



Silent operation



Switchable reverse rotation

### Specifications

Work plate Dimension	
Work plate material	
Motor output power	
Power	
Voltage	
Stirring positions	
Max. stirring quantity[H <sub>2</sub> O]	
Max. magnetic bar[length]	
Speed range	
Speed setting	
Protection class	
Dimension [W x D x H]	
Weight	
Permissible ambient temperature and humidity	

### FlatSpin

∅90mm
PET
3W
5W
100~120/200~240,V50/60Hz
1
0.8L
40mm
15~1500rpm
button
IP65
175x120x15mm
0.3kg
5~40°C,80%

## ➤ Economical Magnetic Stirrer



Brushless DC motor



Chemical resistance



Strong magnetic



External sensor

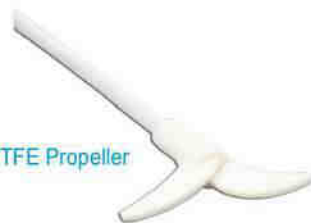
### Specifications

Work plate Dimension	
Work plate materials	
Motor type	
Motor output power	
Power	
Voltage	
Stirring positions	
Max. stirring quantity[H <sub>2</sub> O]	
Max. magnetic bar[length]	
Speed range	
Speed setting	
Protection class	
Dimension [W x D x H]	
Weight	
Permissible ambient temperature and humidity	

### EcoStir

∅20mm
PET
Brushless DC motor
1.2W
7.2W
100~120/200~240V,50/60Hz
1
1.5L
40mm
300~2000prm
scale
IP21
150x145x50mm
0.3kg
5~40°C,80%

## Digital Overhead Stirrer



PTFE Propeller

### Specifications

Max. stirring quantity(H <sub>2</sub> O)	
Motor type	
Motor input power	
Motor output power	
Voltage	
Power	
Speed range	
Speed display accuracy	
Speed display	
Torque display	
Overload protection display	
Max. torque	
Viscosity max.	
Chuck range diameter	
Dimension [W x H x D]	
Weight	
Protection class	
Permissible ambient temperature and humidity	
Data connector	

	OS20-Pro	OS40-Pro
Max. stirring quantity	20L	40L
Motor type	brushless DC motor	brushless DC motor
Motor input power	60W	120W
Motor output power	50W	100W
Voltage	100~220V, 50/60 Hz	100~220V, 50/60 Hz
Power	70W	130W
Speed range	50~2200rpm	50~2200rpm
Speed display accuracy	±3rpm	±3rpm
Speed display	LCD	LCD
Torque display	LCD	LCD
Overload protection display	LED lights	LED lights
Max. torque	40Ncm	60Ncm
Viscosity max.	10000mPas	50000mPas
Chuck range diameter	0.5~10mm	0.5~10mm
Dimension [W x H x D]	83 x 220 x 186mm	83 x 220 x 186mm
Weight	2.8kg	2.8kg
Protection class	IP21	IP21
Permissible ambient temperature and humidity	5~40 °C, 80%	5~40 °C, 80%
Data connector	RS232	RS232



LCD display



Torque display



Speed adjusting with viscosity changing



Wide range of accessory

## Digital Overhead Stirrer



PTFE Propeller

### Specifications

Max. stirring quantity(H <sub>2</sub> O)	
Motor type	
Motor input power	
Motor output power	
Voltage	
Power	
Speed range	
Speed display accuracy	
Speed display	
Overload protection display	
Max. torque	
Viscosity max.	
Chuck range diameter	
Dimension [W x H x D]	
Weight	
Protection class	
Permissible ambient temperature and humidity	

	OS20-S	OS40-S
Max. stirring quantity	20L	40L
Motor type	brushless DC motor	brushless DC motor
Motor input power	60W	120W
Motor output power	50W	100W
Voltage	100~220V, 50/60 Hz	100~220V, 50/60 Hz
Power	70W	130W
Speed range	50~2200rpm	50~2200rpm
Speed display accuracy	±3rpm	±3rpm
Speed display	LED	LED
Overload protection display	LED lights	LED lights
Max. torque	40Ncm	60Ncm
Viscosity max.	10000mPas	50000mPas
Chuck range diameter	0.5~10mm	0.5~10mm
Dimension [W x H x D]	83 x 220 x 186mm	83 x 220 x 186mm
Weight	2.8kg	2.8kg
Protection class	IP42	IP42
Permissible ambient temperature and humidity	5~40 °C, 80%	5~40 °C, 80%



Explosion-proof



Wide range of accessories

## ➤ Vortex Mixer



### Specifications

	MX-S (Adjustable speed)	MX-F (Fixed speed)
Voltage	110~120V/220~230V,50/60Hz	110~120V/220~230V,50/60Hz
Power	60W	60W
Mixing motion	Orbital	Orbital
Orbital diameter	4mm	4mm
Motor type	Shaded pole motor	Shaded pole motor
Motor rating input	58W	58W
Motor rating output	10W	10W
Speed range	0~2500rpm	2500rpm
Speed display	Scale	-
Run type	Touch operation/Continuous	Touch operation/Continuous
Dimension[WxHxD]	127x130x160mm	127x130x160mm
Weight	3.5kg	3.5kg
Permissible ambient temperature	5~40°C	5~40°C
Permissible relative humidity	80%	80%
Protection class	IP21	IP21

## ➤ Accessories for Microplate Mixer / Vortex Mixer



**PS1.1 Universal top plate**  
 Used with tube adapters  
 Cat. No. 18900067



**VT1.3.1 tube adapter**  
 for 48 holes test tubes, Ø6mm  
 Cat. No. 18900020



**VT1.3.2 tube adapter**  
 for 15 holes test tubes, Ø10mm  
 Cat. No. 18900021



**PS1.2 Microplate clamp**  
 Cat. No. 18900042



**VT1.3.3 tube adapter**  
 for 12 holes test tubes, Ø12mm  
 Cat. No. 18900022



**VT1.3.4 tube adapter**  
 for 8 holes test tubes, Ø16mm  
 Cat. No. 18900023



**VT1.3.5 tube adapter**  
 for 8 holes test tubes, Ø20mm  
 Cat. No. 18900024



**MXM-116**  
 Double microplate clamps  
 Cat. No. 18900079

## ➤ Microplate Mixer



### Specifications

	MX-M
Shaking movement	Orbital
Orbital diameter	4.5mm
Max. shaking weight (with accessory)	0.5 kg
Motor type	Brushless DC motor
Motor rating input	18W
Motor rating output	10W
Speed range	Single microplate: 0~1500rpm Double microplate : 0~1000 rpm
Speed display	Scale
Voltage	100~240V,50/60Hz
Power	20W
Dimension	260x150x80mm
Weight	3kg
Permissible ambient temperature and humidity	5~40 °C, 80%
Protection class	IP21

➤ Digital Linear / Orbital Shaker



Specifications

	SK-L330-Pro	SK-L180-Pro	SK-L180-S	SK-L180-E
Amplitude	10mm	4mm	20mm	20mm
Max. load capacity (with platform)	7.5kg	2.5kg	3kg	3kg
Motor type	Brushless DC motor	Brushless DC motor	DC motor	DC motor
Motor input power	28W	28W	16W	16W
Motor output power	15W	15W	10W	10W
Speed range	100~350rpm	100~350rpm	40~200rpm	0~200rpm
Speed display	LCD	LCD	LED	scale
Timer display	LCD	LCD	LED	-
Time settings range	1min~19h59min	1min~19h59min	1min~19h59min	-
Voltage	100~240V,50/60Hz	100~240V,50/60Hz	100~240V,50/60Hz	100~240V,50/60Hz
Power	30W	30W	20W	20W
Weight	13.5kg	8.1kg	3.1kg	3.1kg
Permissible ambient temperature and humidity	5~40 °C, 80%	5~40 °C, 80%	5~40 °C, 80%	5~40 °C, 80%
Dimension[WxDxH]	370x420x100mm	300x340x100mm	270x330x110mm	270x330x110mm
Protection class	IP21	IP21	IP21	IP21
Data connector	RS232	RS232	-	-

➤ Tube Roller



Specifications

	MX-T6-Pro	MX-T6-S
Amplitude	24mm	24mm
Motor type	DC motor	DC motor
Rocking motion	Rocking and rolling	Rocking and rolling
Amplitude	24mm	24mm
Max. load capacity	4kg	4kg
Number of rollers	6	6
Roller size [length]	280mm	280mm
Speed range	10 ~70rpm	0~70rpm
Speed display	LCD	Scale
Timer	Yes	-
Timer display	LCD	-
Time setting range	1~1199min	-
Operation mode	Continuous / timed	Continuous
Voltage	100~240V,50/60Hz	100~240V,50/60Hz
Power	30W	25W
Dimension [DxWxH]	450x260x120mm	450x260x120mm
Weight	5.1kg	4.5kg
Permissible ambient temperature and humidity	5~40 °C,80%	5~40 °C,80%
Protection class	IP21	IP21



## ➤ Digital Rocking Shaker



### Specifications

	SK-R330-Pro	SK-R1807-S	SK-R1807-E
Tilt angle	9°	7°	7°
Max. load capacity (with platform)	10kg	3kg	3kg
Motor type	DC motor	DC motor	DC motor
Motor input power	40W	16W	16W
Motor output power	24W	10W	10W
Speed range	10~70rpm	10~80rpm	0~80rpm
Speed display	LCD	LED	-
Timer display	LCD	LED	-
Time settings range	1min~19h59min	1min~19h59min	-
Voltage	100~240V,50/60Hz	100~240V,50/60Hz	100~240V,50/60Hz
Power	50W	20W	20W
Weight	9kg	3.2kg	3.2kg
Permissible ambient temperature and humidity	5~40°C,80%	5~40°C,80%	5~40°C,80%
Dimension[WxDxH]	360x410x200mm	270x330x130mm	270x330x130mm
Protection class	IP21	IP21	IP21

## ➤ Digital 3D Shaker



### Specifications

	SK-D3309-Pro	SK-D1807-S	SK-D1807-E
Tilt angle	9°	7°	7°
Max. load capacity (with platform)	5kg	3kg	3kg
Motor type	DC motor	DC motor	DC motor
Motor input power	40W	16W	16W
Motor output power	24W	10W	10W
Speed range	10~70rpm	10~80rpm	0~80rpm
Speed display	LCD	LED	scale
Timer display	LCD	LED	-
Time settings range	1min~19h59min	1min~19h59min	-
Voltage	100~240V,50/60Hz	100~240V,50/60Hz	100~240V,50/60Hz
Power	50W	20W	20W
Weight	9kg	2.7kg	2.7kg
Permissible ambient temperature and humidity	5~40°C, 80%	5~40°C, 80%	5~40°C, 80%
Dimension[WxDxH]	360x430x106mm	270x330x130mm	270x330x130mm
Protection class	IP21	IP21	IP21
Data connector	-	-	-

↘ **High Speed Multi-Purpose Centrifuge / Refrigerated**



**Specifications**

Speed range
Max. RCF
Speed accuracy
Temperature Range
Rotor Capacity
Run Time
Motor
Display
Program Memory
Safety Devices
Acceleration/Braking time
Power
Dimension[WxDxH]
Weight
Certification
Advanced Features

D1536
300~15000rpm
25150xg
±20rpm
-
9 types
30sec~99mins/continue
Brushless DC
LCD
9
door,imb,motor over hot,speed over,chamber over temper
9s / 10s
Single-phase AC220V~240V, 50Hz/60Hz, 6.3A; AC110V~120V,50Hz/60Hz,10A
445x579x269mm
36kg
CE cTUVus FCC MCA
speed/rcf switch; rotor identification

D1536R
300~15000rpm
25150xg
±20rpm
-20~40 °C
9 types
30sec~99mins/continue
Brushless DC
LCD
9
door,imb,motor over hot,speed over,chamber over temper
9s / 10s
Single-phase AC220V~240V, 50Hz/60Hz, 12.5A; AC110V~120V,50Hz/60Hz,15A
630x579x269mm
50kg
CE cTUVus FCC MCA
speed/rcf switch; rotor identification



19400043



19400042



bucket	x 4	x 4				x 4	
tube	x 8	x 4	x 4	x 4	x 8	x 20	
Nominal volume	50mL	100mL	85mL	50mL	15mL	3~7mL	
φ×L mm	34×100	38×108	38×104	34×100	17×120 13×100 13×75	13×100 13×75	
tube							
adapter							
		A100P80		A100P50	A100P15	A100P10	

## High Speed Centrifuge / Refrigerated



Brushless DC motor



Wide range of rotors



### Specifications

	D3024	D3024R
Max. Speed	15000rpm (200~15000rpm), increment:10rpm	15000rpm (200~15000rpm), increment:10rpm
Max. RCF	21380xg, increment:10xg	21380xg, increment: 10xg
Speed Accuracy	±20 rpm	±20 rpm
Temperature Range	-	-20°C~40°C
Rotor Capacity	5mLx18, 0.2mL/0.5mL/1.5mL/ 2mLx24, 0.5mLx36, PCR8x4	5mLx18, 0.2mL/0.5mL/1.5mL/ 2mLx24, 0.5mLx36, PCR8x4
Run Time	30sec~99min / Continuous	30sec~99min / Continuous
Motor	Brushless DC motor	Brushless DC motor
Safety Devices	Dual door interlock, Over-speed detection, Over-temperature detection, Automatic internal diagnosis	Dual door interlock, Over-speed detection, Over-temperature detection, Automatic internal diagnosis
Power	Single-phase, AC220V~240V, 50Hz/60Hz, 5A, AC110V~120V, 50Hz/60Hz, 8A 200W	Single-phase, AC220V~240V, 50Hz/60Hz, 10A, AC110V~120V, 50Hz/60Hz, 10A 400W
Acceleration /Braking time [Sec]	25s $\square$ 25s $\square$	25s $\square$ 25s $\square$
Dimension [WxDxH]	280x364x266mm	338x580x324mm
Weight	12kg	30kg
Certification	CE cTUVus FCC MCA	CE cTUVus FCC MCA
Advanced features	Speed/RCF switch; Short-time run function; sound-alert function	Speed/RCF switch; Short-time run function; sound-alert function



#### AS24-2

Cat. No. 19400006

for D3024 & D3024R  
Max. speed : 15000 rpm  
Max. RCF: 21380 xg  
Rotor capacity: 2mL/1.5mLx24,0.2mLx24,0.5mLx24  
Rotor material: Aluminum alloy  
Bio-safe(Bio sealing):YES  
Available rotor adapters: A02P2,A05P2.



#### AS36-05

Cat. No. 19400007

for D3024 & D3024R  
Max. speed : 15000 rpm  
Max. RCF: 21380 xg  
Rotor capacity: 0.5mLx36,0.2mLx36  
Rotor material: Aluminum alloy  
Bio-safe(Bio sealing):YES  
Available rotor adapters: A02P05



#### AS12-5V

Cat. No. 19400032

for D3024 & D3024R  
Max. speed : 15000 rpm  
Max. RCF: 21380 xg  
Rotor capacity: 5mLx12(culture tube)  
Rotor material: Aluminum alloy  
Bio-safe(Bio sealing):YES



#### AS4-PCR8

Cat. No. 19400008

for D3024 & D3024R  
Max. speed : 15000 rpm  
Max. RCF: 21380 xg  
Rotor capacity: 0.2mL/PCR8x4  
Rotor material: Aluminum alloy  
Bio-safe(Bio sealing):YES

➤ **Multi-Purpose Clinical Centrifuge / Refrigerated**



**Specifications**

	DM0636	DM0636R
Speed range	300~6000rpm increment:10rpm	300~6000rpm increment:10rpm
Max. RCF	4300xg	4300xg
Speed accuracy	±20rpm	±20rpm
Temperature Range	-	-20~40 °C
Rotor Capacity	9 types	9 types
Run Time	30sec~99mins/continue	30sec~99mins/continue
Motor	Brushless DC	Brushless DC
Display	LCD	LCD
Program Memory	9	9
Safety Devices	door,imb,motor over hot,speed over,chamber over temper	door,imb,motor over hot,speed over,chamber over temper
Acceleration/Braking time	9s /10s	9s /10s
Power	Single-phase AC220V~240V, 50Hz/60Hz, 6.3A; AC110V~120V,50Hz/60Hz,10A	Single-phase AC220V~240V, 50Hz/60Hz, 12.5A; AC110V~120V,50Hz/60Hz,15A
Dimension[WxDxH]	445x579x269mm	630x579x269mm
Weight	36kg	50kg
Certification	CE cTUVus FCC IVD	CE cTUVus FCC IVD
Advanced features	speed/rcf switch; Rotor identification	speed/rcf switch; Rotor identification



19400045



19400044



19400043



19400042

bucket	x 4									
tube	x 36	x 16			x 8	x 4	x 4	x 4	x 8	x 20
Nominal volume	3~7mL	10mL	12mL	15mL	50mL	100mL	85mL	50mL	15mL	3~7mL



**AS6-50V**

for DM0636 & DM0636R

Max. speed :6000rpm  
Max. RCF:4300xg  
Rotor capacity: 50mLx6  
Rotor material:aluminum  
Bio-safe(Bio sealing):YES

Cat. No. 19400038



**A8-50**

for DM0636 & DM0636R

Max. speed : 5000rpm  
Max. RCF:3460xg  
Rotor capacity: 50mLx8 or 15mLx16  
Rotor material:aluminum body and stainless steel adaptor

Cat. No. 19400039



**AS18-5V**

for DM0636 & DM0636R

Max. speed : 6000rpm  
Max. RCF: 4300xg  
Rotor capacity: 5mLx18  
Rotor material:stainless steel body and aluminum buckets

Cat. No. 19400035



**A30-15**

for DM0636 & DM0636R

Max. speed :4500rpm  
Max. RCF:2570xg  
Rotor capacity:15mLx30  
Rotor material:aluminum body and stainless steel adaptor  
Bio-safe(Bio sealing):YES

Cat. No. 19400040

## ➤ Clinical Centrifuge



### Specifications

	DM0412	DM0412S
Speed range	300~4500rpm, increment: 100rpm	300~4500rpm, increment:100rpm
Max. RCF	2490xg	2490xg
Speed accuracy	±20rpm	±100rpm
Rotor Capacity	1 type	1 type
Run Time	30sec~99min HOLD(Continuous operation)	1sec~99min HOLD(Continuous operation)
Motor	Brushless DC motor	DC motor
Display	LCD	LED
Safety Devices	Door interlock,Overspeed detector; Automatic internal diagnosis	Door interlock,Over-speed detection
Acceleration/Braking time	20s☒ 13s☒	23s☒ 23s☒
Power	Single-phase, 110V~240V,50Hz/60Hz, 3A 70W	Single-phase,220V~240V,50Hz/60Hz, 3A;110V~120V,50Hz/60Hz, 3A 70W
Dimension[WxDxH]	301x354x217mm	301x354x217mm
Weight	6kg	6kg
Certification	CE, UL, IVD	-
Advanced features	Speed/RCF switch;Short-time run function; sound-alert function	sound-alert function

### A12-10P

Cat. No. 19200348











for DM0412 & DM0412S

Max. speed :4500rpm

Max. RCF:2500xg

Rotor capacity: 8x15ml;12x10ml

Rotor material: High strength plastic

Available tubes	Tube quantity	Dimension (ØxL mm)	Adapters	Maximum speed(rpm)	Radius (cm)	Maximum RCF (xg)
15mL con	8	17x120		4500	11	2490
1.5~5mL vacu 	12	13x75	A10P15 & Plug 	4500	9.8	2218
4~7 mL vacu 	12	13x100	A10P15 	4500	11	2490
8.5~10 mL vacu 	12	16x75		4500	9.8	2218
16x107 	12	16x107		4500	11	2490
2.7~3 mL(EU) collection tube 	12	11x66	A10P15 & Plug 	4500	9.8	2218
7.5~8.2 mL(EU) collection tube 	12	15x92	A10P15 	4500	11	2490

➤ **High Speed Mini Centrifuge**



**Specifications**

	<b>D2012 plus</b>
Max. Speed	15000rpm (500~15000rpm), increment:100rpm
Max. RCF	15100×g, increment:100×g
Speed Accuracy	±20 rpm
Rotor Capacity	0.2mL/0.5mL/1.5mL/ 2mL×12
Run Time	30sec~99min / Continuous
Driving Motor	Brushless DC motor
Safety Devices	Door interlock, Over-speed detection, Over-temperature detection, Automatic internal diagnosis
Power	Single-phase, AC110V~240V, 50Hz/60Hz, 3A 100W
Noise level	≤54dB
Acceleration /Braking time	11s/ 9s
Dimension [D×W×H]	255×245×140mm
Weight	6kg
Certification	EMC, CE, FCC, ICES, cTUVus, CB
Advanced features	Speed/RCF switch, Short-time run function, sound-alert function

➤ **Mini Centrifuge**



**Specifications**

	<b>D1008</b>	<b>D1008E</b>
Max. Speed	7000rpm	5000rpm
Max. RCF	2680×g	1360×g
Rotor Capacity	0.2/0.5/1.5/2.0mL×8; 0.2mL×16 PCR strips or 0.2mL×2 PCR 8 strips	0.2/0.5/1.5/2.0mL×8; 0.2mL×16 PCR strips or 0.2mL×2 PCR 8 strips
Run Time	Continuous operation	Continuous operation
Driving Motor	DC motor	DC motor
Power	AC110~240V/50Hz/60Hz 20W	AC110~240V/50Hz/60Hz 20W
Noise level	≤45dB	≤45dB
Dimension [D×W×H]	160 x 170 x 122mm	160 x 170 x 122mm
Weight	0.5kg	0.5kg
Certification	CE cTUVus FCC MCA	CE cTUVus FCC MCA



**A08-2** Cat. No. 19400015  
 Max. speed:10000/7000/5000rpm  
 Max. RCF:5460/2680/1360×g  
 Rotor capacity:2mL/1.5mL×8,0.2mL×8,0.5mL×8  
 Rotor material:High strength plastic  
 Available rotor adapters:SA02P2, SA05P2



**A02-PCR8** Cat. No. 19400017  
 Max. speed:10000/7000/5000rpm  
 Max. RCF: 5460/2680/1360 ×g  
 Rotor capacity:0.2mL×16 PCR strips,0.2 mL×2 PCR 8 strips  
 Rotor material:High strength plastic

## ➤ Capp Tronic Electronic pipettes



Micropipette

**Capp Tronic Single**  
Cat. No. Description  
E20-1BA Capp electronic pipette single channel, 2-20 ul  
E200-1BA Capp electronic pipette single channel, 10-200 ul  
E1000-1BA Capp electronic pipette single channel, 100-1000 ul

**Capp Tronic Multi**  
Cat. No. Description  
E20-8BA Capp electronic pipette 8-channel, 2-20 ul  
E200-8BA Capp electronic pipette 8-channel, 10-200 ul  
E1200-8BA Capp electronic pipette 8-channel, 100-1200 ul



## ➤ Capp Eco pipettes (Single/Multi channel)



Micropipette



Micropipette

Micropipette

Cat. No.	Description	Cat. No.	Description
C02-1S	Capp pipette, variable vol. 0.2-2 ul	C100-1	Capp pipette, variable vol. 10-100 ul
C10-1	Capp pipette, variable vol. 0.5-10 ul	C200-1	Capp pipette, variable vol. 20-200 ul
C20-1	Capp pipette, variable vol. 2-20 ul	C1000-1	Capp pipette, variable vol. 100-1000 ul
C50-1	Capp pipette, variable vol. 5-50 ul	C5000-1	Capp pipette, variable vol. 1000-5000 ul

## ➤ Capp Aid (Pipette Controller)



Digital Pipette Controller

Cat. No.	Description
PA-100	CappAid pipette controller, 0.1-100ml
PA-100FT	CappAid disposable filter, 0.2um
PA-100NC	CappAid autoclavable nose cone
PA-100TH	CappAid silicon pipette holder

## ➤ Micropipette Tips (Diff. Range)



Centrifuge Tubes: BluCapp 15ml and 50ml tubes

Cat. No.	Description
5100015C	BluCapp 15ml, pre-sterile, 20x25 pcs.
5100050C	BluCapp 50ml, pre-sterile, 20x25 pcs.

## ➤ Centrifuge

CR-656



Specifications	CR-656
Maximum speed RPM / RCF (g)	6500 RPM / 3684 g
Speed setting	500 to 6500 rpm (increments of 100 rpm=)
Timer setting	0.5 to 30 minutes or infinite mode
Imbalance detection	Yes
Dimensions	260 x 244 x 205 mm
Noise level	< 60 dB
Weight	4 kg
Rotors and adaptors included	6x 10/15mL, adaptors for 5mL, 7mL, 1.5mL and 2mL tubes

## ➤ Micropipette Stand



Pipette stands

Cat. No.	Description
C-01	Capp Combi Stand (2 modules) for up to 3 mechanical pipettes
C-05	Capp Acrylic stand for up to 5 pipettes, incl. Capp Bravo
S-06	Capp Carousel stand for up to 6 mechanical pipettes
00169-1	Bench top stand for multichannel pipettes
E-Stand	Stand for 3 units of CappTronic™ pipettes
00392-1	Block for 4 volume controllers

## ➤ Vortex Mixer

CRV-45X



CRV-45X Technical Specifications	
Motion	Orbital
Speed Range (RPM)	0 - 4,500
Orbital Diameter	4.5 mm
Operating Mode	Touch
Max tube diameter	30 mm
Power Supply	Universal (90 to 230V, 50 / 60 Hz.)
Motor	Brush-less DC motor
Max. Load Capacity	500 gm
Permissible ambient temperature	5 - 40 °C
Permissible relative moisture	80%
Material Body	PC ABS
Material Platform	Die Cast
Dimension (WxDxH)	100x100x67 mm
Power Consumption	15 W
Protection Class (DIN EN 60529)	IP 43

## ➤ Microcentrifuge



CR-68X

- Supplied with 8 slot closed rotor for quiet & powerful operation.
- Additional PCR strip rotor (2X8X0.2ML) and reduction adaptors for 0.2/0.4ML microtubes supplied along with product.
- Electronic safety brake provides an immediate stop on lid opening.
- Quick operation by simply closing and opening the lid.
- Imbalance cut-off safety feature (CR-68X).
- Digital calibration function (CR-68X).
- Digital display of speed and timer function (CR-68X).

Cat. No.	Description
CR-68	Capp Rondo Microcentrifuge 8000rpm/2000g
CR-68X	Capp Rondo Microcentrifuge w/ adjustable speed and timer function, max. 8000rpm/2000g

## ➤ Magnetic Stirrer



CRS-15X

Specifications	Capp Rondo Magnetic Stirrer
Maximum speed	1500 rpm
Speed setting	15 to 1500 rpm (increments of 50 rpm)
Load capacity	800 mL
Recommended stir bar length	25 mm
Dimensions	124 x 191 x 16.5mm
Weight	600 grams
Pulse function	YES
Timer function	1 to 99 minutes and infinite mode

➤ C1006 Small Centrifuge



**Technical Specifications**

Speed	500-6000Rpm (10Rpm steps)
Rcfmax	3,500G
Timer	0-99 Mins & hold (30sec steps)
Dims HWD	235x235x350mm
Weight	12.8Kg (without rotor)
Power	172 watts
Memory	10 programs
Accel rates	10 programs
Decel rates	10 programs

**Rotors**

Rotor type	4x15ml & 4x10ml
Tube size max	17x120mm&13x110mm
Minimum speed	500Rpm
Maximum speed	6000Rpm
Maximum Rcf (G)	3500
Radius max cms	8.50
Sample tube angle (o)	30
Acceleration time (secs)	30
Deceleration time (secs)	30
Autoclaveable (frequency)	121°C(10)



BRK5407



BRK5408

4x15ml	8x15ml
17x120mm&13x110mm	17x120mm
500Rpm	500Rpm
6000Rpm	6000Rpm
3500	3500
8.50	8.50
30	30
30	30
30	30
121°C(10)	121°C(20)

➤ C2004 Medium Centrifuge



**Technical Specifications**

Speed	500-4000Rpm (10Rpm steps)
Rcfmax	2,200G
Timer	0-99 Mins & hold (30 sec steps)
Dims HWD	275x325x470mm
Weight	21.8Kg (without rotor)
Power	125 watts
Memory	10 programs
Accel rates	10 programs
Decel rates	10 programs

**Rotors**

Rotor type	24x15ml
Tube size max	17x120mm
Minimum speed	500Rpm
Maximum speed	4000Rpm
Maximum Rcf (G)	3500
Radius max cms	12.3
Sample tube angle (o)	30
Acceleration time (secs)	35
Deceleration time (secs)	35
Autoclaveable (frequency)	121°C(20)



BRK5431



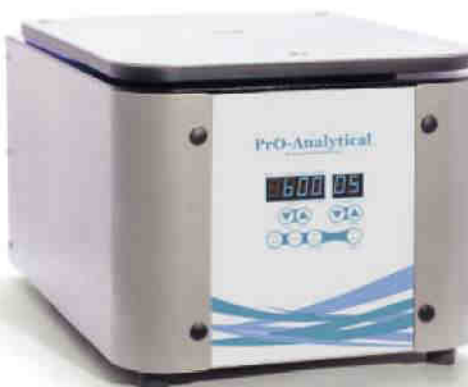
BRK5434



BRK5434

8x50ml	4x100ml
30x120mm	45x100mm
500Rpm	500Rpm
4000Rpm	4000Rpm
3500	2200
12.3	12.3
30	0
35	25
35	25
121°C(20)	121°C(20)

➤ C2006 General Purpose Centrifuge



**Technical Specifications**

Speed	500-6000Rpm (10Rpm steps)
Rcfmax	3,800G
Timer	0-99 Mins & hold (30 sec steps)
Dims HWD	275x325x470mm
Weight	21.8Kg (without rotor)
Power	80 watts
Memory	10 programs
Accel rates	10 programs
Decel rates	10 programs

**Rotors**

Rotor type	12x15ml
Tube size max	17x120mm
Minimum speed	500Rpm
Maximum speed	6000Rpm
Maximum Rcf (G)	3800
Radius max cms	9.5
Sample tube angle (o)	30
Acceleration time (secs)	25
Deceleration time (secs)	25
Autoclaveable (frequency)	121°C(20)



BRK5412

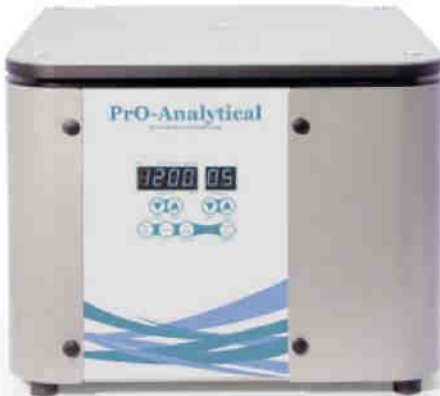


BRK5406

6x50ml	30x120mm
500Rpm	500Rpm
6000Rpm	6000Rpm
3800	3800
9.5	9.5
30	30
25	25
25	25
121°C(20)	121°C(20)



➤ **CR4000 Ambient Centrifuge/CR4000R Refrigerated Centrifuge**



**Technical Specifications**

Speed	500-15000Rpm (10Rpm steps)
Rcfmax	22,000G
Timer	0-9999 Mins & hold (30sec steps)
Dims HWD	310x400x500mm
Weight	31.6Kg (without rotor)
Power	309 watts
Memory	10 programs
Accel rates	10 programs
Decel rates	10 programs

**Rotors**

Rotor type	24x2ml	36x0.5ml	48x0.2ml
Tube size max	11x50mm	8x30mm	6x40mm
Minimum speed	500Rpm	500Rpm	500Rpm
Maximum speed	15000Rpm	15000Rpm	15000Rpm
Maximum Rcf (G)	22000	20000	22000
Radius max cms	8.75	8.75	8.75
Sample tube angle (o)	45	45	45
Acceleration time (secs)	20	20	20
Deceleration time (secs)	20	20	20
Autoclaveable (frequency)	121°C(20)	121°C(20)	121°C(20)
Minimum Temperature	4°C for CR4000R		



BRK5424	BRK5436	BRK5448
24x2ml	36x0.5ml	48x0.2ml
11x50mm	8x30mm	6x40mm
500Rpm	500Rpm	500Rpm
15000Rpm	15000Rpm	15000Rpm
22000	20000	22000
8.75	8.75	8.75
45	45	45
20	20	20
20	20	20
121°C(20)	121°C(20)	121°C(20)
4°C for CR4000R		



➤ **Swing out Rotors for CR4000/CR4000R/K2015/K2015R**

**Rotors**

Rotor type	4x250ml	8x15ml	24x15ml	8x50ml	6x100ml
Tube size max	62x110mm	17x125mm	17x120mm	30x120mm	45x125mm
Minimum speed	500Rpm	500Rpm	500Rpm	500Rpm	500Rpm
Maximum speed	4000Rpm	4000Rpm	6000Rpm	6000Rpm	6000Rpm
Maximum Rcf (G)	2600	2600	4800	4800	4800
Radius max cms	14.6	14.6	12	12	12
Sample tube angle (o)	0	0	30	30	30
Acceleration time (secs)	25	20	35	35	35
Deceleration time (secs)	25	20	35	35	35
Autoclaveable (frequency)	121°C(20)	121°C(20)	121°C(20)	121°C(20)	121°C(20)
Minimum Temperature	4°C for CR4000R				



BRK5510	BRK5508L	BRK5324	BRK5308	BRK5100
4x250ml	8x15ml	24x15ml	8x50ml	6x100ml
62x110mm	17x125mm	17x120mm	30x120mm	45x125mm
500Rpm	500Rpm	500Rpm	500Rpm	500Rpm
4000Rpm	4000Rpm	6000Rpm	6000Rpm	6000Rpm
2600	2600	4800	4800	4800
14.6	14.6	12	12	12
0	0	30	30	30
25	20	35	35	35
25	20	35	35	35
121°C(20)	121°C(20)	121°C(20)	121°C(20)	121°C(20)
4°C for CR4000R				

➤ **K2015 Ambient Centrifuge/K2015R Refrigerated Centrifuge**



**Technical Specifications**

Speed	500-15000Rpm (1 Rpm steps)
Rcfmax	22,000G
Timer	0-9999 Mins & hold (1 sec steps)
Dims HWD	275x325x470mm
Weight	21.8 Kg (without rotor)
Power	120 watts
Memory	108 programs
Accel rates	10 programs
Decel rates	10 programs
Temp.	-9°C to 40°C Controlled to +/- 1°C for K2015R

**Rotors**

Rotor type	24x2ml	36x0.5ml	48x0.2ml
Tube size max	11x50mm	8x30mm	6x40mm
Minimum speed	500Rpm	500Rpm	500Rpm
Maximum speed	15000Rpm	15000Rpm	15000Rpm
Maximum Rcf (G)	22000	20000	22000
Radius max cms	8.75	8.75	8.75
Sample tube angle (o)	45	45	45
Acceleration time (secs)	20	20	20
Deceleration time (secs)	20	20	20
Autoclaveable (frequency)	121°C(20)	121°C(20)	121°C(20)
Minimum Temperature	4°C for CR4000R		



BRK5424	BRK5436	BRK5448
24x2ml	36x0.5ml	48x0.2ml
11x50mm	8x30mm	6x40mm
500Rpm	500Rpm	500Rpm
15000Rpm	15000Rpm	15000Rpm
22000	20000	22000
8.75	8.75	8.75
45	45	45
20	20	20
20	20	20
121°C(20)	121°C(20)	121°C(20)
4°C for CR4000R		

## mini Personal Microcentrifuge for up to 13,500 rpm

Guarantee speedy centrifugation of simple spin-down or filtered precipitation



### Technical Specifications

Max. RPM	13,500 rpm
Max. RCF	12,300 x g
Max. capacity	12 x 1.5/2.0 ml, 4 PCR strips
Time control	Pulse or timed < 30 min
RCF/RPM conversion	Yes
Noise level (dependent on rotor)	< 60 dB
Acc. time to max. speed	< 12 sec
Dec. time from max. speed	< 16 sec
Display	Blue LCD

## 1524 High Speed Microcentrifuge for up to 15,000 rpm

24-place microcentrifuge for simple precipitation and NA preparation



### Technical Specifications

Max. RPM	15,000 rpm
Max. RCF	21,206 x g
Max. capacity	24 x 1.5/2.0 ml, 4 PCR strips
Time control	Pulse, timed < 100 min, or continuous
RCF/RPM conversion	Yes
Noise level (dependent on rotor)	< 60 dB
Acceleration ramp	5
Deceleration ramp	5
Display	Blue LCD

## 1730R Refrigerated, High Speed Microcentrifuge for up to 17,000 rpm

30-place microcentrifuge for most molecular biology experiments



### Technical Specifications

Max. RPM	17,000 rpm
Max. RCF	27,237 x g
Max. capacity	30 x 1.5/2.0 ml, 8 PCR strips
Temp. range	-20° to 40°
Time control	Pulse, timed < 100 min, or continuous
Noise level (dependent on rotor)	< 60 dB
Acceleration	ramp 5
Deceleration	ramp 5
Display	Blue LCD

## 2236R High Speed Refrigerated Centrifuge for up to 54,000 g

Ideal for high volume (6 x 1,000 ml) centrifugation at high-speed



### Technical Specifications

Max. capacity	Fixed Angle Rotor	Swing Rotor	Time control	timed < 100 hr, or continuous
	30x1.5/2.0 ml	4x12x15 ml	RCF/RPM conversion	Yes
	8x15 ml	4x4x50 ml	Noise level (dependent on rotor)	< 60 dB
	8x50 ml	4x2x85 ml	OS Windows	CE
	6x85 ml	4x250 ml	Acceleration ramp	9
	6x250 ml	4x4xMTP	Deceleration ramp	10
	6x500 ml		Display	7" LCD
Max. RPM/RCF	22,000/54,111	4,000/3,134	Rotor identification	Automatic
Temp. range	-20° to 40°			

## 406/416 Low-Speed Centrifuge

Good for simple cell harvest and blood cell separation!  
 Ideal for biological sample separation of cells, bloods, urines, etc



### Technical Specifications

	Model: 406	Model: 416
Max. capacity	6 x 15 .	Fixed Angle Rotor 16x15ml Swing Rotor 4x2x15 ml 4x50 ml
Max. RPM	4,000 rpm	4,000 rpm
Max. RCF	2,075 x g	2,700 rpm 2,826 rpm
Time control	Timed < 100 min or continuous	Timed < 100 min or continuous
RCF/RPM conversion	Yes	Yes
Noise level (dependent on rotor)	< 60 dB	< 60 dB
Acc. time to max. speed	< 20 sec	< 20 sec
Dec. time from max. speed	< 20 sec	< 25 sec

## Vacuum Concentrators



### Technical Specifications

	MiniVac Alpha	MiniVac Beta
Auto / start stop	Yes	Yes
Timer function	Yes	Yes
Pressure Read out mBar	1 ~ 1000 mBar	1 ~ 1000 mBar
Rpm Adjustable	0 ~ 2000	0 ~ 2000
Heat Temp. Range 0C	+ 5 to + 80	+ 5 to + 80
Pump down capacity L/min	15	37
Pump capacity	25 mBar at 25°C and 6 mBar at 0°C	7mBar
Power consumption W	1500	1500
Voltage V/Hz	230 / 50-60 Hz or 110 / 50 Hz	230 / 50-60 Hz or 110 / 50 Hz

## ➤ Gel documentation



### Technical Specifications

Camera:	
Type	5x optical / 4x digital zoom
camera-	
Effective Pixels	14.7 megapixels
CCD	1/1.7" high-density CCD
Maximum Aperture	f/2.8 (W) – f/4.5 (T)
Shutter Speed	15 – 1/4000s
Filters	+3 Close up and EIBr; optional SYBR green
Storage Media	2MB memory card
Computer Interface	USB 2.0 Hi Speed (mini-B jack)
Video Out	NTSC/PAL
Darkroom:	
Multi-power Source	For camera, inner white LED
Capture	Manual-save in BMP format
Inner White Light	2x3W LED
Safety Device	Safety door switch
Weight & Dimensions	
Weight	6.1kg; 290x220x320mm
Voltage Rating	110–220V
Screen:	
Type	8" TFT
Resolution	600x800 Pixels
Brightness	350 cd/mm <sup>2</sup>
Constant Ratio	300 : 1
Display Mode	NTSC / PAL / SECAM mode auto switching

- 1 14.7 Megapixel digital CCD camera
- 1 Image visualised within a large 8" TFT colour monitor
- 1 Light weight compact hood with easy access door and built-in inner lights
- 1 Safety switches disconnect the UV source when the easy access door is opened
- 1 Computer-free operation
- 1 Available on its own with camera and darkroom, or as a complete gel documentation system with transilluminator, either with or without software
- 1 Transilluminators supplied in single and dual wavelength formats - see page 42

## ➤ Gel documentation



### Technical Specifications

Product Name	omniDOC	omniDOC
Camera	5MP (2592 x 1944, 10 bit scientific grade sensor)	omniDOC
UV Light		312nm
Lens (Camera)		9mm, F1.2
Filter (Camera)	Optical EIBr (Standard), options available	
Image Storage	PC	Portable Device (iOS or Android) and PC
Connection	USB to PC	WiFi to portable device and PC
Software support	Windows7 (64bit & 32bit) XP/Vista	Windows7 (64bit & 32bit) XP/Vista or iPad
Cabinet	Door with pull out transilluminator	
Field of View	8.26" X 10.24" (210mm x 260mm), H 3.46" (88mm)	
Dimensions	15.75" x 12.36" x 21.81" (400 x 314 x 554mm)	
Display	LED	LCD
Viewing Window	For Gel Observation	
Window Filter	560nm amber filter (standard)	
Light	White Light (Standard)	
Optional	White Light Board and Blue Light (Power built in ready to connect)	
Safety	CE, FCC	
USB Port	for PC connection	for maintenance purposes only
WiFi Format	NA	n/g

### Features

- 5MP Camera
- Built in 21 x 28cm pull-out Transilluminator
- Pre focused lens - no focusing needed.
- Optional blue LED or white light table available
- Image analysis software included FREE.
- omniDOCi runs on iPad or other smart device.

## ➤ Multi SUB mini



### Technical Specifications

Gel Dimensions, (W X L)	7 X 7cm
Unit Dimensions (W X L X H)	7 X 10cm
Unit Dimensions (W X L X H)	21 X 9 X 9cm
Max. Sample	7 X 7cm Tray – 32 Samples
Capacity	7 X 10cm Tray – 64 Samples
Buffer Volume	225ML
Combs Available	:
No. Of Samples	1, 2, 4, 8mc, 10, 12mc, 16
Thicknesses	0.75, 1, 1.5, 2mm

## ➤ Multi SUB midi



### Technical Specifications

Gel Dimensions, (W X L)	10 X 7cm
Unit Dimensions (W X L X H)	10 X 10cm
Unit Dimensions (W X L X H)	21 X 12.5 X 9cm
Max. Sample	10 X 7cm Tray – 50 Samples
Capacity	10 X 10cm Tray – 100 Samples
Buffer Volume	300ML
Combs Available	:
No. Of Samples	1, 2, 4, 8mc, 12, 16, 20mc, 25
Thicknesses	0.75, 1, 1.5, 2mm

## ➤ Omni PAGE mini



### Technical Specifications

Plate Dimensions	10 X 10cm
Gel Dimensions (W X L)	7.5 X 8cm
Unit Dimensions (W X L X H)	19 X 13 X 15cm (W X D X H)
Max. Sample	80 Samples,
Capacity	20 Samples Per Gel
Buffer Volume	Min 250ML; Max 1200ML
Combs Available	:
No. Of Samples	1, 5, 8Mc, 9, 10, 12, 16Mc, 20
Thicknesses	0.75, 1, 1.5, 2mm

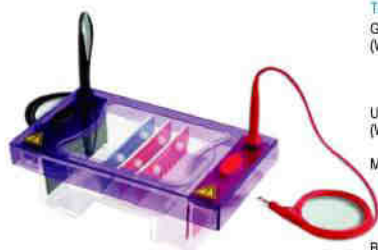
## ➤ OmniPAGE maxi



### Technical Specifications

Plate Dimensions	20 X 20cm
Gel Dimensions (W X L)	16 X 17.5cm
Unit Dimensions (W X L X H)	26 X 16 X 28cm (W X D X H)
Max. Sample	192 Samples,
Capacity	48 Samples Per Gel
Buffer Volume	Min 1200ML; Max 5600ML
Combs Available	:
No. Of Samples	1, 5, 10, 18mc, 24, 30, 38mc, 48
Thicknesses	0.75, 1, 1.5, 2mm

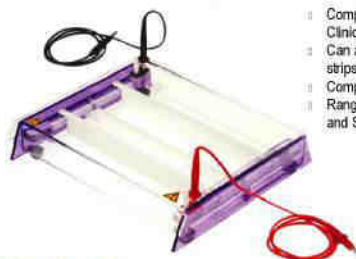
## ➤ Multi SUB choice



### Technical Specifications

Gel Dimensions (W X L)	15 X 7cm
Unit Dimensions (W X L X H)	15 X 10cm
Unit Dimensions (W X L X H)	15 X 15cm
Unit Dimensions (W X L X H)	15 X 20cm
Unit Dimensions (W X L X H)	15 X 25cm
Unit Dimensions (W X L X H)	26.5 X 17.5 X 9cm
Unit Dimensions (W X L X H)	41 X 17.5 X 9cm
	(Stretch Models Only)
Max. Sample	15 X 7cm Tray – 70 Samples
	15 X 10cm Tray – 140 Samples
	15 X 15cm Tray – 210 Samples
	15 X 20cm Tray – 280 Samples
	15 X 25cm Tray – 350 Samples
Buffer Volume	Choice 500ML
	Choice Stretch 1000ML
Combs Available	:
No. Of Samples	1, 2, 4, 10, 10Mc, 12, 14Mc,
	16, 18Mc, 20, 28Mc, 30Mc, 35
Thicknesses	0.75, 1, 1.5, 2mm

## ➤ Clinical Electrophoresis



- 1 Compact High Resolution Systems for Clinical Electrophoresis
- 1 Can accommodate cellulose acetate strips up to 24 x 20cm
- 1 Complete range of cellulose acetate gels and kits
- 1 Range includes Densitometer, Scanner and Software

### Ordering Information

CSLCELLAS	Horizontal Unit for Cellulose Acetate Electrophoresis
CSLDENS	TurboScan Software Densitometer (computer and scanner not included)
CSLSCAN	Flatbed Scanner for TurboScan software.

## Modular Systems



### Technical Specifications

Unit Dimensions Mini (W X D X H) 19 X 13 X 15cm  
 Mini Wide 26 X 16 X 16cm  
 Maxi 26 X 16 X 28cm  
 Slab 80 Samples, 20 Samples /Gel  
 Tube - 10 Tubes; Blot - 3 Blots  
 Max. Sample Mini Capacity  
 Max. Sample, Mini Wide Capacity  
 Slab 192 Samples, 48 Samples /Gel  
 Tube - 10 Tubes; Blot - 3 Blots  
 Max. Sample Maxi Capacity  
 Slab 192 Samples, 48 Samples /Gel  
 Tube - 10 Tubes; Blot - 3 Blots  
 Buffer Volume  
 Mini: Min 250ml; Max 1200ml  
 Mini Wide: Min 600ml; Max 2800ml  
 Maxi: Min 1200ml; Max 5600ml

- Economy of bench space and cost
- Enhanced reproducibility
- Simple to use casting
- Rapid set up cooling

## Comet Assay Tanks



- For Single Cell Gel Electrophoresis
- Minimise exposure to light and reduce background DNA damage
- High efficiency cooling for enhanced resolution

### Ordering Information

CSL-COM10 Comet Assay Tank for 10 Slides  
 CSL-COM20 Comet Assay Tank for 20 Slides  
 CSL-COM40 Comet Assay Tank for 40 Slides  
 CSL-COM80 Comet Assay Tank for 80 Slides

CSL-CHILLER  
 Comet Assay IV  
 F250

Chiller unit for active slide temperature control  
 DNA damage and repair software scoring system  
 (contact sales@cleaverscientific.com)  
 Julabo Chiller

## UV Transilluminator



- Three wavelength options: 254/312/365 nm, two Dual wavelength models
- Long life filter
- High efficiency reflector
- Hi/Lo intensity switch
- Fast start up

### Technical Specifications

Filter Size 20 X 20 cm  
 Light Source: 8W X 6 Tubes  
 UV Resistant Plastic Cover: 33 X 25cm (WxD)  
 Unit Dimensions WxLxH 34 X 29.5 X 10cm

## Gel Dryers

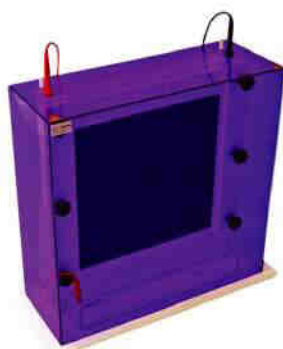


- Maxi dries up to twelve 10 x 10cm gels at a time
- Microprocessor control temperature and timer
- Optimal light seal during the drying process

### Technical Specifications

Temperature Increment	0.1°C
Temperature Calibration	Yes
Temp Uniformity	± 0.2°C
Timer 1-999 Mins	
Drying Area	Midi 21 X 31cm Maxi 35 X 45cm
Operating Temp. Range	Ambient To 90°C
Dimension	WxLxH Midi 30 X 36 X 8cm Maxi 44 X 50 X 8cm

## Large Format Vertical



- Run up to 96 samples
- Enhanced gel heat homogenisation
- Variable low or high buffer volumes
- 20 x 50cm or 33 x 45cm formats

### Technical Specifications

Plate Dimensions (W X L)	CSQ20 20 X 50cm CSQ33 33 X 45cm
Max Sample Capacity	CSQ20 48 Samples CSQ33 96 Samples
Buffer Volume	CSQ20 Min 500ML, Max 1000ML CSQ33 Min 800ML, Max 2000ML
Combs Available	
No. Of Teeth	24, 48, 80, 96
Thicknesses	0.25, 0.35, 1, 1.5mm

## Omni PAC Power Supplies



### omniPAC MAXI

- High performance, easy to operate
- Graphic and text displays
- Completely programmable
- Programme constant voltage and current
- Memory mode - Stores 16 files to recall and re-run
- Safety - Comply to all relevant safety standards

### Technical Specifications

Model	Cs-500V	Cs-3Amp
Max. Voltage	500V	300V
Max. Current	800MA	3A
Max. Watt	300W	300W
Model	Cs-250V	Cs-300V
Max. Voltage	250V	300V
Max. Current	700MA	700MA
Max. Watt	150W	150W
Model	Mini150V	Mini300V
Max. Voltage	150V	300V
Max. Current	800MA	400MA
Max. Watt	60W	60W



## Vacuum Pumps



- Maxi dries up to twelve 10 x 10cm gels at a time
- Microprocessor control temperature and timer
- Optimal light seal during the drying process

### Technical Specifications

MZ 2C + 2 AK	
Unit Dimensions (W X L X H)	24.1 X 34.5 X 32.6cm
Vacuum Pump	Chemistry Diaphragm Pump
MZ 2C	
Number Of Stages	2
Pumping Speed 50/60 Hz	1.9M3/H / 2.1 M3/H // 1.2cfm
Ultimate Vacuum (Total)	9 MBAR // 6.8 TORR
Ultimate Vacuum With Gas Ballast	15 MBAR // 11 TORR
Inlet Connection (In)	Hose Nozzle NW 10mm
Outlet Connection (Ex)	Hose Nozzle NW 10mm
Weight	11.9kg
Pump Flow Rate	35 L/min

## omniPAGE mini Wide



- Offers the capacity of two mini gels on a single gel
- Rapid gel casting and loading
- Optional low or high buffer volumes
- Rapid set up cooling

### Technical Specifications

Plate dimensions,	20 x 10cm
Gel dimensions (w x l)	18 x 8cm
Unit dimensions (w x l x h)	26 x 16 x 16cm
Max. sample capacity	192 samples, 48 samples per gel
Buffer volume	Min 600ml; Max 2800ml
Combs available:	
No. of samples	1, 5, 10, 18MC, 24, 30, 36MC, 48
Thicknesses	0.75, 1, 1.5, 2mm

## ➤ MiniRapide



### Technical Specifications

Gel dimensions (w x l)	10 x 8cm
Unit dimensions (w x l x h)	15 x 15 x 4cm
Max. sample capacity	40 samples
Buffer volume	50ml
Combs available:	
No. of samples	1, 4, 8, 12, 16, 20
Thicknesses	1, 1.5mm

- ❑ A convenient self contained solution for routine agarose gel electrophoresis
- ❑ Ultra compact
- ❑ Low buffer volumes
- ❑ Multichannel pipette compatible combs for speed loading

## ➤ Isoelectric Focusing



### Technical Specification

Unit dimensions (w x h x d)	38x33x18cm
Plate dimensions (w x h)	30x22cm
Gel dimensions (w x h)	28x20cm
Max. sample capacity	300 samples per run; 75 per gel
Buffer volume	1800-8400ml
Combs options	
No. of teeth	1, 2, 4, 28MC, 56MC, 75
Thicknesses	0.25, 0.35, 0.5, 1, 1.5, 2

- ❑ Ideal for second-dimension electrophoresis
- ❑ Accepts IPG strips 24cm in length, the longest available commercially
- ❑ Rapid set-up cool packs enhance resolution, particularly during extended runs

## ➤ Horizontal Electrophoresis with Power Supply



### Ordering Information

#### MSCHOICETRIO-CS300

- Choice Horizontal Electrophoresis Package, includes: -
- MSCHOICETRIO - horizontal unit with 15x7cm, 15x10cm and 15x15cm gel trays and combs
  - CS-300V - 300V, 700mA, 150W midi power supply

#### MSCHOICETRIO-CS300KIT

- Choice Horizontal Electrophoresis Package with electrophoresis starter kit, includes: -
- MSCHOICETRIO-CS300
  - CSL-LOADDYE - 10x Bromophenol Blue Loading Dye, 1ml
  - CSL-MDNA-1kb - 1kb DNA ladder
  - CSL-AG100 - 100g agarose
  - CSL-TBEP - Powdered Tris-Borate-EDTA Running Buffer - 10 pouches

## ➤ Gel Electrophoresis with Power Supply

### Mupid-exu

a submarine type electrophoresis system



### Electrophoresis Cell

Solution volume Approx. 270-320 ml  
 Multi-sample Multichannel-pipette compatible

### Power Supply

Input voltage AC100-240V, AC50/60Hz  
 Output voltage 135V 100V 50V 25V 70V 35V 18V  
 Constant peak voltage of 140V and duty control  
 Pause function supported  
 Timer Timer operation 0 - 99 min. and continuous mode  
 Safety switch Micro-switches in the power supply without safety lid, no output of Power

Memory function Automatic memory (the last used V & T)

### Gel Tray

Gel Tray - S 130mm(W)×13mm(H)×59.5mm(L)  
 Gel Tray - L 130mm(W)×13mm(H)×122mm(L)  
 Quantity Gel Tray - S : 2, Gel Tray - L : 1

### Comb

Multiple number of wells 13 or 26 wells  
 Quantity 4

\*Power Supply Section is very important

## ➤ Battery Gel MSBGEL



### Technical Specifications

Gel dimensions (w x l)	8 x 7.5cm
Unit dimensions (w x l x h)	17 x 11 x 3.5cm
Max. sample (capacity)	32 samples
Buffer volume	50ml
Combs available:	
No. of samples	4, 8, 12 and 16
Thicknesses	1mm

- ❑ Low voltage makes the MSBGEL ideal for use in schools and colleges where safety is paramount
- ❑ Integrated safety lid makes the gel inaccessible during use
- ❑ UV-transparent acrylic for direct visualisation of the gel within the tank
- ❑ Small size minimises buffer and gel consumption
- ❑ Cost-effective - no need for expensive power supplies, or transilluminators if supplied with optional kit

## ➤ Run View Real-Time Horizontal Gel Electrophoresis System



### Technical Specification

runVIEW Viewing Dock	470nm
Blue Light Wavelength	25-150V / 1V
Voltage/ Resolution	300mA / 1mA
Current/ Resolution	30 W
Power	Constant Voltage or Current
Operating Mode	runVIEW Gel System
Gel Dimensions (w x l)	15 X 7, 15 x 10 & 15 X 15cm

Unit dimensions (w x d x h) 26.5 X 17.5 X 9cm

Buffer volume 500ml

Timer 1-999 minutes with alarm  
 Safety Device No load detection  
 Operating Temperature Ambient to 40°C  
 Dimensions 293 x 220 x 80 mm  
 Rated Voltage 100-240V, 50/60Hz

bluVIEW Lid Design Orange spectral emission filter with condensation-free viewing pane  
 Included Double-sided Combs 2x 1-sample / 2-sample preparatory, 2x 4-sample preparatory / 16-sample combs, 4x 20- / 28- sample multichannel compatible screening  
 Comb Thickness 1mm

## ➤ Agarose Gel



### Ordering Information

CSL-AG5	Agarose 5g
CSL-AG100	Agarose 100g
CSL-AG500	Agarose 500g
CSL-AG1000	Agarose 1000g (2x500g bottles)
CSL-AG2000	Agarose 2000g (4x500g)
CSL-AG5000	Agarose 5000g (10x500g)
CSL-AG10KG	Agarose 10KG (20x500g)

## ➤ Gel Electrophoresis with Power Supply

### Mupid-One

a submarine type electrophoresis system



### Electrophoresis Cell

Solution volume Approx. 270-320 ml (includes gel tray and gel)  
 Multi-sample Multichannel-pipette compatible

### Safety Lid

Overall dimensions 197mm(W)×38mm(H)×170mm(L)  
 197mm(W)×38mm(H)×170mm(L)

### Power Supply

Input voltage AC100-240V, AC50/60Hz  
 Output voltage 135V 100V 50V 25V 70V 35V 18V  
 Constant peak voltage of 140V and duty control  
 Can be set between 0 and 99 min. and continuous mode  
 Temporary shutdown supported  
 Timer Automatic memory (the last used V & T)

### Memory function

### Gel Tray

Material Heat Resistance Materials

Multiple number of wells 13 or 26 wells  
 (13wells: 9mm spacing 26wells: 4.5mm spacing)

### Quantity

4  
 Material Heat Resistance Materials

## ➤ Benchtop Fermentor & Bioreactor System



VESSEL	Series	CSLFS-V-B						CSLFS-V-D			
	Working volume	3L	5L	7L	10L	15L	20L	3L	5L	7L	10L
	Total volume	3.7L	6.8L	8.9L	12.5L	18L	24.4L	3.7L	6.8L	9.1L	13L
	Design	All vessels comprise autoclavable borosilicate glass construction with 316L stainless steel headplate with fittings									
CONTROL STATION	Design features	(A) Compact control station with integrated controller including built-in pumps and side panel capable of supporting utilities; (B) storage for 59,994 process programmes; (C) log data storage for 10 process monitoring files; (D) real-time trend data recording; (E) Industrial standard ABS front panel with painted iron housing									
	Display	10.4-inch (265mm) colour touchscreen interface supplied as standard with each control station									
	Function	Fermentation and cell culture monitoring and control									
	Dimensions	Footprint (W x D): 400 x 500mm (15.75 x 19.69"); Height: 740mm (29.13")									
TEMPERATURE	Range	5°C above coolant to maximum 90°C									
	Control	(A) Dry-heating system with programmable 15-step PID control; (B) automatic solenoid-controlled cooling water valve Dry-heating blanket and cooling loop (see A and B above)						Dry-heating base unit and cooling loop (see A and B above)			
	Probe	Platinum RTD probe (Pt100)									
AGITATION	Drive	Removable top 'brushless' motor									
	Range	30-1200rpm standard motor for routine fermentation and cell culture; 5-300rpm option for shear sensitive cell lines									
	Control	Manual setting or programmable 15-step PID control									
	Impellers	3 pieces of adjustable Rushton-type Impeller for less shear-sensitive microbial cell types (2 pieces of adjustable pitched-blade impeller for fragile cell types - optional)									
	Baffles	Removable 316L stainless steel baffle for fermentation									
AERATION	Gas flow options	Standard built-in air-flow rotameter (1-10Lpm for 3/5L; 2-20Lpm for 7/10L; 4-50Lpm for 15/20L vessels); optional O <sub>2</sub> enrichment module with rotameter and enrichment valve (bespoke TMFC possible - please enquire)									
	Gas mixing	Manual / automatic air and O <sub>2</sub> mixing; additional 4-gas mixing station available									
	Sparger	Orifice ring sparger supplied as standard									
	Inlet filter	0.2µm absolute filter									
pH	Range	2-14 pH; 0.01pH resolution									
	Control	PID, linked to acid/base pumps; one-point control with adjustable deadband (pH control range)									
	Sensor	Gel-filled, autoclavable pH probe									
DO	Range	0-200%; 0.1% resolution									
	Control	PID, 2-stage cascade: starting with agitation (1), cascading to optional O <sub>2</sub> enrichment (2) if agitation speed is maximum but DO is below setpoint; substrate feeding programme (3) activated at DO setpoint									
	Sensor	Autoclavable, polarographic DO probe									
ANTI-FOAM	Control	On/off									
	Sensor	316L stainless steel with insulated Teflon tube									
EXHAUST	Filter	0.2µm absolute filter									
	Condenser	316L stainless steel									
PUMPS	Control	4 built-in, assignable, with manual setting or programmable 15-step PID control; 0-65rpm (RS-485 connection on control station for fifth pump option)									
UTILITIES	Water / gas / power	2 bar maximum (29 PSI) / 1 bar maximum (14.5 PSI); dry and oil-free / 100-120V 50/60Hz or 210-230V 50/60Hz; electrical safety cut-off switch									

\*Specifications may be subject to change without notice

## Thermal And Gradient Thermal Cycler



### Features:

- Multiple programme options and reaction formats ensure outstanding flexibility
- Low price combined with numerous features means exceptional value for any laboratory
- Easy-to-read touch screen for single-screen programming of entire protocol
- Heated lid allows complete sealing of plates, tubes and slide chambers
- Gradient model has four quick change block options for 0.2ml or 0.5ml tubes, 96 or 384 well plates and slides
- Compact design means a small footprint saving valuable bench space
- Very large touch screen displays programme content, progress and status, at-a-glance Specifications and ordering information
- TC32/80 Non gradient economical model option for when microplates or gradient are not required
- TC32/80 includes a combi block for 0.2ml and 0.5ml tubes

## Thermal Cycler Specifications

Sample Blocks	TC32/80	GTC Series
Capacity	<b>CombiBlock:</b> 80 x 0.2 ml tubes or 32 x 0.5 ml tubes	<b>0.2 ml Gradient Block:</b> 96 x 0.2 ml tubes or 1x 96-well plate <b>0.5 ml Gradient Block:</b> 54 x 0.5 ml tubes <b>384-Well Block:</b> 1x 384-well plate <b>Flat Block:</b> 4 slides
Temperature	4°C – 99°C	
Heating rate	Up to 3°C /sec	
Cooling rate	Up to 2°C /sec	
Uniformity	±0.5°C within 15 sec	±0.4°C within 15 sec
Material	Nickel-plated aluminum	
<b>Heated Lid</b>		
Temperature	105°C	
Pressure	Spring-loaded	Electromechanical adjustment
<b>Programming</b>		
Display/Input	5.7" diag. touchscreen (b&w)	5.7" diag. touchscreen (color)
Number of programs	60	100
Maximum program stages	5	10
Maximum steps per stage	5	7
Gradient software	n/a	20° range from 30°C– 70°C
Max programmed dwell time	Infinite	
Pause function	Yes	
Temp increments/decrements	No	Yes
Time increments/decrements	No	Yes
Auto-restart function	No	Yes
Run "end time" calculation	Yes	
Temperature control options	Block control and simulated tube control	Block control, active tube control, and simulated tube, plate and slide controls
<b>Working Conditions</b>		
Temperature	Ambient (12°C – 32°C)	
Relative humidity	Up to 80%	
Power requirements	550W at 115/230V a.c. +/- 10% and 50/60Hz	
<b>Physical Characteristics</b>		
Dimensions (W x D x H)	1 260 x 300 x 240 mm	

### Water Bath Digital



#### Specifications

Working Temperature Range °F	Ambient +10° to 210°	Display	3.25" LCD
Working Temperature Range °C	Ambient +5° to 99°	Flammability Class (DIN 12876-1)	I (NFL)
Reservoir Capacity (gallons)	5.28	Over-Temperature Protection /	Yes
Reservoir Capacity (liters)	20	Failsafe Heater Control	
Reservoir/Tank Material	Stainless Steel	Reservoir Drain	Yes
Reservoir Cover	Hinged Gable	Maximum Ambient Temperature °F	104°
Working Access (L x W x D) (inches)	9.5 x 17 x 6	Maximum Ambient Temperature °C	40°
Working Access (L x W x D) (cm)	24.1 x 43.2 x 15.2	Overall Dimensions (L x W x H) (inches)	17.5 x 22.5 x 12
Temperature Stability °F	±0.2°	Overall Dimensions (L x W x H) (cm)	44.5 x 57.2 x 30.5
Temperature Stability °C	±0.1°		

### Circulating Water Bath Digital



#### Specifications

Capacity	7 Liter	15 Liter	20 Liter	28 Liter
Maximum Temperature <sup>1</sup>	200°C	200°C	200°C	200°C
Minimum Temperature <sup>2</sup>	Ambient +10°C	Ambient +10°C	Ambient +10°C	Ambient +10°C
Working Access (L x W x D)	15.7 x 14.2 x 12.7 cm	21.2 x 27.6 x 14 cm	25 x 31.6 x 14 cm	31.4 x 35.9 x 14 cm
Tank Material	Insulated Stainless Steel	Insulated Stainless Steel	Insulated Stainless Steel	Insulated Stainless Steel
Drain	•	•	•	•
Tap Water Cooling-Coil	•	•	•	•
LidDock™	•	•	•	•

### Viscosity Bath Digital



#### Specifications

Working Temperature Range °F	Ambient +20° to 275°	Display Resolution (Read)	0.1
Working Temperature Range °C	Ambient +10° to 135°	Pump Type	Pressure
Reservoir Capacity (gallons)	4.49	Pump Speed	One
Reservoir Capacity (liters)	17	Process Connections	1/2" O.D. Barbed Tubes
Reservoir/Tank Material	Glass	Flammability Class (DIN 12876-1)	I (NFL)
Reservoir Cover	Round, Included	Over-Temperature Protection /	
DuraTop	Yes	Failsafe Heater Control	Yes
Working Access (L x W x D) (inches)	(6) x 2 Ø x 11 in	Low Liquid Level Protection	Yes
Working Access (L x W x D) (cm)	(6) x 5.1 Ø x 27.9 cm	Cooling Coil Port	Yes
Temperature Stability °F	±0.13°	Maximum Ambient Temperature °F	95°
Temperature Stability °C	±0.07°	Maximum Ambient Temperature °C	35°
Display	3.25" LCD	Overall Dimensions (L x W x H) (inches)	12.5 Ø x 20.5 in
Display Resolution (Set)	0.1	Overall Dimensions (L x W x H) (cm)	31.8 Ø x 52.1 cm

### Refrigerated Circulator Digital



#### Specifications

Working Temperature Range °F	-13° to 275°	Display Resolution (Set)	0.01
Working Temperature Range °C	-25° to 135°	Display Resolution (Read)	0.001
Nominal Cooling Capacity @ +20C	1400 (W)	Pump Type	Pressure/Suction
Reservoir Capacity (gallons)	11.88	Pump Speed	Variable
Reservoir Capacity (liters)	45	Process Connections	1/4" (F) NPT
Reservoir/Tank Material	Stainless Steel	External Temperature Control Capability	Yes
Reservoir Cover	Included	Flammability Class (DIN 12876-1)	III (FL)
Cleanable Air Filter	Yes	Over-Temperature Protection /	Yes
Working Access (L x W x D) (inches)	21.6 x 15.68 x 5.5 in	Failsafe Heater Control	
Working Access (L x W x D) (cm)	54.9 x 39.8 x 14 cm	Low Liquid Level Protection	Yes
Temperature Stability °F	±0.02°	WhisperCool Environmental Control Technology	Yes
Temperature Stability °C	±0.01°	Cool Command Refrigeration Technology	Yes
Display	4.3" SmartTouch Touchscreen	Reservoir Drain	Yes



## Rotational Viscometers Digital



### Smart Series Specifications

- > Precision:  $\pm 1\%$  of full scale
- > Resolution: With low viscosity adapter: 0.01  
For lower than 10.000 viscosity cP: 0.1  
For viscosity equal to or above 10.000 cP: 1
- > Repeatability: 0.2%
- > Thermometer features:  
Temperature margins: 0°C to +100°C  
32°F to 212.0°F
- Resolution: 0.1°C / 0.1722 °F
- Precision:  $\pm 0.1$  °C
- Type of probe: PT100
- > Supplied at 100-240 VAC, 50/60 Hz

### Spindles

AISI 316 stainless steel spindles, easily identified by number and letter when changed according to range of viscosity.

These are the standards our units follow:

- BS: 6075, 5350
- ISO: 2555, 1652
- ASTM: 115, 789, 1076, 1084, 1286, 1417, 1439, 1638, 1824, 2196, 2336, 2364, 2393, 2556, 2669, 2849, 2983, 2994, 3232, 3236, 3716

Code	Model	Measuring Range (cP)	Speed (r.p.m.)	Number of speeds
VL200003	SMART L	20 - 2.000.000	0.3 - 100	18
VL200002	SMART R	100 - 13.000.000	0.3 - 100	18
VL200001	SMART H	200 - 106.000.000	0.3 - 100	18

## Rotational Viscometers Digital



### Viscolead One Specifications

- > Precision:  $\pm 1\%$  of full scale
- > Resolution: Using low viscosity adapter: 0.01  
For lower than 10.000 viscosity cP: 0.1  
For viscosity equal to or above 10.000 cP: 1
- > Repeatability: 0.2%
- > Supplied at 100-240 VAC, 50/60 Hz

### Spindles

AISI 316 stainless steel spindles, easily identified by number and letter when changed according to range of viscosity.

These are the standards our units follow:

- BS: 6075, 5350
- ISO: 2555, 1652
- ASTM: 115, 789, 1076, 1084, 1286, 1417, 1439, 1638, 1824, 2196, 2336, 2364, 2393, 2556, 2669, 2849, 2983, 2994, 3232, 3236, 3716

Code	Model	Measuring Range (cP)	Speed (r.p.m.)	Number of speeds
VL210003	VISCOLEAD ONE L	20 - 2.000.000	0.3 - 100	18
VL210002	VISCOLEAD ONE R	100 - 13.000.000	0.3 - 100	18
VL210001	VISCOLEAD ONE H	200 - 106.000.000	0.3 - 100	18



Small Sample Adapters



Low Viscosity Adapters



Heldal unit for helicoidal movement



## Flow Cup Viscometer



Flow Cup Viscometers with Tripod support

### Features:

STANDARDS: ISO 2431, ASTM D-1200

Flow cup viscometers provide kinematic viscosity data. The measured kinematic viscosity is generally expressed in seconds (s) flow time when the fluid is flowing through an orifice at a specified temperature. Thanks to the conversion equations the viscosity is calculated from the flow time to centistokes (cSt). The calibration certificates are supplied with the cups.

According to the standards, there are several viscosity ranges available from 5 cSt. Flow cups made of anodized aluminium body with a stainless steel orifice.

Ensuring the accuracy of the test results, FUNGILAB recommends a periodic calibration check. You can check the viscosity results using the standard oils specially manufactured for these kind of viscometers (available under request), or sending the instrument to our calibration laboratories.

Industries like paint, ink, varnishes and similar products use this very easy to use flow cups to quickly calculate the viscosity.

### ISO 2431 Flow Cup Viscometers

Code	Model	Bore Ø mm	Viscosity range (cSt)
FCI003	Flow Cup Viscometer 3 ISO 2431	3	5 to 42
FCI004	Flow Cup Viscometer 4 ISO 2431	4	35 to 135
FCI005	Flow Cup Viscometer 5 ISO 2431	5	100 to 350
FCI006	Flow Cup Viscometer 6 ISO 2431	6	190 to 680
FCS	Tripod Support for Flow Cup Viscometer		
FCS-GL	Ergonomic Support for Flow Cup Viscometer		

### ASTM D-1200 Flow Cup Viscometers (Ford Cup)

Code	Model	Bore Ø mm	Viscosity range (cSt)
FCA002	Flow Cup Viscometer 2 ASTM D-1200	2.53	25 to 120
FCA003	Flow Cup Viscometer 3 ASTM D-1200	3.40	40 to 220
FCA004	Flow Cup Viscometer 4 ASTM D-1200	4.12	70 to 370
FCA005	Flow Cup Viscometer 5 ASTM D-1200	5.20	200 to 1,200
FCS	Tripod Support for Flow Cup Viscometer		
FCS-GL	Ergonomic Support for Flow Cup Viscometer		

### ➤ Vacuum Filtration Unit



**Specification:**  
 Power: 110-120V/50,60Hz  
 Max. power consumption(W): 65  
 Max. current(A): 0.7  
 Max. vacuum: -650mmHg=85.5kPa=110Torr  
 Max. flow rate: 20 l/min  
 Horse Power: 1/8HP  
 Pole: 4P  
 Net wet: 4.1kg  
 Gross weight: 5.1kg  
 Port thread: 5/16"  
 Noise Level: 50dB

### ➤ Magnetic Funnel



**Specifications**  
 Materials of Construction  
 Funnel Body, Stem, Lid, Support Screen:  
 Polyphenylsulfone  
 Vent Plugs: Polypropylene  
 Effective Filtration Area  
 150 and 300 mL: 9.6 cm<sup>2</sup>, 35 mm effective diameter  
 500 mL: 13.1 cm<sup>2</sup>, 41 mm effective diameter  
**Dimensions**  
 Overall Height:  
 150 mL: 17.8 cm (7.0 in.)  
 300 mL: 22.9 cm (9 in.)  
 500 mL: 19.6 cm (7.7 in.)  
 Maximum Diameter:  
 150 and 300 mL: 7.6 cm (3 in.)  
 500 mL: 8.9 cm (3.5 in.)

**Filter Size**  
 Accepts 47 mm filter  
**Funnel Capacity**  
 150, 300, or 500 mL  
**Outlet Connection**  
 Stem fits into standard one-hole stopper  
**Sterilization**  
 Provided non-sterile. Withstands multiple autoclavings\* at 121 - 123 °C (250 - 253 °F) at 1.0 bar (100 kPa, 15 psi) for 15 - 20 min; UV sterilizable.

### ➤ Vacuum Filtration System



### ➤ Chemical Resistant Vacuum Pump



**Chemker 300**

**Technical Specifications:**  
 Max. power consumption (W): 60  
 Max. current (A): 0.32  
 Max. vacuum: -600mmHg = 79kPa = 160 Torr  
 Max. pressure: 25 PSI  
 Vacuum 0mmHg: 22 l/min = 0.78CFM  
 00mmHg: 17 l/min = 0.6CFM  
 200mmHg: 13 l/min = 0.46CFM  
 400mmHg: 7 l/min = 0.25CFM  
 500mmHg: 4 l/min = 0.14CFM  
 550mmHg: 2 l/min = 0.07CFM  
 Motor rotation: 1450RPM  
 Capacitor: 2uf/450V  
 Horse power: 1/8HP  
 Pole: 4P  
 Net wet: 5.0 kg  
 Gross weight: 5.2 kg  
 Port thread: 5/16"  
 Noise: 50dB

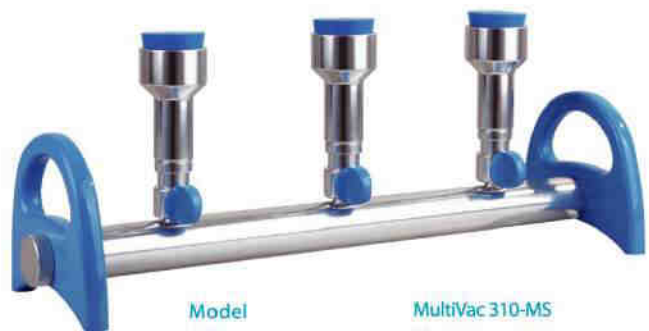
**Features:**  
 Chemker 300 is a chemical-resistant, diaphragm vacuum pump which can be widely used to hand acidic, basic and solvent vapors by utilizing corrosion proof PTFE on all the wetted surfaces. Through innovative mechanical technology and human considerations, we have made chemker 300 to be a quiet, safe, maintenance-free and cost effective vacuum pump.

### ➤ Sample Filtration System



3 branch aluminum manifold filtration system, complete set includes aluminum manifold vacuum pump, 3000ml waste bottle, connecting hose and 3 of magnetic funnel (300ml capacity, 47mm diameter, autoclavable)

### ➤ Aluminum Multi-Branch Manifold Filtration System



Model	MultiVac 310-MS
Number of branch	3
Filter diameter	Optional
Funnel capacity	Optional
Effective filtration area	Optional
Port thread	5/16 inch (8 mm)
Dimension (LxWxH)	47 x 13 x 16 cm

## ➤ Glass Filtration Set

Filtration adaptor patent number :M508321

A new filtration set to simplify purification process

Features:

1. Save Time: VF12 can filtrate and store solution directly in GL45 storage bottle without the need of being transferred from the filtering flask.
2. Suitable for GL45 storage bottle: Unique filtration adaptor design can connect with GL45 storage bottle (1000ml, 2000ml, 5000ml...etc.)
3. Competitive Price: The whole set is offered at a more competitive price than common filtration set with filtering flask.
4. Filtration Adaptor has been awarded a patent, No.M508321

Application:

Ideal for the purification of organic, corrosive liquid such as solvent (mobile phase) for HPLC analysis.



Innovative VF 12 filtration set with 1000ml storage bottle



Chemker 300-VF12 Solvent filtration system (VF12 with chemical resistant pump)

Common filtration set with filtering flask



## ➤ WaterVac Vacuum Filtration System



compatible with general filter holder

Model	WaterVac 100 - M5
Voltage	DC 12 V, 1.5A
Max. flow rate	2.2 LPM (air) / 0.5 LPM (liquid)
Max. vacuum	540 mmHg
Weight	1.16 kg
Effective filtration area	optional
Dimension (LxWxH)	170 x 120 x 96 mm
Support base	silicone stopper

## Micro and Standard Kjeldahl Block Digestion System

FoodALYT MBS 160, 400, SBS 800, 2000



The Micro and Standard Kjeldahl Block Digestion Units FoodALYT MBS and SBS allow heating samples in the suitable digestion tubes. They are particularly used for quantification of total protein by nitrogen determination acc. to Kjeldahl.

The block digestion systems are equipped with a corrosion-resistant block casing made of stainless steel. They are equippable with 8 or 20 standard Kjeldahl digestion tubes of either 250 or 400 ml. The Micro Kjeldahl systems FoodALYT MBS are designed for small quantities. They are available with 16 or 40 tubes of 100 ml. With FoodALYT we provide experienced and practicable systems - made in Germany - with a balanced cost-benefit ratio. All products are CE conform and certified.

- Extremely simple and fast programming per one-button operation.
- Menu designed in various languages.
- 10 freely configurable programmes for block temperature and digestion time.
- Applications storable.
- High power heater and extraction hood with exhaust gas collector.
- Digestion vessels 100, 250 and 400 ml.
- RS 232-interface.

### Field of Application:

FoodALYT MBS 160	For a small number of samples and low sample volumes.
FoodALYT MBS 400	For a small number of samples and low sample volumes.
FoodALYT SBS 800	For a small or average number of samples.
FoodALYT SBS 2000	For a large or average number of samples.
FoodALYT SBS 5000L	For large numbers of samples.
FoodALYT MBS 400L	For small sample volumes.

### Technical Data

Mains supply:	230 V, 50 Hz
Temperature-control range:	up to 450 °C, digitally adjustable
Time-setting range:	0 to 999 minutes, digitally adjustable
Programmes:	10
Display:	LCD
Interface:	RS232

### Items Supplied

All Block Digestion Units are delivered as complete systems, including digestion vessels, rack and extraction hood.

The Micro and Standard Kjeldahl Block Digestion Units FoodALYT MBS and SBS allow heating samples in the suitable digestion tubes. They are particularly used for quantification of total protein by nitrogen determination acc. to Kjeldahl. The block digestion systems are equipped with a corrosion-resistant block casing made of stainless steel. The Block Digestion Systems of the L series are equipped with a fully automatic lift. This relieves the user of handling the heavy sample unit and hot chemicals. The software allows for a fully automatic digestion process. After an individually programmable cooling and suction time, the fume hood is raised into the final position. The programming allows for individually adaptable temperature profiles and starting times. With FoodALYT we provide experienced and practicable systems - made in Germany - with a balanced cost-benefit ratio. All products are CE conform and certified.

- Extremely simple and fast programming per one-button operation.
- Menu designed in various languages.
- 10 freely configurable programmes for block temperature and digestion time.
- Applications storable.
- High power heater and extraction hood with exhaust gas collector.
- Digestion vessels 100, 250 and 400 ml.
- RS 232-interface.

### Order Informat

Type	No. of places	Vessels ml	Power W	Size (W x D x H)	Weight kg	PU	Order No.
FoodALYT MBS 160	16	100	1000	approx. 43 x 46 x 77 cm	approx. 23	1	4700111
FoodALYT MBS 400	40	100	2000	approx. 43 x 46 x 77 cm	approx. 33	1	4700112
FoodALYT SBS 800	8	250	1000	approx. 43 x 46 x 77 cm	approx. 23	1	4700004
FoodALYT SBS 2000	20	250	2000	approx. 48 x 52 x 77 cm	approx. 33	1	4700005
FoodALYT MBS 400L	40	100	2000	approx. 48 x 62 x 77 cm	approx. 40	1	4700113
FoodALYT SBS 5000L	20	250	2000	approx. 48 x 62 x 77 cm	approx. 40	1	4700007



## Steam Distillation Unit

### FoodALYT D



D 1000



D 5000

Titrator, Printer (optional)

The Steam Distillation Units FoodALYT D are small 'all-rounders' in sample preparation. With these devices, proteins, nitrate, nitrite, ammonia, volatile acids, ethanol, formaldehyde etc. can be measured in different samples. A typical field of application is the treatment of subsequent Kjeldahl digestion by distilling ammonia in an acid receiver. Furthermore, volatile preservatives in canned fish or meat salads are distilled to subsequently carry out a photometric determination. Steam distillation is also used to separate alcohols in spirits (e. g. egg or cream liqueurs) for later quantitative analysis. The unique versatility of the FoodALYT D units are underlined by their additional use in water and environmental chemistry for the determination of volatile organic acids (e. g. sewage sludge).

#### Technical Data

Mains supply	230 V / 50 Hz
Power	1700 W
Cooling water usage	approx. 3 l / min
Distillation	approx. 2 to 3 min per sample
Dimensions (W x D x H)	approx. 43 x 39 x 71 cm

#### Items supplied:

All Steam Distillation Units are delivered as complete systems including glassware.

- Stand-by operation between distillations.
- Extremely simple and fast programming per one-button operation.
- Start / Stop of the distillation via time setting.
- Optical and acoustic fault alarms.
- Door contact safety switch.
- Menu designed in various languages.
- Separate rinsing programme.
- Programmable reaction and distillation time.
- Automatic steam generation.
- Steam generating capacity adjustable from 30 to 100 %.
- Filling level monitoring for canister set.
- Various glass digestion vessels usable.
- Reagent containers: any size - F-KS canister set recommended.
- RS 232-interface.
- CE-conform and certified.

Type	No. of programmes	Weight / kg	PU
FoodALYT D 1000	1	approx. 23	1
FoodALYT D 1000 SP	1	approx. 23	1
FoodALYT D 2000	1	approx. 23	1
FoodALYT D 3000	10	approx. 26	1
FoodALYT D 4000	99	approx. 26	1
FoodALYT D 5000	99	approx. 27	1

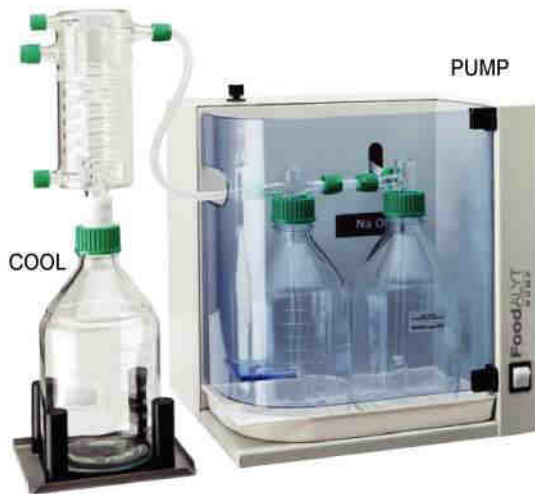
#### Accessories for FoodALYT D

Type	Description	PU	Order No.
F-KS 20	set of canisters for D 1000 and D 2000, consisting of 2 canisters 20 l, incl. float switch	1	4700026
F-KS 30	set of canisters for D 3000, consisting of 3 canisters 20 l, incl. float switch	1	4700027
F-KS 40	set of canisters for D 4000 and D 5000, consisting of 4 canisters 20 l, incl. float switch	1	4700028
F-TS 1000	Titrator TitroLine Easy	1	4700078
DPU 414	Printer	1	4250031



## Process Extraction System and Additional Cooling System

FoodALYT PUMP / COOL



Compact Process Extraction System for extracting and neutralising aggressive acid vapours especially from quantification of nitrogen acc. to Kjeldahl. The acid vapours pass through a two-step neutraliser. FoodALYT PUMP is fitted with a vacuum pump (40 l / min). No water connection is required. The Additional Cooling System FoodALYT COOL, consisting of stand, bottle and cooler is available on request.

- Low operating costs.
- Efficient two-step neutralisation of acid vapours.
- CE-conform and certified.

### Technical Data

#### FoodALYT PUMP

Mains supply	230 V / 50 Hz
Power consumption	100 W
Weight	approx. 20 kg
Dimensions (W x D x H)	approx. 38 x 36 x 44 cm
Flow rate	max. 40 l / min w/o backpressure

#### FoodALYT COOL

Dimensions (W x D x H)	approx. 17 x 20 x 53 cm
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### Order Information

Type	PU	Order No.
FoodALYT PUMP	1	4700012
FoodALYT COOL	1	4700013

### Items supplied:

The Process Extraction System FoodALYT PUMP is preassembled with bottles and hoses. The Additional Cooling System FoodALYT COOL consists of stand, bottle and cooler.

## Extraction Unit according to Randall

FoodALYT RD



RD 40

The Extraction Unit FoodALYT RD 40 is used for fat extraction acc. to Randall in food and feed. This method dissolves certain substances within the sample via the following steps: immersion in boiling solvent, rinsing and drying by lifting the reaction vessel from the heated sample position. FoodALYT RD 40 consists of 4 individually adjustable heating positions for 100 ml extraction thimbles. The hot extraction system acc. to Randall is up to five times faster than the conventional Soxhlet extraction.

- Cost savings through rapid extractions.
- Screwed extraction systems for optimum safety.
- Individual handling of each extraction thimble with sample.
- The analyst can lift or lower the complete extraction system with one lever.
- CE-conform and certified.

### Technical Data

Mains supply	230 V / 50 Hz
Power	max. 1500 W
Weight (incl. glassware)	approx. 35 kg
Dimensions (W x D x H)	approx. 54 x 61 x 66 cm

### Items supplied:

Delivery of FoodALYT RD 40 includes 25 extraction thimbles of 100 ml.

### Order Information

Type	Method of extraction	PU	Order No.
FoodALYT RD 40	Randall	1	4700072



## Hydrolysis Unit / Raw Fibre Analysis

FoodALYT RH / RF



RH 60

### Technical Data

Mains supply	230 V / 50 Hz
<b>FoodALYT RH 40 / RF 40</b>	
Heating positions	4
Power	max. 1440 W
Weight (excl. glass)	approx. 15 kg
Dimensions (W x D x H)	approx. 53 x 32 x 74 cm
<b>FoodALYT RH 60 / RF 60</b>	
Heating positions	6
Power	max. 2160 W
Weight (excl. glass)	approx. 20 kg
Dimensions (W x D x H)	approx. 76 x 32 x 74 cm

The Hydrolysis Units FoodALYT RH are designed for sample preparation for fat extraction acc. to the Weibull-Stoldt method. The total fat content contains not only 'free fats' but also 'bound fats' which are released by means of this acid digestion method. FoodALYT RH is equipped with 4 or 6 individually adjustable sample positions for 600 ml beakers. FoodALYT RH 40 and RH 60 are the perfect supplement to the Serial Heating Block Systems FoodALYT RS and RT. The determination of total fat acc. to Soxhlet, Twisselmann or Weibull-Stoldt is an important routine procedure, acc. to official methods (AOAC, § 64 LFGB). The Hydrolysis Units FoodALYT RH and the Serial Heating Block Systems FoodALYT RS / RT facilitate performance of analysis for many laboratories.

- Each sample position is individually adjustable.
- Cooling water distributor ensures even cooling at all sample positions.
- Practical stand for holding condensers securely between extractions.
- CE-conform and certified.

The FoodALYT RF systems are designed for the determination of the raw fibre content in food. The raw fibre analysis system is equipped with 4 or 6 individually adjustable sample positions for 600 ml beakers.

### Items supplied:

Delivery of all systems includes the serial heating unit, rack, glassware and accessories. The basic systems are delivered without filtration units.

Type	Description	No. of places
FoodALYT RH 40	Complete system incl. filtration unit	4
FoodALYT RH 60	Complete system incl. filtration unit	6
FoodALYT RF 40	Complete system incl. filtration unit	4
FoodALYT RF 60	Complete system incl. filtration unit	6

### Accessories for FoodALYT RH and RF

Type	Description	No. of places
FoodALYT RH 40	Basic system	4
FoodALYT RH 60	Basic system	6
F-RHF 40	Filtration unit for hydrolysis	4
F-RHF 60	Filtration unit for hydrolysis	6
F-RFF 40	Filtration unit for raw fibre	4
F-RFF 60	Filtration unit for raw fibre	6

## UV / VIS Spectrophotometer

Single Beam



- Modes of operation: % transmission, extinction, concentration.
- Internal basic software for scan, standard curve, kinetics and multi-wavelength.
- Pre-stored methods for life science applications: DNA, RNA, oligo, protein-direct UV, BCA, Bradford, Lowry, biuret and cell density measurement.
- Large LCD-display.
- Storage for up to 90 methods.
- Cell holder for 10 mm rectangular cuvettes.
- USB cable and print via computer (PC) software to allow data storage / printout via any Windows computer.

### Technical Data

Wavelength range	190 to 1100 nm
Photometric measuring range	0 to 2.5 A
Light source	pulsed xenon
Spectral bandwidth	5 nm (Photometer), 3 nm (Photometer Extra)
Dimensions (W x D x H)	26 x 39 x 10 cm
Weight	5 kg

Type	PU	Type	PU
FoodALYT Photometer	1	FoodALYT Photometer Extra	1
FoodALYT Photometer with integrated printer	1	FoodALYT Photometer Extra with integrated printer	1
FoodALYT Photometer with Bluetooth interface	1	FoodALYT Photometer Extra with Bluetooth interface	1
FoodALYT Photometer with SD-Card	1	FoodALYT Photometer Extra with SD-Card	1



## ➤ Heating Systems and Soxhlet

FoodALYT RS / RT



The Serial Heating Block Systems FoodALYT RS and RT are used for classical fat extraction according to Soxhlet resp. Twisselmann. Depending on the model and configuration, the unit consists of either four or six individually adjustable heating positions for 250 ml flat bottom flasks, which are used in conjunction with extractors of 100 ml. FoodALYT RS and RT are the economical and user-friendly units for extraction in this segment.

- Each sample position is individually adjustable.
- Cooling water distributor ensures an even cooling at all sample positions.
- Practical stand for holding the condensers securely between the extractions.
- Mounts for holding the spacers after the removal of the sample containers.

### Field of Application:

FoodALYT RS 10	Fat extraction according to Soxhlet
FoodALYT RS 40	Fat extraction according to Soxhlet
FoodALYT RS 60	Fat extraction according to Soxhlet
FoodALYT RT 10	Fat extraction according to Twisselmann
FoodALYT RT 40	Fat extraction according to Twisselmann
FoodALYT RT 60	Fat extraction according to Twisselmann

### Technical Data

Mains supply	230 V / 50 bis 60 Hz
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#### FoodALYT RS 40 / RT 40

Power input	1140 W
Weight (excl. vessels)	approx. 15,1 kg
Size (W x D x H)	approx. 53 x 32 x 74 cm

#### FoodALYT RS 60 / RT 60

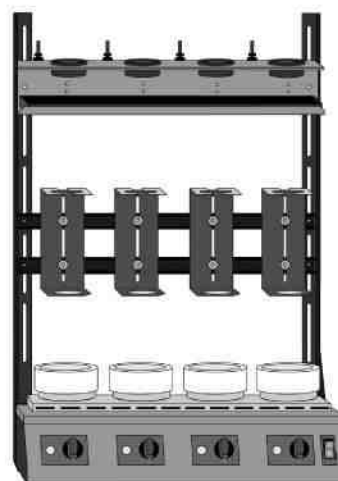
Power input	2160 W
Weight (excl. vessels)	approx. 19,8 kg
Size (W x D x H)	approx. 76 x 32 x 74 cm

### Order Information

Type	No. of places	Method of extraction	PU	Order No.
FoodALYT RS 10	1	Soxhlet	1	4700070
FoodALYT RS 40	4	Soxhlet	1	4700001
FoodALYT RS 60	6	Soxhlet	1	4700000
FoodALYT RT 10	1	Twisselmann	1	4700071
FoodALYT RT 40	4	Twisselmann	1	4700003
FoodALYT RT 60	6	Twisselmann	1	4700002

### Accessories for FoodALYT RS

Type	Description	PU	Order No.
F-EXS 100	extractor for 100 ml extraction	1	4700021
F-EXS 100 H	extractor for 100 ml extraction with stopcock	1	4700022
F-EXS 250 H	extractor for 250 ml extraction with stopcock	1	4700123
F-RK 100	reflux condenser for 100 ml extractors F-EXS 100 or F-EXS 100 H	1	4700025
F-EH 100	extraction thimbles for extractors F-EXS 100 and F-EXS 100 H	1	4700034
F-EH 250	extraction thimbles for extractors F-EXS 250 and F-EXS 250 H	1	4700125
F-PM 45	PTFE collar for NS 45	1	4700035



FoodALYT RS / RT



FoodALYT RS



FoodALYT RT





## Manual Titration Station

FoodALYT TS



TS 10

### Technical Data

Mains supply	230 V / 50 Hz
Weight (incl. glassware)	approx. 4 kg
Dimensions (W x D x H)	approx. 33 x 20 x 60 cm

Type	PU	Order No.
FoodALYT TS 10	1	4700073

The Manual Titration Station FoodALYT TS 10 ideally supplements the product range of FoodALYT D, FoodALYT MBS, FoodALYT SBS and FoodALYT IR within the nitrogen determination acc. to Kjeldahl.

- Neutral background screen, designed with angled wings which also protect against lateral glare, ensures precise determination of colour change at the end of titration.
- Carrying out titration under similar visual conditions achieves better accuracy and reproducibility of results.
- Precise positioning of Erlenmeyer flasks in the holder on the top of the magnetic stirrer.

### Items supplied:

FoodALYT TS 10 consists of a burette with digital display and magnetic stirrer with accurately fitting holder for Erlenmeyer flasks.

### Individual Equipment:

#### FoodALYT D 1000

- Automatic addition of NaOH.
- LCD-display.

#### FoodALYT D 1000 SP

- Direct distillation into calibrated vessel.
- Incl. 50 ml pycnometer.
- LCD-display.

#### FoodALYT D 2000

- Automatic addition of H<sub>2</sub>O and NaOH.
- LCD-display.

#### FoodALYT D 3000

- Automatic addition of H<sub>2</sub>O and NaOH.
- Automatic extraction by suction of sample residues.
- LCD-display.

#### FoodALYT D 4000

- Automatic addition of H<sub>2</sub>O and NaOH.
- Automatic addition of H<sub>3</sub>BO<sub>3</sub>.
- Automatic extraction by suction of sample residues.
- LCD-display.

#### FoodALYT D 5000

- Automatic addition of H<sub>2</sub>O and NaOH.
- Automatic addition of H<sub>3</sub>BO<sub>3</sub>.
- Automatic extraction by suction of sample residues.
- LCD-display.
- Connectable to external titration and printer.
- Optional: Software for the direct output and storage of data on a PC or tablet.



➤ **Water Distiller 710**



**Features:**

Automatic distiller and continuous output. High quality distillation with water of high purity and free of metal ions and pyrogens.

Safety device protects the water still in the event of water supply failure. The different parts made of borosilicate glass 3.3, and heater protected by a quartz sheathe lengthens its duration. Small size for easy handling and cleaning. All models feature with wall mounting bracket. Optional exclusive POBEL system in 4 l/h model for limiting the water flow from the tap water, optimizing the flow down to a necessary minimum (see ref. 10RECA0010). We recommend LITOPOL liquid detergent for glass cleaning (see ref. 10LITO1000).

**Technical Specifications:**

Model	: 710
Distillation Capacity L/H	: 4.2
Water Consumption L/MIN	: 1
Conductivity at 20°C (µS/cm)*	: 1
Equipment, measures height x width x depth (mm)	: 510 x 590 x 170
Packaging, measures height x width x depth (mm)	: 520 x 620 x 410
Heaters W.	: 1 x 3000
Electricity Supply	: 230 V. - 50/60 Hz. - 13A
Equipment, weight (kg)	: 5.2

➤ **Water Distiller 720**



**Features:**

Automatic distiller and continuous output. High quality distillation with water of high purity and free of metal ions and pyrogens.

Safety device protects the water still in the event of water supply failure. The different parts made of borosilicate glass 3.3, and heater protected by a quartz sheathe lengthens its duration. Small size for easy handling and cleaning. All models feature with wall mounting bracket. Optional exclusive POBEL system in 4 l/h model for limiting the water flow from the tap water, optimizing the flow down to a necessary minimum (see ref. 10RECA0010). We recommend LITOPOL liquid detergent for glass cleaning (see ref. 10LITO1000).

**Technical Specifications:**

Model	: 720
Distillation capacity L/H	: 4.2
Water consumption L/MIN	: 1
Conductivity at 20°C (µS/cm)*	: 1
Equipment, dimensions height x width x depth (mm)	: 400 x 590 x 170
Packaging, dimensions height x width x depth (mm)	: 520 x 310 x 610
Heaters (W)	: 1 x 3000
Electricity supply	: 230 V. - 50/60 Hz. - 13 A.
Equipment, weight (kg)	: 5.2
Packaging, weight (kg)	: 9.5

➤ **Water Distiller 811**



**Features:**

Fully automatic operation and continuous output. The water still consists of a metallic base covered with epoxy resin and a heater made of stainless steel. This base joins to the borosilicate glass condenser with an original locking device under pressure. Safety device protects the water still in the event of water supply failure. Easily removable for cleaning. Optional exclusive POBEL system in 4 l/h model for limiting the water flow from the tap water, optimizing the flow down to a necessary minimum.

**Technical Specifications:**

Model	: 0100704200
Distillation Capacity L/H	: 4
Water consumption L/MIN	: 1
Conductivity at 20°C (µS/cm) *	: 2
Equipment Measures (H x W x D) mm	: 490 x 270 x 240
Heaters W	: 3000
Electricity Supply	: 230 V.- 50/60 Hz. 13 A
Equipment weight Kg	: 5

## Water Distiller Cabinet Hydro Still



### Features:

HYDRO range presents 3 models designed as a cabinet shape. Distillers for usual distillation and bidistillation in laboratory. High quality distillation with high purity water and free of metal ions and pyrogens. Fully automatic continuous output. Optionally it can include an exclusive POBEL system for limiting the flow of water from the tap water optimizing the flow down to a necessary minimum (see ref. 10RECA0010 for HYDRO 4.1 and ref. 10RECA0020 for HYDRO 8, page 19). The different parts made of borosilicate glass 3.3, and heater protected by a quartz sheath lengthens its duration. Translucent color screen that displays the process, and easily removable in order to access into the water still. Safety device protects the water still in the event of water supply failure. This whole range incorporates a device to fill a container without worrying when it has finished. It cuts water and electrical supply to avoid useless expenses of water and electricity. All models have wall mounting bracket.

### Technical Specifications:

Model	Hydro Still 4	Hydro Still 8
Distillation Capacity L/H	: 4	8
Water consumption L/MIN	: 1	2
Conductivity at 20°C (µS/ cm) *	: 1	1
Equipment Measures (H x W x D) mm	: 480 x 690 x 260	480 x 690 x 400
Heaters W	: 3000	2 x 3000
Electricity Supply	: 230 V.- 50/60 Hz. 13 A	230V.- 50/60 Hz. 26 A
Equipment weight Kg	: 12	22

## Stainless Steel Distiller Desa



### Features:

Automatic distiller of continuous production. Excellent quality of distillation. Safety mechanism which switches off the heaters in the absence of cooling water and connects it again. Easily removable for cleaning. Furniture, cooling and heating elements made of stainless steel when it. Housing made of stainless steel and painted with epoxy. Switch light pilot. With thermostat, that protects the distiller in case of overheating. Optionally it can include an exclusive POBEL system for limiting the flow of water from the tap water optimizing the flow down to a necessary minimum.

### Technical Specifications:

Model	10DESA0041	10DESA0081
Distillation Capacity L/H	: 4	8
Water consumption L/MIN	: 1	1.4
Conductivity at 20°C (µS/ cm) *	: 1.5	1.5
Equipment Measures (H x W x D) mm	: 435 x 370 x 220	635 x 370 x 260
Heaters W	: 3000	2 x 3000
Electricity Supply	: 230 V.- 50/60 Hz. 13 A	230V.- 50/60 Hz. 26 A
Equipment weight Kg	: 8	14

## Water Distiller Deta



### Features:

Automatic distiller and continuous output. Built-in water storage tank with a capacity of 8 litres for models 10 DETA 0040 and 10DETA1040. Capacity of 16 litres for model 10DETA0080. Excellent quality of distillation. Cooling element and heaters made of stainless steel. Safety device protects the water still in the event of water supply failure. Some models have a device to fill a container without worrying when it finished. It cuts water and electrical supply to avoid useless expenses of water and electricity. With thermostat, that protects the distiller in case of overheating, and dispenser tap of the distilled water. Supplied with wall mounting bracket. Flow restrictor that limits the water flow from tap water, optimizing it down to a necessary minimum.

### Technical Specifications:

Model	10DETA0040	10DETA0080
Distillation Capacity L/H	: 4	8
Water consumption L/MIN	: 0.6	0.9
Conductivity at 20°C (µS/ cm) *	: 1.5	1.5
Equipment Measures (H x W x D) mm	: 500 x 630 x 320	593 x 710 x 340
Heaters W	: 3000	2 x 3000
Electricity Supply	: 230 V.- 50/60 Hz. 13 A	230V.- 50/60 Hz. 26 A
Equipment weight Kg	: 24	34

➤ **Standard Duty Dry Vacuum Pumps**



Model 2511



Models 2522 / 2534



Model 2546



Models 2567 / 2561



Model 2562B-01



Specifications	Vacuum/Pressure Pumps				
Welch Model	2511	2522	2534	2546	2561
Free Air Displacement					
cfm (l/min.)@60Hz	0.39(11)	0.76(22)	1.2(34)	1.6(45)	2.3(65)
m <sup>3</sup> /hr (l/min.)@50Hz	0.55(9.2)	1.1(18)	1.7(28)	2.3(38)	3.4(57)
Ult. Vac. Pressure, torr(mbar)	219(292)	100(133)	70(93)	60(80)	5(6.7)
Max Pressure PSIG(pascal)	33(3.3 x 105)	100(106)	50(5 x 105)	100(106)	—
Maximum Vacuum, in. Hg	21.3	26	27.2	27.6	29.8
Motor Horsepower(watts)	1/30(25)	1/8(93)	1/8(93)	1/4(190)	1/3(250)
Tubing Needed, I.D. in.(mm)	3/16(5)	3/16(5)	3/16(5)	3/16(5)	1/4(7)
Intake/Exhaust Thread NPT	3/16 in. Hose	1/4	1/4	1/4	1/4
Weight lbs.(kg)	5(2.3)	11.7(5.3)	11.7(5.3)	13.8(6.3)	16.5(7.5)
Overall Dimensions L x W x H in.(cm)	7.6x4.5x7.5 (19.4x11.4x19.1)	8.1x8.8x10 (20.6x22.4x25.4)	8.1x8.8x10 (20.6x22.4x25.4)	10x7.5x9 (25.4x19.1x7.7)	17.3x6.5x10.5 (43.9x16.5x26.7)
Ship Weight, lbs.(kg)	6(2.7)	17(7.7)	17(7.7)	17(7.7)	24(10.9)
Shipping Carton Dimensions L x W x H in.(cm)	11x7x8.3 (28x18x21)	15.3x12.3x12.7 (39x31x32)	15.3x12.3x12.7 (39x31x32)	15.3x12.3x12.7 (39x31x32)	21x12x15 (53x30x38)
<b>Ordering Information</b>					
Wired for 115V, 60Hz, 1 Ph with N. American 115V Plug	2511B-01 <sup>3</sup>	2522B-01 <sup>4</sup>	2534B-01 <sup>4</sup>	2546B-01 <sup>4</sup>	2561B-50
Wired for 230V, 60Hz, 1 Ph with N. American 230V Plug	—	2522C-01 <sup>4</sup>	2534C-01 <sup>4,7</sup>	2546C-01 <sup>4,7</sup>	—
Wired for 230V, 50Hz, 1 Ph2. with Cont. Euro.(Schuko) Plug	2511C-02 <sup>3</sup>	2522C-02 <sup>4,6</sup>	2534C-02 <sup>4,6,7</sup>	2546C-02 <sup>4,6,7</sup>	2561C-50 <sup>6,7</sup>
Wired for 100V, 50/60Hz, 1 Ph with a plug	2511C-05 <sup>3,5</sup>	2522C-05 <sup>4,5</sup>	—	—	2561C-56

**Applications**

1. Vacuum Filtration
2. Vacuum Oven / Desiccation
3. Aspiration / Automation
4. Cell Culture
5. Glove Box
6. Vacuum Chamber / Roughing

**Vacuum/Pressure Standard Duty Dry Vacuum Pumps**

- Ultimate to <5 torr(6mbar)
- Lightweight, compact pump
- Inlet liquid trap with vacuum regulator

Oil-free operation for reduced maintenance. Welch Standard Duty Dry pumps are ideal for pumping water vapor. These WOB-L piston pumps have a high water vapor tolerance. Pumps come with inlet liquid trap, mounted vacuum gauge and vacuum regulator (except 2511 and 2562).



Model 2585B-01

Note: Standard Duty Dry Pumps are not recommended for pumping organic, acidic and basic vapors.

## ▶ Portable Microbiological Air Sampler



### Main Features:

- Chassis in disinfectable polyurethane and resistant to impacts
- Autoclavable anodised aluminium sampling head with conical holes: 60 mm head: 219 holes (Ø 1 mm) 90 mm head: 380 holes (Ø 1 mm)
- Bayonet head coupling system
- Autoclavable anodised aluminium support plate
- Two ON/OFF red LED to verify that the instrument is working
- Sampling flow rates: 30-60-90-100-120 l/min (180 l/min on request)
- Sampling mode: manual, sequential and programmed sampling
- Total volume of sampled air programmable from 1 up to 2000 litres: 1 litre step (program and sequential sampling mode) or more (manual sampling)

### OTHER FEATURES

- Sampling in vertical or horizontal position without tripod auxiliary
- Delay start function
- Calibration function (with optional calibration kit)
- Memorization of 160 samples
- USB output interface for PC computer connection (optional)
- Remote switch with infra-red rays control
- Rechargeable battery operated. Battery Ni/Mh (memory effect free) with 4 hours battery life. Recharging battery in 3 - 4 hours.
- Dimension: 310 x 130 x 170 mm (w x d x h)
- Weight: 1,9 kg

### AVAILABLE MODELS

- MICROFLOW a 60: it works with contact plates (Ø 60 ± 2 mm)
- MICROFLOW a 90/C\*: it works with contact plates (Ø 90 ± 2 mm)
- MICROFLOWa 60-90/C\*: it works with both contact plates (Ø 60 ± 2 mm) and Petri dishes (Ø 90 ± 2 mm)

\* with compensation system of flow rate

### ACCESSORIES



- \* Pencil torch
- \* Additional aluminium sampling head



- \* Noze for CFU measurement in ducts diam. 35mm. (for 60 or 90 mm. head)



- \* Calibration system kit



Alphanumeric LCD for display of the different menu and visualization of sampling operations "step by step"  
 The display of various menu can be selected in five languages (Italian, French, English, German and Spanish)

Some possible APPLICATIONS are:

- clean rooms, - hospitals
- pharmaceutical industries
- food and diary industries
- air treatment plants
- water treatment plants
- working areas exposed to controlles in demand of HACCP



MICROFLOW KIT a includes :

- Carrying case
- Microbiological air sampler
- Additional aluminum sampling head (only for kit Microflow alfa 60 and 90C)
- Battery charger
- IR remote control
- Pencil torch for head sterilisation
- User manual (In English)
- Calibration report



- \* PC interface with software (MS WINDOWS 9x/2000/XP)
- \* Master tripod (maximum height 3,84m)

## ➤ Digital Electromagnetic Sieve Shaker



### Features:

Digital electromagnetic sieve shaker for sieves from 60 to 203 mm in diameter. Its three-dimensional motion throughout the sieve column makes it extremely effective when performing particle separation granulometric tests, both dry and wet. It is manufactured in anodized aluminium with a polyurethane resin shell, it features a digital panel with power regulation, sieving time control and adjustments to enable continuous or intermittent sieving. The sieve fastening system comprised of two threaded rods fitted with Bakelite tightening knobs and methacrylate lid. As an option it can be fitted with an Easy-Press quick release coupling system (smooth rods and pressurized easy-sliding tightening knobs).

### Includes:

- ☑ Sieve shaker
- ☑ Connecting cable
- ☑ Methacrylate lid
- ☑ Threaded closing system
- ☑ User manual
- ☑ CE declaration of conformity
- ☑ Accessories in wet (optional)

### Technical Specifications:

- ☑ Type of sieve shaker: Electromagnetic.
- ☑ Type of sieving: Dry/wet.
- ☑ Application: Granulometric separation.
- ☑ Particle size: From 20 µm to 125 mm.
- ☑ Product motion: Three-dimensional.
- ☑ Maximum amplitude: 3,5 mm.
- ☑ Power levels: 9
- ☑ Time display: 1 - 99 min.
- ☑ Interval operation: 1 - 9 s.
- ☑ Maximum number of sieves:
  - 8 (Ø 60/203 x 50 mm h.), 16 (Ø 60/203 x 25 mm h.)
- ☑ Sieve diameters: From 60 mm to 203 mm.
- ☑ Voltage: 220/240 V- 50/60 Hz.
- ☑ Power: 400 W.
- ☑ Current: 0,8 A.
- ☑ Weight: 40 Kg.

	FTL-0200	FTL-0200-EP
A	800	850
B	254	254
C	245	245
D	ø360	ø360

Dimensions in mm.



## ➤ Laboratory Grinding Mill



ARES FML-0100



ARES FML-2000

### Features:

FILTRA manufacture two different models of laboratory Grinding Hammer Mills, in order to cover the different customer needs: ARES FML-0100 is a small and economical one for milling small quantities of product and ARES FML-2000 with the double of capacity for biggest quantities of product or biggest articles. They are used to grind a wide variety of soft, semi-hard and hard materials, such as, cereals, spices, vegetables, plastics, resins, minerals, earth, stone, coal, etc. with a particle feed size of +/- 15 mm in FML-0100 and of +/- 20mm in FML-2000. The feeding is supplied by a hopper located at the top and can be dosed manually using a chopper. The door has a quick locking with a safety micro-sensor which stops the rotation of the hammers when it's opened. Both the front and loading hopper are manufactured from mirror-polished AISI 304 stainless steel. In the interior the 3 hammers are made from anti-wear AISI 410 stainless steel. The equipment includes an easily interchangeable sieve with round perforations. In ARES FML-2000 model, plus the sieve, the blades and the toothed crown are also interchangeable, and can be easily removed for cleaning without using any key. This model incorporates a potentiometer to regulate the engine speed.

MODEL	Timer (min)	Tension	Power (Kw)	Speed (rpm)	Grinding chamber Dimensions (mm)	Loading hopper Volume (l)	Grinding chamber Volume (l)	Drawer Volume (l)	Weight (kg)	Number of hammers	Size of sieve holes (Ø mm)	Maximum Hardness (Mohs)	Maximum size of particle at the entrance (mm)	General dimensions (mm)
FML-0100	0 - 99	220-240 V (50-60 Hz)	1,9	3000	Ø110x66	1,2	0,4	1	38	3	1,2,3,4,5	6-7	15	225 x600 x420
FML-2000	0 - 99	220-240 V (50-60 Hz)	2,6	3000	Ø150x88	5,5	1,2	2	72	3	0,5, 0,8, 1, 1,5, 2, 2,5, 3,4,5,6	6-7	20	520 x700 x700

## ColonyStar

Colony Counter with colored illumination



- Color and brightness of the counting plate are adjustable. (65 steps)
- The pressure-sensitivity of the luminous field is adjustable.
- The acoustical signal of the count confirmation can be switched off / on.
- 2 Wolffhügel-disks (black/white), magnifying glass and felt-tip pen are included in the delivery.

### Optimal contrast conditions

By the customization of the color (pat. pend.) and the brightness - an effortless work is made possible.

Color choice: 65 color variants, made from the primary colors red/green/blue - are available.

Brightness: The brightness can be adjusted in 65 steps.

### Automatic counting

The counting impulse is activated by the pressure-sensitive counting plate. The pressure sensitivity for the count can be adjusted. Any ordinary felt-tip pen can be used for the marking.

### Counting plate, Ø 145 mm

Dazzle-free illumination by the use of high power LED. The irradiation is carried out both of below and sideways. No warming of the Petri dishes.

### Technical description

Easy-to-clean plastic casing, height adjustable, illumination area of 145 mm Ø with 1 cm<sup>2</sup> and 1/9 cm<sup>2</sup> graduation. Petri dishes of up to 145 mm Ø can be used. The supplied reducing insert can be used for dishes with smaller diameters.



Colony Star with reducing insert



Dimensions (LxHxW): 27,5 x 8 x 30cm  
Weight: appr. 1,7 kg  
Connected loads: 230 V/50 Hz

Ordering data:  
Colony Star with accessories

Art. no: 8500



### Following Accessories are included:

Magnifying glass	8501
Wolffhügeldisk, white	8502
Wolffhügeldisk, black	8505
Felt-tip marker	8504
Reducing insert	

Color and Brightness of the luminous field are adjustable.

## Horizontal Laminar Flow Cabinet



### Airflow

- Room air
- HEPA filtered air



### Features:

It is a horizontal airflow type that the clean air filtered through the HEPA filter flows from the inside the chamber to the direction of the front entrance, and the inflow of the outside air which can contaminate the specimen is blocked as the inside the chamber is maintained as positive pressure (+) without the front door. Clean work space at any points inside the chamber is available, and if any contaminated particles are generated, they are quickly eliminated. It is mainly used for the work of blood agar plate, experiment or work under the aseptic, non-vibration environment.

General specification		Model No.			
		B-CH (CLB-202D)			
		03	04	05	06
Dimension	Exterior (WxDxH)mm	1040x777x1300	1340x777x1300	1650x777x1300	1960x777x1300
	Interior (WxDxH)mm	919x520x584	1219x520x584	1529x520x584	1839x520x584
	Color	Gray			
	Door	Basic - Tempered safety glass 5mm / Option - Acrylic panel door			
Material	Control panel	LCD digital display panel			
	External material	SPCC / AL with epoxy powder coated			
	Interior material (worktop)	Stainless steel 304			
Performance	Support stand	Carbon steel pipes for ordinary piping			
	Avg. downflow velocity (m/s)	0.3 ~ 0.4 (variable set speed)			
	Filter efficiency	HEPA filter > 99.995% at 0.3µm / ISO Class 5			

## Fume Hood



### Airflow

- Room air
- Contaminated air under negative pressure



**Bypass** : The internal pressure is lowered in case the door is closed as the bypass structure design is applied.

**Baffle** : It is designed in baffle structure which emits the air inside the chamber to the outside effectively.

**Ergonomic Airfoil Structure** : CHC Lab's airfoil structure secures the safety of researchers by preventing the concentration of the noxious gas due to the eddy current at the front area of the fume hood, and the gas leakage to the outside of the chamber.

**Computational Fluid Dynamics** : It is designed as the optimum structure for the energy saving of the ventilation system consumed at time of fume hood operation, and the perfect emission of the noxious gas generated during the test, through the computational fluid dynamics (CFD) simulations.

General specification		Model No.					
		A-MB (CLE-101)					
		1200	1500	1800	2100	2400	
Dimension & Features	Exterior	W/mm	1200	1500	1800	2100	2400
		D/mm	860				
		H/mm	2370				
	Color	Gray					
	Door	Up/Down sliding door type					
	Airfoil	Steel plate 1.6mm with epoxy powder coated					
Material	Glass	Tempered safety glass 5mm					
	Cabinet & Cabinet door	LPM PB / 2 door		LPM PB / 4 door			
	P.P resin & drain	1EA		2EA			
	External	Phenolic laminate 6mm & Aluminum structure					
	Chamber	Phenolic laminate 4mm					
	Support stand	75 X 45 X 1.4mm sq pipe, epoxy powder coated					
Material	Interior material (worktop)	Ceramide 30mm					
	Door sash	Aluminum					



## Horizontal Laminar Flow Cabinet



### Features:

- Horizontal air stream producing clean air in compliance with ISO5/ CLASS100 or ISO4/Class10 standards (depending on the filter installed).
- Massive epoxy coated, oven-tempered metal structure assures stability, preventing movement during sensitive operations.
- User-friendly digital control system manages fan speed and lighting system; during lighting system operation, an indicator displays the airflow and warns against filter blockage
- Work surface made of 304 stainless steel that does not emit particles
- Side windows made from tempered glass, allowing an optimal view of work inside the station
- High quality, quiet fan by EBM Germany; the fan enclosure is padded with noise-absorbing material
- Noise level < 58 DBA
- Universal electrical outlet
- Innovative, advanced design
- Variety of sizes and materials
- Eco-friendly, cost-effective LED lighting

Spec/Model	HC-H90	HC-H120	HC-H160	HC-H180
Outer Dims. WxDxH	980x750x1100mm	1280x750x1100mm	1680x750x1100mm	1880x750x1100mm
Workspace WxDxH	900x660x660mm	1200x660x660mm	1600x660x660mm	1800x660x660mm
Production / Test Standard	USA Federal Standard 209E / ISO 1- 144641 / ISO-9001:2008			
Air Velocity m/s	Average 0.45±20% m/s 90±20% FPM			
Cleanliness within Workstation	Class-100 (FS 209E ) ISO 5, 14644-1			
Cabinet Material	High grade cold rolled steel and surface is static powder coated			
Work Table Matrial	Stainless steel SUS 304			
Noise	<58dB	<58dB	<60dB	<62dB
	(Tested 20 cm from the work table, 1.2m above ground)			
Power Supply Options	110 / 220V 50/60 Hz, Single phase			
Illumination	>800 LUX/ 1700 LUX, Cost-effective Eco friendly LEDs			
Filter	HEPA Filter Efficiency of 99,9995% at 0.3 Microns			

## UV PCR Cabinet



### Features:

- Welded white polypropylene structure
- Built-in polypropylene worktop
- Ozone free UV lightbulb, UV output at 1M 254nm
- Tempered glass frameless pivot window
- Eco-friendly, cost-effective 600-800 LUX LED lighting
- Wind speed at 0.6+0.1 m/s, 120±FPM
- Smart safety mechanism prevents UV exposure
- Top filtration unit including HEPA filter
- User-friendly control panel including fan, UV and lighting control as well as UV timer (30 min).

Spec/Model	PCR-060-HEPA	PCR-060-UV
External Dimensions W x D x H	600 x 500 x 700 mm	600 x 500 x 550 mm
Workspace (W x D x H)	580 x 480 x 500 mm	580 x 480 x 500 mm
Production / test Standard	CE / ISO-9001:2008	
Air Velocity	0.6±0.1m/s, 120 ±20 FPM	
Cabinet Material	White Polypropylene	
Work Table Material	White Polypropylene	
Noise	< 52 dB	
UV light	17w ozone free 245nm	
Power Supply Options	110 / 220V 50/60 Hz, Single phase	
Illumination	> 800 LUX / 1700 lux	
Filter	H14, HEPA	



### Compare Specifications

Specification	NMReady-60	PicoSpin-45
Operating Frequency	60MHz ✓	45MHz
Magnet	permanent, no cryogenics ✓	permanent, no cryogenics
Available nuclei	1H, 19F switchable, 2H lock	Separate for 1H and 19F
Sample management	3 or 5mm NMR tubes ✓	Capillary cartridge, 20 uL
Field Strength	1.41T ✓	1T
Resolution	<3Hz (50ppb) ✓	<3Hz (70ppb)
Signal to Noise (1 Scan)	12,500:1 (H2O 100%) ✓	300:1 (H2O 100%)
Stray Field (5G contour)	22cm radial, 16cm axial	Nominal
Operating Temperature	18-26°C	18-26°C
Power Supply	100-240 VAC, 50-60Hz	100-240 VAC, 50-60Hz
Dimensions	24 x 28 x 43 cm	18 x 15 x 29 cm
Weight	18kg	3kg
Communications	TCP/IP, WIFI	TCP/IP, WIFI
User Interface	Touchscreen ✓	External Computer

### Tintometer Digital (UK)

Please feel free to browse and visit our website  
[www.lovibondcolour.com](http://www.lovibondcolour.com)



#### PFXi-880/F Features:

- Single Scale Spectrophotometer for Lovibond® RYBN (Red, Yellow, Blue, Neutral)
- Ideal for the Colour Measurement of Oils & Fats
- Direct Lovibond® colour readings with 5 1/4" cells
- Full support for RCMSi (Remote Calibration and Maintenance via internet)
- Optional heated sample chamber for maintaining samples at high temperatures
- USB & LAN interface
- Robust steel construction with excellent chemical resistance
- Easy maintenance with removable sample chamber

#### Spectrophotometers are ideal for:

- External Quality Control
- Internal Quality Control
- Continual Monitoring, in real time, of production processes
- Faster matching of customers' colours
- Clear Communication
- Objective Research and Development



### Glassware Washer-Dryer (France)

Please feel free to browse and visit our website  
[www.lancer.fr](http://www.lancer.fr)



#### Washer-dryers specifications

WASHER-DRYER MODEL	LANCER 810 LX	LANCER 815 LX	LANCER 820 LX	LANCER 910 LX	LANCER 1300 LX	LANCER 1400 LX	LANCER 1400 LXP
FEAT URES							
Underbench				-	-	-	-
Free-standing	-	-	-				
Available in pass-through version	-	-	-	-	-	-	-
Machine width, mm	600	600	900	604	604	790	790
Machine depth, mm	700	700	700	736	736	811	831
Machine height, mm	845	845	845	1466	1628	1728	1728
Chamber width, mm*	491	491	491	491	491	581	581
Chamber depth, mm*	520	520	520	520	520	629	629
Chamber height, mm*	496	496	496	540	640	770	770
Chamber volume, L**	138	138	138	148	175	295	295
Chamber Air forced drying	-						
High-speed injector drying	-	-					
HEPA filter	-	-					
Vertical sliding door	-	-	-	-	-	-	-
Drop-down door							
Door lock - to prevent door being opened during operation	Std.	Std.	Std.	Std.	Std.	Std.	Std.
Number of wash levels	2	2	2	2	3	3	3
Built-in chemical storage	-	-					
Water consumption, L/fill	12	12	12	11-15	14-16	20-25	20-25

### ▶ HPLC Columns Diff. Type & Size

[www.higanalyt.com](http://www.higanalyt.com)



### ▶ HPLC Columns Diff. Type & Size

[www.vdsoptilab.de](http://www.vdsoptilab.de)



### ▶ Muffle Furnaces with Embedded Heating Elements in the Ceramic Muffle

[www.nabertherm.com](http://www.nabertherm.com)



Model	Tmax °C	Inner dimensions in mm			Volume in l	Outer dimensions in mm			Connected load kW	Electrical connection*	Weight in kg
		w	d	h		W	D	H			
LH 15/12	1200	250	250	250	15	570	790	1170	5.0	3-phase <sup>1</sup>	150
LH 30/12	1200	320	320	320	30	640	860	1240	7.0	3-phase <sup>1</sup>	170
LH 60/12	1200	400	400	400	60	720	1010	1320	8.0	3-phase	260
LH 120/12	1200	500	500	500	120	820	1110	1420	12.0	3-phase	340
LH 216/12	1200	600	600	600	216	900	1210	1530	20.0	3-phase	400
LH 15/13	1300	250	250	250	15	570	790	1170	7.0	3-phase <sup>1</sup>	150
LH 30/13	1300	320	320	320	30	640	860	1240	8.0	3-phase <sup>1</sup>	170
LH 60/13	1300	400	400	400	60	720	1010	1320	11.0	3-phase	260
LH 120/13	1300	500	500	500	120	820	1110	1420	15.0	3-phase	340
LH 216/13	1300	600	600	600	216	900	1210	1530	22.0	3-phase	400
LH 15/14	1400	250	250	250	15	570	790	1170	8.0	3-phase <sup>1</sup>	150
LH 30/14	1400	320	320	320	30	640	860	1240	10.0	3-phase <sup>1</sup>	170
LH 60/14	1400	400	400	400	60	720	1010	1320	12.0	3-phase	260
LH 120/14	1400	500	500	500	120	820	1110	1420	18.0	3-phase	340
LH 216/14	1400	600	600	600	216	900	1210	1530	26.0	3-phase	400
LF 15/13	1300	250	250	250	15	570	790	1170	7.0	3-phase <sup>1</sup>	130
LF 30/13	1300	320	320	320	30	640	860	1240	8.0	3-phase <sup>1</sup>	150
LF 60/13	1300	400	400	400	60	720	1010	1320	11.0	3-phase	230
LF 120/13	1300	500	500	500	120	820	1110	1420	15.0	3-phase	300
LF 15/14	1400	250	250	250	15	570	790	1170	8.0	3-phase <sup>1</sup>	130
LF 30/14	1400	320	320	320	30	640	860	1240	10.0	3-phase <sup>1</sup>	150
LF 60/14	1400	400	400	400	60	720	1010	1320	12.0	3-phase	230
LF 120/14	1400	500	500	500	120	820	1110	1420	18.0	3-phase	300

➤ Digital Burette



**BURETTE - "digital" - "manuel control"**

- Guarantees reliable measuring results with bubble-free dispensing and consistent delivery.
- Discharge tube can be turned to any desired position since the body can rotate 360° round the axis.
- The angled, large and 4 digit LCD display clearly shows the titration values till to 99,99 ml and eliminate meniscus level errors.
- Continuous display of dispensed volume with zero reset feature for multiple titrations.
- PTFE plunger and borosilicate glass barrel allow dispensing of most aggressive solutions.
- Visible glass barrel shows allows inspection of the liquid before and during dispensing.
- Precision valve ensures easy priming and minimum waste with no back leakage into the reservoir bottle.
- Supplied with a battery with a lifetime for 60.000 titrations. Featured with a low battery indicator on the LCD display.



The angled, large and 4 digit LCD display clearly shows the titration values till to 99,99 ml and eliminate meniscus level errors.

catalogue number	volume range	volume accuracy	pack quantity
007.01.001	50 ml	0,01 ml	1 piece

➤ Digital Vortex Mixer



**VORTEX MIXER - "LED display"**

- Offers touch and continuous orbital mixing for variety of applications. Provides efficient mixing with infinitely adjustable electronic speed control from 0 to 3000 rpm.
- Operation time can be set and controlled electronically between 1 second to 100 minutes. User friendly large LED displays enables easy setting and reading of speed and time.
- Guarantees perfect mixing of a 50 ml tube in 3 seconds with 6 mm diameter orbital movement.
- Unique counter-balance system creates maximum vortex power while minimizing the noise and excessive vibration.
- Aluminium cast base avoids unnecessary "walking" and slip resistant silicone feet pads minimizes the vibration enabling an excellent stable operation by a tight hold to the work bench.
- Reliable and extremely quiet motor guarantees an even distributed efficient mixing for all speeds ranges.
- Head is easily removable and replaceable with optional adapters that offers multiple use with different tube diameters.
- Can be used both in cold rooms, incubators and anaerobic and aerobic chambers due to the small foot print and extremely compact design.

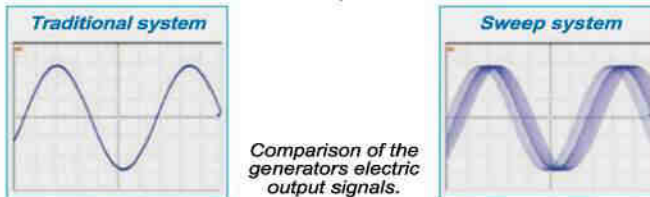
catalogue number	622.03.001
dimensions / weight (mm / kg)	107 x 146 x 166 / 3,0
power (W)	36
voltage (V)	100 - 240
frequency (Hz)	50 / 60
mixing motion	orbital
orbital diameter (mm)	6
speed range (rpm)	0 - 3000
speed & time display	LED
run time	continuous / touch operation
protection class	IP 21

➤ Digital Ultrasonic Bath

**BATHS - "ultrasonic" - "with sweep & degass & pulse functions"**



34 kHz  
35 kHz  
37 kHz  
Comparison of acoustic field distribution inside the liquid.



Comparison of the generators electric output signals.

catalogue no	621.06.003	621.06.006	621.06.010
ext. dimensions (mm)	265x165x225	365x175x285	420x265x285
tank dimensions (mm)	238x138x100	302x152x150	302x239x150
tank volume (L)	3,0	6,0	10,0
ultrasonic power (W)	160	240	320
frequency (kHz)	40	40	40
heating power (W)	180	300	300
max. heating (°C)	80	80	80
heating accuracy (°C)	± 1	± 1	± 1
time control (min)	1 - 60	1 - 60	1 - 60
drainage valve	N/A	N/A	yes
standard accesories	basket & lid	basket & lid	basket & lid

➤ Digital Ultrasonic Bath

**BATHS - "ultrasonic"**



Ultrasonic baths are delivered with stainless steel standard density basket and stainless steel lid with handle.



Keypad with digital LED panel for display for set & actual temp. and set & actual time.

Ultrasonic cleaners from 10 to 28 L featured with a drainage valve for removal of use water.

catalogue no	621.05.001	621.05.003	621.05.006	621.05.010	621.05.015	621.05.022	621.05.028
ext. dimensions (mm)	175 x 155 x 225	265 x 165 x 225	365 x 175 x 285	420 x 265 x 285	365 x 340 x 365	540 x 340 x 365	540 x 340 x 365
tank dimensions (mm)	150 x 138 x 65	238 x 138 x 100	302 x 152 x 150	302 x 239 x 150	325 x 295 x 150	502 x 298 x 150	502 x 298 x 200
tank volume (L)	1,3	3,0	6,0	10,0	15,0	22,0	28,0
ultrasonic power (W)	60	120	180	240	360	360	480
frequency (kHz)	40	40	40	40	40	40	40
heating power (W)	60	180	300	300	500	600	600
max. heating (°C)	80	80	80	80	80	80	80
heating accuracy (°C)	± 1	± 1	± 1	± 1	± 1	± 1	± 1
time control (min)	1 - 60	1 - 60	1 - 60	1 - 60	1 - 60	1 - 60	1 - 60
drainage valve	N/A	N/A	N/A	yes	yes	yes	yes
standard accesories	basket & lid	basket & lid	basket & lid	basket & lid	basket & lid	basket & lid	basket & lid

➤ ELISA / Microplate Reader



**Pre-installed filters and Applications**

4 filters are pre-mounted on the 6 position filter wheel covering most applications. [1]

**Reporter Gene Assay**

based on  $\beta$ -galactosidases and secreted alkaline phosphatases

**DNA Quantification**

with the Diphenylamine assay according to Dische

**Protein Quantification**

traditional Lowry and Bradford methods

**ELISAs and Immunoassays [2]**

with horseradish peroxidase and phosphatase labelled antibodies

**Apollo 11 LB 913**

**Microplate Absorbance Reader\***

Based on the proven technology of its predecessors the Apollo 11 sets new targets for microplate absorbance readers by introducing its new unlimited life-time LED light source technology.

The Apollo 11 is ideally suited for all common ELISAs, assays for monitoring enzyme activities and protein and DNA quantification assays.

The easy-to-use self-explaining one-view PhotoRead software lets you get started with the measurements within seconds.

**Outstanding Properties**

**Auto-Control**

The instrument performs auto-check and auto-calibration of the optics and electronics before every measurement.

**Large Dynamic Range**

The instrument's dynamic range of 3.7 OD is large enough to cover any assay's requirements.

**Precision**

Precise mechanics, quality optics and the auto-control guarantee unrivalled repeatability of measurements.

**Accuracy**

Like all Berthold Technologies instruments the Apollo 11 comes to your laboratory checked against a QC test plate. With this reassurance you are able to work with accurate, traceable and comparable results.

**Small Footprint**

Not very much bigger than a sheet of paper the Apollo 11 saves valuable laboratory space.



**Apollo 11 LB 913 Specifications**

Detection unit	Photo diode
Excitation Source	LED, spectral range 400 – 700 nm
Accuracy	better 1 % and 0.005 OD (@0 to 2.5 OD)
Precision	better 0.5 % and 0.005 OD (@0 to 2.5 OD)
Dynamic Range	0 – 3.7 OD
Microplate Formats	12 to 96 well Plate heights 15 to 20 mm (96 well only with PhotoRead software)
Reading Speed	20 s per wavelength
Shaking	4 amplitudes, 4 speeds
Interface	USB
PC Operating System	Pentium Processor, 500 MHz (or better), CD ROM drive, display 1024 x 768 (or better), USB
Regulations	CE
Power Supply	110 - 240 V, 50/60 Hz, 20 VA External auto-ranging mains adaptor
Temperature range	Storage: 0 – 40 °C Operation: 15 – 35 °C
Humidity	10 – 80 % non-condensing
Dimensions	210 x 281 x 160 mm (W x D x H)
Weight	3 Kg



➤ **ELISA Plate Analyser**  
 MICRO READ 1000



**FEATURES**

- ☒ Built in printer
- ☒ Plate shaking facility with variable speed and duration
- ☒ Ability to read plate within seconds
- ☒ Digital light control with unique circuit for long lamp life
- ☒ Matrix mode for Result printing
- ☒ Intelligent cut off programme
- ☒ Storage of calibration curves
- ☒ Storage of Plate results
- ☒ Various Curve fit mode like : Linear, Point to Point and 4 parameter.
- ☒ Universal power supply

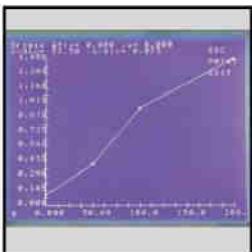
**TECHNICAL SPECIFICATIONS**



Printer



Display



Graph

Human Machine Interface	:	TOUCH PANEL / KEYPAD
Linear Measurement Range	:	0.000 to 3.000 Absorbance Units(A)
Photometric Accuracy	:	± 2% or 0.007 whichever is higher, from 0 to 1.5 A ± 3% from 1.5 A to 3.0 A
Drift	:	<0.005 A/hr
Optical Measurement	:	8 Channel
Filters		
Type of Filter	:	High Quality Narrow band Interference
Wave Length	:	405nm, 450nm, 492nm, 630 nm 560 nm & Three Optional
Half Bandwidth	:	10 nm ± 2nm
Selection	:	Automatic by Stepper Motor
Display	:	6" Graphics LCD, Negative Blue, STN
Curve Plotting	:	Graphical Representation on Printer
Plate Carrier Movement	:	Precisely through the stepper motor
Printer	:	Built in Thermal Printer 52 columns
Memory	:	Battery back up for 250 tests and more than 2500 results.
Analysis Mode	:	Absorbance (Normal & Differential) Cut - off           Multi - Standard % Absorbance    Single Standard Uptake            Kinetic
RS232 Serial Port / USB	:	9600 baud, 8 data, 1 stop, no parity bits / USB
Power	:	75 Watts / 115 - 230 Volts ± 10%, 50 / 60 Hz.
Weight	:	10 Kgs. (Approx)

*Due to continuous development, specifications are subject to change without prior notice.*

## ➤ Dissolution Test Apparatus - 2912 & 2914

*IQ/OQ/PQ Document, CE, ISO Certified*



### GENERAL

### Technical Data

<b>Stations</b>	14 stations in Model 2914
	12 stations in Model 2912
<b>Display</b>	20 x 4 line alphanumeric LCD display with backlit
<b>Keyboard</b>	19 soft touch membrane type keys
<b>LED's</b>	4 LED's for different status indications. 3 LED's for test status like Run, Alarm, End & 1 LED for heater ON/OFF status
<b>Setup Data</b>	20 different test setups available in routine and sustain modes
<b>Printer Attachment</b>	Provision for the attachment of dot-matrix printer with centronics parallel port interface available
<b>STIRRER</b>	
<b>Speed</b>	25 to 200 RPM $\pm$ 1 RPM
<b>Resolution</b>	1 RPM
<b>Accuracy</b>	$\pm$ 1 RPM
<b>TEMPERATURE</b>	
<b>Range</b>	30 to 50 °C
<b>Accuracy</b>	$\pm$ 0.2 °C
<b>Temp. Control</b>	Microprocessor based using PT100/ Semiconductor sensor as per IP/USP
<b>SAMPLE</b>	
<b>Reaction Vessel</b>	1000 ml jar with stirrer pedal and basket
<b>Heater</b>	1900 W
<b>Power</b>	230 V $\pm$ 10%, 50 Hz. AC

## ➤ Dissolution Test Apparatus - 1916 & 1918

*IQ/OQ/PQ Document, CE, ISO Certified*



### GENERAL

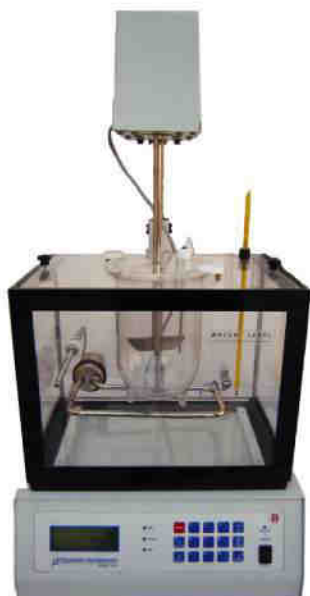
### Technical Data

<b>STATIONS</b>	8 Station in Model - 1918
	6 Station in Model - 1916
<b>DISPLAY</b>	20 x 4 Line Alphanumeric LCD display with Backlit
<b>KEYBOARD</b>	19 soft touch membrane keys
<b>LED'S</b>	4 LED's available for different status indications. 3 LED's for Test status like Run, Alarm, End and one LED for heater on/off status.
<b>PROGRAMMABLE MODES</b>	Routine, Sustain and Control mode. Facility for 20 different test setups available in Routine and Sustain mode.
<b>PRINTER</b>	Provision for the attachment of dot-matrix printer with centronics parallel port interface available.
<b>STIRRER</b>	
<b>SPEED</b>	25 - 200 RPM $\pm$ 1 RPM
<b>RESOLUTION</b>	1 RPM
<b>ACCURACY</b>	$\pm$ 1 RPM
<b>TEMPERATURE</b>	
<b>RANGE</b>	30 °C - 50 °C
<b>ACCURACY</b>	$\pm$ 0.2 °C
<b>TEMPERATURE CONTROL</b>	Microprocessor based using PT100/ Semiconductor Sensor
<b>SAMPLING</b>	
<b>REACTION VESSEL</b>	1000 ml jar with stirrer pedal and basket
<b>HEA TER</b>	1 KW
<b>POWER</b>	230 V $\pm$ 10% AC, 50 Hz



## ➤ Dissolution Test Apparatus - 1912

*IQ/OQ/PQ Document, CE, ISO Certified*



### GENERAL

DISPLAY	20 x 4 Line Alphanumeric LCD display with Backlit
KEYBOARD	15 soft touch membrane keys
LED'S	4 LED's available for different status indications. 3 LED's for Test status like Run, Alarm, End and one LED for heater on/off status.
SETUP DATA	Facility for 20 different test setups available in Routine and Sustain mode.
PRINTER	Provision for the attachment of dot-matrix printer with centronics parallel port interface available.

### STIRRER

SPEED	25 - 160 RPM $\pm 1$ RPM
RESOLUTION	1 RPM
ACCURACY	$\pm 1$ RPM
DEPTH ADJUSTMENT	25 mm to 40 mm

### TEMPERATURE

RANGE	20 °C - 40 °C
ACCURACY	$\pm 0.2$ °C
TEMPERATURE CONTROL	Microprocessor based using PT100/ Semiconductor Sensor

### SAMPLING

REACTION VESSEL	1000 ml Jar with stirrer pedal and basket
HEATER	1 KW
POWER	230 V $\pm 10\%$ AC, 50 Hz
DIMENSION (L x B x H)	330 x 300 x 660 mm (Approx.)
WEIGHT	9 Kg. (Approx.)

### Technical Data

## ➤ Dissolution Test Apparatus - 912

*IQ/OQ/PQ Document, CE, ISO Certified*



### STIRRER

SPEED	25-200 RPM $\pm 1$ RPM
RESOLUTION	1 RPM
ACCURACY	$\pm 1$ RPM
DEPTH ADJUSTMENT	25 mm to 40 mm

### TEMPERATURE

RANGE	10 - 50°C
ACCURACY	$\pm 1$ °C
TEMP. CONTROL	Thermostat 0 - 85°C

### SAMPLING

REACTION VESSEL	1000ml Jar with Stirrer Pedal and Basket
HEATER	1 KW
POWER	230 $\pm 10\%$ V AC, 50Hz
DIMENSIONS	320 x 320 x 375mm (LxBxH) (Approx.)
WEIGHT	9 Kg. (Approx.)

### Technical Data

**Disintegration Test Appartus - 2901**

*IQ/OQ/PQ Document, CE, ISO Certified*



**MODEL 2901**

**Technical Data**

NUMBER OF BASKETS	2
STROKE LENGTH	55 mm ± 0.5 strokes / minute
NO. OF T IMERS	2 Timers
TIMER DISPLAY	5 Digit LED Display for each T imer
TIMER RANGE	1Sec. To 9 Hrs. 59 Min 59 Sec.
KEYBOARD	Soft touch membrane keys
NO. OF MOTORS	2
TEMPERATURE DISPLAY	3 Digit LED Display
TEMPERATURE RANGE	20.0°C to 39.9°C
TEMP. CONTROL	Microprocessor based using PT100/ semiconductor sensor as per IP/USP
ACCURACY	+ 0.2 oC
REACTION V ESSEL	1000 ml
HEATER	0.5 KW
ELECTRICAL SUPPLY	220/230 V AC ± 10%, 50/60 Hz, 44VA
DIMENSIONS (W X H X D)	36 cm x 20 cm x 32 cm
WEIGHT	17 Kgs

**Disintegration Test Appartus - 1901**

*IQ/OQ/PQ Document, CE, ISO Certified*



**MODEL 1901**

**Technical Data**

DISPLAY	20 x 4 Line Alphanumeric LCD display with Backlit
KEYBOARD	15 soft touch membrane keys
LED'S	4 LED's available for different status indications. 3 LED's for Test status like Run, Alarm, End and one LED for heater on/off status.
SETUP DATA	Facility for 20 different test setups available
PRINTER	Provision for the attachment of dot-matrix printer with centronics parallel port interface available.
SPEED	55 mm, 30 ±1 Strokes per minute
RESOLUTION	1 Sec to 99 Minutes
RANGE	20 °C - 40 °C
ACCURACY	± 0.2 °C
TEMPERATURE CONTROL	Microprocessor based using PT100/ Semiconductor Sensor
REACTION BEAKER	1000 ml
HEATER	1 KW
POWER	230 V±10% AC, 50 Hz
DIMENSION (L x B x H)	330 x 300 x 660 mm (Approx.)
WEIGHT	9 Kg. (Approx.)

## Disintegration Test Apparatus - 901 & 904

*IQ/OQ/PQ Document, CE, ISO Certified*



MODEL	901	904
BEAKER SYSTEM	Dual Beaker System	Single Beaker System
TABLET SYSTEM	Dual Basket with 6 Tubes & guided disc	Single Basket with 6 Tubes & guided disc
TIME DISPLAY	5 digit red LED ½" display	
UP AND DOWN SPEED	30 rpm ± 2 rpm	
ACCURACY	2%	
RESOLUTION	1 sec.	
OPERATING TEMP. RANGE	0 - 100° C	
POWER	230V ± 10%, 50Hz. AC	
DIMENSIONS	(Without Rods) 320 x 290 x 290mm (L x B x H) (With Rods) 320 x 290 x 370mm (L x B x H)	
WEIGHT	8 Kgs. (Approx.)	

## Flame Photometer - 1985

*IQ/OQ/PQ Document, CE, ISO Certified*



MODEL	1385 & 1382			
RANGE	ppm	General Range meq/l	Serum Range meq/l	Urine Range meq/l
	Na : 0-100 K : 0-100 Ca : 0-100 Li : 0-100 Ba : 50-1000	Upto 250 meq/l, 1:100 dil. Upto 250 meq/l, 1:100 dil. Upto 250 meq/l, 1:100 dil. Upto 250 meq/l, 1:100 dil. -	0-200 meq/l, 1:100 dil. 0-10 meq/l, 1:100 dil. -	0-250 meq/l, 1:100 dil. 0-100 meq/l, 1:100 dil. 0-10 meq/l, 1:2 dil. -
SENSITIVITY	General Mode : Na:0.5 ppm, K:0.5 ppm, Li:0.5 ppm, Ca:15 ppm, Ba : 50 ppm			
FILTERS	Na & K Supplied (Ca & Li are optional at extra cost)			
RESOLUTION	0.1 ppm / 0.1 meq.			
REPRODUCIBILITY	< 1% coefficient of variation for 20 consecutive samples using 10 ppm Na set as Maximum Standard			
LINEARITY	< 2% error when 3 ppm Na/K and 5 ppm Li are set as Maximum Standard			
CURVE FIT ACCURACY	±2% of FS			
DISPLAY	20 x 4 Character alphanumeric LCD display with backlit			
AVERAGE TIME	In-built in Software			
FLAME SYSTEM	LPG & Dry Oil Free Air			
DETECT OR	Photodiode			
CALIBRA TION	with up to 25 Standards of User Choice with Curve Fitting Software (5 for each Element) Multiple Calibration Curves can be stored in the memory			
GAS CONTROL	Adjustable with knob			
FLAME FAILURE	Auto Detection (Model 1385 only)			
GAS CUTT OFF	Automatic (Model 1385 only)			
IGNITION SYSTEM	Auto Ignition			
AUTOMISER	Axial Flow Type			
DIMENSIONS (LxBxH)	Instrument : 285 x 255 x 210 mm Approx. Box : 600 x 360 x 320mm			
PRINTER	Provision for attachment of Dot-Matrix Printer or HP Laserjet/ Inkjet printer (non-win printers) with centronics parallel interface			
RS 232 INTERFACE	Available (PC software at extra cost)			
WEIGHT	Main Unit : 9 Kg .(Approx.) Box: 10.5 Kg (Approx)			
POWER SUPPLY	230 V AC ± 10%, 50 Hz			

**Friability Apparatus 1902**

*IQ/OQ/PQ Document, CE, ISO Certified*



**Model - 1902**

**Technical Data**

TEST METHODS	Time and Count Mode
SPEED OF DRUMS	20 – 60 RPM
NO . OF DRUMS	2
DISPLAY	20x4 Alphanumeric LCD
KEYBOARD	Soft touch membrane keys, alphanumeric mobile keypad
COUNTER	1 to 9999 rotations
TIMER	1 sec to 9 hrs 59 min 59 sec
TYPE OF DRIVE	Direct Drive with Stepper Motor
PRINTER	Attachment of RS232 printer with Serial interface
ELECTRICAL SUPPLY	230 V AC ± 10%, 50/60 Hz, 44VA
DIMENSIONS (WXHXD)	335mm X 330mm X 340mm
WEIGHT	12 Kgs

**Friability Apparatus 902 & 903**

*IQ/OQ/PQ Document, CE, ISO Certified*



Model - 902



Model - 903

**Model - 902 & 903**

**Technical Data**

ACCURACY	± 1 revolution
RESOL UTION	1 revolution
DRUM SPEED	25±1 rpm.
DISPLA Y	0 - 999 revolution on 3 digit red LEDS
NO . OF DRUMS	Model 902 - 2 Nos. Model 903 - 1 No.
OPERA TING TEMP. RANGE	10° - 50°C
POWER	230V ± 10%, 50Hz. Ac
DIMENSIONS	(No Drum) 240 X 215 X 220mm(L x B x H) (2 Drum) 420 X 215 X 330mm(L x B x H)
WEIGHT	9.5 Kgs. (Approx.)
STAND ARD ACCESSORIES	Dust Cover - 1 No.      Drum (902) - 2 Nos. Instruction Manual - 1 No.      (903) - 1 No.

### Leak Test Apparatus 1961

*IQ/OQ/PQ Document, CE, ISO Certified*



#### Model - 1961

#### Technical Data

<b>VACUUM RANGE</b>	150 - 600 mm Hg
<b>VACUUM SETTING</b>	Vacuum can stabilize for a set value less than 400 mmHg $\pm$ 10 mmHg within 30 seconds
<b>DESICCATOR</b>	12 Inch
<b>DISPLAY</b>	20 x 4 Line alphanumeric LCD with backlit
<b>KEYBOARD</b>	Soft touch membrane keys, Alphanumeric mobile keypad.
<b>PRINTER</b>	Attachment of dot matrix printer with centronics /parallel interface
<b>SETUP'S</b>	5 Programmable user setups for quick analysis
<b>HOLD TIME</b>	upto 9999 secs
<b>POWER</b>	AC 230 V $\pm$ 10%, 50 Hz
<b>WEIGHT</b>	13 Kg. (Approx.)

### Leak Test Apparatus 961

*IQ/OQ/PQ Document, CE, ISO Certified*



#### Model - 961

#### Technical Data

<b>VACUUM RANGE</b>	up to 22" of Hg
<b>VACUUM SETTING</b>	Vacuum can stabilize for a set value less than 400 mm Hg $\pm$ 10 mm Hg within 30 seconds
<b>DESICCATOR</b>	6", 10", 12" (Please specify while ordering)
<b>DISPLAY</b>	4-Digit Seven Segment Bright Red LED
<b>KEYBOARD</b>	Soft touch keys
<b>HOLD TIME</b>	15 – 9999 Secs
<b>POWER</b>	230V $\pm$ 10% AC, 50Hz, 10W
<b>WEIGHT</b>	13 Kg (Approx.)

### Bulk Density Apparatus 951

*IQ/OQ/PQ Document, CE, ISO Certified*



#### Model - 951

#### Technical Data

<b>DISPLAY</b>	4 Digit Seven Segment Bright Red LED
<b>MAXIMUM COUNTS</b>	9999
<b>KEYBORAD</b>	6 Soft T ouch Membrane Keys
<b>CYLINDER</b>	2 Nos., 50/100 ml Cylinders
<b>DROP HEIGHT</b>	25 mm (Approx.)
<b>POWER</b>	230 V $\pm$ 10% AC, 50 Hz
<b>DIMENSIONS (L x B x H)</b>	600 x 450 x 200 mm (Approx.)
<b>WEIGHT</b>	12 Kg. (Approx.)
<b>ACCESSORIES</b>	50 ml Cylinders - 2 Nos., Instruction Manual & Dust Cover

### Tap Density Tester 1951

*IQ/OQ/PQ Document, CE, ISO Certified*



#### Model - 1951

#### Technical Data

TEST METHODS	USP-I & USP -II
NO. OF STATIONS	2
DISPLAY	20x4 Alphanumeric LCD
KEYBOARD	16 Soft touch membrane keys, alphanumeric mobile keypad
TAP HEIGHT	USP-I: 14mm± 2mm, USP -II: 3mm ± 0.3mm
TAPS/MINUTE	USP-I: 300± 15, USP -II: 250± 15
NO. OF TAP COUNTS	1 to 9999
TYPE OF DRIVE	Direct Drive with Stepper Motor
PRINTER	Attachment of RS232 printer with Serial interface
STANDARD ACCESSORIES	Cylinders 100 & 250ml (1 each) Cylinder holders for 100 & 250ml (1 each)
ELECTRICAL SUPPLY	230 V AC ± 10%, 50/60 Hz, 44VA
DIMENSIONS (WXHXD)	360x340x190 mm without holder
WEIGHT	15 Kgs

### K.F. Moisture Titrator 1760

*IQ/OQ/PQ Document, CE, ISO Certified*



#### Model - 1760

#### Technical Data

MEASURING RANGE	50 ppm to 100% of moisture
MEASURING METHOD	Karl Fischer volumetric titration method
K.F. DISPENSING	Highly sensitive motorized dispensing system
RESOLUTION OF TITRANT VOLUME	0.01 ml
INDICATION OF TITRANT VOLUME	0.00 to 99.99 ml on display
MOISTURE CONTENT CALCULATION (AUTOMATIC)	% age : (0.00 to 100%) ppm : (10 to 999999) mg H <sub>2</sub> O : (0.00 to 999.99)
KF TITRATION FACTOR	In-built automatic KF Titer Factor calculation facility
END POINT ALARM	Visual LED and Audible Alarm
WAIT TIME FOR END POINT ALARM	Adjustable (1 to 59 seconds)
DISPENSING PUMP CALIBRATION	Available through keyboard
KEYBOARD	24 keys soft touch, membrane type
SAMPLE STORAGE	Upto 20 latest samples using FIFO memory
DISPLAY	8 digit bright red, seven segment LED display
CLOCK	In-built clock with date and time display
STIRRER	In-built magnetic stirrer with adjustable speed
REAGENT BOTTLES	3x250 ml bottles for KF Reagent, Methanol & Calcium Chloride
PRINTER INTERFACE	External Dot-matrix Printer interface available
POWER	230 V AC + 10%, 50 Hz
DIMENSIONS	L 360 x B 295 x H 175 mm (Approx.)
STANDARD ACCESSORIES	* Dual Platinum Electrode * Titration Vessel * Built-in Magnetic Stirrer * Teflon Coated Magnetic Stirring Capsule * 250ml Bottle for Methanol * 250ml Reservoir Bottle for KF Solution * 25 µl Syringe * 250 ml Bottle for Calcium Chloride * Adaptor for KF Reservoir * Adaptor for acetone Reservoir Bottle * Set of Dispenser Tubes * Set of Connecting Tubes * Main Lead * Instruction Manual.

## Colony Counter Model 1363

*IQ/OQ/PQ Document, CE, ISO Certified*



### Technical Data

MODEL	1361	1362	1363
DISPLAY	3 - Digit Seven Segment LED	4 - Digit Seven Segment LED	6 - Digit Seven Segment LED
MAX COUNTS	999	9999	999999
KEYBOARD	6 soft touch membrane keys		
CORRECTION	Correction count facility available to cancel the unwanted counts		
STORAGE	100 Result-count storage retained even if the system is switched off		
AVERAGE	Average mode facility available		
DISH SIZE	110 mm		
MAGNIFICATION	x 1.7 surface magnification		
DIMENSIONS (L x B x H)	Instrument : 225 x 250 x 280 mm (Approx.) Packing Box : 320 x 300 x 265 mm (Approx.)		
WEIGHT	3 Kg. (Approx.)		
POWER	230 V $\pm$ 10% AC, 50 Hz		
STANDARD ACCESSORIES	Marking Pen, Magnifying Lens, Lens Holder, Instruction Manual, Dust Cover		

## Melting Point Apparatus 1935

*IQ/OQ/PQ Document, CE, ISO Certified*



### Model - 1935

### Technical Data

NUMBER OF SAMPLES	1 Sample at a Time
TEMPERATURE RANGE	Ambient to 300 °C
TEMPERATURE ACCURACY	$\pm 1$ °C at 20 °C $\pm 2.5$ °C at 300 °C
TEMPERATURE SENSOR	Platinum Resistance Pt100
RAMP RATE	Programmable at Scale of 1 – 10
PLATEAU TEMPERATURE	Programmable
DISPLAY	4 Digit Seven Segment LED Display (Model – 1935) 3 Digit Seven Segment LED Display (Model – 1934)
DISPLAY RESOLUTION	0.1 °C (Model – 1935) 1 °C (Model – 1934)
KEYBOARD	Soft Touch Membrane Keys
STATUS LED'S	PLATEAU, °C, RAMP, RUN, END, READY & RECAL
MEMORY	Storage upto 100 Results
POWER	AC 230 V $\pm$ 10%, 50 Hz
WEIGHT	9.0 Kg. (Approx.)
ACCESSORIES	Box of Capillaries, Operation Manual & Dust Cover

**Electromagnetic Sieve Shaker**

*IQ/OQ/PQ Document, CE, ISO Certified*



**Model - 918**

**Technical Data**

<b>OPERATION MODE</b>	Intermittent and Continuous Shifting Motion
<b>INTERMITTENT OPERATION</b>	At Intervals (0.5 sec)
<b>CAPACITY</b>	Up to 8 Sieves (Test Sieve Dia form 200mm x 50mm h)
<b>SHAKE TIME</b>	Programmable Shake Time from 1min to 99min
<b>DISPLAY</b>	20 x 4 Alphanumeric LCD with Backlit Display
<b>KEYPAD</b>	Fully Alphanumeric Keypad
<b>POWER LEVEL</b>	Programmable (from 1 to 20)
<b>NOISE</b>	Very Low Noise Operation
<b>SECURITY</b>	2 Tier Password Protection Facility (Admin & User)
<b>PRINTER</b>	RS 232 Port for Serial Printer using 80 Column Dot Matrix or Thermal Printer
<b>DRY SIEVING</b>	Standard (Wet Sieve Optional)
<b>POWER</b>	220/230V AC, 50 Hz, 600VA
<b>DIMENSION (L X B X H)</b>	310mm x 390mm x260mm (approx.)
<b>WEIGHT</b>	49 kgs approx. (without Sieves)

**Powder Flow Meter**

*IQ/OQ/PQ Document, CE, ISO Certified*



**Model - FP 922**

**Technical Data**

<b>TOP FUNNEL</b>	Two Pieces Stainless Steel Conical Funnel with 16-Mesh & 1.03mm Opening
<b>BAFFLE QUANTITY</b>	4 Nos. Glass Material
<b>DENSITY CUPS</b>	
<b>CYLINDRICAL VOLUME</b>	25.00 ml ± 0.05 ml
<b>INNER DIAMETER</b>	30.00 mm ± 2.00 mm
<b>CUBE VOLUME</b>	16.39 ml ± 0.2 ml
<b>CUBE SIZE</b>	25.4 mm ± 0.076 mm
<b>INSTRUMENT STAND</b>	A Stand to Support th Top Funnel and Baffle Box, Level & Vibration Free



## ▶ Portable Tablet Hardness Tester TABTEST 101

*IQ/OQ/PQ Document, CE, ISO Certified*



### Technical Specifications:

Display	LCD with backlit display
Key Board	User Friendly 9 Key operation
Hardness range	5-500N
Hardness Accuracy	±0.05% FS
Measurable Units	N(Newton), KGF ( Kilogram Force) and Lbf ( Low bound Force)
Interface Ports	RS-232
Dimensions	360 x 65 x 100 mm
Electrical Power Adapter	230 V, 50Hz to DC 12V, 300 mA
Battery	1200 mAh, 8.4V, Ni-Hi Rechargeable Battery
Peak Force Measurement	Yes
Acrylic Safety Glass Cover	Yes
Stored Results	Upto 10 (also calculate the average value of test results)
Zero point adjustment for Calibration	Yes
Auto Unit Conversion	Yes
Programmable T1, T2 tolerance	Yes
Tablet Size	Yes (2mm to 28mm)

## ▶ Tablet Hardness Tester TABTEST 301

*IQ/OQ/PQ Document, CE, ISO Certified*



Packing buffer



Easy CAL



Password Secured



Accuracy



Dot Matrix printer



Built In Printer

### Technical Specifications:

Display	LED
Keyboard	User Friendly 9 Key operations
Hardness Range	5 - 500N ( 800N Option Available)
Hardness Accuracy	>1N
Diameter and Thickness Range	1.5 - 35mm
Diameter Accuracy	>±0.05mm
Measuring Units	Thickness and Diameter in either mm or Inches • N (Newton)
Measurable Units	• KP (KiloPond, 1KP = 9.81N) • Sc (Strong cobb, 1KP = 1.43Sc)
Force Rate	Constant (Linear) Force or Constant (Linear) Speed
Number of Tests for Statistics	Up to 99
Stored Methods	Last test result
Calibration Procedure	Requires 10mm Reference Block and 10kg Reference Weight (Certified)
Calibration Technique	No Tilt (User Friendly)
Distance Validation	10mm Certified Block (For Thickness and Diameter)
Load Cell Linearity	3-Point Linear Calibration with Certified Weight (5, 10, 15kg)
Interface Ports	RS-232 (Serial Port for Service Use Only) and Parallel Printer

## ▶ Tablet Hardness Tester TABTEST 401

*IQ/OQ/PQ Document, CE, ISO Certified*



Packing buffer



LAN



Easy CAL



Password Secured



Accuracy



Dot Matrix printer



Built In Printer



USB Printer



PDF Format



Balance interface

### Technical Specifications:

Display	Graphic LCD (240 x 128 pixels)
Keyboard	Alpha - Numeric Function Keys
Hardness Range	5 - 500N (800N Option Available)
Hardness Accuracy	>1N
Diameter and Thickness Range	0.5 - 35mm
Diameter Accuracy	>±0.05mm
Measuring Units	Thickness and Diameter in either mm or Inches • N (Newton)
Measurable Units	• KP (KiloPond, 1KP = 9.81N) • Sc (Strong cobb, 1KP = 1.43Sc)
KP Resolution Accuracy	Yes (1/10 or 1/100 Settable)
Tolerance	Yes (Programmable Tolerances T1, T2, and Plausibility)
Force Rate	Constant (Linear) Force or Constant (Linear) Speed
Number of Tests for Statistics	Up to 100
Stored Methods	Up to 10
Calibration Procedure	Requires 10mm Reference Block and 10kg Reference Weight (Certified)
Distance Validation	10mm Certified Block (For Thickness and Diameter)
Load Cell Linearity	3-Point Linear Calibration with Certified Weight (5, 10, 15kg)
Interface Ports	USB Type A (2), USB Type B, LAN, RS-232 (Serial Port for Balance Connection) and Parallel Printer

## ➤ Dissolution Tester Dis 6000

*IQ/OQ/PQ Document, CE, ISO Certified*



Model: Dis 6000

### DISSOLUTION INTRODUCTION

In the majority of cases, the effectiveness of tablets or capsules administered orally relies on the drug dissolving in the fluids of the gastrointestinal tract prior to absorption through the walls of the tract into the systemic circulation. For this reason, the rate of dissolution is a key factor in both the formulation process and final quality control.

The most common apparatus used to measure the dissolution rate of solid dose forms are the basket and paddle. Both use the same basic configuration, are simple, robust and can be used to test a variety of different products. The basic apparatus consists of a covered cylindrical vessel having a hemispherical bottom and capable of holding approx. 1000 ml of simulated gastric juice. The vessel is partially immersed in a suitable water bath capable of maintaining the temperature of the vessel contents at 37 degrees C.

In the case of the basket method, the tablet or capsule is constrained in a cylindrical basket constructed of sieve mesh of defined proportions. The basket is attached to a metal drive shaft by a 3-pronged retention spring and the shaft positioned in such a manner that the bottom of the basket is at 25 mm from the bottom of the vessel. In the case of the paddle method, the basket is replaced by a paddle and the sample to be tested is allowed to sink to the bottom of the vessel. During the test, a motor is used to rotate the drive shaft at the speed (normally 50, 75 or 100 rpm) specified in the pharmacopoeia.

A sample of the dissolution medium is taken at predefined time intervals to determine the percentage of dissolved drug present – this is normally determined using a UV/Vis Spectrophotometer or HPLC.

### All Copley Dissolution Testers feature:

- Sturdy, robust construction specifically designed to reduce clutter and maximize visibility and access in the critical sampling area above the water bath
- Simple, easy-to-use operation ensures that the number of operations required to perform a test are kept to a minimum
- Full supporting documentation (including full IQ/OQ/PQ qualification documentation if required)

## ➤ Disintegration Testers Series DTG 2000

*IQ/OQ/PQ Document, CE, ISO Certified*



Model: DTG 2000

### DISINTEGRATION TESTERS SERIES DTG

The Disintegration Tester Series DTG is the result of over 50 years experience in the field of pharmaceutical testing.

They have been specifically designed for use in the quality and production control of normal, plain coated and delayed release coated tablets, and gelatine capsules in accordance with the specifications as laid down in European, United States and associated Pharmacopoeia.

The series is available with one (DTG 1000), two (DTG 2000), three (DTG 3000) or four (DTG 4000) test stations. Each individual test station is capable of accepting one batch of six tablets or capsules.

Foremost in the design specification were those features that you, the user, identified as being essential to the 'ideal' disintegration tester.

### PHARMACOPOEIAL COMPLIANCE AND QUALIFICATION

The most critical factors in the design of any disintegration tester are (a) that it complies with the respective Pharmacopoeia, (b) that this compliance can be proved or qualified and (c) that both compliance and qualification are documented. Copley offer a three tier approach to address these points:

- Certificate of Compliance to USP/Ph.Eur.: Provided free of charge with each unit. This is a written statement that the product, by design, complies with the current pharmacopoeial specifications.
- Laser Numbering and Certification: Identification and measurement of critical components to provide documented verification of compliance with current pharmacopoeial specifications. Available as an optional service.
- IQ/OQ/PQ Qualification Documentation: Comprehensive documentation to guide the user through the installation, operating and performance checks of the equipment in its operating environment, using specified test protocols. This optional service provides a comprehensive record of the suitability of the equipment to perform its specified task, to be created and archived. Please see the ordering information for further details on our verification and qualification services.

## ➤ Friability Tester Series FR & FRV

*IQ/OQ/PQ Document, CE, ISO Certified*



Model: FRV 2000

### FRIABILITY TESTER SERIES FR & FRV INTRODUCTION

Based on an original design by Roche, the friability tester has now become an accepted standard throughout the pharmaceutical industry for determining the resistance of uncoated tablets to the abrasion and shock experienced in manufacturing, packing and shipping operations. Such stresses can lead to capping, chipping, abrasion or even breakage of the tablets. Whilst the basic design remains unchanged, considerable advances have been made in terms of reliability and ease of usage which have now been incorporated into current units.

### PHARMACOPOEIAL COMPLIANCE AND VALIDATION

In order to meet your individual requirements, Copley provide a three tier approach to regulatory compliance and validation.

- Certificate of Compliance to USP/Ph.Eur.: Included with each unit. Written statement that the product, by design, complies with the current pharmacopoeial specifications.
- Laser Numbering and Certification: Identification and measurement of critical components (i.e. the friability drum) to provide documented verification of compliance with pharmacopoeial requirements. Available as an optional service.
- IQ/OQ/PQ Qualification Documentation: Comprehensive documentation to guide the user through the installation, operating and performance checks of the equipment, in its operating environment, using specified test protocols. It provides a comprehensive record of the suitability of the equipment to perform its specified task, to be created and archived. Available as an optional service. Please see the ordering information for further details on our verification and IQ/OQ/PQ services.

## ▶ Hardness Tester TBF 1000

*IQ/OQ/PQ Document, CE, ISO Certified*



TBF 1000 (with Keyboard Option)

### HARDNESS INTRODUCTION

Modern day tablets come in a variety of forms – uncoated, coated, dispersible, effervescent, gastro-resistant, modified release, soluble, rapidly disintegrating, slowly disintegrated, etc. Each type places different demands on the formulation concerned.

Manufacturing processes such as coating, printing, packaging and rigours of handling and transport place additional demands on the mechanical integrity of the finished product.

Together with friability testing, the testing of a tablet's hardness (or more correctly breaking force) plays a vital role in both product development and subsequent quality control.

In this test method, the tablet is placed between two platens (jaws), one of which is attached to a load cell and the other to a motor which provides the mechanical drive. During testing, the motorised jaw drives forward pressing the tablet against the fixed jaw until such time as the tablet breaks whereupon the motorised jaw retracts and the load required to break the tablet is recorded.

High hardness values may indicate, for example, increased disintegration times and reduced dissolution values. On the other hand, if hardness is too low then friability and hence % defective may well be too high. By exploiting the correlation between hardness, disintegration, dissolution, friability, percentage defective and weight variation, the various parameters can be manipulated to produce a dosage form with optimum characteristics.

Significant advances have been made in the field of tablet hardness testing in recent years. Copley Scientific offers a range of semi and fully automatic electronic testers incorporating these advances and varying in sophistication from simple hand held units for use on the production floor to fully automatic units incorporating print-out and data input/output facilities.

All Copley Hardness Testers feature:

- Simple, easy-to-use operation ensures that the number of operations required to perform a test are kept to a minimum
- Full supporting documentation (including full IQ/OQ/PQ qualification documentation where applicable)

## ▶ Hardness Tester TH3

*IQ/OQ/PQ Document, CE, ISO Certified*



### COPLEY TABLET HARDNESS TESTER TH3

A portable semi-automatic electronic tester with LCD display designed to accept tablets up to 30 mm in diameter - ideal for the tablet production area as a quick check as to compression force settings.

The tablet is placed on the test platform between the test jaw and the load cell plunger.

A multi-turn low-friction hand-wheel similar to the type used on machine tools is used to apply load to the tablet until it fractures. The resulting breaking force is displayed on the LCD display in either newtons (N), grams (g), pounds (lbs) or ounces (oz).

To test another tablet, simply press <Zero> to zero the load cell and proceed as above.

Two models are available, the TH3/200 having a range of 200 Newtons +/- 0.04N or the TH3/500 having a range of 500 Newtons +/- 0.1 N respectively.

The TH3 is provided with RS232, Mitutoyo and analogue data output facilities as standard. All displayed readings can be transmitted to peripheral devices, for example, a PC or printer, by pressing the <TXD> key. Alternatively, a PC can request data from the unit by sending a <?> character via the RS232 interface.

Provision is also made for a footswitch.

The unit measures 450 x 70 x 80 mm and weighs approx. 2 kilos and can be operated in either mains or battery modes. It includes a calibration certificate and mains adaptor/charger as standard.

The instrument performs an automatic self test (zero calibration routine) on switch on.

## ▶ Tapped Density Testers Series JV

*IQ/OQ/PQ Document, CE, ISO Certified*



### FRIABILITY TESTER SERIES FR & FRV INTRODUCTION

Based on an original design by Roche, the friability tester has now become an accepted standard throughout the pharmaceutical industry for determining the resistance of uncoated tablets to the abrasion and shock experienced in manufacturing, packing and shipping operations. Such stresses can lead to capping, chipping, abrasion or even breakage of the tablets. Whilst the basic design remains unchanged, considerable advances have been made in terms of reliability and ease of usage which have now been incorporated into current units.

### PHARMACOPOEIAL COMPLIANCE AND VALIDATION

In order to meet your individual requirements, Copley provide a three tier approach to regulatory compliance and validation.

- Certificate of Compliance to USP/Ph.Eur.: Included with each unit. Written statement that the product, by design, complies with the current pharmacopoeial specifications.
- Laser Numbering and Certification: Identification and measurement of critical components (i.e. the friability drum) to provide documented verification of compliance with pharmacopoeial requirements. Available as an optional service.
- IQ/OQ/PQ Qualification Documentation: Comprehensive documentation to guide the user through the installation, operating and performance checks of the equipment, in its operating environment, using specified test protocols. It provides a comprehensive record of the suitability of the equipment to perform its specified task, to be created and archived. Available as an optional service. Please see the ordering information for further details on our verification and IQ/OQ/PQ services.

## UV-Visible Spectrophotometer (Single Beam)

*IQ/OQ/PQ Document, CE, ISO Certified*



### Features:

- Fixed or variable slits (Bandwidth)
- Sealed, solvent-resistant tactile keypad with alphanumericity for file names and units
- Pre-aligned deuterium lamp for easy lamp replacement. The status of the lamp may be monitored
- Online software upgrading via internet helps to keep it updated
- Data Download-to-PC software expands the data storage tounlimited
- The PC model comes standard with Windows ® basedapplication software UV-VIS Analyst
- Data can be saved by USB memory device directly

Model	EMC-31PC-UV	EMC-32PCS-UV
Wavelength Range	190-1100 nm	
Spectral Bandwidth	2 nm	0.5/1/2/4/5 nm
Optical System	Single Beam, grating 1200 lines/mm	
Wavelength Accuracy	±0.5 nm	±0.3 nm
Wavelength Repeatability	0.3 nm	0.2 nm
Scan Speed	Hi, MED, LOW, MAX. 3000 nm/min	
Photometric Accuracy	≤±0.5 % T or ±0.00 5A@1A	
Photometric Range	0-200 % T, -0.3 - 3A, 0-9999Conc.	
Stray Light	0.05 % T@220, 340 nm	
Stability	±0.002A/h @500 nm	
Detector	Silicon Photodiode	
Display	5 inches LCD (320*240 dots)	
Baseline Flatness	±0.002A (200-1000 nm)	
Standard Cell Holder	4-position 10 mm cell changer	
Sample Compartment	Standard 10 mm path length cuvette	
Light Source	Tungsten & Deuterium lamp (Pre-aligned)	
Output	USB type A port for USB memory device (Right side)	
	USB type B port for optional computer connectivity (Back)	
	Parallel port for printer	
Power Requirement	AC 110/220V 50/60 Hz	
Dimensions (LxWxH)	490 x 370 x 220 mm	589 x 428 x 240 mm
Weight	14 kg	20 kg

## UV-Visible Spectrophotometer (Single Beam)

*IQ/OQ/PQ Document, CE, ISO Certified*



### Features:

- Large LCD screen (128\*64 Dots)
- System can also save the test results. Total 200 groups of data 200 standard curves can be saved in the RAM. Convenient for check and reload.
- Data can be restored after a sudden power cut
- Auto setting wavelength
- Tungsten lamp & Deuterium lamp can be turned on/off individually to extend lifetime
- Pre-aligned design makes it convenient to change lamps
- Large sample compartment, it can be accommodate 5-100 mm path length cuvettes with optional holders. A variety of optional accessories are available
- The application software M. Wave Professional provides complete control of the spectrophotometer from a computer through the Built-in USB port. It can expand to the following

### Functions:

- I. Quantitative, II. Kinetics, III. Wavelength Scan, IV. Multi Wavelength, V. DNA/Protein

### Functions:

1. Photometry, 2. Quantitative, 3. Kinetics, 4. System Utilities

Model	EMC-16PC-V	EMC-16PC-UV
Wavelength Range	320-1100 nm	190-1100 nm
Spectral Bandwidth	4 nm	
Optical System	Single Beam, grating 1200 lines/mm	
Wavelength Accuracy	±0.5 nm	
Wavelength Repeatability	0.3 nm	
Photometric Accuracy	≤±0.5 % T or ±0.003A@1A	
Photometric Range	0-200 % T, -0.3 - 3A, 0-9999 Conc.	
Stray Light	≤0.05 % T@360 nm	≤0.05 % T@260, 360 nm
Stability	±0.002A/h @500 nm	
Detector	Silicon Photodiode	
Display	Graphic LCD (128+64 dots)	
Keyboard	22 Membrane keypad	
Standard Cell Holder	4-position 10 mm cell changer	
Sample Compartment	Standard 10 mm path length cuvette	
Light Source	Tungsten lamp	Tungsten & Deuterium lamp
Output	USB Port & Parallel Port (Printer)	
Power Requirement	AC 110/220V 50/60 Hz	
Dimensions (LxWxH)	490 x 370 x 220 mm	
Weight	12 kg	14 kg

## UV-Visible Spectrophotometer (Double Beam)

*IQ/OQ/PQ Document, CE, ISO Certified*



### Features:

- ☑ Fixed or variable slits (Bandwidth)
- ☑ Sealed, solvent-resistant tactile keypad with alpha-numeric entry for file names and units
- ☑ Pre-aligned deuterium lamp for easy lamp replacement. The status of the lamp may be monitored
- ☑ Online software upgrading via internet helps to keep it updated
- ☑ Data Download-to-PC software expands the data storage to unlimited
- ☑ The PC model comes standard with Windows® based application software UV-VIS Analyst
- ☑ Data can be saved by USB memory device directly

Model	EMC-61PC-UV	EMC-61PCS-UV
Wavelength Range	190-1100 nm	
Spectral Bandwidth	1.8 nm	0.5/1/2/4/5 nm
Optical System	Double Beam, grating 1200 lines/mm	
Wavelength Accuracy	±0.3 nm	
Wavelength Repeatability	0.2 nm	
Scan Speed	Hi, MED, LOW, MAX. 3000 nm/min	
Photometric Accuracy	≤±0.5 % T or ±0.00 5A@1A	
Photometric Range	0-200 % T, -0.3 - 3A	
Stray Light	0.05 % T@220, 340 nm	
Stability	±0.001A/h @500 nm	
Detector	Silicon Photodiode	
Display	5 inches LCD (320*240 dots)	
Baseline Flatness	±0.001A	
Standard Cell Holder	Standard 10 mm single cell holder (2 pcs.)	
Sample Compartment	Standard 10 mm path length cuvette	
Light Source	Tungsten & Deuterium lamp (Pre-aligned) USB type A port for USB memory device (Right side)	
Output	USB type B port for optional computer connectivity (Back) Parallel port for printer	
Power Requirement	AC 110/220V 50/60 Hz	
Dimensions (LxWxH)	589 x 428 x 240 mm	
Weight	22 kg	

## NANO Spectrophotometer EMC-NANO-UV

*IQ/OQ/PQ Document, CE, ISO Certified*



### Features:

- ☑ Compact instrument with on-board software as well as PC application software UV/VIS-Analyst
- ☑ Multifunctional EMC-cell holder for Nano volume and standard cuvette optical path length 10 mm, optional with magnetic stirrer
- ☑ Large 5" LCD screen (320\*240 Dots)
- ☑ 0.2-2.0 µl sample volume for DNA, RNA, PCR, protein ...
- ☑ One step – one movement drop close turn and measure
- ☑ Wavelength from 190-1100 nm
- ☑ Pre-aligned design ensures the user can change lamps conveniently
- ☑ Additional USB port for memory extension
- ☑ High quality silicon photodiode detector ensures high accuracy and precision

The special multifunctional cell holder for Nano volume and standard cuvette optical path length 10 mm:

- ☑ Simple-to-use
- ☑ Multifunctional EMC-cell holder – 2 in 1
- ☑ Horizontal light path – high precision, no lost of energy

Model	EMC-NANO-UV
Wavelength Range	190-1100 nm
Spectral Bandwidth	4 nm
Optical System	Single Beam, grating 1200 lines/mm
Wavelength Accuracy	±0.5 nm
Wavelength Repeatability	0.3 nm
Photometric Accuracy	≤±0.5 % T or ±0.004 A@1A
Photometric Range	0-200 % T, -0.3 - 3A, 0-9999 Conc.
Stray Light	0.05 % T@220, 340 nm
Stability	±0.0008A/h @500 nm
Detector	Silicon Photodiode
Multifunctional Cell Holder	0.5 – 2 µl Volume & Standard cuvette 10 mm path length
Scan Speed	Hi, MED, LOW – MAX: 3000nm/min
Light Source	Tungsten & Deuterium lamp
Output	USB type A port for USB memory device (Right side) USB type B port for optional computer connectivity (Back) Parallel port for printer
Power Requirement	AC 110/220V 50/60 Hz
Dimensions (LxWxH)	490 x 370 x 220 mm
Weight	14 kg

### Recommended Pipette

Article No.	Volume (µl)	Increment (µl)	R/A% (CV%)	Tip
EMC-5720005	0.1-2.5	0.05	4.0 (2.0)	1



## YL9100 Plus+ / YL9300

High Performance Liquid Chromatograph



### YL9110 Plus Quaternary Pump

- Operating principle : Parallel dual-plunger pump, Low-pressure gradient
- Number of Solvents : up to 4 solvents
- Gradient formation : 4-channel mixing valve
- Composition Precision : < 0.1 %
- Composition Accuracy : < 0.5 %

### Pump Specification in Common

- Compressibility compensation : Automatic
- Flow range : - Analytical : 0.001-10 mL/min  
 - Semi-prep : 0.01-50 mL/min
- Flow rate accuracy :  $\pm 1\%$  at 1 mL/min
- Maximum pressure

- Analytical : 6000 psi  
 > Operating range : 0-6000 psi up to 5 mL/min  
 > Operating range : 0-3000 psi at 5-10 mL/min  
 - Semi-prep : 3500 psi  
 > Operating range : 0-3500 psi up to 35 mL/min  
 > Operating range : 0-2500 psi at 35-50 mL/min

- Automatic prime/purge
- Safety & maintenance : Leak detection, Diagnostics, Error detection

### YL9120 UV/Vis Detector

- Wavelength Range : 190-900 nm
- Data collection rate : up to 50Hz
- Light Source : Deuterium lamp & tungsten lamp
- Noise level :  $< \pm 0.35 \times 10^{-5}$  AU, 254 nm, dry cell
- Drift :  $< 1 \times 10^{-4}$  AU/hr
- Bandwidth : 5 nm
- Wavelength Accuracy :  $\pm 1$  nm
- Wavelength Precision :  $\pm 0.1$  nm
- Linearity : >99.5 % for 2.5 AU (acetone, 254 nm)
- Path Length : 10 mm (Analytical cell) / 3 mm (Semi-prep cell)
- Cell Volume : 10  $\mu$ L (Analytical cell) / 5  $\mu$ L (Semi-prep cell)

### YL9111 Plus Binary Pump

- Operating principle : Double Parallel dual-plunger pump, High-pressure gradient
- Number of Solvents : 2

### YL9112 Plus Isocratic Pump

- No mixing valve
- Operating principle : Parallel dual-plunger pump
- Easily upgraded to YL9110 Plus Quaternary pump

### YL9160 PDA Detector

- Slit Bandwidth : 1.7 nm
- No. of PDA Channel : 1024
- Pixel Resolution : 0.9 nm
- Wavelength : 190~950 nm
- Analytical Cell

- Path-length : 10 mm  
 - Pressure : < 1500 psi  
 - Volume : 13  $\mu$ L

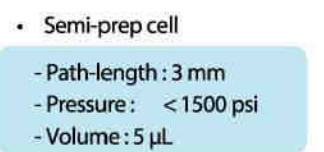
- Noise Level :  $< \pm 2 \times 10^{-5}$  AU (Empty Cell, 1 sec Rise Time, 254 nm)
- Drift :  $< 2 \times 10^{-4}$  AU/hr (Baseline Correction), 0.001AU/hr (Room Temp)
- Wavelength Accuracy : < 1 nm (HY-1 Holmium Oxide Filter)
- GLP Compliance : - Photometric Accuracy, Linearity, Noise Level, Drift - System Check

### YL9170 Refractive Index Detector

- RI Range : 1.00 ~ 1.75 RIU
- Noise :  $\pm 5 \times 10^{-9}$  RIU (Analytical) /  $\pm 10 \times 10^{-8}$  RIU (Semi-prep)
- Flow Cell Volume : 9  $\mu$ L (Analytical) / 7  $\mu$ L (Semi-prep)
- Cell pressure : 6 kg/cm<sup>2</sup> (84 psi)
- RS232 Control

### YL9181 ELSD (Evaporative Light Scattering Detector)

- Highly Sensitive
- Advanced Research
- Cooling Down to 10°C for Chamber
- Patented Thermo-Split : Vapor Phase Control for optimum sensitivity
- Very low detector volume resulting in the smallest peak within 3 sec.
- A single multi-flow, nebulizer for use with micro-bore to semi-preparative flow rates.





## ● Vacuum Degasser

### ☒ YL9101 Vacuum Degasser

- Number of channel : 4 Channels
- Maximum flow rate : 10 mL/min per channel  
> 0 ~ 2.0 mL/min per channel for 70 % Gas Removed from Methanol
- Internal volume per channel : 925  $\mu$ L per channel
- Materials in contact with solvent : Teflon AF and PEEK



## ● Column Compartment

### ☒ YL9131 Column Compartment

- Temperature range : 4  $^{\circ}$ C (Cooling) - 90  $^{\circ}$ C
- Temperature stability :  $\pm 0.05$   $^{\circ}$ C
- Temperature accuracy :  $\pm 0.5$   $^{\circ}$ C
- Temperature programs : 40 Steps
- Column capacity : - Analytical : Max. 3 ea of 30 cm column (Max. OD 18 mm)  
- Semi-prep : Max. 2 ea of 30 cm column
- Heat-up time : 16 minutes from 4  $^{\circ}$ C to 80  $^{\circ}$ C
- Cool-down time : 13 minutes from 80  $^{\circ}$ C to 4  $^{\circ}$ C
- Column switching : max. two automatic 6-port valve (optional)



## ● Autosampler

### ☒ YL9150 Plus LC Autosampler

Newly launched YL9150 Plus LC Autosampler developed by our own technology can provide the enhanced efficiency of analysis with fast injection and enlarged sample capacity. The spray-type rinsing reduces the carry-over by washing off the contamination and the direct injection leads the low sample consumption. The leak sensor and the automatic tray sensor ensure the process safety as well as the LED inside of equipment allows users to see its operation.

- Sample Capacity : Up to 120 samples (2 ml vial), 80 samples (4 ml vial)
- Carry Over : < 0.04% with standard wash  
Typically < 0.02% with extra wash
- Reproducibility : RSD < 0.3% for full loop injections  
RSD < 0.5% for partial loopfill injections (Injection volume > 5  $\mu$ L)  
RSD < 1.0% for  $\mu$ l pick-up injections (Injection volume > 5  $\mu$ L)
- Injection Volume : 1  $\mu$ L - 400  $\mu$ L, with 0.1  $\mu$ L increment
- Sample Cooling : 4  $^{\circ}$ C ~ 40  $^{\circ}$ C (option)



## ● Manual Injector

### ☒ Rheodyne 7725i / 9725i

- Industry standard manual injector
- Analytical : 7725i(SUS) and 9725i(PEEK)
- Semi-prep : 3725i

## ● Column Switching Valve

### ☒ MX Series II™ (Stand-alone )

MX Series II™ automated high-pressure fluidic valves provides productivity enhancing solutions for today's demanding analytical methods. Combine MX Series II modular valves with your current instrument to support complex fluid switching and sample injection needs.

### ☒ TitanHP™

TitanHP™ consists of an integrated driver/actuator and a removable liquid-end (Rapid Replacement Pod™) to provide a single, flexible space-saving design. Eliminating the need for development of an internal board and firmware means shorter product development cycles and reduced time-to-market.

DuraLife™ wear surfaces extends valve lifetime, which means reduced field service and more customer analysis time between replacements of the wetted surfaces.



## YL6500 GC



### YL6500 GC

YL6500 GC provides substantially reliable and precise data by every single part from the stable inlets to the extremely sensitive detectors as well as the innovative haptic touch pad strengthening user interface with a finger-tip. With strongly enhanced APCs (Advanced Pneumatic Control), installation of three units of inlet and detector for each enables to extend the various GC configurations to perform complex analyses. Moreover, an intuitive chromatography data system with user-friendly interface improves the ease of instrument control and a network (LAN) communication speeds up a data process.

#### Inlet

- Max. no. of installation: Three
- Capillary Inlet (Split/Splitless Inlet)
- Packed Inlet
- On-Column Inlet  
(Temperature programming up to 5 steps)

#### APC (Advanced Pneumatic Control)

- Increased precision in gas pressure and flow rate for more reliable results
- Automatic compensation for temperature & pressure in installation condition
- Pressure setpoint increment: 0.01 psi
- Pressure stability:  $\pm 0.001$  psi

#### Column Oven

- Programming ramp/plateaus: 25/26
- Thermal stability:  $\pm 0.01$  °C
- Temperature program method: Max. 20

#### YL-Clarity/Autochro-3000 CDS

- US FDA 21 CFR Part 11 compliance
- Simultaneous data acquisition up to 4 independent chromatographs /12 detectors
- Various analysis method applications
- NGA/SST/Validation kit (Option)



#### Detector

- Max. no. of installation
- FID (Flame Ionization Detector)
- TCD (Thermal Conductivity Detector)
- ECD (Electron Capture Detector)
- $\mu$ TCD (Micro-Thermal Conductivity Detector)
- NPD(Nitrogen Phosphorous Detector)
- PDD (Pulsed Discharge Detector)
- (PDHID) MDL
- (PDECD) MDL
- FPD(Flame Photometric Detector)
- PFPD(Pulsed Flame Photometric Detector)

- Three
- MDL < 2.0 pg C/sec
- MDL < 2.5 ng/ml
- MDL < 10 fg/sec
- MDL < 400 pg/ml
- MDL < 0.4 pg N/sec
- < 0.2 pg P/sec
- Organic compound < low ppb
- Permanent gas < low ppm
- 10-15
- MDL < 20 pg S/sec
- < 0.5 pg P/sec

Total Solutions for Analytical Instruments

## Sample Preparation System and Others



### YL3000A Autosampler

YL3000A autosampler with a large, full-color touch screen interface offers both reliability and superior performance with the improved sample and solvent capacity (121 vials (2ml)/60 ml), which means you can get reproducible data more quickly.



### YL3100A Autoinjector

YL3100A is the entry level version of autosampler with the 15 sample capacity. This is an economical solution if you need the high levels of reproducibility that an autosampler gives, but do not run large sample batches.



### YL3200A Autosampler

YL3200A is an automatic liquid autosampler that delivers reliability, flexibility and the highest productivity with 3 unique premium features; Bar code reader, Syringe ID, Top-class sample capacity (209).



### Versa Automated Headspace Vial Sampler

Versa is the perfect solution for applications which require all the advantages of static headspace analysis and is economical to fit any budget.



### HT3 Automated Static and Dynamic Headspace

HT3™ combines Static and Dynamic Headspace analysis techniques into one easy-to-use unit, saving your time, bench space and money while providing increased sensitivity and accurate results.



### HT200H Static Headspace Autosampler

With the static headspace design, HT200H utilizes a heated syringe to transfer the samples from the oven directly into the injector and this virtually eliminates sample carry-over to analyze drinking water, waste water, soil (EPA 5021), industrial waste, etc.

HT280T Headspace, Liquid and SPME Autosampler



HT280T is a single unit combining static headspace analysis, liquid sample injection and SPME (Solid Phase Microextraction). It can save your time and money increasing analysis flexibility.

### Stratum Purge and Trap Concentrator

The Stratum Purge and Trap Concentrator (PTC) is a sample preparation instrument used to remove Volatile Organic Compounds (VOCs) out of aqueous and solid sample types using Helium or Nitrogen.



### AquaTek 100 Waters-only Autosampler

The AQUATEk 100 is a Purge and Trap (P&T) Autosampler that automates the sample preparation steps for the analysis of liquid samples via purge and trap. The system is capable of preparing samples such as drinking water and wastewater.



### Atomx Automated VOC Sample Prep System

The Atomx combines an Autosampler and Purge and Trap into a single instrument for the analysis of VOCs in soils and waters. Extractasol clean-up step (patent pending) in the Atomx reduces carryover or cross contamination normally associated with highlevel water or soil analysis.



### Gas Sampling Valve

In order to obtain accurate results in gas analysis, it is necessary to equip with gas sampling valves. For the analysis of samples including O<sub>2</sub> and N<sub>2</sub> in very low trace level, a purge housing is very useful to eliminate any possible diffusion from the atmosphere into the valve and safely vent fugitive emissions.



### Pyrolyzer, Pyroprobe 5000 series

Pyrolyzer coupled with YL6500 GC allows you to analyze the samples such as paint, tapes, caulk, adhesives, food packaging, rubber, plastic, papers, ink, coating and a full range of household products without extractions or derivatizations for qualitative and quantitative information.



### Rapid Oven Cooler (ROC)

Rapid Oven Cooler considerably reduces dead time between sequential runs and ensures highly stable GC oven temperatures, down to 20°C, very rapidly to increase lab productivity. Analyzing very volatile compounds, it's strongly recommended to improve significantly high resolution.



➤ **YL6900 GC/MS**  
**Gas Chromatograph Mass Spectrometer**



The Smartest **Mass Spectrometer**  
 designed for laboratories

**Specifications**

- Ion Source: EI (CI – option)
- Mass Range: 1–1200 u
- Resolution: 0.7 amu
- Electron Energy: Adjustable from 0 to 240 eV
- Emission current: 500 uA max
- Max Scan Rate: 20000 amu./s
- Mass Stability: ±0.1 amu /48 h
- Ion Source Temperature: up to 350 °C
- Transfer Line Temperature: up to 400 °C
- Scan mode: Full, Segment, Selected Ions Mode, Combined
- Turbo pump: 240 L/sec (66 or 300 L/sec as option)
- Sensitivity (EI): Signal-to-Noise ratio 1500:1 and more (1uL of 1pg/uL OFN, SIM)
- Instrument Detection Limit (IDL):  
 <10fg (Eight sequential splitless injections, 100fg OFN, m/z 272)
- Power supply: 220V±10%, 50/60Hz
- Power consumption: 900 W max
- Weight: 48 kg
- Dimensions: 35 x 65 x 50 cm
- Data communication: Ethernet
- Compatibility of GC model: YL6500 Gas Chromatograph
- Software: YL-Clarity software

**Key Features**

1. High Performance Ion Source provides extended operation and lifetime of the dual filament which ensures improved performance and is protected by an electron lens.
2. The powerful tuning protocols in our MS software increases sensitivity, so it makes sure of achieving lower detection limits for trace-level compounds.
3. High Capacity Vacuum System provides a stable high vacuum zone and enables analysis for running large numbers of environmental samples. The standard vacuum system offers 240L/s and optionally 300L/s is also available.
4. A Powerful Tuning process enhances sensitivity, stability and reproducibility of MS results and a manual tune for customization supports to change setting values to achieve higher levels of sensitivity required by certain specific analysis.
5. An Optimized Full scanning and selected ion mode can support simultaneous sample injection.
6. Ultra fast Scanning Speed (20,000 amu/sec) which is supported by highest technology of firmware protocol ensures high performance of analysis with narrow-bore capillary columns for faster analysis.
7. A strong ion filtering removes effectively non target ions before quadrupole mass filter ensuring more stable and higher level of signals.
8. A deflecting electrode eliminates neutral particles reaching the detection system, so it allows you to improve the MSD sensitivity and enhance S/N ratio.
9. The widest mass range, from 1 to 1,200u enables performing most of the analysis in very wide mass range of compounds.
10. Easy column change is possible by using a special tool for measuring end of column length to the MS ion source chamber.
11. Chemical Ionization and Direct Sample probe (DIP) is available as an optional module for variable applications.
12. Innovative designed MS hardware and software provide easy operation and allow operator to spend less time from sample injection to get results.
13. YL-Clarity software offers easy control of the GC/MS and LC/MS and supports the NIST mass spectral library automatically identifying and naming compounds.

## ➤ AAS 8000 Series (Atomic Absorption Spectrometer)

YL AAS-8000 Series Atomic Absorption Spectrometer has been developed with our accumulated experience in analytical instruments. YL AAS-8000 Series will satisfy all demands by providing excellent performance with reliable and accurate data.



### AAS 8020 Fully Automatic Flame/Graphite Furnace AAS

- Easy switching between Flame and Graphite Furnace

### AAS 8010 Fully Automatic Flame AAS

#### Specifications

Wavelength Range	190 nm~900 nm	Spectrum Bandwidth	5 steps: 0.1 nm, 0.2 nm, 0.4 nm, 1.0 nm and 2.0 nm, respectively
Grating	1800 lines/mm	Mono-Chromator	Czerny-Tuner Grating Mono-Chromator
Wavelength Repeatability	Full Wavelength $\leq\pm 0.1$ nm	Background Calibration	>50 times
Blaze Wavelength	250 nm	Accuracy	Full Wavelength $\leq\pm 0.2$ nm
Focal Length	300 mm	Resolution	Better than 0.3 nm

#### Features

- Fully controlled by PC
- Automatic wavelength set-up/ Automatic slit switching/ Automatic lamp current and gain set-up within 40 seconds
- Easy button switching and control of 6 lamps on a rolling turret
- Automatic flame ignition/ Automatic flow control for gases and gas leak detection
- Nitrous Oxide Gas/Acetylene Gas selection (Option) to analyze elements under the condition of high temperature
- The use of advanced 1,800 lines/mm grating for strong energy and high resolution
- Compatible with MS Windows OS and user-friendly graphical user interface

#### Related Products

- HG 8000 Hydride Generator
- Water Cooling Chamber
- AS-GF Autosampler for Graphite Furnace
- AS-F Autosampler for Flame

## ➤ WPS (Water Purification System)

Various aquaMAX™ Water Purification Systems have been developed to meet the ideal water quality for your analytical and bioscientific requirements. We provide 4 types of model for each series to satisfy your application.



### aquaMAX™-Basic 360 series

#### • The Highest Water Quality

- Easy to upgrade by adding R.O Post pack to produce Type II water (ASTM)
- Auto-rinsing to keep constant water quality
- Sensing cell to display accurate water quality (Conductivity & Resistivity) by automatic temperature compensation

#### • Convenience for Users

- One-touch clip type filters: Easy to replace filters by user
- Monitoring self test, filter replacement, auto-rinsing and service check
- Separated modules for easy maintenance

#### • Safety Function

- Pressure regulator to prevent the instrument from damages by constant pressure.
- Pressure blocking: High and low pressure limit blocking for safe operation.

#### • Attractive Price

- The higher water quality you get, the lower cost we provide.



### aquaMAX™-Ultra 370 series

#### • The Highest Water Quality

- aquaMAX™- Ultra produces Type I grade in electrical resistivity 18.2  $\Omega \cdot \text{cm}$  and TOC level less than 10 ppb.
- The water quality of aquaMAX™- Ultra complies with ASTM, CAP, ACS and NCCLS to be used with HPLC, GC, IC, AAS, ICP and ICP - MS.

#### • Resistivity Measurement

- Measuring the resistivity by automatic temperature compensation for accurate measurement
- Easy to select temp. compensation at your fingertips

#### • Ultra Pack

- Perfect removal of inorganics

#### • UF Filter

- Reducing Pyrogen to 0.06 Eu/ml. by Polysulphone membrane

#### • UV Filter

- Significantly low TOC level (< 5ppb) for preparation of ultratrace analysis

#### • 0.2 $\mu\text{m}$ Final Filter

- Final filtering of impurities for produced water and prevention of contamination at drain

## aquaMAX™ Basic 360 Series System

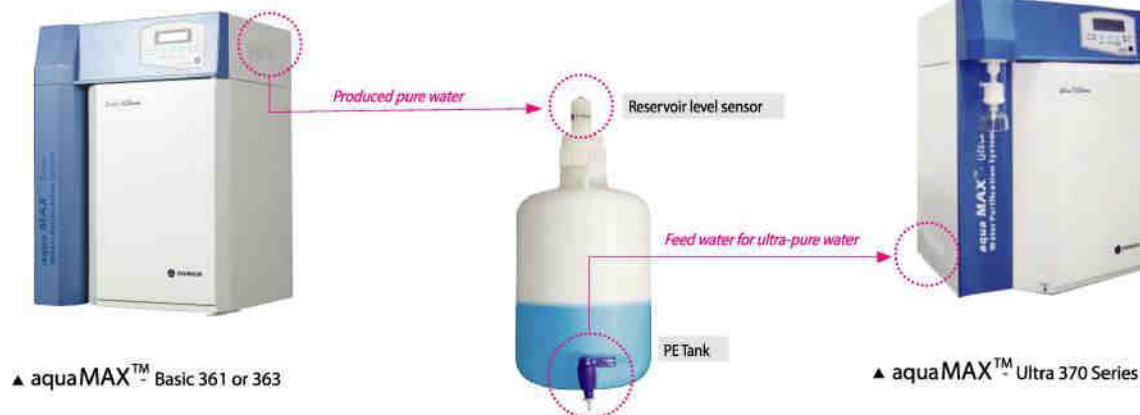
Model	aquaMAX™ -Basic 360	aquaMAX™ -Basic 361	aquaMAX™ -Basic 362	aquaMAX™ -Basic 363
Part No.	3601011000	3601011001	3601011002	3601011003
Water grade	Type III water/Standard	Type II water/Standard	Type III water/Extended capacity	Type II water/Extended capacity
Productivity	10l / H	10l / H	20l / H	20l / H
Water Quality	- Ion removal 95~99% - Particle removal 99% - Bacteria removal 99.99% - Pyrogen removal 99% - Organics removal 99%	1~15M $\Omega$ · cm	- Ion removal 95~99% - Particle removal 99% - Bacteria removal 99.99% - Pyrogen removal 99% - Organics removal 99%	1~15M $\Omega$ · cm
Filter Type	Pretreatment	✓	✓	✓
	Reverse Osmosis	✓	✓	✓
	Ion exchange		✓	✓
Feed water requirement	PH : 3~10, TDS : lower than 500ppm, Temp : 4~35°C, Pressure : 1~5Kg/cm <sup>2</sup> , Turbidity : 1.0 NTU			
Environment Requirement	Temp : 5~40 °C, Humidity : 20~80%			
Applications	- Washing/Rinsing - Autoclaves - Steam Generators	- Same as Basic 360 - Buffer and Media - Preparation, Electrophoresis - Feed Water for Ultra-Pure Water	- Washing/Rinsing - Autoclaves - Steam Generators	- Same as Basic 362 - Buffer and Media - Preparation, Electrophoresis - Feed Water for Ultra-Pure Water

## aquaMAX™ Ultra 370 Series System

Model	aquaMAX™ -Ultra 370 (Standard)	aquaMAX™ -Ultra 371 (UF Version)	aquaMAX™ -Ultra 372 (UV Version)	aquaMAX™ -Ultra 373 (UV/UF Version)
Part No.	3701011000	3701011001	3701011002	3701011003
Applications	Reagents, General analysis, IC, AAS, HPLC, ICP-MS, Standard solvents and buffer solutions	Mammalian cell culture, DNA sequencing, Electrophoresis, Monoclonal antibody production	Ultra-trace inorganic and organic analysis, GC-MS and TOC analysis	Including all applications of UV and UF version, PCR, 2-dimensional electrophoresis, cell culture
Resistivity(at 25 °C)	18.2M $\Omega$ · cm	18.2M $\Omega$ · cm	18.2M $\Omega$ · cm	18.2M $\Omega$ · cm
TOC	5~10 ppb	5~10 ppb	1~5 ppb	1~5 ppb
Pyrogen	-	<0.06 Eu/ml	-	<0.06 Eu/ml
Productivity	50 L/H	50 L/H	50 L/H	50 L/H

◆ The specification is subject to change depending on the water quality of feedwater.

### ● Ultra-pure/Pure Water Purification System Package



## FT-IR (Fourier Transform Infrared Spectrometer)

YL FT-IR Series brings both high performance and cost efficiency. With a sophisticated interferometer design, YL FT-IR Series delivers reliable and reproducible data ensuring excellent and stable light source.



YL2000 FT-IR



YL2300 FT-IR (Portable)

### Features

- No interference of humidity by a desiccated and sealed interferometer
- Stable wavelength emission by air cooled infrared sources
- Self compensating alignment at an optical system
- Ease of use with an intuitive software
- DLATGS Detector with high sensitivity and excellent linearity

### Specifications

	YL2000 FT-IR	YL2300 FT-IR
Wavelength Range, IR	7800 to 380 cm <sup>-1</sup>	7000 to 400 cm <sup>-1</sup> (without ATR accessory)
Wavelength Range, NIR	15000 to 3850 cm <sup>-1</sup>	15000 to 3850 cm <sup>-1</sup>
Spectral Resolution (Standard)	1 cm <sup>-1</sup> (8 cm <sup>-1</sup> - NIR)	2 cm <sup>-1</sup> (8 cm <sup>-1</sup> - NIR)
Spectral Resolution (Option)	0.5 cm <sup>-1</sup>	1.0 or 0.5 cm <sup>-1</sup>
Interferometer	Self aligning	Self aligning
Beamsplitter, Standard IR	Multicoated KBr	Multicoated KBr
Frequency Reference	VCSEL laser	VCSEL laser
Detector, IR Standard	Low noise DLATGS	Low noise DLATGS
Detector, IR Option	MCT	-

## Scanning Electron Microscope



YL EZSEM Series



YL HPSEM Series

### Specification: EZSEM-20

### Specification: HPSEM-200TM

	Specification: EZSEM-20	Specification: HPSEM-200TM
Magnification	x 20 ~ x 80,000	x 15 ~ x 300,000
Resolution	7nm [at 20kV, SE Image]	3.0nm [at 30kV, SE Image]
Accelerating Voltage	1~20kV (1/3/5/10/15/20kV)	1~30kV
Electron Gun	Tungsten Filament (W)	Tungsten Filament (W)
Detector	SE Detector	SE Detector (Option: BSE, EDS)
Stage	X:35mm (Motorized), Y:35mm (Motorized), R:360°, Z:0 to 50mm	Only Z Axis Auto Stage X:40mm, Y:40mm, T:-20° ~ 90° R:360°, Z:0 to 60mm
Sample Size	45mm (H), 60mm (Diameter)	60mm (H), 130mm (Diameter)
Image Mode (Pixel)	RED(320x240), TV(640x480), Slow(800x600), Photo(1280x960, 2560x1920, 5120x3840)	RED(320x240), TV(640x480), Slow(800x600), Photo(1280x960, 2560x1920, 5120x3840)
Frame Rate	RED (Max. 30 frames/sec), TV (Max. 10 frames/sec), Slow (Max. 2 frames/sec)	RED (Max. 30 frames/sec), TV (Max. 10 frames/sec), Slow (Max. 2 frames/sec)
Vacuum System	Turbo Molecular Pump	Turbo Molecular Pump
Auto Functions	Focus, Filament, Brightness/Contrast	Focus, Filament, Brightness/Contrast
OS	Windows 7	Windows 7
Operation	Key Board/Mouse	Key Board/Mouse
Dimension	400(W) x 600(L) x 550(H)mm, 100kg	800(W) x 900(L) x 1500(H)mm, 400kg



## Gas Generator

YL Instruments provides gas generators for the use of your appropriate application where requires high purity gases securing your safety, improving lab efficiency as well as ensuring superior results at a economical price.

### Nitrogen Generator

#### Whisper-N2 Series



N2-Whisper-C-35



N2-C-500

	Model	Flow Rate	Application
Compressor Built-in	N2-Whisper-C-35	35 L/min	with LC-MS
	N2-Whisper-Hybrid	5 L/min (80psi)	N2/Air Generation
External Compressor	N2-Mini-Whisper	8 L/min	with ELSD
	N2-Whisper-0 Series	40, 80, 120 L/min	Large N2 volumes

#### High Purity N2 Series

	Model	Flow Rate	Purity	Application
Compressor Built-in	N2-C-500	500 ml/min	99.999 %	GC carrier gas, ICP, ELSD, etc.
	N2-C-750	750 ml/min		
	N2-C-1300	1300 ml/min	99.995 %	
No Compressor	N2-C-4000	4000 ml/min	98 %	
	N2-NC-500	500 ml/min	99.999 %	
	N2-NC-750	750 ml/min		
	N2-NC-1300	1300 ml/min	99.995 %	
	N2-NC-4000	4000 ml/min	98 %	

### Hydrogen Generator

#### NM-H2 Series



NM-H2-Series



PG-H2-Series

Model	NM-H2-Series
Flow Rate	100-160-250-300-500-600-1000ml/min
Dryer	Exclusive Dual Automatic Regeneration System
Purity	99.9999 %
Cascading	NM-H2-250/300/500/600/1000
Application	- GC & GC-MS: Flame Ionization Detector(FID), Carrier gas - Fast GC, Collisions: ICP-MS - Small Fuel-Cell Cylinder Refills

#### PG-H2 Series

Model	PG-H2-Series
Flow Rate	100-160-250-300-500-600ml/min
Electrolysis Cell	Membrane Type
Purity	99.999 %
Cascading	PG-H2-250/300/500/600 (Requires I/O Board: Option)

### Zero Air Generator

#### GC Series (Zero Air)



Zero Air



Ultra Zero Air

Model	Flow Rate	HC & CO out	Applications
GC-1500	1.5 L/min	<0.1 ppm	GC-FID/ GC-NPD/ GC-FPD/ GC-PFPD, THA, Flame Gas
GC-3000	3 L/min		
GC-6000	6 L/min		
GC-15000	15 L/min		
GC-30000	30 L/min		

#### GT Series (Ultra Zero Air)

Model	Flow Rate	HC & CO out	CO2 out	NOX, SOX out	Applications
GT-1500	1.5 L/min	<0.1 ppm	<5 ppm	<0.1 ppm	GC-FI GC-NPD/ GC-FPD/ GC-PFPD, THA, Flame Gas, HTC, TOC, ELSD, TGA, DSC
GT-3000	3 L/min				
GT-6000	6 L/min				
GT-15000	15 L/min				
GT-30000	30 L/min				

➤ YL9900 LC/MS



What is YL9900 LC/MS?

YL9900 LC/MS quickly provides essential information and improves the chemist's workflow. Modern organic labs have become automated, yet real-time mass assays remain just out of reach.

YL9900 LC/MS solves this !

YL 9900 LC/MS is the smartest instrument for performing a mass spec solution, if you are a biopharmaceutical company, academic teaching/research lab or any industry requiring mass assays.

YL9900 LC/MS Delivers:

- Positive and negative ions analysis
- ESI / APCI (switchable with minimal effort, optional installation)
- The first mass spec which fits in a fume hood with the sash closed
- Easy access to the YL9900 LC/MS :
- 10 connectors located on the front of the instrument
- (8 I/O connectors, USB port and computer connector)
- Integrated solutions :

- FIA
- LC or UPLC
- Flash
- Reaction monitoring
- TLC

Software

An inviting interface with powerful depth  
 - Mass Express™, Data Express™.  
 YL-Clarity both LC and MS with LC/MS Extension only.

The smartest mass spec designed **just for Chemists!**

YL9900 LC/MS Specification

Mass Analyzer	Single Quadrupole
Mass Range	10 - 1,200 m/z
Scan Speed	5,000 m/z/s
Ion Source	ESI / APCI (Option)
Polarity	Positive / Negative
HPLC Flow Rate	10 - 500 fÊL/min
Resolution	0.5 - 0.7 m/s (FWHM) at 1,000 m/z/s
Sensitivity	10 pg reserpine (FIA - 5 fÊL injection at 100 fÊL/min) 100:1 S/N (RMS) with SIM of m/z 609.28 100 pg reserpine (FIA - 5 fÊL injection at 100 fÊL/min) 100:1 S/N (RMS) with full-scan acquisition from m/z 100 to m/z 1,200
Accuracy	±0.1 m/z
Stability	0.1 m/z over 12 hour
Gas	N2, 98 %, 60 psi
Gas Consumption	8 L/min
Weight	32 kg
Dimensions (H ~ W ~ D, mm)	660 ~ 280 ~ 560
Power Consumption	Max. 300 VA (MS) Max. 550 VA (Rotary pump)
Software	Mass Express™ / Data Express™ YL-Clarity
Warranty	1 year



## ➤ Liquid Nitrogen Container



MODEL	YDS-2-30	YDS-2-35	YDS-2	YDS-3	YDS-6	YDS-8-80	YDS-10
Performance							
LN2 Capacity (L)	2	2	2	3	6	8	10
Neck Opening (mm)	30	35	50	50	50	80	50
Static Evaporation Rate (L/day)	0.07	0.08	0.10	0.12	0.12	0.21	0.12
Static Holding Time (day)	28	24	20	25	52	38	86
Maximum Storage Capacity							
Canister Diameter (mm)	19	25	—	38	38	63	38
Canister Height (mm)	120	120	—	120	120	120	120
Number of Canisters (ea)	3	3	—	6	6	6	6
Straws Capacity	0.5ml (ea)	90	165	—	792	792	2244
	120 mm canister	0.25ml (ea)	204	330	—	1788	1788
(276 mm canister)	0.5ml (ea)	—	—	—	—	—	—
	0.25ml (ea)	—	—	—	—	—	—
Unit Dimensions							
Overall Height (mm)	399	428	385	435	462	502	552
Outer Diameter (mm)	223	204	223	223	300	300	300
Weight Empty (kg)	2.8	2.6	2.7	3.1	4.8	5.9	5.9
Optional Accessories							
Lockable Lid	✓	✓	✓	✓	✓	✓	✓
PU Bag	✓	✓	—	✓	✓	✓	✓
Level Monitor	✓	✓	✓	✓	✓	✓	✓

MODEL	YDS-10-125-F	YDS-20-125-F	YDS-25-125-F	YDS-30-125-F	YDS-35-125-F	YDS-50B-125-F	YDS-65-216-F	YDS-95-216-F	YDS-115-216-F	YDS-145-216-F	
Performance											
LN2 Capacity (L)	10	20	25	30	35	50	65	95	115	145	
Neck Opening (mm)	125	125	125	125	125	125	216	216	216	216	
Static Evaporation Rate (L/day)	0.42	0.37	0.37	0.33	0.36	0.43	0.76	0.97	0.94	0.96	
Static Holding Time (day)	24	54	67	90	97	115	83	98	122	151	
Maximum Storage Capacity											
Racks and Vials Boxes	Number of Racks (ea)	1	1	1	6/7	6/7	6/7	6/7	6/7	6/7	
	Rack Dimension (mm)	82 x 84	82 x 84	82 x 84	82 x 84	82 x 84	82 x 84	142 x 144	142 x 144	142 x 144	
	Vial Boxes Dimension (mm)	76 x 76	76 x 76	76 x 76	76 x 76	76 x 76	76 x 76	134 x 134	134 x 134	134 x 134	
	Boxes per Rack (ea)	4	4	5	4	5	6	4	5	6	
1.2, 1.8 & 2 ml Vials (Internally Threaded)	100	100	125	600/700	750/875	900/1050	2400/2800	3000/3500	3600/4200	4600/5600	
25 ml Blood Bag (single)	Number of Racks (ea)	—	—	—	18	18	18	30	30	30	
	Boxes per Rack (ea)	—	—	—	2	2	3	2	3	4	
	Blood Bag Capacity (ea)	—	—	—	36	36	54	60	60	120	
25 ml Blood Bag (multiple)	Number of Racks (ea)	—	—	—	7	7	7	7	7	7	
	Stages per Rack (ea)	—	—	—	2	2	3	2	3	4	
	Boxes per Stage (ea)	—	—	—	4	4	4	10	10	10	
50 ml Blood Bag (single)	Number of Racks (ea)	—	—	—	—	—	—	30	30	30	
	Boxes per Rack (ea)	—	—	—	—	—	—	2	3	4	
	Blood Bag Capacity (ea)	—	—	—	—	—	—	60	90	120	
50 ml Blood Bag (multiple)	Number of Racks (ea)	—	—	—	—	—	—	7	7	7	
	Stages per Rack (ea)	—	—	—	—	—	—	2	3	4	
	Boxes per Stage (ea)	—	—	—	—	—	—	8	8	6	
Blood Bag Capacity (ea)	—	—	—	—	—	—	—	112	168	224	
	Unit Dimensions										
	Overall Height (mm)	554	670	700	705	748	754	785	790	870	960
Outer Diameter (mm)	300	394	394	462	462	462	681	681	681	681	
Weight Empty (kg)	5.9	9.7	10.2	12.9	14.2	15.2	38.3	41.3	42.3	48.9	
Optional Accessories											
Lockable Lid	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
PU Bag	✓	✓	✓	✓	✓	✓	—	—	—	—	
Level Monitor	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Roller Base	—	—	—	✓	✓	✓	✓	✓	✓	✓	

## Haier Biomedical Models Line-up

### Cryo Freezer



DW-150W200

### -86 °C ULT Freezer

#### Slim



DW-86L338



DW-86L388A

#### Upright



DW-86L486



DW-86L578



DW-86L628



DW-86L728



DW-86L828

### ULT Water Cooling



DW-86L338J DW-86L388J DW-86L490J DW-86L578J DW-86L728J DW-86L828J DW-86L729 DW-86L959 DW-86W100/100J DW-86W420J



#### Chest



DW-86L828W



DW-86L959W

### -40°C Deep Freezer

#### Upright



DW-40L92



DW-40L262



DW-40L278



DW-30L420F



DW-40W100



DW-40W255



DW-40W380



DW-40L348



DW-40L508

DW-40L92 DW-40L262 DW-40L278 DW-30L420F DW-40W100 DW-40W255 DW-40W380 DW-40L348 DW-40L508

#### Chest

#### Double Door

### -25°C Biomedical Freezer

#### Upright



DW-25L92



DW-25L262

### Combined Refrigerator and Freezer



HYCD-282



HYCD-282A

### Pharmacy Refrigerator

#### New Generation



HYC-290/290(basic)



HYC-300/300(basic)



HYC-390F

#### Under-counter Pharmacy Refrigerator



HYC-68



HYC-68A



HYC-118



HYC-118A



HYC-260



HYC-360



HYC-610

## Haier Biomedical Models Line-up

### Spark Free Refrigerator



HYC-940 HYC-940F HYC-1378

### Vaccine & Icepack Freezer



HBD-116 HBD-286

### SDD Vaccine Refrigerator



HTCD-160 HTCD-90

### SDD Vaccine Refrigerator



HTC-40 HTC-110 HTD-40

### Ice-lined Refrigerator



HBC-70 HBC-80 HBC-110 HBC-150 HBC-200 HBC-260 HBC-340

### Blood Bank Refrigerator



#### Baskets

#### Drawers

HXC-158 HXC-358 HXC-608 HXC-1308 HXC-158B HXC-358B HXC-608B HXC-1308B

### Clean Bench



HCB-900V HCB-1300V HCB-1300H HCB-1600H

### Biological Safety Cabinet



#### TYPE A2

#### New Generation

#### TYPE B2

HR30-IIA2 HR40-IIA2 HR50-IIA2 HR900-IIA2 HR1200-IIA2 HR1200-IIA2-D HR1500-IIA2 HR40-IIB2

### Liquid Nitrogen Container



YDS-35B-80 YDD-1800-610 YDZ-500

## ↘ Fume Hood Cabinet (Metal)



## ↘ Fume Hood Cabinet (PP)



Introduction: Cabinet Structure: Material: All steel (1.0mm cold-rolling steel or 1.0mm stainless steel) covered with electrostatic spraying after folding, welding, polishing, acid cleaning, phosphorization, chemical resistance.

Inner liner panel: Imported from America, 6mm compact panel, acid and alkali resistance, temperature resistance, anti-moisture. Guide plate: Imported from America, 6mm compact panel, reasonable and knock-down guide structure. Concentrated and effective discharge air, letting off different poisonous gas.

Operation Table board: lab-grade phenolic resins worktop, or epoxy resin worktop, or ceramic worktop and stainless steel as worktop.

Window: 6mm thickness steel safe glass, balancing form elevation and subsidence, it can be stopped at any position by pulling.

Lighting equipment: 30W antiseptic daylight lamp, lamp house is insulated with gas. Lightness on table not lower than 400LUX.

Operation panel: lighting switch, ON/OFF switch, two sets of 220V/10A versatile electric socket. Ventilation equipment: selecting rust-resistance, low wasting, low noise and famous fan and special wind tube. Noise can be reduced at about 55 DB.

Accessories: vertical and single test cock: made by yellow brass, the surface is treated by EPOXY baking paint.

Cup slot: acid and alkali resistance, PP water cup.

The poisonous air can be limited in minimum range and discharged rapidly

Type	Specification(mm)	Face velocity(m/s)	Air volume(m <sup>3</sup> /h)	Pressure balance(Pa)	Noise DB(A)
FH 1200	1200×850×2350	0.4~0.8	1200~1500	40~85	≤54
FH 1500	1500×850×2350	0.4~0.8	1500~2000	50~120	≤54
PP 1200	1200×850×2350	0.4~0.8	1200~1500	40~85	≤54
PP 1500	1500×850×2350	0.4~0.8	1500~2000	50~120	≤54

↘ Lab Furniture

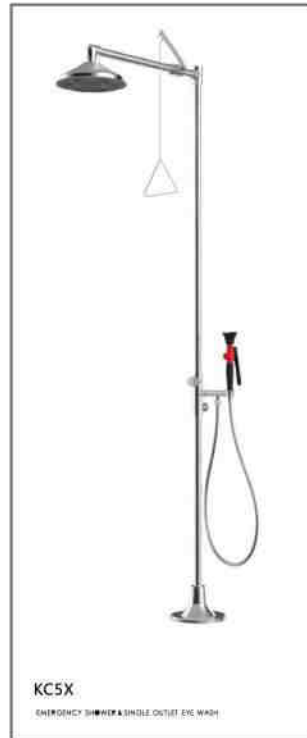
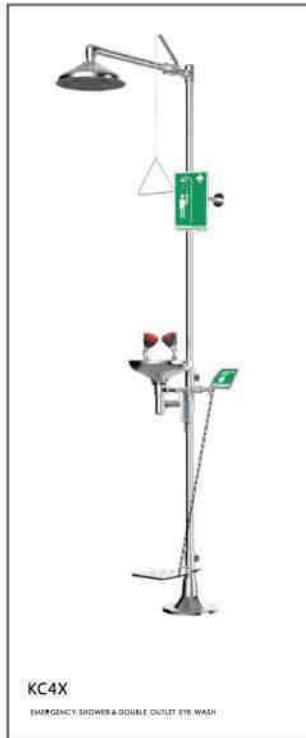


↘ Lab Furniture





➤ Emergency Shower





**KA1-1G**  
TRIPLE OUTLET FAUCET



**KB9G**  
DECK MOUNTED, QUADRUPLE  
OUTLET GAS FITTING



**KA1S**  
DECK MOUNTED, STAINLESS STEEL,  
TRIPLE OUTLET FAUCET



**KA5S**  
DECK MOUNTED, STAINLESS STEEL,  
SINGLE FAUCET



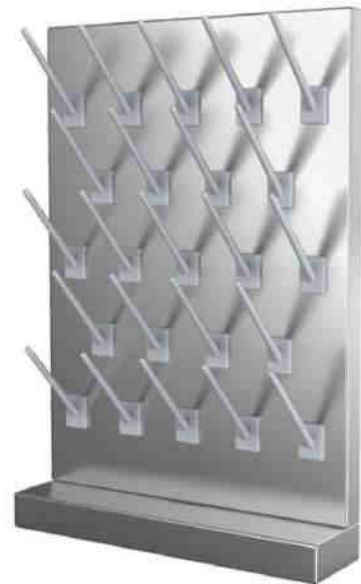
**KP1B**  
PP SINK



**KP4G**  
PP CUP SINK



**KP3G**  
PP SINK



## Thin Layer Chromatography (TLC)



UV Cabinet



TLC Plate



Silica Gel



Column Chromatography

STAINING JARS  
"Schifferdecker"STAINING JARS  
"Hellendahl"STAINING JAR  
"macro"

TLC TANK

## Portable Viewing Cabinets

### CM-Series

- Flexible, contoured eyepiece with a built-in UV-absorbing window for safe sample viewing
- Felt curtain permits easy access to cabinet interior while shielding samples from external light
- Removable bottom panel allows easy positioning over transilluminators
- Lightweight, durable construction creates easily transportable darkroom

Our portable, space-saving mini-cabinets double as personal darkrooms and UV irradiating units. The **CM-10A** model comes without a light source but can be outfitted with one of our Spectroline E-series UV lamps, available in 4-, 5- and 6-watt versions in combinations of LW, MW and SW. The **CM-24A** model comes complete with an ENF-240C lamp and **CM-26A** model is equipped with an ENF-260C. The compact **CM-10MP** viewing cabinet can be coupled with one of our battery-operated MiniMAX™ Series 4-watt or 5-watt UV lamps, available in SW, LW and combination versions\*.

\* Mini-cabinets and UV lamps each sold separately (see page 15, 16, 17, 18 for lamps).

Model	Product	UV Tubes with Typical Intensities	Dimensions (W x L x H)	Net Weight
CM-10A	Cabinet only	optional	9 x 12 x 6.5 in (22.9 x 30.5 x 16.5cm)	5.0 lbs, 2.3kg
CM-10MP	Cabinet only	optional	8.75 x 10 x 4.5 (22.2 x 25.4 x 11.4cm)	4.0 lbs, 1.8kg
CM-24A	CM-10A with ENF-240C	4W, 365nm with 300 $\mu$ W/cm <sup>2</sup> , 254nm with 310 $\mu$ W/cm <sup>2</sup>	9 x 12 x 6.5 in (22.9 x 30.5 x 16.5cm)	7.0 lbs, 3.2kg
CM-26A	CM-10A with ENF-260C	6W, 365nm with 350 $\mu$ W/cm <sup>2</sup> , 254nm with 390 $\mu$ W/cm <sup>2</sup>	9 x 12 x 6.5 in (22.9 x 30.5 x 16.5cm)	7.2 lbs, 3.4kg

## Walk in Stability Chamber

Temperature Range: 20° C to 60° C Humidity Range: 40 % RH to 95 % RH.



### Technical Specifications :

- PLC based Controller.
- High quality 4 – 20 mA electronic Sensors.
- Digital display having resolution of 0.1° C & 0.1 % RH visibility for accurate measuring of temperature and humidity.
- Precise Temperature Control Accuracy  $\pm 0.2^{\circ}$  C.
- Best Uniformity of Temperature  $\pm 1.0^{\circ}$  C.
- Precise Humidity Control Accuracy  $\pm 2.0$  % RH.
- Best Uniformity of Temperature  $\pm 3.0$  % RH.

### Temperature & Humidity Range:

25° C & 60 % RH

30° C & 65 % RH

40° C & 75 % RH

### Optional at an extra cost :

- 8 point Temperature & Humidity Scanner (1 Master + 7 Sensors).
- Stand by Cooling System
- Touch Screen Display
- Common Software: NIVDAS Software comply 21 CFR part 11. (Monitoring, Trending Performance, Data Logging, Data Acquisition, Event Capturing, Audit Trial & History Trialwith E – Signature).
- Remote Alarm System & Remote Alarm view System (for monitoring of alarms of multiple units).
- Mobile Alert via SMS facility to multiple cell numbers.
- Stand by boiler tank set with auto and manual change over to minimize the downtime of break down.

### Features :

- This unit is design to meet ICH guidelines and all other regulatory norms.
- Fulfill all requirements of WHO, US-FDA, MHRA & other audits.
- It is an ideal unit to study Long Term Test, Accelerated, Intermediate and NMT tests in pharmaceuticals industry.
- Pre – fabricated stainless steel made PUF insulated panels.
- Unit is easy to install without any major hassle and ready to use in short span of time.
- Unit delivers precise accuracy and uniformity of temperature and humidity.
- In – built safety devices and corresponding indicators for over & under shoot of temperature and humidity.
- Audio visual alarms generated for temperature and humidity deviation OR in case of any malfunction.
- Hermetically sealed "CFC" free Refrigeration System is provided with Eco – friendly refrigerants for cooling. In built stand by cooling system provided with auto change over facility.
- Newly designed boiler and water reservoir tanks provided for generating steam to maintain humidity in chamber.
- Stainless steel made perforated trays with adjustable racks and runners.
- Front opening door with vacuum glass window for viewing of samples and specimens without disturbing inner temperature and humidity.
- Working manuals, test reports and certificates along with its traceability & IQ, OQ, & PQ protocols will be provided.
- Calibration and Validation will be provided as per the protocol.

### Model Selection Table:

MODELS	CAPACITY		INTERNAL DIM.	EXTERNAL DIM.	TRAY SIZE	TRAY QTY.
	Cu. Ft.	Liters	H x W x D (mm)	H x W x D (mm)	(mm)	Nos.
NEPL 2190RSI	190	5400	2000 x 1360 x 2000	2120 x 1480 x 2120	870 x 300	24
NEPL 2230RSI	230	6400	2400 x 1360 x 2000	2520 x 1480 x 2120	870 x 300	32
NEPL 2280RSI	280	8000	2000 x 2000 x 2000	2120 x 2120 x 2120	870 x 600	24
NEPL 2340RSI	340	9600	2400 x 2000 x 2000	2520 x 2120 x 2120	870 x 600	32
NEPL 2428RSI	428	12000	2400 x 2500 x 2000	2520 x 2620 x 2120	870 x 800	32
NEPL 2530RSI	530	15000	2400 x 2500 x 2500	2520 x 2620 x 2620	725 x 800	48
NEPL 2640RSI	640	18000	2400 x 2500 x 3000	2520 x 2620 x 3120	900 x 800	48

## Stability Chamber

Temperature Range: 20° C to 60° C Humidity Range: 40 % RH to 95 % RH.



### Optional at an extra cost :

- 4 point Temperature and Humidity Scanner (1 Master + 3 Sensors)
- Stand by Cooling System
- Touch Screen Display
- Common Software: NIVDAS Software comply 21 CFR part 11.(Monitoring, Trending Performance, Data Logging, Data Acquisition, Event Capturing, Audit Trial & History Trial with E – Signature).
- Remote Alarm System & Remote Alarm view System (for monitoring of alarms of multiple units).
- Mobile Alert via SMS facility to multiple cell numbers.

### Features :

- Precise accuracy and uniformity of Temperature and RH by convection Technology.
- Double walled in construction made up of stainless steel with matt finish.
- Inner and outer wall made of stainless steel with PUF insulation between two walls.
- The unit is provided with safety devices for temperature / humidity over or under shoot in case of malfunction.
- Audio and visual alarms are generated for Temperature / Humidity variation.
- IQ, OQ, & PQ Protocols.
- Calibration & Validation will be provided as per the protocol.

### Technical Specifications :

- PLC based Controller.
- High quality 4-20mA sensors
- Digital Display having resolution of 0.1° C & 0.1 % RH visibility for accurate measuring of Temperature and Humidity.
- Precise Temperature Control Accuracy  $\pm 0.2^{\circ}$  C.
- Best uniformity of Temperature  $\pm 1.0^{\circ}$  C.
- Precise Humidity Control Accuracy  $\pm 2.0$  % RH
- Best uniformity of Humidity  $\pm 3.0$  % RH

### Model Selection Table:

MODELS	CAPACITY		INTERNAL DIM.	EXTERNAL DIM.	TRAY SIZE	TRAY QTY.
	Cu. Ft.	Liters	H x W x D (mm)	H x W x D (mm)	(mm)	Nos.
NEPL 208RT10SI	8	200	600 x 600 x 600	1235 x 760 x 1090	560 x 560	2
NEPL 212RT10SI	12	324	900 x 600 x 600	1535 x 760 x 1090	560 x 560	3
NEPL 216RT10SI	16	430	1200 x 600 x 600	1835 x 760 x 1090	560 x 560	4
NEPL 221RT10SI	21	600	1200 x 700 x 700	1835 x 860 x 1190	660 x 660	4
NEPL 228RT10SI	28	800	1200 x 800 x 800	1835 x 960 x 1290	760 x 760	4
NEPL 234RT10SI	34	1000	1500 x 800 x 800	2135 x 960 x 1290	760 x 760	5

## Stability Chamber

Temperature Range: 0° C to 80° C Humidity Range: 20 % RH to 95 % RH.



	Target	Actual	OUT
TEMP	50.0°C	28.8°C	○
HUMID	60.0RH	70.0RH	○
1 ON 2 ON 3 ON 4 ON Alarm			●

### 8. Printer/ Recorder

A printer/recorder on the controlling panel. It can print the test data and test time.

Time	Actual Temperature	Actual Humidity
2015-01-01 9:00	25.2°C	60.0%R.H.
2015-01-01 9:01	25.1°C	60.8%R.H.
2015-01-01 9:02	25.1°C	61.0%R.H.
2015-01-01 9:03	25.0°C	60.3%R.H.
2015-01-01 9:04	25.2°C	59.4%R.H.
2015-01-01 9:05	24.9°C	60.7%R.H.

### 9. Measuring System

- 9.1 Temperature Sensor Pt100 Platinum resistance temperature sensor
- 9.2 Humidity Sensor Humidity transmitter
- 9.3 Other controlling component OMRON relay; Delixi breaker;

### 10. Safety device

- (1) Over-heat protection
- (2) Over-load of fan
- (3) Over-load of compressor protection
- (4) Short-circuit protection
- (5) Ground protection

### 11 Operation Ambient Condition

- 11.1 Power Supply 220V±10%, 50Hz, single-phase
- 11.2 Ambient temperature 5 ~35°C
- 11.3 No Inflammable, explosive, volatible, corrosive goods, and the goods that might release dangerous gas shall be close to the chamber.
- 11.4 The chamber shall be placed in a lab with good air ventilation. At least 0.5 m space around the chamber shall be left for ventilation, operation and maintenance.

### 1. Main Technical Parameters

#### Model

- 1.1 Test area size (D×W×H)
- 1.2 External size (D×W×H)
- 1.3 Temperature range
- 1.4 Temp. fluctuation
- 1.5 Temp. setting accuracy
- 1.6 Humidity range
- 1.7 Humidity fluctuation
- 1.8 Humidity setting accuracy
- 1.9 Refrigerating mode
- 1.10 Power

#### SHH-150D

- 470×500×600 mm  
880×680×1500 mm  
0 ~ 80°C  
±1°C  
0.1°C  
20~95%  
+2/-3% R.H  
0.1%RH  
Air cooling  
220V±10%, 50Hz, 1P, 1.5Kw

#### SHH-250D

- 470×500×950 mm  
880×680×1700 mm  
0 ~ 80°C  
±0.5°C  
0.1°C  
20~95%  
+2/-3% R.H  
0.1%RH  
Air cooling  
220V±10%, 50Hz, 1P, 2.0Kw

### 2. Heating System

- 2.1 Controlling component
- 2.2 Heater

SSR solid-state relay  
Nickel-chromium alloy heating wire, and electric relay with over-heat protection

### 3. Chamber Structure

- 3.1 External Material
- 3.2 Test Area Material
- 3.3 Insulation material
- 3.4 Door
- 3.5 Door seal
- 3.6 Door window
- 3.7 Test area light
- 3.8 Specimen shelf
- 3.9 Wire hole

SPCC cold-rolled electrostatic sprayed steel plate  
SUS304 stainless steel plate  
Superfine glass wool  
Single-door, flat handlebars  
Resistant-to-high-temperature silicone rubber  
An vacuum view window on the door  
One proof-defrost light  
2 removable stainless steel levels  
Ø50mm wire hole through which wire can be linked to your specimen in test area  
4 wheels with brakes

### 3.10 Wheel

### 4. Refrigerating System

- 4.1 Compressor
- 4.2 Refrigerant
- 4.3 Refrigerating mode
- 4.4 Evaporator
- 4.5 Condenser
- 4.6 Other refrigerating components

DANFOSS totally-closed hermetic Compressor imported from Denmark  
Environmentally friendly refrigerant  
Air-cooling  
Domestically-made evaporative condenser  
Domestically-made condenser  
expansion relief valve electromagnetic control valve drying filter pressure controller oil separator

### 5. Humidifying/Dehumidifying System

- 5.1 Humidifier
- 5.2 Humidifying
- 5.3 Dehumidifying Mode
- 5.4 Water Tank

Built-in boiler steam humidifier which automatically add water and give water-shortage alarm  
Mode Steam-humidifying  
Evaporator coil dew-point temperature laminar flow contact  
15L Plastic water tank

### 6. Air Circulation System

- 6.1 Blower
- 6.2 Air circulation mode

Stainless steel long-axial fan  
compulsory air circulation and Balance Temperature & Humidity Calculation (BTHC ) which means when the refrigerating system is running, it controls the heater and humidity according to the calculated outcome gained from PID function.

### 7. Controlling System

- 7.1 Controller
- 7.2 Controller Language
- 7.3 Controller Display
- 7.4 Operating Mode
- 7.5 Controller Setting Accuracy

WS-08 temperature and humidity controller has also the PID function of the controller can automatically control the temperature and humidity and correct the deviations. It can store the test data as well.  
Digits and English  
target temperature and humidity real temperature and humidity operating time alarm....  
Constant / Fix  
Temperature:0.1°C