

# METROTEST

A SUPPLY CHAIN MANAGEMENT COMPANY

CATALOG

2022



**Metrotest Sdn Bhd**

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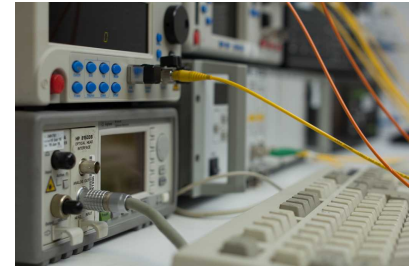
## About Us

Metrotest Sdn Bhd was formed in 2002 as a calibration service providers. Today, we are a leading distributor for test, measurement and other semiconductor equipments and instruments.

Our mission is to supply first quality products and service to our customers at competitive prices, with emphasis on safety, proper application and efficiency.

We are here to provide the best service to our customers. We effectively represent the interests and excellent reputations of our equipments suppliers in the market place by fulfilling our mandate to our customers.

A broad selection of equipments and instruments are available to meet our customers' specifications and budgets.



## Our Services



As a leading Calibration service provider, we are recognizing all of the demands placed on you in today's fast-paced business environment.

That is why we are dedicated to giving you back two of your most valuable resources: TIME and PEACE OF MIND.

Keeping our promise of quick turn-around and high quality work.

Metrotest gives you the freedom to focus on other tasks and responsibilities.

With our third party laboratory accreditation, quality system registrations, and proven service record, you can be assured that your calibration and repair work will be done right, and done on time - every time.

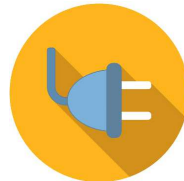
### Pressure



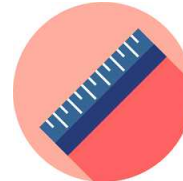
### Temperature



### Electrical



### Dimensional



### Mechanical



## Contact Us

Metrotest serves customers from a wide range of industries, such as automotive, aviation, contractor engineering, education, food and beverage, manufacturing, marine, metal and mining, oil and gas, petrochemical and chemical, and pharmaceutical.

We are constantly improving and understanding of customer needs and developing solutions to meet them.

Please send us your requirements.

We are here to serve you better



**Thomas Lu**  
Service Manager



**Lisa Ang**  
Sales Manager

# Our Clients

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4 **MyDataIoT**  
ecosystem  
Data/Alarm

5 **LesoRental**  
Rental

6 **Mitutoyo**  
Measuring & Testing  
Instrument

8 **AccuTEC**  
Weighing System

9 **AMETEK**<sup>®</sup>  
Sensors, Test & Calibration

10 **AROS**<sup>®</sup>  
Metrology Equipment

10 **CENTER**<sup>®</sup>  
Environment Measuring Meter

11 **Constance**  
Freezer, Refrigerator, Oven,  
Incubator, Furnace, Laboratory &  
Research Equipment

12 **DeFelsko**<sup>®</sup>  
Inspection Instrument

13 **EYELA**  
Rotary Evaporator &  
Laboratory Equipment

14 **FISCHER**<sup>®</sup>  
Material Coating Thickness &  
Analysis Instrument

15 **GOTECH**  
Material Testing Equipment

16 **Hettich**  
Centrifuge, Pipette &  
Incubator

17 **IKA**<sup>®</sup>  
Liquid Handling Instrument

18 **interscience**  
*for microbiology*  
Sample Preparation &  
Analysis System

19 **Julabo**  
Circulator, Water Bath &  
Cooler

20 **Kibron**  
Surface Tension Instrument

21 **Milwaukee**  
Liquid Analysis Meter

22 **Nabertherm**  
MORE THAN HEAT 30-3000 °C  
Furnace

23 **OPTIKA**<sup>®</sup>  
ITALY  
Microscope & Inspection  
System

24 **PerkinElmer**<sup>®</sup>  
Analytical Equipment

25 **RaxVision**  
Microscope & Inspection  
System

26 **RCPAQAP**  
Quality Assurance Program

27 **RENISHAW**<sup>®</sup>  
Probing System & Styli

28 **ROCKER**  
Vacuum System

28 **sartorius**  
pH Meter & Ultrapure Water  
System

29 **SL SciLab**  
YOUR LAB - FRIEND  
Lab Essential

30 **SHIMADZU**  
Electronic Balance

31 **SHIMPO**  
Force & Speed Measuring  
Instrument

32 **Steelco**  
Glassware Washer  
& Sterilizer

33 **TOP TECH**  
Sample Preparation Equipment

34 **VELP**  
SCIENTIFICA  
Analytical & Laboratory  
Instrument

35 **WELCH**  
Vacuum System

# One-Stop Industrial IoT Solutions

M2M Cellular and Cloud enabled Industrial 4.0 & GPS Real Time Data Monitoring

**MyDataIoT** provides Cloud and Cellular Based IoT solutions for various sectors mainly in healthcare, manufacturing Industrial 4.0 and agriculture. Our innovations and solutions are continuously inspired by our partners and customers in various applications. We principally specialized in environmental monitoring and asset management via Cellular M2M RTU, GPS trackers, Industrial Remote IO sensors and IoT Cloud Platform.

## Market We Serve



Healthcare



Manufacturing



Laboratory LifeScience



Agriculture

## Benefits

- ▶ Simple and Inexpensive Subscription
- ▶ Minimum Setup & Infrastructure Cost
- ▶ Safe & Reliable IoT Cloud Solution
- ▶ Improved Operational Efficiency
- ▶ Stay Connected To Customers
- ▶ Gear Up For Business Expansion



## What We Offer

### We Provide Various IoT Services



- ▶ **Environmental Monitoring System**  
M2M Cellular and Cloud enabled Industrial 4.0 Real Time Data Monitoring for environmental control.



- ▶ **Asset Management System**  
M2M Cellular and Cloud enabled GPS Real Time Data Monitoring for location tracking.

JOIN THE LARGEST RENTAL PORTAL

Rent Now!



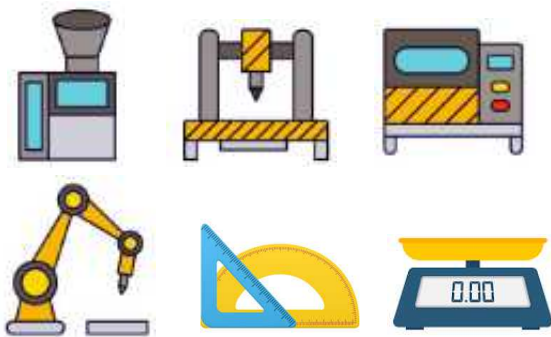
### 3 Reasons To Rent

- ▶ Maximise Budget
- ▶ Adhoc Demand
- ▶ Pre-Purchase Trial

Equipment Rental is gaining popularity among industrial and laboratory players in order to keep up with high annual capital investment, fast pace of technology development and high risk of making wrong purchases.

LesoRental takes pride to be your one-stop Rental Equipment sourcing centre. We are backed by more than 10,000 equipment and tools in our warehouse. Rest assured that you will be served by our pool of experienced and highly skilled sales and technical workforce.

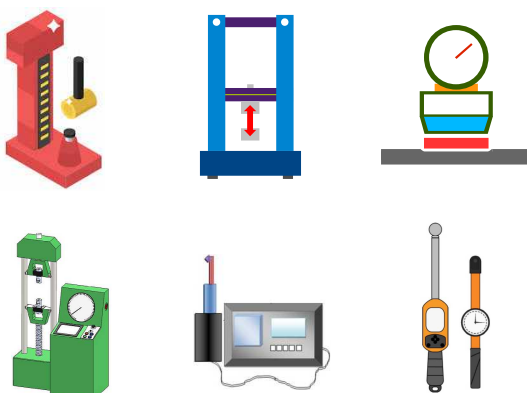
#### Industrial & Measurement



#### Laboratory



#### Testing



#### Environmental



## 投影機

●微細ワークの測定・検査・観察を能率的に行います

### PJ-A3010F-200 Measuring Projector

- The PJ-A3000 Series profile projectors are medium-size models that feature excellent versatility and easy operation.
- Easy-to-read digital XY counter is located near the projection screen to minimize eye movement.
- Digital readout protractor screen facilitates angle measurement.



#### Specifications:-

Projected image:	Inverted
XY range:	200 X 100 mm
Measuring unit:	Digital scale
Top surface size:	380mm X 250mm
Maximum loading:	8Kg
Projection lens:	10X
Resolution for X/Y counter::	0.001 mm or 0.0001"/0.001mm (0.00005"/0.001mm: digital head)

## 測定顕微鏡

●観察・測定・加工をシステム化する顕微鏡ラインアップ

### MF-B2017D

#### Measuring Microscope

- Measuring accuracy that is the highest in its class (and conforms to JIS B 7153).
- Quick-release mechanism useful for moving the stage quickly when measuring workpieces that are large in size or quantity



#### Specifications:-

Eyepiece:	10X (eyepiece field number: 24)
Objective:	ML objective 3X
Maximum workpiece height:	220mm
Measurement range:	200 X 170 mm
Measuring accuracy (X, Y no load):	(2.2+0.02L)µm, L: measuring length (mm)

## シリーズ サーフテスト (現場形表面粗さ測定機)

### SJ-210 Surftest (Surface Roughness Tester)

- 2.4" colour graphic LCD with backlight.
- Simple key layout : The Surftest SJ-210 can be operated easily using the keys on the front of the unit and under the sliding cover.
- Advanced data storage capabilities : Up to 10 measurement conditions and one measured profile can be stored in the internal memory.
- Complies with JIS (JIS-B0601-2001, JIS-B0601-1994, JIS-B0601-1982), VDA, ISO-1997 and ANSI.
- Measuring speed: 0.01, 0.02, 0.03 in/s (0.25mm/s, 0.5mm/s, 0.75mm/s) Returning: 1mm/s
- Measuring force / Stylus tip 0.75mN type: 0.75mN / 2µmR 60, 4mN type: 4mN / 5µmR 90



## マニュアル三次元測定機 CRYSTA-PLUS M443

### Manual Coordinate Measuring Machine

The Crysta-Plus M has been developed by Mitutoyo in its quest to offer the market low-cost, easy to-use coordinate measuring machines with no compromise in accuracy. The moving bridge design allows unobstructed access to the measuring table for quick, easy handling of workpieces. All models are equipped with one-touch air clamps for simple axis clamping.

Measuring range:	X-axis 400mm Y-axis 400mm Z-axis 300mm
Resolution:	0.0005mm (0.5µm)
Accuracy:	Measuring error (E) = (3.0+4.0L/1000)µm, Probing error (R) = 4.0µm



## 二次元マニュアル画像測定機

### Quick Image Series 2-D Color Vision Measuring System

- Measurement is performed with a single click after setting the workpiece in place.
- The telecentric optical system with its extreme focal depth needs no focusing even on a stepped workpiece.
- The measurement result and tolerancing screen is understandable at a glance. A quick GO/NG judgement of measurement results promotes the efficiency of your quality control system.



#### Specifications:-

Measuring range (5 models):	100X100mm, 200X100mm, 200mmX170mm, 300X170mm, 400X200mm
Measurement accuracy:	±(3.5+0.02L) µm, L: arbitrary measuring length (mm)

## マイクロビッカース硬さ試験機

### HR-530 Rockwell Hardness Tester

Unique electronic control makes the HR-530 series of hardness testers capable of Rockwell, Rockwell Superficial, Rockwell testing of plastics (A & B) and Light Force Brinell hardness testing.



#### Specifications:-

Test force (N) - automatic:	
Rockwell Superficial:	147.1N (15kgf), 294.2N (30kgf), 441.3N (45kgf)
Rockwell:	588.4N (60kgf), 980.7N (100kgf), 1471N (150kgf)
Light Force Brinell:	61.29 (6.25kgf), 98.07 (10kgf), 153.2 (15.625kgf), 245.2 (25kgf), 294.2 (30kgf), 306.5 (31.25kgf), 612.9 (62.5kgf), 980.7 (100kgf), 1226 (125kgf), 1839 (187.5kgf)

## クイックスコープ (CNC 画像測定機)

### QV APEX 302 PRO

#### Quick Vision Video Measuring Machine

- The model equipped with the tracking focus function that allows continuous focusing in response to change in workpiece height is also available, achieving improvement in measurement throughput.
- This model can support ISO 10360-7:2011 guaranteed accuracy (specifications on request)



Measuring range (XYZ):	300X200X200 mm
Resolution of scale/Scale type:	0.1µm/Linear encoder
Accuracy (µm):	E1x E1y = (1.5+3.0L/1000)µm E1z = (1.5+4.0L/1000)µm E2xy = (2+4.0L/1000) µm
Maximum stage loading:	20Kg

Series 500



ABSOLUTE

AOS ABSOLUTE Digimatic Caliper

Series 500



IP67 ABSOLUTE

Super Caliper

Series 500



ABSOLUTE

Long ABSOLUTE Digimatic Caliper

Series 530



Vernier Caliper

Series 293



IP65

QUANTUMIKE

Series 293



IP65

Coolant Proof Micrometer

Series 293



Digimatic Outside Micrometer

Series 102



Outside Micrometer

Series 2



Dial Indicator

Series 1



Dial Indicator  
- Compact One Revolution Type

Series 513



Dial Test Indicator  
- Vertical Type

Series 547



Thickness Gage  
- Standard Type

Series 518



QM-Height

Series 518



Linear Height

Series 192



Digimatic Height Gage

Series 192



Dial Height Gage

Series 514



Vernier Height Gage

Series 570



ABSOLUTE Digimatic Height Gage

Series 7



Dial Gage Stand

Series 215



Granite Comparator Stand

Series 7



Magnetic Stands

Series 515



Digital Height Master

Series 515



Universal Height Master

Series 515



Check Master



*Our accuracy your efficiency*

customised equipment, **AccuTEC** offers Distributors and Customers all the possibilities to meet their price, technology and performance requirements.

From the very beginning, **AccuTEC** has placed the highest priority on creating products and services that provide maximum value to its Customers. The continuous growth in **AccuTEC** along its history reflects the acceptance of our products and the confidence of our Customers. Currently, **AccuTEC** scales are exported to different continents worldwide. **AccuTEC** distinguishes itself from the competition by producing scales with high quality and reasonable pricing. From standard products to sophisticated

## UWA Weighing Series

- High accuracy up to 1/30,000 resolution
- Rugged design with overload protector
- Large LCD with backlight display
- Long life rechargeable battery 160 hrs
- Hi-Lo check-weighing function available
- Auto zero tracking and tare
- 285 x 240 mm Stainless Steel Weighing Pan



### Specifications:-

UWA-B: 3Kg x 0.2g, 6Kg x 0.5g, 12Kg x 1g and 30Kg x 2g  
 UWA-C: 3Kg x 0.1g, 6Kg x 0.2g, 15Kg x 0.5g and 30Kg x 1

## UCA Counting Series

- High accuracy up to 1/30,000 resolution
- Rugged design with overload protector
- Large LCD with backlight display
- Long life rechargeable battery 160 hrs
- Hi-Lo check-weighing function available
- Auto zero tracking and tare
- 285 x 240 mm Stainless Steel Weighing Pan



### Specifications:-

UCA-B: 3Kg x 0.2g, 6Kg x 0.5g, 12 Kg x 1g and 30Kg x 2g  
 UCA-C: 3Kg x 0.1g, 6Kg x 0.2g, 15Kg x 0.5g and 30Kg x 1

## BSWN-B-PF Weighing Series

- High accuracy up to 1/15,000 resolution
- Rugged design with overload protector
- Large LED with backlight display
- Long life rechargeable battery 90 hrs
- Auto zero tracking and tare
- 380 x 480 mm stainless steel weighing pan
- Adjustable leveling with four stands



### Specifications:-

BSWN-B-PF-60: 60Kg x 5g  
 BSWN-B-PF-150: 150Kg x 10g  
 BSWN-B-PF-300: 300Kg x 20g

## BSCN-B-PF Counting Series

- High accuracy up to 1/15,000, resolution
- Rugged design with overload protector
- Large LCD with backlight display
- Long life rechargeable battery 160 hrs
- Hi-Lo check-weighing function available
- Auto zero tracking and tare
- 380 x 480 mm stainless steel weighing pan
- Adjustable leveling with four stands



### Specifications:-

BSCN-B-PF-60: 60Kg x 5g  
 BSCN-B-PF-150: 150Kg x 10g  
 BSCN-B-PF-300: 300Kg x 20g

## BSW-S-PF Waterproof Series

- All Stainless steel construction
- Stainless steel load cell and indicator
- 400 x 500 mm stainless steel weighing pan
- 20mm Bright green LED display
- Direct AC/DC power
- Kg and pound conversion
- Weighing and easy counting function
- Auto Zero-tracking, tare and memory



### Specifications:-

BSW-S-60: 60Kg x 10g  
 BSW-S-150: 150Kg x 20g  
 BSW-S-300: 300Kg x 50g

## UT Crane Scale Series

- Initial Range: Up to 100% loadcell output
- Tare Range: 100% of scale capacity
- Auto zero tracking
- Kg / lb conversion
- 1 inch bright & large LED display
- Overload indication
- Long life rechargeable battery 100-120 hrs
- Auto power off

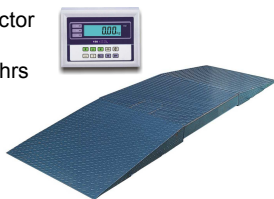


### Specifications:-

UT-1-010: 1,000Kg x 0.5Kg  
 UT-1-020: 2,000 Kg x 1Kg  
 UT-1-030: 3,000 Kg x 1Kg

## FS Floor Scale Series

- High accuracy indicator up to 1/15,000 resolution
- Rugged design with overload protector
- Large LCD with backlight display
- Long life rechargeable battery 160 hrs
- Hi-Lo and dynamic weighing
- Auto zero tracking and tare
- Auto power off
- Powder coated surface and thicker platform plate (ramp is optional)



### Specifications:-

FS-001: 1,000Kg x 0.5Kg (platform size: 1 m x 1 m)  
 FS-002: 2,000Kg x 0.5Kg (platform size: 1.2 m x 1.2 m)  
 FS-003: 3,000Kg x 1Kg (platform size: 1.5 m x 1.5 m)

## ULP Thermal Printer Series

(compatible to selected model only)

- Small, lightweight and installable in a narrow area
- High speed and low noise
- Long-life printing head and high reliability
- With bar code print out
- Could store up to 99 memories



### Specifications:-

Printing Speed: 50mm/s  
 Paper Size: 57mm×25mm / 57mm×43mm  
 57mm×75mm  
 Print Head Life: Up to 70Km print out  
 Interface: RS-232  
 Power: 12VDC / 2.5A



**Chatillon**   
force measurement

**D FE 3 Series Digital Force Gauges**

The DFE3 is ideal for collecting production sample data at the end of a production line, performing pass/fail test status, or recording of quality testing data for incoming material inspection conformance.



**Specifications:-**

Accuracy:  $\pm 0.2\%$  of Full Scale  
Maximum Overload: 150% of Rated Capacity  
Resolution: Up to 50,000 resolution points  
(according the Unit & Capacity)  
Peak Capture Rate: 10 kHz  
Data Sampling: 30 kHz  
Display Update Rate: 10 Hz  
Data Save (internal 32Go SD Card): Up to 100 Results  
Power: Battery (Lithium Ion) or via the USB-C port  
Battery Life: With Dimming On: 40hrs, With Dimming Off: 30hrs

**LLOYD**   
materials testing

**LD Series (bench mounted)  
- Up to 100 kN**

The powerful LD Series testing machines from Lloyd Instruments combine high performance, ease of use and superior flexibility. These universal materials testing machines are ideal for testing applications up to 100 kN (22480 lbf) and are designed for both routine quality control testing, automated testing and for performing complex multi-stage testing.



**Specifications:-**

Force Capacity: LD5 5 kN /1124 lbf, LD10 10 kN /2248 lbf  
LD30 30 kN /6744 lbf, LD50 50kN /11240 lbf,  
LD100 100 kN /22480 lbf  
Crosshead Speed Range:  
LD5 0.0001 to 1270 mm/min / 0.000004 to 50 in/min  
LD10 0.0001 to 1270 mm/min / 0.000004 to 50 in/min  
LD30 0.0001 to 1000 mm/min / 0.000004 to 40 in/min  
LD50 0.0001 to 500 mm/min / 0.000004 to 20 in/min  
LD100 0.0001 to 250 mm/min / 0.000004 to 10 in/min  
Speed Accuracy: 0.1%

**LLOYD**   
materials testing

**TA1 Texture Analyzer**

The TA1 texture analyzer is excellent at testing compression, shear, extrusion, puncture, hardness forces, etc. within food testing, pet food testing, cosmetics testing and pharmaceuticals testing.



**Specifications:-**

Force Capacity: 1000 N (225 lbf)  
Max. Crosshead Travel, Standard Travel: 500 mm (19.7 in)  
(Between the Eye Ends)  
Crosshead Speed Range: 0.01-2032 mm/min (0.0004-80 in/min)  
Speed Accuracy (Unloaded):  $\pm 0.2\%$  of selected speed from 2% to 100% of max. speed  
Min. Load Resolution (Load Cell Specific): 0.0001N (2.2x10<sup>-5</sup> lbf)  
Load Cell Accuracy:  $\pm 0.5\%$  from 1% to 100% of load cell value  
Distance accuracy:  $\pm 0.2\%$  of reading from 2% to 100% of max. travel  
Load Measuring System: EN ISO 7500:2004, Class 0.5 ASTM E4

**Chatillon**   
force measurement

**CS2 Series - Up to 5 kN Digital Force Testing Machine**

The CS2 Series are high quality digital force testing machines optimized for production and laboratory testing. These force testing machines are an excellent choice for simple testing of plastic, rubber, packaging, pharma, cosmetic, electronics and wood.



**Specifications:-**

Force Capacity: 225 lbf/1000 N, 1124 lbf/5000 N  
Maximum Crosshead Travel: 19.7 in/500 mm, 31.5 in/800 mm  
(between the eye ends)  
Throat Depth: 7.1 in/ 180 mm, 5.9 in / 150 mm  
Crosshead Speed Range (at full load):  
0.001 to 50 in/min / 0.01 to 1270 mm/min  
0.001 to 40 in/min / 0.01 to 1016 mm/min  
Speed Accuracy (unloaded):  
 $\pm 1\%$  of selected speed (2% to 100% of maximum speed)  
Crosshead Displacement Accuracy (unloaded):  
 $\pm 0.25\%$  of reading (2% to 100% of maximum travel)  
Remark: CS2-225, CS2-1100

**Davenport**   
polymer test equipment

**PETPlus - IV Measurement**

The Davenport PETPlus IV testing machine is a unique and solvent-free test instrument designed for fast and safe intrinsic viscosity (IV) measurement of moisture-sensitive polyethylene terephthalate (PET). The instrument can be operated in stand-alone mode to provide on-screen results, or used with the powerful data analysis software, NEXYGENPlus PET.



**Specifications:-**

Intrinsic Viscosity (IV): 0.43-1.43 depending on die selection  
Measurement Range (Die must be specified at time of order)  
Barrel: Insulated stainless steel barrel with replaceable stainless steel liner  
Heaters: 3 x 250 watt cartridge type symmetrically positioned for optimum temperature control  
Temperature Range: 50°C – 400°C  
Nitrogen Gas: Requires a supply limited at source to min. 30 bar to max. 35 bar.

**Newage**   
hardness testing

**MT91 Hardness Tester**

The Newage® MT91 Automatic Microhardness Traverse Testing System offers unrivalled testing speed – as fast as six seconds per test cycle – and precise Rockwell type testing method that requires no manual interpretation of the impression.



**Specifications:-**

Test Cycle: Rockwell, penetration depth  
Cycle Time: Automatic with 1000 gf load  
Positioning: 6-9 seconds  
Position Accuracy: Motorized X-Y positioning. Better than 0.00025"  
Video: CCD video with 20-140X magnification  
Scale: Displays results in HRC, Vickers, Knoop and other common Rockwell scales

### KIM-CU Series Video Measuring System



- Video system: High Resolution & High Accuracy CCD
- Magnification: 0.7x~4.5x (17.5x~112.5x) Zoom lens
- Illumination: Adjustable surface and contour illumination (High Brightness Ring Illumination)
- Linear scale: 0.5µm on X, Y, Z-axis
- Length accuracy: ± (3+L/150) µm on X,Y-axis
- Repeatability: 3µm on X, Y-axis
- Connection: USB Output + Metrology software
- Sighting device: Cross-hair generator
- Base: Precision granite table
- Software: SI-101

Model	KIM 2010CU	KIM 3020CU
Travel – X, Y, Z Axis	200 x 100 x 200mm	300 x 200 x 200mm
Stage Size	355 x 255mm	505 x 355mm
Stage Load Capacity	25Kg	25Kg

### HIM-2015 Horizontal Measuring System



- Video system: High Resolution & High Accuracy CCD
- Magnification: 0.3x~1.8x (10x~60x) Step lens
- Illumination: Adjustable surface and contour illumination
- Linear scale: 0.5µm on X, Y-axis
- Length accuracy: ± (3+L/75) µm
- Repeatability: 3µm
- Connection: USB Output + Metrology software
- Software: SI-102 (Optional:SI-101)
- Monitor: 17 inch touch panel

Travel – X, Y Axis	200 x 100mm
Focus Distance	150mm
Stage Size	200 x 120mm
Stage Load Capacity	25Kg

### 311 Humidity Temperature Meter

- Dual input
- Triple display
- Auto power off
- RS232 interface
- REL function
- Hold function
- MAX, AVG and MIN function
- 0.1°C, 0.1°F resolution
- Low battery indication



#### Specifications:-

Sensor Type:	K type bead probe
RS232 Interface:	Yes
Temperature Range:	K Type: -200 – 1370°C J Type: -200 – 760°C
Accuracy:	± 0.1% / ± 0.7°C
Humidity:	0 – 100% RH ± 2.5% RH
Battery:	9V

### 300 Thermometer

- Single input
- Dual display
- Auto power off
- RS232 interface
- REL function
- Hold function
- MAX, AVG and MIN function
- 0.1°C, 0.1°F resolution
- Low battery indication



#### Specifications:-

Sensor Type:	K type bead probe
RS232 Interface:	Yes
Temperature Range:	K Type: -200 – 1370°C
Accuracy:	± 0.1% / ± 0.7°C
Battery:	9V

### 350 Infrared Thermometer

- Simple one-handed operation
- Laser targeting
- LCD with back light display
- Auto power off
- Display hold function



#### Specifications:-

Temperature Range:	-20 – 500°C
Resolution:	0.5°C
Accuracy:	± 2% or ± 2°C
Distance To Spot:	8 : 1
Response Time:	500 msec
Emissivity:	Pre-set at 0.98
Battery:	9V

### 325 Sound Level Meter

- Mini size
- Low cost high performance
- MAX / MIN function
- 0.1 dB resolution
- IEC 651 Type II



#### Specifications:-

Range:	Lo= 32 – 80dB Med = 50 – 100dB Hi = 80 – 130dB
Dynamic Range:	50dB
Microphone:	Electret condenser type
Battery:	9V



**Cold Line Medical Refrigerator LT02-520**

**Specification:**

- Capacity: 520L
- Temperature ranging from +2°C to +8°C with display precision of 1°C
- Alarm: High or low temperature alarm, door open alarm & sensor failure alarm
- With temperature printer, records 7days data. 72 hour battery back up for printer and controller display
- Exterior and internal chamber are made of stainless steel with 4 adjustable shelves & two-layer glass door
- Lockable and built-in fluorescent lighting
- Certificate: ISO9001, ISO14001, ISO13485
- External Dimension (W x D x H) mm: 710\*730\*2000
- Internal Dimension (W x D x H) mm: 590\*670\*1450



**Cold Line Combine Refrigerator & Freezer LT25-450D**

**Specification:**

- Capacity: 450L
- Temperature ranging from -10°C to -25°C
- Alarm: High or low temperature alarm & system failure alarm
- Lockable
- Internal chamber are made of ABS with 3 adjustable shelves & 6 drawers
- Certificate: ISO9001, ISO14001, ISO13485
- External Dimension (W x D x H) mm: 780 x 670 x 1850
- Internal Dimension (W x D x H) mm: Upper chamber 390 x 390 x 300  
Lower chamber 440 x 480 x 710



**Cold Line Ultra-Low Temperature Freezer UL86-528**

**Specification:**

- Capacity: 528L
- Temperature ranging from -10°C to -86°C
- LED touch screen controller with 7", clear display, easy to operate. Gorgeously design for excellent appearance
- USB interface for users to download the temperature data
- 2-times foaming thermal insulation door, multi-patents outdoor insulation design; Effectively prevent the loss of cooling capacity
- Certificate: ISO9001, ISO14001, ISO13485
- External Dimension (W x D x H) mm: 930 x 1041 x 1947
- Internal Dimension (W x D x H) mm: 585 x 696 x 1266

**Hot Line FCH Series Oven**



1. The heating elements are installed at the bottom side of the working chamber
2. Forced vertical air circulation allows fast and even distribution of temperature
3. PID Microprocessor control
4. Low noise operation
5. Temperature up to 300°C



Model	Capacity (liter)	Int. Dimension
FCH-9036A	32	300 X 300 X 350mm
FCH-9076A	72	400 X 400 X 450mm
FCH-9146A	136	450 X 550 X 550mm
FCH-9246A	225	500 X 600 X 750mm
FCH-9426A	429	600 X 550 X 1300mm

**Hot Line IN Series Incubator**



1. Intelligent PID microprocessor temperature control
2. Stable and accurate heating control of ±0.5°C
3. Safe and rigid structure
4. Temperature up to 65°C



Model	Capacity (liter)	Int. Dimension
IN-9052	50	350 X 350 X 410mm
IN-9082	80	400 X 400 X 500mm
IN-9162	162	500 X 500 X 650mm
IN-9272	270	600 X 600 X 750mm

**Hot Line FN Series Furnace**



1. Intelligent PID microprocessor temperature control
2. Stable and accurate heating control of ±1 %
3. Safe and rigid structure



Model	Capacity (liter)	Temperature	Int. Dimension
FN1002	2	Up To 1000°C	120 X 200 X 80mm
FN1008	7.2	Up To 1000°C	200 X 300 X 120mm
FN1016	16	Up To 1200°C	250 X 400 X 160mm
FN1208	7.2	Up To 1200°C	200 X 300 X 120mm
FN1216	16	Up To 1200°C	250 X 400 X 160mm

**PosiTector® 6000  
 Coating Thickness Gages for ALL  
 Metal Substrates**

Rugged, fully electronic coating thickness gauges use magnetic and eddy current principles to measure coating thickness on both ferrous and non-ferrous metals, accurately and quickly

- Ready to measure – no calibration adjustment required for most applications
- Solvent, acid, oil, water, and dust resistant – weatherproof
- Wear resistant ruby probe tip, for long-lasting calibration
- PosiTector interchangeable platform – attach any PosiTector probe to a single gage body
- USB, WiFi, and Bluetooth connectivity to - PosiSoft PC, Mac, and Smartphone software
- Certificate of Calibration showing traceability to NIST or PTB included (Long Form)
- Conforms to ISO 2178/2360/2808, ISO 19840, ASTM B244/B499/D1186/D1400/D7091/E376/G12, BS3900-C5, SSPC-PA2 and others



**PosiTector® 200  
 Coating Thickness Gages for Non-  
 Metal Substrates**

Non-destructively measures a wide variety of applications using proven ultrasound technology. Measure coating thickness over wood, concrete, plastic and more. Advanced models measure up to 3 layers with graphics

- Ready to measure – no calibration adjustment required for most applications
- Solvent, acid, oil, water, and dust resistant – weatherproof
- PosiTector interchangeable platform – attach any PosiTector probe to a single gage body
- USB, WiFi, and Bluetooth connectivity to - PosiSoft PC, Mac, and Smartphone software
- Certificate of Calibration showing traceability to NIST or PTB included (Long Form)
- Conforms to ASTM D6132 and ISO 2808



**PosiTest® DFT  
 Coating Thickness Gage for ALL  
 Metal Substrates**

Measures coatings on metal substrates. It is the economical choice that retains the uncompromising quality of DeFelsko coating thickness and inspection instruments

- Available in Two Models - PosiTest DFT Ferrous or PosiTest DFT Combo
- Fast, repeatable measurements - 60+ readings per minute
- Ready to measure - No adjustment required for most applications
- Zero or 1 Point Calibration Adjustment for complex applications
- Onscreen averaging for up to 99 readings
- Strong, wear-resistant, ruby-tipped probe
- Adjustable display brightness for optimal visibility in all environments
- Auto rotating display with rotation lock
- Simple icon based menu
- Certificate of Calibration showing traceability to PTB included (Long Form)
- Conforms to ISO 2178/2360/2808, ISO 19840, ASTM B244/B499/D7091/E376, BS3900-C5, SSPC-PA2 and others



**PosiTector® SPG  
 Surface Profile Gages for Blasted Steel,  
 Textured Coatings and Concrete Profile**

Digital depth micrometer measures and records peak to valley surface profile heights

- Solvent, acid, oil, water, and dust resistant
- Weatherproof
- Alumina wear face and tungsten carbide tip for long life and continuous accuracy – field replaceable
- PosiTector interchangeable platform – attach any PosiTector probe to a single gage body
- Fast measurement rate of over 50 readings per minute – ideal for quickly and accurately measuring large surfaces
- USB, WiFi, and Bluetooth connectivity to PosiSoft PC, Mac, and Smartphone software
- Certificate of Calibration showing traceability to PTB included (Long Form)
- Conforms to ASTM D4417-B, ASTM D8271 (SPG TS only), AS 3894.5-C (with optional 30° tip), U.S. Navy NSI 009-32, SANS 5772 and others



**PosiTector® UTG  
 Ultrasonic Thickness Gage  
 Measures Wall Thickness**

Measures the wall thickness of materials such as steel, plastic and more using ultrasonic technology. Ideal for measuring the effects of corrosion or erosion on tanks, pipes or any structure where access is limited to one side. Multiple echo (UTG M) Thru-Paint models measure the metal thickness of a painted structure without having to remove the coating

- Precision ultrasonic transducers provide fast, accurate readings
- Solvent, acid, oil, water, and dust resistant – weatherproof
- Pre-programmed velocities – Simply select from a list of common materials or enter your own with ease
- Min Scan mode—take continuous readings and record min/max thicknesses — ideal for quick inspection over a large area
- PosiTector interchangeable platform – attach any PosiTector probe to a single gage body
- USB, WiFi, and Bluetooth connectivity to PosiSoft PC, Mac, and Smartphone software
- Conforms to ASTM E797



**PosiTest® AT  
 Pull-off Adhesion Testers**

Measures adhesion of coatings to metal, wood, concrete and other rigid substrates

- Select from four Stand-offs - 20 mm, 50 mm, 50x50 mm Tile and 50 mm C1583
- Environmentally sealed enclosure – weatherproof, dustproof and shockproof - meets or exceeds IP65
- Inexpensive, single-use dollies eliminate cleaning for re-use and can be kept as a permanent record
- Self-aligning aluminum dolly enables accurate measurements on smooth or uneven surfaces
- 10, 14, 20 or 50 mm dollies maximize capability and measurement resolution across a wide range of bond strengths
- Calibrated and certified to ± 1% accuracy using a NIST traceable load cell
- Certificate of Calibration showing traceability to NIST included (Long Form)
- Conforms to international standards including ASTM C1583/D4541/D7234/D7522, ISO 4624/16276-1, EN 1542/12004-2, AS/NZS 1580.408.5 and others



### N-1300V-WB Series Rotary Evaporator

- Condenser: Vertical double helix condenser with built-in adapter (cooling area 0.146m<sup>2</sup>). Equipped with a new backflow prevention structure to prevent liquid pooling of condensate
- Reflux prevention structure is applied to the base of the condenser (on the receiving flask side) to prevent liquid accumulation on the seal part
- The addition new anti-reverse cover protects against pool of condensed fluid
- Possible to fix jack at any elevation



#### Specifications:-

- Bath Type: Water / Oil
- Bath Temp. Control Range: RT + 5 – 180°C
- Rotation Speed Range: 10 – 310 rpm
- Evaporation Capacity: 23 mL/min (Water Evaporation)
- Jack Function: Manual balancing system (Jack stroke 180mm, stepless)
- Vacuum Seal: Teflon
- Bath Size: Ø 240 x H120 mm

### N-1210BV-WB Series Rotary Evaporator

- Auto Jack System
- Driving unit is automatically lifted up in case of power failure
- Manual slide mechanism (130mm) is provided in addition to jack mechanism
- Newly developed Teflon vacuum seal for strong chemical resistance, long period operation and high speed rotation
- One touch connector nozzle and one touch cooling hose make it easy to detach cooling water circulation hose



#### Specifications:-

- Bath Type: Water / Oil
- Bath Temp. Control Range: RT + 10 – 180°C
- Rotation Speed Range: 5 – 280 rpm
- Evaporation Capacity: 23 mL/min (Water Evaporation)
- Jack Function: Motorized Lift (100mm) Manual Slide (130mm)
- Vacuum Seal: Teflon
- Bath Size: Ø 240 x H120 mm

### Fermentor For Microorganism M-1000A / 1000B

- Simple operation fermentor suitable for acquisition of basic data
- Magnetic drive non-seal rotation system reduces contamination
- Strong stirring force provides stable stirring for sample with variable viscosity



#### Specifications:-

- Temp/ Control Range: Cooled water temp. +5 ~ 60°C
- Temp/ Control Accuracy: 150ml/batch
- Tem. Setting & Display: ±0.2°C (with external cooling device)
- Rotation Speed: 80 ~ 1000rpm
- Temp. Control System: Bath base heater, Cooling water circulation in pipe
- Safety Function: Self diagnosis, Independent overheat protector, Fuse
- Timer: Auto start, Auto stop
- Bath Dimension (mm): \*ID114 x H160 / \*\*ID131 x H186
- Bath Dimension: \*1.5L / \*\*2.5L

Model: \*M-1000A / \*\*M-1000B

### Freeze Dryer FDS-1000

- Compact dryer for small samples at -80°C. Vacuum level, trap temperature and operation time are simultaneously displayed on control panel and operation condition can be confirmed at a glance



- During Auto mode operation, cooling trap temperature and vacuum level are measured
- 0.2µm filter is equipped at air inlet to prevent contamination during leakage

#### Specifications:-

- Cold Trap Temperature: -80°C
- Ice Holding Capacity: 150ml/one batch
- Safety Functions: Leak/over current breaker, Vacuum pump automatic operation, Vacuum monitoring function, Trap temp. monitoring, Refrigerator overload relay
- Vacuum Leak Function: Auto-leak at power OFF or at power failure
- Trap De-icing: By heater
- Cooling & Refrigerant: Refrigerator, 80W Helium gas
- Vacuum Pump: Option (over 50l/min)

### Microwave Synthesizer GPS-1100C

A reaction device capable of microwave irradiation while cooling the peripheral by means of a thermostatic bath. It enables reactions to be carried out at lower temperature than conventional devices

- A new microwave system equipped with an aluminum block jacket thermostat
- Quantitative heating by semiconductor microwave oscillator
- Reaction can be carried out at a temperature lower than usual due to constant temperature response from -13 to 200 °C
- It is possible to perform synthesis experiments by eliminating the thermal effects of microwaves
- The reaction temperature is controlled while the microwave is continuously irradiated

#### Specifications:-

- Aluminum Block Jacket Heating & Cooling, With Microwave Heating : Heating and cooling of solid-state aluminum jacket, microwave heating of the sample
- Temperature Control Accuracy : Solid-state aluminum Jacket temperature control: ±0.5 °C of set point Solvent temperature control: ±0.5 °C of set point (water)
- Microwave Power Output : 0, 1 – 100 Watts, continuous output
- Microwave Temperature Rising Speed : 1.7–2.9 K/sec (φ15 glass vessel, Water1–5 ml, microwave 100 W)
- Stirring : Built-in magnetic stirrer, 0, 100–2000 rpm
- Microwave Oscillation Frequency : 2450MHz Semiconductor oscillator, single mode TE<sub>10</sub>
- Microwave Applicator : Aluminum block jacket integrated with microwave waveguide



## MP0/MP0R Portable Coating Thickness Measurement

Compact, handy and robust – instruments from the MP0 and MP0R series make it easy and fast to measure coating thicknesses non-destructively. With two displays, a particularly strong casing and wear-resistant probe tip, they are the ideal companion for reliable usage directly onsite.

### Features:

- Reliable measurements, even under rough environmental conditions, due to especially robust instrument construction
- Simple operation even in hard-to-reach measuring spots with two independently pivoting and illuminated displays
- Measure according to standards, with special modes for IMO PSPC and SSPC-PA2
- Fast and repeatably accurate measurement due to the device's compact size and intuitive single-handed operation concept

### Applications:

- PERMASCOPE® for coatings on steel and iron
- ISOSCOPE® for coatings on aluminum and other non-ferrous metals
- DUALSCOPE® for coatings on steel, aluminum and other non-ferrous metals, with no need to change the instrument



## MMS® Designed For Corrosion Protection

Developed by anti-corrosion experts, the three devices impress with robustness, usability and performance. All required measurement tasks in heavy corrosion protection are solved quickly and reliably. The DFT is the handheld device for the simple layer thickness measurement on steel and non-ferrous metals. The DPM with integrated measuring probe is used to measure and record all climate parameters relevant for coating processes. The SPG checks the surface profile in the blink of an eye. All devices are available in a corrosion kit.

### Features:

- Drop resistant, dustproof and hose water protected housings according to IP65
- One-hand operation via 4 seized pressure points for optimal work even with gloves
- Visual, haptic and audible feedback for full control over the measurement
- Intuitive user interface allows easy handling even by untrained personnel
- Scratch-resistant, high-contrast display adapts to device positioning
- Three-point support for precise measuring in every situation (DFT)
- Preconfigured batches for SSPC-PA 2, IMO PSPC, ISO 19840, Australian AS 3894.3 B, Swedish IS 18 41 60 etc. (DFT)
- Probe pol (DFT) and temperature sensors (DPM) very resistant
- Big memory space for 250,000 readings in 2500 batches (DFT, DPM and SPG)

### Applications:

- Shipbuilding, infrastructure, offshore wind farms, chemical plants etc.
- Ideal for use under very harsh conditions from -10 to 60 °C
- Dual probe for reliable measurements on all relevant substrates: ISO/FE, NF/FE, ISO/NF (DFT)
- Measuring ranges: 0–2500 µm on FE and 0–2000 µm on NF (DFT); 0–500 µm (SPG)



## FMP 10/40 Coating Thickness Measurement With Exchangeable Probes

The dry film thickness (DFT) gauges from the FMP10 to FMP40 series deliver precise results and the various measurement techniques available make them highly flexible. Models are available with magnetic inductive test method on ferrous substrates (DELTA SCOPE), eddy current test method on non-ferrous substrates (ISOSCOPE) or both techniques combined (DUALSCOPE). By attaching different probes to these instruments, you quickly create the right solution for virtually any dry film thickness measurement task.

### Features:

- Interchangeable probes provide flexibility for a diverse range of dry film thickness (DFT) measurement tasks
- Efficient and structured measurement, with enough memory for several thousand applications, as well as many evaluation and display functions
- Measure according to standards, with special modes for IMO PSPC, SSPC-PA2, QUALANOD or QUALICOAT

### Applications:

- DELTASCOPE® for dry film thickness (DFT) coatings on steel and iron
- ISOSCOPE® for dry film thickness (DFT) coatings on aluminum and other non-ferrous metals
- DUALSCOPE® with automatic substrate recognition and the combination of two measurement techniques (magnetic induction and eddy current); DUALSCOPE® can measure a variety of DFT coatings on iron/steel or non-ferromagnetic metals and on non-conductive substrates
- Coatings in the micrometer range on non-ferrous metals, iron or steel
- Thick dry film coatings made from non-ferrous metals or protective coatings on steel



## FISCHERSCOPE UMP20/40/100 Wall Thickness Measurement

Fischer's ultrasonic line is ideal for measuring wall thicknesses in all aspects of corrosion protection. Exchangeable probes make the devices of the UMP series particularly flexible; models range from entry level gauges to high-precision instruments with multiple measurement modes, including A- and B-Scan, echo-to-echo measurement and sound velocity mode.



### Features:

- Many software options and measurement modes can be enabled directly via the keypad
- Dual-element probes for reliable results even on rough, corroded surfaces
- Measuring range from 0.5 - 500 mm
- Zero-point compensation for reliable measurements even after frequent use and/or at fluctuating temperatures
- Comes equipped with a 5 MHz probe; many other probes optionally available, even for use at high temperatures

### Applications:

- Detection of corrosion damage to ship hulls, pipelines, tanks and containers
- Quality control in the transport and chemical industries

### GT-7045-MD Izod Charpy Digital Impact Tester

This tester is used to test the impact resistance of specimen of various materials which is endured by the impact in a certain angle and weight to access it's toughness. Test results are calculated/saved automatically, displayed and printed out (single or multiple printing). Impact action is performed by simply pressing a control button.



#### Specifications:-

Standard: ASTM-D6110, ASTM-D256, ISO-179, ISO-180, GB/T 1843, GB/T 1043

Capacity Optional:

Izod (1J, 2J, 2.75J, 5.5J, 7.5J, 11J, 15J, 22J) & Charpy (1J, 2J, 2.75J, 4J, 5.5J, 7.5J, 11J, 15J, 25J)

Impact Speed: 2.9 m/sec , 3.46 m/sec, 3.8 m/sec

Test Angle: 150°

Energy Unit: kg-cm , kg-m , lb-ft , J(or defined by user)

### GT-7005-T Desk Type Temperature & Humidity Tester

By simulating various conditions of environment and humidity, the constant temperature and humidity tester tests, the adaptability and properties of a product. This tester is widely used for testing electronic components, appliances, metals, rubbers, plastics, chemicals, building materials, food, etc.



#### Specifications:-

Temp. Range: 0°C~100°C(+125°C optional)  
-20°C~100°C (-25~+125°C optional)

Humidity Range: 30~95% R.H.

Interior Dimension: 40×50×40cm (W×H×D)

50×60×40cm (W×H×D)

Interior Material: Frosty stainless steel

### AI-7000-SU1 Servo Control System Universal Testing Machine

These series of universal testing machine are used to test tension, compression, bend, shearing force, adhesion, peeling force, tear strength,...etc. of specimen, semi-product and finished product in the field of rubber, plastic, metal, nylon, fabric, paper, aviation, packing, architecture, petrochemistry, electric appliance, automobile,...etc. , which are the basic facilities for input quality control (I.Q.C), Quality Control (Q.C.), Physical Inspection, Mechanics Research and Material Development.



#### Specifications:-

Capacity (optional): 100, 200, 500 N; 1,2,5 kN

Unit (Switchable): kgf, lbf, N, kN, kPa, MPa

Load Resolution: 1/500,000

Load Accuracy: ±0.5%

Load Range: Rangeless (full scales at the same amplification)

Stroke (exclude the grips): 1100 mm

Effective width: 410 mm

Test Speed: 0.001~1000 mm/min selectable

Speed Accuracy: ±0.5%

Stroke Resolution: 0.00004 mm

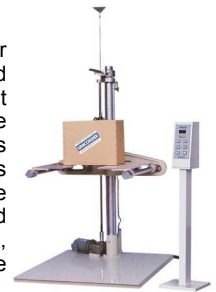
Sample Rate: 200 times/sec

Communication Interface: RJ45

Motor: AC servo motor

### GT-7003 Drop Tester

This machine is designed specially for testing the damage of those packaged products which dropped to the ground. It can evaluate the impact-resistance strength of electronic assembly which falls down during transportation. This machine is controlled by an electromagnetic device which can drop the specimen freely and immediately. All the rhombohedron, angle, face of the package container can be tested.



#### Specifications:-

Test Height: 40~150cm

Effective test Stroke: 100×100×150cm (W×D×H)

Maximum Specimen Weight: 60kg(approx.)

Motor: height adjustment 1/2HP

Double Wing Adjustment: Manual adjustment

### AI-3000-U Servo Control System Benchtop Tensile Strength Tester

The tensile strength testers are widely applied to determine elongation, compression, flexing, tear, peeling, shear force, adhesive force, etc. of finished or semifinished products such as rubber, plastic, footwear, leathers, metal, wire, paper, timber, etc.



#### Specifications:-

Capacity (optional): 100, 200, 500 N; 1, 2, 5 kN

Unit (Switchable): kgf, gf, Ton, lbf, N, kN or by user's definition

Load Resolution: 1/500,000

Load Accuracy: ±0.5%

Stroke (exclude the grips): 1100 mm

Test Speed: 0.001~999 mm/min

Speed Accuracy: ±0.5%

Stroke Resolution: 0.00004 mm

Sample Rate: 200 times/sec

### UN-7001-LS Static Hydraulic Universal Testing Machine

UN-7001-LS is an ideal material testing instrument to determine tensile, compression and bending strength for a wide range of materials and applications. By combining with powerful hydraulic power pack and dedicated software, UN-7001-LS can precisely perform the measurement and carry out accurate analysis of mechanical properties of materials.



#### Specifications:-

Model: UN-7001-LS

PC based

Speed (without loading): 0.01~70mm/min

Resolution: 1/500000

Load Accuracy: ±1%

Tensile Max. Space: 620mm

Grips for Rod(rod dia.): 13~75mm

Grips for Plate: 70x90mm

Compression Effective Space(2): 740mm

Diameter of Compression Platen: 160mm

Transverse Effective Space(3): 300mm

Supports: Max. Space: 340mm

(between two fulcrums)

Fulcrum Size: 30x145mm

(dia×width)

Punch: R22x160mm (Radius×Width)

Ram Stroke: 220mm

Number of pillars: 6

Effective Space (between two columns): 450mm

Crosshead drive system: Hydraulic based

Crosshead Speed: 300mm/min +/-10%

**EBA 200**

The EBA 200 is a practical centrifuge for use with small sample volumes. The centrifuge is supplied with an angle rotor that can hold up to eight 15 ml tubes.

The EBA 200 is the ideal centrifuge for medical practices. It can also hold glass tubes without the need for an adapter. Adapters for other blood collection tubes are also available on request.



**Specifications:-**

- Max. capacity: with angle rotor 8 x 15 ml
- Max. speed: 6,000 rpm
- Max. RCF: 3,461
- Cooling: Air cooling
- Rotor: Angle rotor for 8 x 15 ml tubes included
- Dimensions: 228 x 261 x 353 mm (H x W x D)
- Weight: Approx. 9 kg



**HAEMATOKRIT 200**

The HAEMATOKRIT 200 is a compact and efficient centrifuge for the determination of the percentage by volume of erythrocytes in blood.

It is furthermore used to derive plasma for the photometric determination of the bilirubin content of the blood of neonates.



**Specifications:-**

- Max. speed: 13,000 rpm
- Max. RCF: 16,060
- Cooling: Air cooling
- Rotors: Haematocrit rotor for 24 standard capillary tubes
- Dimensions: 228 x 262 x 352 mm (H x W x D)
- Weight: approx. 10 kg



**ROTOFIX 32A**

Its high performance makes it the benchmark centrifuge in its class. It is a reliable tool for daily laboratory work in a medical practice or small hospital. It is not only suitable for use in clinical chemistry, it is also an indispensable tool in cytology. Its comprehensive range of accessories make it suitable for use in research and analytical laboratories in chemistry, pharmacy and biotechnology.



**Specifications:-**

- Max. capacity: with swing-out rotor 4 x 100 ml
- Max. capacity: with angle rotor 6 x 85 ml
- Max. speed (RPM): 6,000
- Max. RCF: 4,226
- Refrigeration: Air cooling
- Frequently used rotors: Swing-out rotor for 4 x100ml (90°), 8x50ml (45°), Angle rotor for 6x85ml
- Dimensions: 257 x 366 x 430 mm (H x W x D)
- Weight: approx. 23 kg



**UNIVERSAL 320R**

Its comprehensive range of accessories and outstanding performance make the UNIVERSAL 320R the ideal centrifuge for almost every application. The centrifuge separates samples reliably at the desired temperature. It can be set to any temperature in the range -20 °C to +40 °C. In addition, it has a fast cool function.



**Specifications:-**

- Max. capacity in a swing-out rotor: 4 x 100 ml
- Max. capacity in an angle rotor: 6 x 85 ml
- Max. capacity in a hematocrit rotor: 24 standard capillaries
- Max. speed (RPM): 15,000
- Max. RCF: 21,382
- Frequently used rotors: Swing-out rotor for 4x100ml (90°), Angle rotor for 30x1.5 / 2ml, 6x85ml, Cyto rotor for 6 slide preparations
- Dimensions: 346 x 401 x 695 mm (H x W x D)
- Weight: approx. 53 kg



**HETTLITE Pro™**  
Precision, Reliability & Optimisation



**Fully Autoclavable**

HETTLITE pro pipettes can be autoclaved at 2 bar, 121°C for 15-20 minutes



**Fully UV resistant**

HETTLITE pro pipettes are made from UV-resistant materials, allowing users to leave them in laminar flow hoods during the UV sterilization process, reducing the chances of contamination



**Certification**

All HETTLITE pro pipettes are CE certified and each unit of pipette will come with ISO/IEC 17025:2005 calibration certificate

**HettCube**  
INCUBATORS AND COOLED INCUBATORS

The HettCube range is manufactured in Germany. HettCube range combines the advantages of natural and forced convection. The fan is housed outside the usable space, so that there is a low air flow inside the incubator. The temperature is maintained by radiated heat, preventing the formation of hot spots.



Specification	HettCube 200 / 200R	HettCube 400 / 400R	HettCube 600 / 600R
Temperature range	1K above ambient temperature to +65°C / 0°C to + 65°C		
Internal volume (L)	150	310	520
Number of shelves	2	3	4
Maximum number of shelves	4	9	16
Recovery time after door has been opened for 30s at +37°C	≤3 min	≤4.5 min	≤5.5 min




### RV 3 V Rotary Evaporator

It finds a multitude of uses in the chemical, pharmaceutical, and biotechnology industries, in research and development, in manufacturing and quality assurance, in laboratories, and in plant construction. Thanks to specially designed glass guides, the transparent vertical coated condenser makes extremely efficient use of the 1500 cm<sup>2</sup> cooling surface.



#### Specifications:-


- Cooling Surface:	1500 cm <sup>2</sup>	
- Speed Range:	5 - 300 rpm	
- Lift:	Manual	
- Heating Temperature Range:	Room Temp. - 100 °C	
- Heat Output:	1300 W	
- Heat Control Accuracy:	± 1K	
- Bath Volume Max.:	4 l	

### KS 260 Basic

Compact, flat shaker with optimal swivel motion, for a maximum shaking weight of 7.5Kg. LED display for speed and time adjustment + Wide range of attachment combinations allows for using almost all shapes and sizes of vessels



#### Specifications:-


Shaking Movement:	Orbital	
Orbital Diameter:	10 mm	
Infinitely Adjustable Speed Range:	10 – 500 rpm	
Timer:	∞ / 9 h 59 min	
Protect. Class:	IP 21 Acc. To DIN EN 60529	

### ROLLER 6 basic

Roller shaker with 6 rolls provides smooth rocking and rolling action at a fixed speed. Used for mixing blood samples, solid and liquid suspensions and viscous samples. The unit can be used with all conventional tubes and cylindrical bottles. Easily removable attachments provide for quick cleaning in case of sample spills.



#### Specifications:-

Type Of Movement:	Rocking & rolling	
Speed Min.:	0 rpm	
Speed Fix:	30 rpm	
Operating Mode:	continuous operation	
Rolls, Ø:	32 mm	
Rolls, Length:	327 mm	
Protect. Class:	IP 21 Acc. To DIN EN 60529	


### RW 20 Digital

Bringing the future to your laboratory:

- With digital display
- Robust, slimline, ergonomic design
- Technical improvements on the trusted RW 20 series designs
- With constant power-drive
- Two speed ranges for universal use from 60 - 2.000 rpm
- Push-through agitator shafts (only when stationary)



#### Specifications:-


Stirring Quantity (H <sub>2</sub> O):	20 l	
Max. Viscosity:	10,000 mPas	
Speed Range I:	60 – 500 rpm	
Speed Range II:	240 – 2,000 rpm	
Speed Control:	Stepless	
Protect. Class:	IP 20 Acc. To DIN EN 60529	

### A11 basic Analytical Mill

Batch mill for 2 different grinding procedures: Impact grinding of hard, brittle or non-elastic grinding materials with high-grade stainless steel beater. This beater can be used for a Mohs hardness up to 6 (incl. with delivery). Cutting grinding for pulverizing soft, fibrous materials with a cutting blade (not incl. with delivery).



#### Specifications:-


Process Type:	Batch	
Operating Principle:	Cutting/impact	
Speed::	28,000 rpm (fixed)	
Usable Volume Max.:	80 ml	
Overload Protection:	Yes	
Material Mohs Hardness:	Up to 6 (standard)	
Protect. Class:	IP 43 Acc. To DIN EN 60529	

### C-MAG HS 7

High performance magnetic stirrers with heating and glass ceramics heating plate which offers excellent chemical resistance.



#### Specifications:-


Stirring Quantity (H <sub>2</sub> O):	10 l	
Speed Range:	100 – 1,500 rpm	
Temperature Range:	50 – 500 °C	
Heating Plate Material:	Glass Ceramics	
Heating Plate Dimension:	180 x 180 mm	
Protect. Class:	IP 21 Acc. To DIN EN 60529	

### EUROSTAR 20 Digital

Laboratory stirrer designed for simple stirring tasks for quantities up to 15 l (H<sub>2</sub>O). It automatically adjusts the speed through microprocessor controlled technology within the speed range of 0/30 - 2000 rpm.



#### Specifications:-


Stirring Quantity (H <sub>2</sub> O):	15 l	
Max. Viscosity:	10,000 mPas	
Speed Range:	0/30 – 2,000 rpm	
Protect. Class:	IP 40 Acc. To DIN EN 60529	

### T 25 Digital ULTRA-TURRAX®

High-performance dispersing instrument for volumes from 1 – 2000 ml (H<sub>2</sub>O) with digital speed display. It offers a wide speed range from 3000 – 25,000 rpm that enables users to work at high circumferential speeds even with small rotor diameters. A broad choice of dispersing elements adds versatility. Applications ranges from homogenizing waste water samples, use in laboratory reactors, dispersion tasks under vacuum / pressure and sample preparation in medical diagnostics.

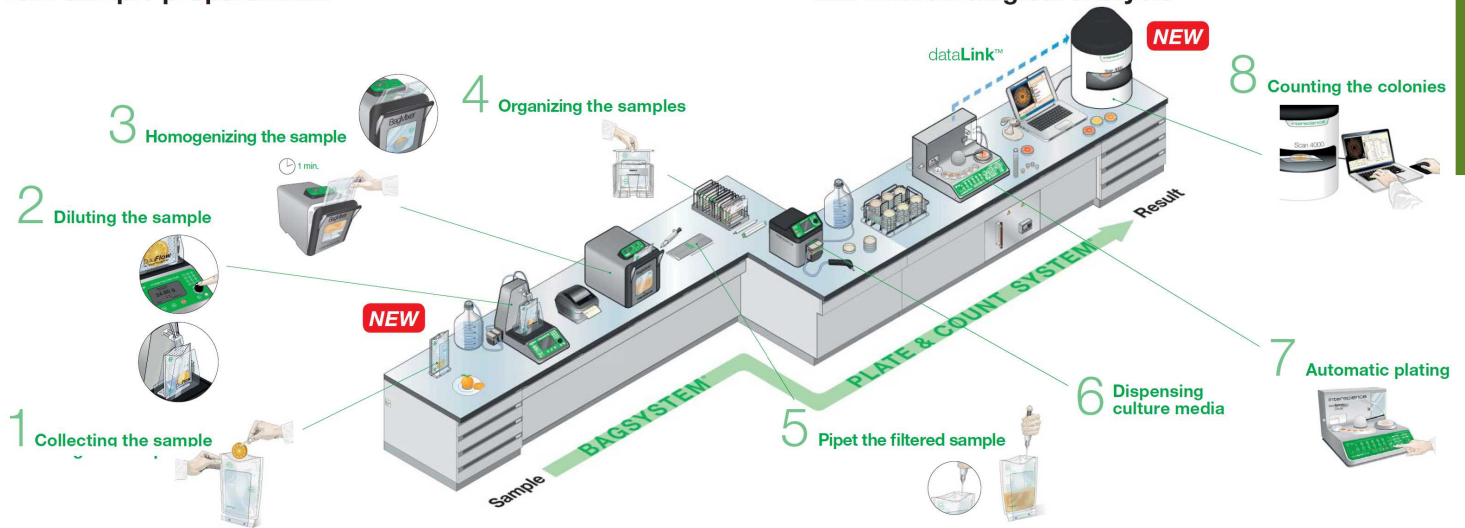


#### Specifications:-

Volume range (H <sub>2</sub> O):	2 l	
Max. Viscosity:	5,000 mPas	
Speed Adjustment:	Stepless	
Speed Range (Under Load):	3.400 – 24.000 rpm	
Protect. Class:	IP 20 Acc. To DIN EN 60529	

From sample preparation...

...to microbiological analysis



## DiluFlow® The best solution for your dilutions

It is designed for the automatic dilution of a solid sample with the appropriate weight of diluent. Its traceability features enable the recording of all the operations. Equipped with a high speed robotic arm, it offers the best solution for your dilutions!



## BagMixer® Lab blenders range

BagMixer® are highly efficient lab blenders for solid sample preparation. With a blender bag, they guarantee optimal microbiological extraction in less than 60 seconds and eliminate all risks of cross contamination.



## FlexiPump® Now dispensing is easy

FlexiPump® is a range of peristaltic pumps for culture media preparation. Great tool for serial dispensing of culture media, agar or any liquid diluant, it is compact, has an intuitive interface and great ergonomics. Its speed and precision guarantee an efficient sample preparation.



## easySpiral Dilute®

Automatic diluter & plater

easySpiral Dilute® is a 2-in-1 equipment: automatic diluter and plater. It allows you to do 5 x serial 1/10 dilutions and automatic plating on 1 single Petri dish, with a countable range from 30 to 1x10<sup>12</sup> CFU/mL.



## Plate & Count system® with dataLink™



*Increase your lab capacity!*

STEP 2



Print the label with Datamatrix code. Stick the label on the plated Petri dish and place in the incubator.

STEP 1



Plate with easySpiral® Pro or Dilute. easySpiral® software collects the plating data.

STEP 3



Once the colonies have grown, scan the Datamatrix code. The Scan® colony counter automatically adjusts its settings thanks to the Datamatrix label's data. Click on "COUNT". Export the data.

**dataLink™** is a full traceability system for the microbiological analysis of a sample, from plating to colony counting with **easySpiral®** automatic platers and **Scan®** automatic colony counters.

All plating data (volume, dilution, time, mode ...) is stored on a Datamatrix or QR Code label placed on the Petri dish. No database is needed.

After incubation, the Datamatrix label is scanned and read by the **Scan®** software and retrieves all the sample information, from the plating to the colony counter settings.

Simply press "COUNT". There is no more time-consuming data double input and potential errors. Export the results, pictures and comments to LIMS\*, Excel™, PDF, JPEG

## CORIO™ CD Series

for working temperatures from -40 °C to +150 °C

### Refrigerated Circulators

- Models for internal and external applications
- Bright, white, easy to read display
- Easy change-over from internal to external circulation and vice versa
- Class III (FL) according to DIN 12876-1
- External pump connections (M16x1)
- Bath lid and drain tap included
- Refrigeration unit without side vents
- Removable ventilation grid
- USB interface



	CORIO™ CD-201F	CORIO™ CD-300F	CORIO™ CD-601F	CORIO™ CD-900F	CORIO™ CD-1001F
Order No.	9012702	9012703	9012705	9012706	9012708
Working Temp. Range °C	-20 ..... +150	-25 ..... +150	-40 ..... +150	-40 ..... +150	-38 ..... +100
Temperature Stability °C	± 0.03	± 0.03	± 0.03	± 0.03	± 0.03
Heating Capacity kW	2	2	2	2	2
Cooling capacity kW (Bath Fluid: Ethanol)	+20°C 0°C	+20°C 0°C	+20°C -10°C	+20°C -10°C	+20°C -10°C
	0.22 0.16	0.31 0.28	0.6 0.35	0.9 0.55	1.0 0.63
Pump Capacity Flow Rate / Pressure	-10°C -20°C	-10°C -20°C	-20°C -40°C	-20°C -40°C	-20°C -30°C
	0.12 0.06	0.2 0.11	0.2 0.01	0.35 0.02	0.35 0.13
Bath Opening / Depth cm	l/min bar	l/min bar	l/min bar	l/min bar	l/min bar
	15 0.35	15 0.35	15 0.35	15 0.35	15 0.35
Bath Opening / Depth cm	13(W)x15(L)x15(D)	13(W)x15(L)x15(D)	22(W)x15(L)x20(D)	26(W)x35(L)x20(D)	35(W)x41(L)x30(D)
Filling Volume Liters	3 ..... 4	3 ..... 4	8 ..... 10	21 ..... 30	42 ..... 56

## F Series

### Compact Recirculating Coolers for simple cooling tasks

The recirculating coolers of the F Series have very low procurement costs and convince with robust technology for continuous operation:

- May be used with water, water-glycol, JULABO Thermal G
- Compact design
- Easy access filling
- Level indicator



	F250	F500	F1000
Order No.	9620025	9620050	9620100
Working Temp. Range °C	-10 ..... +40	-10 ..... +40	-10 ..... +40
Temperature Stability °C	± 0.5	± 0.5	± 0.5
Cooling capacity kW (Bath Fluid: Ethanol)	+20°C 10°C	+20°C 10°C	+20°C 10°C
	0.25 0.22	0.5 0.4	1 0.7
Pump Capacity Flow Rate / Pressure	0°C -5°C	0°C -5°C	0°C -5°C
	0.18 0.09	0.25 -	0.35 -
Bath Opening / Depth cm	l/min bar	l/min bar	l/min bar
	15 0.35	24 0.5	23 1

## PURA™ 10 and PURA™ 14 Water Baths

PURA™ 10 and 14 with a filling volume of up to 10 and 14 liters. Like all PURA™ water baths, they have a built-in intelligent drip off design and provide all of the PURA™ advantages such as:

- Bright display
- Splash-proof protected power switch
- Built-in dry running protection
- Easy operation
- Built-in drain tap
- Built-in drip off design
- USB data port
- No disturbing elements in the bath
- Integrated timer



	PURA™ 10	PURA™ 14
Order No.	9550410	9550414
Working Temp. Range °C	+25 ..... +99.9	+25 ..... +99.9
Temperature Stability °C	± 0.3	± 0.3
Heating Capacity kW	1.3	1.3
Filling Volume Liters	1 ..... 10	1 ..... 14
Bath Opening / Bath Depth cm	22(W)x27(L)x17(D)	30(W)x27(L)x17(D)
Possible Number Of Test Tube Racks (Accessory)	2	3

## SW Series Shaking Water Baths

for working temperatures from +20 °C to +99.9 °C

JULABO Shaking Water Baths provide numerous state-of-the-art features for common day-to-day laboratory tasks. For example: sloped edges keep the water in the stainless steel bath tank even when the bath lid is open.

- Overall splash water protection
- Low water-level warning and cut-off functions
- Integrated timer (0 ... 10 operating hours)
- User-friendly operation and consistent reproducibility
- ATC 1-point calibration



	SW22	SW23
Order No.	9550322	9550323
Working Temp. Range °C	+20 ..... +99.9	+20 ..... +99.9
Temperature Stability °C	± 0.2	± 0.02
Heating Capacity kW	2	2
Filling Volume Liters	8 ..... 20	8 ..... 20
Shaking Frequency rpm	20 ..... 200	20 ..... 200
Shaking Stroke mm	15	15
Bath Opening / Bath Depth cm	50(W)x30(L)x18(D)	50(W)x30(L)x18(D)

## Surface Tensiometer

A tensiometer measures the surface tension of a liquid or the interfacial tension between two immiscible liquids. Surface tension influences properties in a system and is an important parameter in characterising a liquids ability to wet a solid surface and to understand adhesion. Several techniques are described in literature and inherent to the most precise of these methods is to measure the weight of the meniscus using a balance. This method is used in all Kibron's tensiometers.

The Kibron Aqua Pi/Plus (& Ez-Pi plus) range offers users a family of compact, high performance force based surface / Interfacial tensiometers for lab or field use in almost every industry from waste water monitoring to foods & oils & Chrome plating baths to inks & coatings.

### AquaPi Surface Tensionmeter (3500)

The Kibron AquaPi is a compact tensiometer focused on solely surface tension measurements. The AquaPi is battery operated - you can measure surface tension easily and rapidly, practically anywhere: in the field and in the laboratory, in the classroom, in oil refineries, dairies, water purification plants, chrome plating plants, in vegetable safety assessment, to mention just a few examples. AquaPi - accurate and fast surface tension measurements

**Features:**

- Single-use sample cups (3 mL) reduce contamination risk
- Uses a long life battery providing up to 24 hour continuous use
- User friendly hand held controller with a clear digital readout

**Specification:**

Measuring range:	10-100 mN/m
Accuracy/sensitivity:	0.1mN/m
Sample cup material:	Polypropylene
Weight:	2.2 kg
Dimensions:	26 x 8 x 16 cm (11.8 x 3.1 x 5.9 in)
Avg. time per measurement:	Around 30 seconds
Power/communication:	15 V DC (input 100 - 240 VAC)



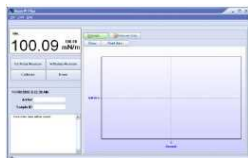
3501



Hand Held Controller 3520

### AquaPi Plus Surface Tensionmeter (3800)

The Kibron AquaPi Plus is a compact, computer controlled tensiometer focused on surface tension measurements. The AquaPi Plus can powered through the USB port of a computer or tablet - you can measure surface tension easily and rapidly, practically anywhere: in the field and in the laboratory, in the classroom, in oil refineries, dairies, water purification plants, chrome plating plants, in vegetable safety assessment, to mention just a few examples. AquaPi Plus- accurate and fast surface tension measurements



Software 3825

**Features:**

- Single-use sample cups (3 mL) reduce contamination risk
- Powered through the USB connection
- User friendly software with real-time data acquisition
- Both maximum pull force and Wilhelmy techniques are available. The former is fast with high reproducibility, while the latter is well suited for viscous samples

**Specification:**

Measuring range:	10-100 mN/m
Accuracy/sensitivity:	0.1mN/m
Sample cup material:	Polypropylene
Weight:	2.2 kg
Dimensions:	26 x 8 x 16 cm (11.8 x 3.1 x 5.9 in)
Avg. time per measurement:	Around 30 seconds
Power/communication:	USB

### EZ-Pi Plus Surface Tensionmeter / Contact Angle Measurement (3600)

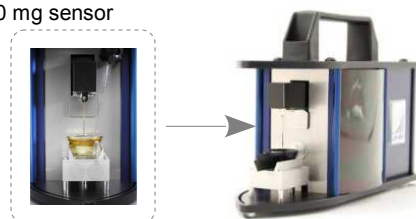
Kibron EZ-PI Plus was designed and built with reliability and ease of use in mind. EZ-PI Plus is compact size, and easy to move. State-of-the-art sensor technology with excellent resolution, connection for water bath, and intuitive user interface

**Features:**

- A high precision instrument for research
- Surface tension, oil/water interfacial tension, and contact angle measurements
- Measures samples with high viscosity (Wilhelmy technique combined with small diameter probe). Currently tested to 100,000 mPas (Newtonian),
- An easy to use tensiometer for educational purposes, no special training needed
- An ideal instrument for the metal plating industry
- Excellent for oil refineries for the monitoring of sour water
- ASTM D 1331 – 14
- Easy Pi Plus Manager Software

**Specification:**

Principle of operation:	minituarized Du-Noüy/ Wilhelmy
Measuring range:	1-350 mN/m
Accuracy/sensitivity:	0.01 mN/m
Resolution:	0.001 mN/m (0.2 µg) for 0-100 mg sensor and 0.003 mN/m (0.6 µg) for 0-300 mg sensor
Sample cup material:	Polypropylene / Glass / Teflon
Sample volume:	0.5-3 ml std (stainless steel vial 25 - 50 microliter available on request )
Maximum viscosity:	60 000 cP (Newtonian)
Weight:	1.3 kg
Dimensions:	26 x 8 x 16 cm (10.2 x 3.1 x 6.3 in)
Avg. time per measurement:	Around 30 seconds
Temperature control:	0-100 °C, connects to circulating bath
Power/communication:	Power is supplied through the same USB port used for communication



### MW150 MAX pH/ORP/Temp Bench Meter

The Milwaukee MW150 MAX 3-in-1 PRO pH/ORP/Temp Bench Meter is preferred by people testing all types of samples viscous or not, in a variety of applications that cause other pH meters and electrodes to fail.



**Specifications:-**

- pH Range: -2.00 to 20.00 pH
- ORP Range: ±2000.0mV
- Temp. Range: -20.0 to 120.00°C (-4.0 to 248.0°F)
- Resolution: 0.01 pH
- Resolution: 0.1mV
- Resolution: 0.1°C (0.1°F)
- Accuracy: ±0.01 pH @ 25°C / 77°F
- Accuracy: ±1mV
- Accuracy: ±0.4°C | ±0.8°F
- pH Calibration: up to 3 point automatic pH calibration | 7 standard buffers (pH 1.68, 4.01, 6.86, 7.01, 9.18, 10.01, 12.45)

### Mi 415 PRO Turbidity Meter

The Milwaukee MI415 PRO Turbidity features easy 3 point FNU calibration. The calibration points are 0, 10 and 500 FNU (Formazine Nephelometric Unit). Calibration is automatic and fast with easy operation and a rugged meter design.



**Specifications:-**

- Range 0.00 to 50.00 FNU; 50 to 1000 FNU
- Resolution 0.01 FNU; 1 FNU
- Accuracy ±0.5 FNU or ±5% of reading, whichever is greater
- Detection of scattered light method
- Light Source high emission infrared LED
- Light Detector silicon photocell
- Environment 0 to 50°C / 32 to 122°F; max RH 100%
- Battery Type 1 x 9V
- Auto-off after 5 minutes of non-use

### MW 100 PRO pH Meter

The MW100 PRO pH meter features manual calibration and fast operation in a rugged design.

The Milwaukee MW100 PRO pH Meter is ideal for users in pools, and hydroponic applications. This meter is also ideal for educators that want their students to learn the basics of pH meter calibration before going fully automatic.



**Specifications:-**

- pH Range: 0.0 to 14.0 pH
- pH Resolution: 0.1 pH
- pH Accuracy: ±0.2 pH
- pH Electrode: SE220 with 3 foot cable (included)
- Environment: 0 to 50°C / 32 to 122°F; max RH 95%
- Battery Type: 1 x 9V (included)
- Battery Life approx: 300 hours of continuous use

### MW801 PRO pH / Conductivity / TDS Combination Meter

The Milwaukee MW801 PRO Low Range Combo Meter lets you easily and accurately test pH, conductivity and total dissolved solids (TDS) using a single meter and integrated probe.



**Specifications:-**

- pH Range: 0.0 to 14.0 pH
- EC Range: 0 to 1990 µS/cm
- TDS Range: 0 to 1990 ppm
- pH Resolution: 0.1 pH
- EC Resolution: 10 µS/cm
- TDS Resolution: 10 ppm
- pH Accuracy: ±0.2 pH
- EC/TDS Accuracy: ±2% Full Scale

### MW151 MAX pH/ORP/Temp Logging Bench Meter

The Milwaukee MW151 MAX 3-in-1 PRO pH/ORP/Temp Bench Logging Meter is preferred by people testing all types of samples viscous or not, in a variety of applications that cause other pH meters and electrodes to fail.



**Specifications:-**

- pH Range: -2.00 to 20.00 pH / -2.000 to 20.000 pH
- ORP Range: ±2000.0 mV
- Temp. Range: -20.0 to 120.00°C (-4.0 to 248.0°F)
- Resolution: 0.01 pH / .001 pH
- Resolution: 0.1mV
- Resolution: 0.1°C / 0.1°F)
- Accuracy: ±0.01 pH / ±0.002 pH @ 25°C / 77°F
- Accuracy: ±1mV
- Accuracy: ±0.4°C | ±0.8°F
- pH Calibration: up to 5 point automatic pH calibration | 7 standard buffers (pH 1.68, 4.01, 6.86, 7.01, 9.18, 10.01, 12.45) and two custom buffers

### MW 600 Dissolved Oxygen Meter

The MW600 is a Portable Dissolved Oxygen meter ideal for use in school laboratories. Dissolved Oxygen measurements are also very important in fish farms and ponds, where Oxygen levels are continuously monitored to obtain optimal reproduction.



**Specifications:-**

- O2 Range 0.0 to 19.9 mg/l
- O2 resolution 0.1 mg/l
- O2 Accuracy ±1.5% Full Scale
- Calibration manual on 2 points (zero and slope)
- Temperature Compensation automatic, from 0 to 30°C
- Probe MA840 (included)
- Environment 0 to 50°C / 32 to 122°F; max RH 95%

### PH600 Digital pH Pen

The Milwaukee PH600 compact digital pen is specifically designed to help maintain pools, water conditioning, classrooms or labs. Keeping the proper pH improves results of chlorine in a pool. It also helps in understanding the quality of a water conditioning system.



**Specifications:-**

- pH range: 0.0 to 14.0 pH
- Resolution: 0.1 pH
- Accuracy: +/- 0.1 pH
- Typical EMC Deviation: +/- 0.2 pH
- Calibration: Manual, 1 Point
- Environment: 32°F to 122°F (0 to 50°C) 95% RH
- Approximate dimensions: 6 x 1.2 x 0.95 inches
- Battery Life: 700 hours

### MA 871 Digital Brix Refractometer

The MA871 digital refractometer eliminates the uncertainty associated with mechanical refractometers and is easily portable for measurements in the field



**Specifications:-**

- Range 0 to 85% Brix; 0 to 80°C / 32 to 175°F
- Resolution 0.1% Brix; 0.1°C / 0.1°F
- Accuracy ±0.2% Brix; ±0.3°C / ±0.5°F
- Light Source Yellow LED
- Measurements Time Approximately 1.5 seconds
- Minimum Sample Volume 100 µL (cover prism totally)
- Sample Cell SS ring and flint glass prism
- Temperature Compensation Automatic between 10 and 40°C / 50 to 104°F
- Case Material ABS
- Enclosure Rating IP 65
- Battery Type 1 x 9V AA (included)
- Battery Life 5000 reading
- Auto-shut off after 3 minutes of non-use

**Muffle Furnaces with Flap Door or Lift Door**



L 5/11

- Tmax 1100 °C or 1200 °C
- Heating from two sides by ceramic heating plates (heating from three sides for muffle furnaces L 24/11 - LT 40/12)
- Ceramic heating plates with integral heating element which is safeguarded against fumes and splashing, and easy to replace
- Insulation made of non-classified fiber material
- Housing made of sheets of textured stainless steel
- Dual shell housing for low external temperatures and high stability
- Optional flap door (L) which can be used as work platform or lift door (LT) with hot surface facing away from the operator
- Adjustable air inlet integrated in door (see illustration)
- Exhaust air outlet in rear wall of furnace
- Solid state relays provide for low-noise operation
- Defined application within the constraints of the operating instructions
- NTLog Basic for Nabertherm controller: recording of process data with USB-flash drive

Model	Tmax	Inner dimensions in mm			Volume	Outer dimensions in mm			Connected	Electrical	Weight	Minutes
Flap door	°C	w	d	h	in l	W	D	H	load kW	connection*	in kg	to Tmax <sup>2</sup>
L 3/11	1100	160	140	100	3	385	330	405	1.2	1-phase	20	60
L 5/11	1100	200	170	130	5	385	390	460	2.4	1-phase	30	60
L 9/11	1100	230	240	170	9	415	455	515	3.0	1-phase	35	75
L 15/11	1100	230	340	170	15	415	555	515	3.5	1-phase	40	90
L 24/11	1100	280	340	250	24	490	555	580	4.5	3-phase	55	95
L 40/11	1100	320	490	250	40	530	705	580	6.0	3-phase	65	95

Model	Tmax	Inner dimensions in mm			Volume	Outer dimensions in mm			Connected	Electrical	Weight	Minutes
Lift door	°C	w	d	h	in l	W	D	H <sup>1</sup>	load kW	connection*	in kg	to Tmax <sup>2</sup>
LT 3/11	1100	160	140	100	3	385	330	405+155	1.2	1-phase	20	60
LT 5/11	1100	200	170	130	5	385	390	460+205	2.4	1-phase	30	60
LT 9/11	1100	230	240	170	9	415	455	515+240	3.0	1-phase	35	75
LT 15/11	1100	230	340	170	15	415	555	515+240	3.5	1-phase	40	90
LT 24/11	1100	280	340	250	24	490	555	580+320	4.5	3-phase	55	95
LT 40/11	1100	320	490	250	40	530	705	580+320	6.0	3-phase	65	95

**Muffle Furnaces with Brick Insulation and Flap Door or Lift Door**



LT 5/13

- Tmax 1300 °C
- Heating from two sides
- Heating elements on support tubes ensure free heat radiation and a long service life
- Multi-layer insulation with robust lightweight refractory bricks in the furnace chamber
- Housing made of sheets of textured stainless steel
- Dual shell housing for low external temperatures and stability
- Optional flap door (L) which can be used as work platform or lift door (LT) with hot surface facing away from the operator
- Adjustable air inlet in the furnace door
- Exhaust air outlet in rear wall of furnace
- Solid state relays provide for low-noise operation
- Defined application within the constraints of the operating instructions
- NTLog Basic for Nabertherm controller: recording of process data with USB-flash drive

Model	Tmax	Inner dimensions in mm			Volume	Outer dimensions in mm			Connected	Electrical	Weight	Minutes
	°C	w	d	h	in l	W	D	H	load kW	connection*	in kg	to Tmax <sup>2</sup>
L, LT 5/13	1300	200	170	130	5	490	450	580+320 <sup>1</sup>	2.4	1-phase	42	45
L, LT 9/13	1300	230	240	170	9	530	525	630+350 <sup>1</sup>	3.0	1-phase	60	50
L, LT 15/13	1300	260	340	170	15	530	625	630+350 <sup>1</sup>	3.5	1-phase	70	60

<sup>1</sup>Including opened lift door (LT models) \*Please see page 60 for more information about supply voltage

<sup>2</sup>If connected at 230 V 1/N/PE resp. 400 V 3/N/PE

**Muffle Furnaces with Embedded Heating Elements in the Ceramic Muffle**



L 9/11/SKM

- Tmax 1100 °C
- Muffle heated from four sides
- Furnace chamber with embedded ceramic muffle, high resistance to aggressive gasses and vapours
- Housing made of sheets of textured stainless steel
- Optional flap door (L) which can be used as work platform or lift door (LT) with hot surface facing away from the operator
- Adjustable working air inlet in the door
- Exhaust air outlet in rear wall of furnace
- Solid state relays provide for lownoise operation
- Defined application within the constraints of the operating instructions
- NTLog Basic for Nabertherm controller: recording of process data with USB-flash drive

Model	Tmax	Inner dimensions in mm			Volume	Outer dimensions in mm			Connected	Electrical	Weight	Minutes
	°C	w	d	h	in l	W	D	H	load kW	connection*	in kg	to Tmax <sup>2</sup>
L 9/11/SKM	1100	230	240	170	9	490	505	580	3.0	1-phase	50	90
LT 9/11/SKM	1100	230	240	170	9	490	505	580+320 <sup>1</sup>	3.0	1-phase	50	90

<sup>1</sup>Including opened lift door

\*Please see page 60 for more information about supply voltage

<sup>2</sup>If connected at 230 V 1/N/PE resp. 400 V 3/N/PE

## IM-5 Material Science (MET) Inverted Research Microscope For Metallography

IM-5MET is a new inverted research microscope for metallography providing a high-end solution in the field of material science. Brightfield, darkfield, polarized light and DIC - Nomarski technique all-in-one for an extremely valuable instrument able to provide ergonomic handy controls and significant unique features, such as the highest F.O.V. Available on an inverted microscope.



### Specifications:

- Observation Methods: Brightfield, darkfield, polarized light (DIC - Nomarski as optional)
- Head: Trinocular, 45° inclined, splitting ratios eyepieces/photo tube: 100% - 0% / 0% - 100%.
- Eyepieces: Plan Extra Wide Field, PL 10x/24 (Ø 30 mm), high eyepoint, with dioptic adjustment
- Nosepiece: Quintuple, reversed with M25 thread holes and adapter rings (for RMS objectives) slot for DIC
- Objectives: M-880, Plan Extra Wide Field, PL 10x/24 (Ø 30 mm), high eyepoint, with dioptic adjustment
- Stage: Rackless, mechanical, 240x250 mm, 50x50 mm movement range
- Focusing: Coaxial coarse & fine (200µm/turn), upper stop, adjustable tension
- Incident Illumination: 100W halogen, manual brightness control
- Incident Light Diaphragms: Aperture and field diaphragm, both centrable
- Accessories Included: Polarizer and rotating analyzer filters, slider with blue LBD filter

## B-290TB Digital Microscope With Camera & Tablet



3MP Built-in camera and 10.1" Windows tablet PC with N-PLAN objectives, rackless stage and exclusive X-LED3 for unmatched performance in illumination. Ideal for discussion group with 360° rotating tablet.



### Specifications:

- Microscope Head: Binocular, 30° inclined, 360° rotating, with tablet.
- Microscope Eyepieces: WF 10x/20
- Microscope Nosepiece: Quadruple, reversed
- Microscope Objectives: N-PLAN 4x, 10x, 40x, 100x (oil)
- Microscope Stage: Double layer, 150x139 mm, moving range 75x33 mm
- Digital Camera Resolution: 3 MP
- Operating System: Windows 10 64-bit
- Image Capturing Software: OPTIKA Vision lite
- CPU: Intel® Atom™ Z830, Quad core
- LCD Display: LED 10.1" IPS Multi Touch Screen
- LCD Resolution: 1920x1080, 16/9 Full HD
- Storage: Hdd 64 GB
- Network: Wireless, Bluetooth 4.0
- Control Buttons: Auto rotate off, volume control
- Battery Technology: Lithium-ion battery
- Also Included: Instruction manual



## B-192 Advanced Biological Microscopes For Students & Teachers

The original design of B-190 series is based on robustness, yet keeping the extreme portability of the instrument, with a dedicated handle on the back. The built-in LED illuminator and the patented version with Windows tablet improve the reliability of one of the best-sellers of OPTIKA in the educational field.



### Specifications:

- Head: Binocular, 360° rotating and 30° inclined
- Eyepieces: WF 10x/18
- Nosepiece: Quadruple revolving nosepiece, rotation on ball bearings
- Objectives: N-PLAN 4x, 10x, 40x, 100x (oil)
- Stage: Double layer mechanical sliding stage, 125x115 mm, 70x30 mm X-Y movement range  
Vernier scale on the two axes, accuracy: 0.1mm
- Focusing: Coaxial coarse and fine focusing mechanism with limit stop to prevent the contact between objective and specimen. Adjustable tension of coarse focusing knob
- Condenser: N.A. 1.25, pre-centered, adjustable height with iris diaphragm
- Illumination: X-LED<sup>2</sup> with white 3 W LED and light intensity control. Color temperature: 6,300 K

## LAB-20 Advanced Biological Microscopes For Students & Teachers



The LAB-20 is ideal for educational purposes in primary and secondary school, providing an exclusive and attractive design combined with premium quality components and optics. Obtain clear stereoscopic view and comfortable and ergonomic operation. The V-shape optical path of Greenough allows us to design a very compact and a slim unit, highly versatile and appreciated for the 3D viewing. Samples with significant depth can be quickly inspected.

### Specifications:

- Head: Binocular, 360° rotating and 45° inclined
- Interpupillary Distance: Adjustable between 51 and 75 mm
- Eyepieces: WF 10x/20 mm
- Objectives: Continuous zoom 0.7x ... 4.5x. (6.43:1 zoom factor). Working distance: 85 mm
- Focusing: Rack and pinion controlled by a pair of knobs placed on both sides of the stand
- Stage: Fixed arm type with focusing mechanism
- Illumination: Double illuminator for incident and transmitted light fitted with two high-efficiency LED light sources with light intensity adjustment. The angle of the incident illuminator is adjustable. Color temperature: 6.300K



## UV 200

UV-VIS Spectrophotometer

**Features:**

- Single Beam Spectrophotometer
- Wavelength range 200-1100nm
- Spectral Bandwidth 5 nm
- Motorized wavelength setting
- Digital 2 Line LCD Display with keypad
- Detector Silicon Photodiode



**Performance Specification:**

Optical system: 1200 lines/mm diffraction grating monochromator  
Light path: 10mm-100mm  
Spectral bandwidth: 5nm  
Wavelength range: 200-1000nm (0.1nm increment)  
Wavelength accuracy: ±1.0nm  
Wavelength repeatability: ±0.5nm  
Stray light: ≤0.3%T (at 220nm NaI & 340nm, NaNO<sub>2</sub>)

## UV 300

UV-VIS Spectrophotometer

**Features:**

- Split Beam Spectrophotometer
- Wavelength range 190-1100 nm
- Spectral Bandwidth 2 nm
- Motorized wavelength setting
- 8 inch color touchscreen
- Spectrum scan function
- Detector 2 Silicon Photodiodes



**Performance Specification:**

Optical system: 1200 lines/mm diffraction grating monochromator  
Optic type: Split (Dual) beam  
Light path: 10mm-100mm  
Spectral bandwidth: 2nm  
Wavelength range: 190-1100nm (0.1nm increment)  
Wavelength accuracy: ±0.5nm  
Wavelength repeatability: ±0.3nm  
Stray light: ≤0.05%T (at 220nm NaI & 340nm, NaNO<sub>2</sub>)

**Spectrum Instruments**  
a PerkinElmer company



Dobi Test

## UV 500

UV-VIS Spectrophotometer

The UV 500 series is a double beam spectrophotometer in the production series of Spectrum Instruments. It gets a technology patent - "space separated double beam, Non-Symmetric vertical optical path". Compared with traditional double beam technology, simplified optical path improves reliability. The "width narrow and depth deep" design saves placement room.

Original Touch Screen of UV 500, the end users can control the instrument by the touch screen without the keypad.

Streamline appearance and pretty colors express a new style fashion.

**Features:**

- Double Beam Spectrometer
- Wavelength range 190-1100 nm
- Spectrum Bandwidth 0.5, 1, 2 and 4 nm
- Motorized wavelength setting
- 8 inch color touchscreen
- Spectrum scan function
- Detector 2 Silicon Photodiodes

**Performance Specification:**

Monochromator: 1200 grooves/mm diffraction grating monochromator  
Optical System: Double beam  
Light path through sample: 10mm (standard), up to 100mm (option)  
Spectral bandwidth: 0.5,1,2,4nm  
Wavelength range: 190-1100nm ( 0.1nm increment )  
Wavelength accuracy: ±0.3nm  
Wavelength repeatability: ≤0.1nm  
Stray light ≤0.02%T (at 220nm NaI & 340nm, NaNO<sub>2</sub>), ≤1.0%T (at 198 nm KCL)



### Molecular Spectrum

- UV/Vis/NIR
- FT-IR/NIR
- FL



LAMBDA™ 265 365 465  
UV/Vis Solutions



Spotlight™ 150i/200i  
FT-IR Microscope



Frontier™ FT-IR, NIR and FIR  
Spectroscopy



Spectrum Two™  
FTIR, FT-NIR Spectroscopy



FL 8500™ Fluorescence  
Spectrometers

### Thermal Analysis

- STA
- DSC
- TGA
- EA
- DMA
- TMA



STA 8000



DSC 8000/8500



TGA 8000™



DMA 8000



## Y103 XPAD Digital Biological Microscope with 9.7 Inch Android Touch Screen Monitor/Tablet

The new Y103 XPAD features ingenious stand, backward nosepiece and flexible set up. The system come with all in one (USB+SD card+WIFI mouse+HD Screen Display) C-mount tablet with high sensitivity CMOS sensor.

### XPAD Specifications:-

- Effective Pixel On Camera System: 5.0 Mega pixel
- Output Interface: USB2.0, HDMI, TF Card, WIFI
- UI Desktop: WIFI-mouse operation, fully humanized settings
- Indication Function: Point coordinates, cross line coordinates, text notes
- Measurement: Measure line length, curve length, parallel line distance, point line distance
- Geometric Measurement: Radius of the circle line, two round, three point circle, concentric circle
- Geometric Area: Geometric area polygon and square
- Snapshot: Support 5 million static camera snapshot
- Video: Support 1080P video

## M-7P Digital Microscope

- Multi-channel signal transmission, support for USB/HDMI output at the same band without interference on each other
- Built-in CMOS camera with 4.0 mega pixels, restore the real color of image with high sharpness and contrast
- Separated switches for intensity control of inner and outer circle light



### Specifications:-

- 10 inch Touch-screen, -5~15 degree adjustable.
- 0.7X~5X zoom lens, built-in camera with HDR image, OSD manual, 1/3" CMOS, 4.0 mega pixels, 16G memory; HDMI/USB2.0/Mini USB output; support for SD card/wireless keyboard and mouse
- Objective Lens: 0.5X, 1X & 1.4X
- Illumination: LED ring lamp with 56 bulbs, intensity adjustable, color temperature 5000-5500K; LED ring lamp with two circles, intensity separately adjustable, color temperature 5000-5500K

## B-200F Fluorescent Biological Microscope

B-200F features superb optical quality with incorporation of high quality fluorescent observation module. It is widely used for research laboratories. Infinite Optical System, Kohler Illumination and Fluorescent module make B-203F the ideal inspection microscope



### Specifications:-

- Eyepiece: WF10X/20mm
- Infinity Plan Achromatic Objectives: 4X, 10X, 40X & 100X
- Observing Tube: Seidentopf Trinocular Head
- Nosepiece: Inward Inclined positional quadruple nosepiece
- Stage: Mechanical stage
- Condenser: Abbe N.A.1.25
- Illumination: 6V/20W halogen (wide range input voltage: 100V ~ 240V)
- Filter: Blue
- Fluorescence Attachment: Epi fluorescence unit (B, G, UV, V) Epi fluorescence unit (B, G), 100W mercury lamp house, 100Wmercury power source

## M-45 Stereo Zoom Microscope

M-45 stereo zoom microscope is a wide field zoom stereo microscope with high performance and high zoom ratio. It is a fully multi-coated high contrast optical system which provide a brighter and more distinctive image even at the peripheral of the field of view



### Specifications:-

- Zoom Objective Magnification: 0.7X – 4.5X, ratio: 1:6.4
- Working Distance: 100mm
- Eyepiece: WF10X
- Interpupillary Distance: 54-76mm
- Diopter Adjustment: ±5 diopters
- Binocular Tube: With an inclined 45 degree and main body can be rotated 360 degree

### Microscope Specifications:-

- Viewing Head: Tinocular Head inclined at 30° inter-pupillary 55-75mm
- Eyepiece: EW10X/22
- Objective: 4X, 10X, 40X and 100X (oil)
- Stage: Double layer, 140 x 140mm / 75 x 50mm
- Illumination: LED
- Filter: Blue & Green

*The XPAD is the monitor/tablet you will want to get your hands on. Do everything at once, from viewing, image capturing, measuring to editing. It can be fitted to any kind of microscope (mono, bino or trinocular).*



## B-201 Biological Microscope

- Excellent OPTICS infinity optical system, outstanding resolution and definition
- Original integrated stand for excellent stability
- Unique aspheric illumination system, provide bright and comfortable lighting
- Various accessories for upgrading



### Specifications:-

- Eyepiece: WF 10X/18mm
- Achromatic Objective: 4X, 10X, 40X(S) & 100X (Oil) (S)
- Seidentopf Binocular Head: Inclined 30°, Rotatable 360°, Interpupillary Distance 48-75mm
- Nosepiece: Quadruple
- Mechanical Stage: 145 mmx140mm, Travel: 76mmx52mm, Scale: 0.1mm, Travel Range: 26mm, Scale: 2µm
- Condenser: Abbe N.A. 1.25(Iris Diaphragm)
- Illumination: 3W-LED

## MX50 Biological Microscope

With perfectly performed structure, high-definition optical image and simple operating system, MX50 realizes professional analysis, and meets all the needs of research in scientific, medical and other fields



### Specifications:-

- Optical System: Infinity Color Corrected Optical System
- Eyepiece: High eyepoint wide field plan eyepiece PL10x25mm, diopter adjustable
- Objective: Plan semi-apochromatic objectives (4X/10X/20X/40X/100X)
- Nosepiece (with DIC slot): Sextuple nosepiece
- Stage: Double layers mechanical stage, size: 187mm X168mm; moving range: 80mmx55mm; precision: 0.1mm; two-way linear drive, tension adjustable
- Condenser: Swing-out type achromatic condenser (N.A.0.9)
- Transmitted Illuminator: 12V/100W halogen lamp house for transmitted light, center pre-set, intensity adjustable

## M-500 Metallurgical Microscope

With perfectly performed structure, high-definition optical image and simple operating system, M-500 realizes professional analysis, and meets all the needs of research in the field of metallurgical & material science



### Specifications:-

- Eyepieces: WF10X/22 mm (Reticule 0.1mm)
- Long Working Distance Infinity Plan Objective: 5X, 10X 20X & 50X
- Seidentopf Binocular Head: Inclined 30°, Rotatable 360°
- Mechanical Stage Size: 190x140mm, Travel:78mmX55mm
- Polarizing Unit: Polarizing /Analyzer Slide
- Illumination: 12V/50W Halogen Lamp (Reflection Illumination) 6V/20W Halogen Lamp (Transmission Illumination)

The Royal College Of Pathologist Of Australasia Quality Assurance Programs (RCPAQAP) was formed in 1988 by the Royal College of Pathologists of Australasia (RCPA) and has evolved to become one of the world's leading external quality assurance (EQA) providers to pathology laboratories in Australia and globally. Programs are provided for all disciplines of pathology.

All Programs have been developed with assistance from a number of professional bodies and with significant input from participating laboratories.

In line with our company's philosophy all Programs are intended to continually improve the practice and standards of pathology services and health of patients.



**Accreditation:**



**ISO/IEC 17043:2010**

The RCPAQAP is accredited for compliance with ISO/IEC 17043 *Conformity assessment – General requirements for proficiency testing.*

**Enrolment:**

Programs offered by the RCPAQAP are organised over a calendar year from January to December. Whilst the key time for participants to enrol is **September to December** of the preceding year, enrolments are offered throughout the year, for most programs, depending on sample availability.

**Programs:**



**Anatomical Pathology**

Anatomical Pathology is the branch of pathology that deals with the tissue diagnosis of disease. The RCPAQAP Anatomical Pathology discipline offers diagnostic proficiency testing programs for histopathologists.



**Haematology**

Haematology is the discipline of pathology which deals with diseases which affect the blood such as anaemia, leukemia, lymphoma, and clotting or bleeding disorders. The RCPAQAP Haematology EQA programs cover a wide range of tests used in laboratory haematology.



**Molecular Genetics**

Genetics is an integral part of pathology with implications in disease pathogenesis and progression, identification of diagnostic and prognostic biomarkers, as well as targeted treatments. The RCPAQAP Molecular Genetics discipline offers diagnostic and technical proficiency testing programs for inherited diseases, oncology, molecular haematology and rare genetic disorders (as sample exchanges).



**Biosecurity**

The program offers surveys free of charge to Australian laboratories and for a fee to approved overseas laboratories with a view to building and enhancing laboratory capacity and capability to detect, analyze, identify and report on these agents.



**Immunology**

Immunological tests are used to diagnose and monitor a range of disorders effecting the immune system. This includes tests for allergic disease, autoimmune conditions and monitoring the level of T-lymphocytes, the cells that disappear after HIV infection. The RCPAQAP immunology program has EQA programs covering over 50 diagnostic immunological tests.



**Serology**

Serology is the study of the blood (specifically serum) and other bodily fluids, for the identification of immunological response, essentially antibodies, to an infectious agent. Serological tests can be used for the diagnosis and monitoring of a range of infectious viral, bacterial, fungal and parasitic diseases and are of particular importance in pregnancy and the immunodeficient.



**Synovial Fluid**

The RCPAQAP Synovial Fluid discipline assesses the ability of laboratories to detect the key disease-related crystals (monosodium urate monohydrate, calcium pyrophosphate dihydrate) and to differentiate those from other crystalline structures such as corticosteroid, cholesterol and cartilage that may be found in synovial fluid.



**Chemical Pathology**

Chemical Pathology is another discipline in the field of Pathology which deals with the entire range of disease. It encompasses detecting changes in a wide range of substances in blood and body fluids (electrolytes, enzymes and proteins) in association with many diseases.



**Key Incident Monitoring & Management Systems (KIMMS)**

Pre- and Post- analytical errors are reported to account for up to 70% of errors in the Total Testing Cycle for Pathology. The KIMMS program is designed to monitor the Key Performance Indicators, or Quality Indicators, for the pre- and post-analytical areas.



**Cytopathology**

Cytopathology is the branch of pathology that deals with the cellular diagnosis of disease. The RCPAQAP Cytopathology discipline offers gynaecological (Conventional, ThinPrep and SurePath) and non-gynaecological (General and Fine Needle Aspiration) diagnostic proficiency testing programs for cytopathologists and cytologists and a technical proficiency testing program for cytology laboratories.



**Microbiology**

Microbiology deals with diseases caused by infectious agents such as bacteria, viruses, fungi and parasites. Microbiologists have roles both in the laboratory and directly in patient care. It offers involvement in a spectrum of activities ranging across:

Basic Laboratory Science, Direct Patient Care, Public Health, Infection Control, Research And Teaching, Business Management



**Transfusion**

Transfusion science deals with the collection, testing, production and supply of the medicines made from blood that are used in clinical transfusion settings. The RCPAQAP Transfusion EQA offers various programs and modules covering the testing scope of routine immunohematology and blood group serology laboratories.

Renishaw stands at the forefront of automated metrology, with the Group's products providing manufacturers with the ability to machine components accurately, and perform measurement traceable to international standards. Probe technology, allows fast, highly repeatable measurements to be carried out on co-ordinate measuring machines (CMMs). A wide range of automated probing systems has been developed to meet the needs of post-process inspection, for quality control. During the manufacturing operation, probes used on computer numerically controlled (CNC) machine tools provide the measurement capability to automatically control the machining process. This eliminates the need for costly, time consuming manual procedures.



\*Please contact us for the latest price

**M2 Threaded Stylus Range**  
**Ruby ball styli (stainless steel stems)**

Part number	A-5000-7806	A-5000-7802	A-5000-7807	A-5000-7803	A-5000-3604
<b>A</b> Ball dia. mm (inch)	1.0 (0.04)	1.5 (0.06)	2.0 (0.08)	2.5 (0.10)	3.0 (0.12)
<b>B</b> Length mm (inch)	10.0 (0.40)	10.0 (0.40)	10.0 (0.40)	10.0 (0.40)	10.0 (0.40)
<b>C</b> Stem dia. mm (in.)	0.7 (0.03)	0.7 (0.03)	1.0 (0.04)	1.0 (0.04)	1.5 (0.06)
<b>D</b> EWL* mm (inch)	4.5 (0.18)	4.5 (0.18)	6.0 (0.24)	6.5 (0.25)	7.0 (0.28)
Mass grammes	0.3	0.3	0.3	0.3	0.4

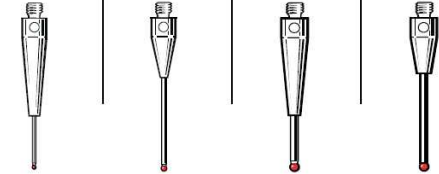
10 mm range



**M2 Threaded Stylus Range**  
**Ruby ball styli (tungsten carbide stems)**

Part number	A-5003-1345	A-5003-0577	A-5000-7808	A-5003-0033
<b>A</b> Ball dia. mm (inch)	0.5 (0.02)	0.7 (0.03)	1.0 (0.04)	1.0 (0.04)
<b>B</b> Length mm (inch)	20.0 (0.79)	20.0 (0.79)	20.0 (0.79)	20.0 (0.76)
<b>C</b> Stem dia. mm (in.)	0.3 (0.012)	0.5 (0.02)	0.7 (0.03)	0.8 (0.04)
<b>D</b> EWL* mm (inch)	7.0 (0.28)	12.0 (0.48)	7.0 (0.28)	12.5 (0.50)
Mass grammes	0.48	0.32	0.50	0.41

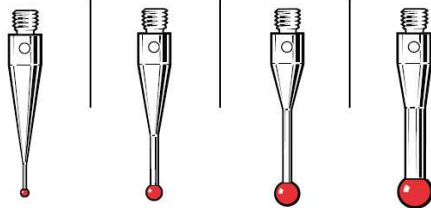
20 mm range



**M3 Threaded Stylus Range**  
**Ruby ball styli (stainless steel stems)**

Part number	A-5000-3551	A-5000-3552	A-5000-3553	A-5000-7606
<b>A</b> Ball dia. mm (inch)	1.0 (0.04)	2.0 (0.08)	3.0 (0.12)	4.0 (0.16)
<b>B</b> Length mm (inch)	21.0 (0.83)	21.0 (0.83)	21.0 (0.83)	21.0 (0.83)
<b>C</b> Stem dia. mm (in.)	0.7 (0.03)	1.4 (0.06)	1.5 (0.06)	2.5 (0.10)
<b>D</b> EWL* mm (inch)	4.0 (0.16)	9.6 (0.38)	14.7 (0.58)	17.2 (0.68)
Mass grammes	1.0	1.0	1.0	1.3

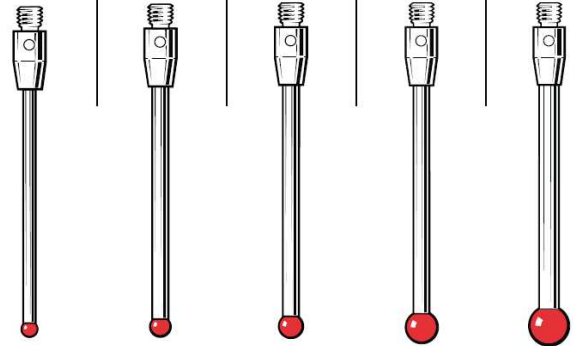
21 mm range



**M3 Threaded Stylus Range**  
**Ruby ball styli (tungsten carbide stems)**

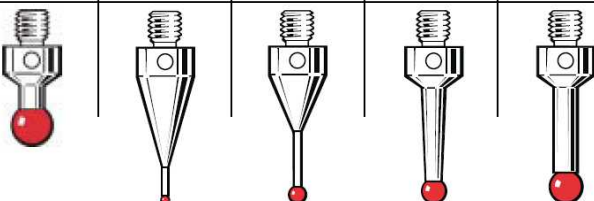
Part number	A-5003-0053	A-5003-0056	A-5003-0058	A-5003-0060	A-5003-0062
<b>A</b> Ball dia. mm (inch)	2.0 (0.08)	2.5 (0.10)	3.0 (0.12)	4.0 (0.16)	5.0 (0.20)
<b>B</b> Length mm (inch)	40.0 (1.58)	40.0 (1.58)	40.0 (1.58)	40.0 (1.58)	40.0 (1.58)
<b>C</b> Stem dia. mm (in.)	1.5 (0.06)	2.0 (0.08)	2.0 (0.08)	2.0 (0.08)	2.5 (0.10)
<b>D</b> EWL* mm (inch)	32.5 (1.28)	32.5 (1.28)	33.7 (1.33)	36.0 (1.42)	40.0 (1.58)
Mass grammes	1.58	2.28	2.30	2.38	3.50

40 mm range



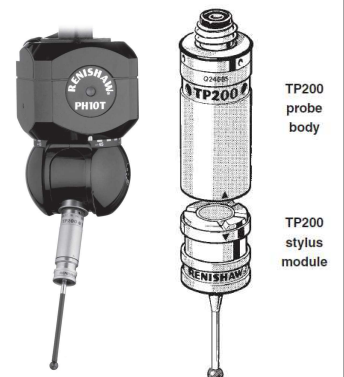
**M4 Threaded Stylus Range**  
**Ruby ball styli (stainless steel stems)**

Part number	A-5000-6350	A-5000-7545	A-5000-7547	A-5000-7549	A-5000-7551
<b>A</b> Ball dia. mm (inch)	5.0 (0.20)	1.0 (0.04)	2.0 (0.08)	3.0 (0.12)	4.0 (0.16)
<b>B</b> Length mm (inch)	10.0 (0.39)	19.5 (0.77)	19.0 (0.75)	18.5 (0.73)	18.0 (0.71)
<b>C</b> Stem dia. mm (in.)	3.0 (0.12)	0.7 (0.03)	1.4 (0.05)	2.0 (0.08)	3.0 (0.12)
<b>D</b> EWL* mm (inch)	5.0 (0.20)	4.5 (0.18)	9.2 (0.36)	13.0 (0.52)	13.7 (0.54)
Mass grammes	1.9	2.5	2.3	2.0	2.1



**TP200 / TP200B modular probes**

The TP200/TP200B are electronic probes using strain gauge technology, which gives higher accuracy than kinematic touch-trigger probes. They combine outstanding metrology performance with superior functionality to produce a highly versatile DCC CMM probing system with excellent productivity.



**Laboratory / Oil Free Vacuum Pump**

Rocker series vacuum pump is a piston-powered, oil-free pump. With innovative electronic, mechanical technology and human design concept make Rocker's family quiet and low vibration, compact and light weight, clean and maintenance free, safe and comfortable.



Model	Rocker 300	Rocker 400	Rocker 811
- Max. vacuum:	105 mbar	105 mbar	30 mbar
- Max. flow:	23 L/min	37 L/min	48 L/min
- Motor rotation:	1750 RPM	1750 RPM	1750 RPM
- Horse power:	1/8 HP	1/6 HP	1/3 HP
- Noise level:	50 dB	52 dB	68 dB

**CD 200 - COD Detector**

- Equipped with multi-curve in single one unit offering not only built-in standard curve for HACH, Lovibond, CHEMetrics reagents but also a simple method to setup standard curves for other brands of reagents
- Measures COD value within 3 ranges of 10-150, 100-1500 and 1000-15000 mg/L
- needs no pre-heating and only takes 3 seconds to display and save the COD concentration after inserting heated COD vial into the detector
- The built-in memory can store up to 100 records for convenient access
- Finish water analysis in 3 easy steps: Sampling, Digestion & Detection



**Laboratory / PTFE Coated Chemical Resistance**

Rocker 300C & 400C vacuum pumps are driven by diaphragm, without the need of lubricant, regular oil changes and maintenance with no oil pollution. The diaphragm chamber of vacuum pump coated with PTFE can offer good resistance to a wide range of corrosive gases except strong acid and alkali.



Model	Rocker 300C	Rocker 400C
- Max. vacuum:	145 mbar	105 mbar
- Max. flow:	23 L/min	34 L/min
- Motor rotation:	1750 RPM	1750 RPM
- Horse power:	1/8 HP	1/6 HP
- Noise level:	50 dB	52 dB

**Galaxy 330 Colony Counter**

- Pressure sensor design, no contamination: allows users to operate with any marking pens. No worry about sample spoiled or contaminated
- 4 panel displays: offers convenience of showing the present and previous three count values
- Multi-counting average: It can make average count from multiple counting automatically
- Exclusive BACK button: offers the convenience of deducting data when over counting
- Suitable for Petri-dishes in various diameters: adjustable dish holder can accept most Petri-dishes in a wide range of diameters from 90 to 150 mm or 60 mm



**PB-10 Basic Bench Top pH Meter**



- Automatic calibration with recognition of up to 16 buffers
  - Automatic temperature compensation
  - Electrode check during calibration
  - Stability icon
  - BNC connector for glass-membrane pH electrodes or Redox electrodes
- Standard Equipment Supplied:
- Electrode holding arm and base plate.
  - pH combination Gel-filling electrode
  - With integrated temperature sensor (3-in-1)
  - AC adapter



Measuring range	
Voltage:	± 1500.0 mV
PH:	0 to + 14.00
Temperature:	- 5 to + 105°C
Resolution	
Voltage:	± 0.1 mV
PH:	± 0.01
Temperature:	± 0.1°C
Accuracy	
Voltage:	± 0.4 mV
pH:	± 0.01
Temperature:	± 0.2°C

**arium® mini – Ultrapure Water System  
 Unique Bagtank Technology**



**arium® mini UV  
 H2O-MA-UV-T**

Standard Version – Without Direct Water Connection.

The device is fed via the integrated bag, which is filled by means of a built-in pump. Pre-treated water is automatically transferred from a vessel in the bag and thus serves as feed water for the production of Type 1 ultrapure water.

**Specification:**

- Water type: ASTM Type 1 ultrapure water
- Water dispensing flow rate: Up to 1.0 l/min
- Volume accuracy: 2 ± 2 % between 0.05 and 5 l
- Typical conductivity: 0.055 µS/cm compensated to 25 °C 5
- Typical resistivity: 18.2 MO × cm compensated to 25 °C 5
- TOC content (system with UV lamp): ≤ 5 ppb
- Microorganism content: < 1 CFU/1,000 ml
- Particle content > 0.2 µm: < 1/ml



One Day Delivery  
(Order Received  
Before 2:00pm)



Dealer Rebate  
Program



Ready Stock



More than 30,000  
products selection



Online Stock &  
Price Checking



\*Terms &  
Condition Apply

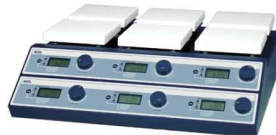
**STAR**

**Multi Hotplate Stirrer**

- Patented Jog-Shuttle Control System
- CE Certified
- Individual Heating and Stirring Control
- Digital Feedback Control by High-Performance Microprocessor
- 140x140mm Ceramic Coated Plate
- Maximum Temperature of 350°C
- Accurate Temperature Control of the Sample in the Vessel using PT100 Sensor (Optional)
- Digital LCD Display with Back-Light Function
- Digital Timer Function: 99 hr 59 min
- Storage Function for Set Values: Temperature, RPM and Timer
- Locking Mode for Experimental Safety Supported



3 Position SMHS-3, 230V  
Catalog No.: DH.WMH03503



2 X 3 Position SMHS-6, 230V  
Catalog No.: DH.WMH03506

**STAR**

**Water Bath**

- Patented Jog-Shuttle Control System and Digital LCD with Back-Light Function
- User's Self-Compensation Function to Control Difference between Real Temperature and Indicated Temperature ( $\pm 10.0^{\circ}\text{C}$ )
- 304 Stainless-steel Bath & Lid for Superior Durability & High Thermal Efficiency/Constant
- Digital Timer Function(99hr 59min): 'Delay Time' and 'Operation Time' can be Controlled
- Storage Function for the Set Values of Temperature and Timer
- Locking Mode Supported for Experimental Safety (Input to Jog-Shuttle can be Disabled)



Max. Capa. 6 L  
Catalog No.: DH.WB000106

Max. Capa. 11 L  
Catalog No.: DH.WB000111

Max. Capa. 22 L  
Catalog No.: DH.WB000122

**STAR**

**Gravity Air Drying Oven**

- 3-Side Heating Zone : The Best Temp. Uniformity & Accuracy by High Performance Heating Mechanism
- Digital PID Control System Implementing Superior Temperature Accuracy
- Optimized Air Flow by Gravity-air Mechanism
- Patented Jog-Dial Control System
- PL(Product Liability) Insurance
- Suitable for Drying, Baking, Conditioning, Curing, Pre-Heating and Aging
- New Jog-Dial with Push Button
- RS232C Interface for Monitoring and Controlling with PC
- Temperature Range: Room Temperature +5°C to 230°C
- Locking Mode Supported for Experimental Safety (Input to Jog-Dial can be disabled)



Capacity: 32 L  
Catalog No.: DH.WON05032

Capacity: 50 L  
Catalog No.: DH.WON05050

Capacity: 105 L  
Catalog No.: DH.WON05105

Capacity: 155 L  
Catalog No.: DH.WON05155

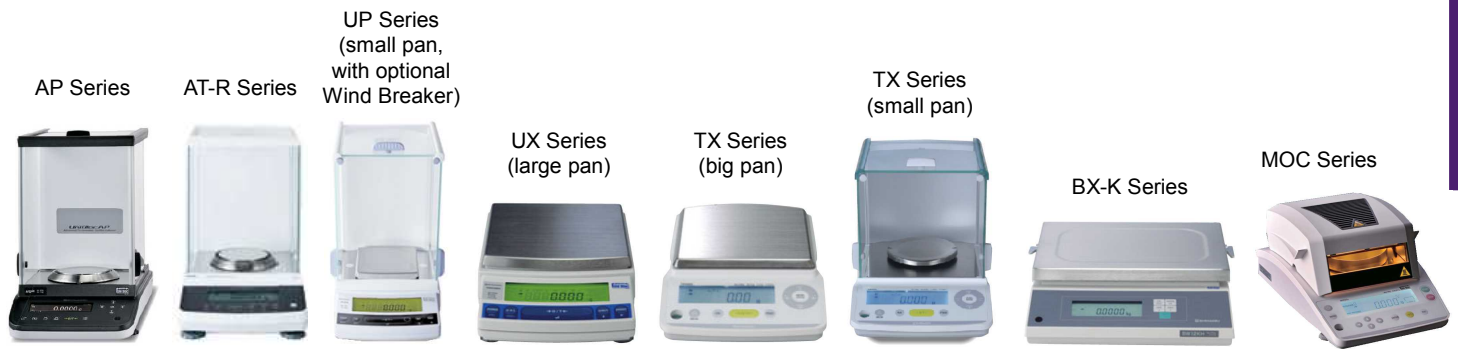
**STAR**











**Autoclave**

- Patented Special Steam Condensing Mechanism, Lever-type Sliding Door
- Patented Jog-Dial Control System
- Electronic Door Lock Sensing System for User Safety
- Door Open Button Automatically Lock Over 80°C for User Safety
- Ideal for Biotechnology, Clinical, Environmental, Medical and Food Industry
- Digital Timer Function: 'Delay Time' and 'Operation Time' can be Controlled
- Water Low Level Detection
- Automatic Over Pressure Release Valve ensures User Safety
- Sterilization Error Indication: Error Alarm and Message in case of Power Failure and Temperature Error




Max. Capa. 47 L  
Catalog No.: SL.SAC05047P



Type Of Balance	Model	Capacity	Readability	Pan Size	Auto Calibration	Wind Breaker
  <b>NEW</b> Automatic Door	<b>AP 225W</b>	220g	0.01mg	≈ Ø 91mm	Yes	Yes
	<b>AP 135W</b>	135	0.01mg	≈ Ø 91mm	Yes	Yes
	<b>AP 225WD</b>	220g / 102g	0.1mg / 0.01mg	≈ Ø 91mm	Yes	Yes
	<b>AP 225W-AD</b>	220g	0.01mg	≈ Ø 91mm	Yes	Yes
	<b>AP 225WD-AD</b>	220g / 102g	0.1mg / 0.01mg	≈ Ø 91mm	Yes	Yes
  Analytical	<b>AP 324X</b>	320g	0.1mg	≈ Ø 91mm	Yes	Yes
	<b>AP 224X</b>	220g	0.1mg	≈ Ø 91mm	Yes	Yes
	<b>AP 324Y</b>	320g	0.1mg	≈ Ø 91mm	No	Yes
	<b>ATX 324 / R</b>	320g	0.1mg	≈ Ø 91mm	Yes	Yes
	<b>ATX 224 / R</b>	220g	0.1mg	≈ Ø 91mm	Yes	Yes
	<b>ATY 324 / R</b>	320g	0.1mg	≈ Ø 91mm	No	Yes
	<b>ATY 224 / R</b>	220g	0.1mg	≈ Ø 91mm	No	Yes
  Precision	<b>UP1023Y</b>	1020g	0.001g	≈ 108mm x 105mm	No	Optional
	<b>UP823Y</b>	820g	0.001g	≈ 108mm x 105mm	No	Optional
	<b>UP423Y</b>	420g	0.001g	≈ 108mm x 105mm	No	Optional
	<b>UW6200H</b>	6200g	0.01g	≈ 170mm x 180mm	Yes	No
	<b>UX4200H</b>	4200g	0.01g	≈ 170mm x 180mm	No	No
	<b>UX1020H</b>	1020g	0.001g	≈ 108mm x 150mm	No	Yes
	<b>TX3202L</b>	3200g	0.01g	≈ 167mm x 181mm	No	No
	<b>TX323L</b>	320g	0.001g	≈ Ø 110mm	No	Yes
  High Precision	<b>BX52KS</b>	52Kg	1g	≈ 345mm x 250mm	No	No
	<b>BX22KH</b>	22Kg	0.1g	≈ 345mm x 250mm	No	No
  Moisture Balance	<b>MOC63U</b>	60g	0.001g	≈ Ø 95mm	No	No

機種・機能一覧表



Type Of Balance	Model	Capacity	Readability	Pan Size	Auto Calibration	AC / Battery Operation
 Precision	<b>TXB 6201L</b>	6200g	0.1g	≈ Ø 160mm	No	Yes
	<b>TXB 622L</b>	620g	0.01g	≈ Ø 110mm	No	Yes
Portable	<b>ELB 3000</b>	3000g	0.1g	≈ 170mm x 130mm	No	Yes
	<b>ELB 300</b>	300g	0.01g	≈ Ø 110mm	No	Yes

**日本電産 (Nidec) グループ**

**荷重・張力計ダイジェスト Force & Tension**

デジタルフォースゲージ/計測スタンド/テンションメータ/ロードセル

**トルク計測機シリーズ Torque**

TRC/TNX/TNP/TNJ/ネジ強度試験機/電動トルク試験機/DSP-10/CRXBシリーズ/BRXシリーズ

**デジタル回転速度計・カウンタ Speed & Counter**



**ハンドヘルド型回転速度計**

非接触・接触兼用

**PH Series Digital Tachometer**

- Contact or non-contact measurements can be selected by attaching the adapter
- Come with calibration certificate
- PH-100A Contact Type, Range: 1.0 to 25,000rpm
- PH-200L Laser, Non Contact Type, Range: 6.0 - 99,999rpm
- PH-200LC Laser Non Contact/Contact Type, Laser Non Contact: 6 - 99,999rpm, Contact: 6-25,000rpm



**デジタルストロボスコープ**

高速運動体、回転体の動作をストップモーション分析

**DT Series Digital Stroboscope**

- Accuracy:  $\pm 0.01\%$  of reading
- 8 times brighter luminen at low speed is assured. (in comparison with shimpo previous model.)
- Flash control realized no drift by digital control. Flashing cycle is extremely stable
- DT-311N, flashing range: 40.0 - 35,000rpm
- DT-311P, flashing range: 60.0 - 3,000rpm



**シリーズ**

**TN Series Digital Torque Meter**

- High accuracy torque measurement of open & close torque for various cap of cosmetics, medicines, beverage bottles or tightening force of bulb & torque wrench
- Measuring Unit: N.m, N.cm, Kg.cm, lb.in
- Accuracy:  $\pm 0.5\%$ /F.S
- Chuck Range: Dia: 10 - 190mm
- Come with calibration certificate
- TNJ Series - Economy Type  
Range: 0.000 - 2.000N.m, 0.000 - 5.000N.m, 0.00 - 10.00N.m
- TNP Series - with Data output, memory data by PC software  
Range: 0.000 - 2.000N.m, 0.000 - 5.000N.m, 0.00 - 10.00N.m



高機能タイプ (出力あり)

FGP- □シリーズ FGJN-シリーズ

**FG Series Force Gauge**

- Accuract:  $\pm 0.2$  RC for FGP &  $\pm 0.3$  RC for FGJN
- Dimension: 75(W) x 38(H) x 147(L) mm
- Acc: AC adapter, hook, chisel, flat, notch, cone head, hanger & ext rod
- Reading: Kg/N/LB (Reversible Display)
- Complete with calibration certificate.
- FGP Series, with USB & RS-232C output, free Toriemoun USB download & USB cable  
Capacity available: 200g, 500g, 1Kg, 2Kg, 5Kg, 10Kg, 20Kg, 50Kg
- FGJN Series, Economy Model:  
Capacity available: 2Kg, 5Kg, 20Kg & 50Kg



通信強化タイプ (出力あり)

FGPX-Hシリーズ

**FGPX-H Series Force Gauge**

- High Function High Quality Series, Rapid sampling rates, 100 sample memory capacity with status & COMPARATOR feature are BUILT IN
- Select N, kgf, lbf with a touch of a button
- HI and LO set points
- RS-232C, Digimatic and Analog outputs
- Remote Tare and Hold Function Control
- Large memory, 100 samples plus statics
- Accuracy:  $\pm 0.2\%$  R.C. +  $\frac{1}{2}$  digit
- Capacity: 250Kg - FGPX-250H
- Capacity: 500Kg - FGPX-500H



高機能型 (出力付)

汎用型 (出力なし)

DTMX- □Cシリーズ DTMB- □Cシリーズ

**DTM Series Digital Tension Meter**

- Measuring unit: gf (Kgf)
- Application for string, steel / copper / tungsten wire, Carbon / Optical fibre
- Accuracy:  $\pm 1\%$  RC for range below 500gf,  $\pm 1.5\%$  RC above 500gf
- Roller span: Dia 38mm for capacity up to 2Kg, Dia. 100mm for capacity abv 2Kg
- DTMB - Analog Output signal
- DTMX - Digital Output or RS232C selectable
- Capacity: 200.0gf, 500.0gf, 1000gf, 2000gf, 2500gf, 5000gf. 10.00kgf & 20.00kgf



**手動ハンドル式 手動レバー式**

**FGS-50H FGS-50L  
Manual Stand**

- Hand operation for tensile/compression force measurement with small movement
- Lever operation for easy and quick movement
- Capacity: 500N/50kgf
- Weight: 15kg
- Hand Operation Model: FGS-50H, stroke: 150mm
- Lever Operation Model: FGS-50L, stroke: 50mm



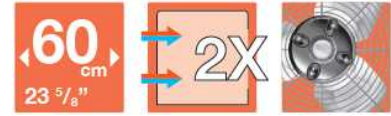
タテ型 フォースゲージ専用電動スタンド

**FGS-100VC/250VC  
Motorised Stand**

- Capacity: 100kg or 250kg
- Stroke: 400mm
- Measurement Table: 150 x 200mm
- Test for compression, tension, welding, peel, suck, repulsion, cord and open
- Force & Displacement
- Communication: USB (PC software is provided FOC)
- Available force Gage: FGP Series
- Overload Detection
- FGS-100V (Capacity: 100kg)
- FGS-250V (Capacity: 250kg)



**LAB 500 Series**  
 Undercounter Glassware Washers



**LAB 500 SC**

- Washing system on two independent levels
- Chamber drying by electrical **heating elements**
- Stainless steel or high visibility full glass door

**LAB 500 CL**

- Washing system on two independent levels
- **Forced hot air** drying system on two independent levels

Specially designed for installations with limited space, Steelco LAB 500 ensures a consistently efficient washing results.



This model is provided with a washing injection system on two independent levels.

This new generation compact laboratory glassware washer shares the same technology of our high capacity machine range, for significant improvements in terms of cleaning effectiveness and thermal disinfection performances.

- Chamber volume ~171 lt / 6.04 ft<sup>3</sup>
- Basket volume ~151 lt / 5.33 ft<sup>3</sup>



**Stainless steel door version LAB 500 SC**

LED display control panel with 10 washing and thermal disinfection programs for laboratory glassware: 5 standard pre-programmed cycles and 5 additional, available for customization.



**Stainless steel door version LAB 500 SC/CL**

LCD display control panel with 40 washing and thermal disinfection programs for laboratory glassware: 20 standard pre-programmed cycles and 20 additional, available for customization.



**Full glass door version LAB 500 SC/CL soft touch**

Soft touch full glass control panel with graphic colour LCD display. 40 washing and thermal disinfection programs for laboratory glassware: 20 standard pre-programmed cycles and 20 additional, available for customization.

**VS L Series**  
 Laboratory Steam Sterilizers (Small & Medium Range)

Steelco Steam Autoclaves are designed for sterilization of heat-resistant and moisture-stable materials such as metal parts, liquids in sealed or vented containers, porous loads, etc., used in scientific and research laboratories.

Steelco has developed a full range of high capacity steam sterilizers to provide the perfect solution from the smallest facility to the largest laboratory department. Up to 8 standard chamber sizes with a volume from 110 to 920 litres, are available with pressure vessel and relief valves that are PED and/or ASME marked or according to the directives of the country of destination.

- ECO water saving options, unrivalled levels of efficiency.
- Single and double door pass through options.
- Manual hinged or automatic sliding door.
- Technical service access either on the left or right loading side.
- Custom sizes available.

**Standard Configuration:**

- Chamber made of AISI 316L stainless steel fine satin finishing Ra < 2 µm (Ra < 80 µ inch)
- Frame and external panels made of AISI 304 stainless steel
- Single door
- Building steam
- Piping and valves in copper-brass
- Water ejector
- ECO CD - cool down system
- Solenoid valves
- Load Control Probe
- Hinged front cabinet panel
- HMI - touch screen display operating panel with PLC
- On board thermal printer on loading side
- Gravity Cycle
- Liquid Cycle
- Pre-Post Vacuum cycles
- Leak Test
- DART (Daily Air Removal Test) cycle



- Small Range - Chamber volume: from 110 to 675 litres
- Medium Range - Chamber volume: from 600 to 920 litres

**Validation:**

- Upon request Steelco supplies IQ/OQ documentation and execution, FAT and SAT documentation and test.

**Car And Carriage:**

- Fixed height loading carriage and loading car with 2 or 3 shelves
- Perforated shelves in lieu of car and carriage system
- Individually customized loading car on request





## ALTOCUT-CK Series CK200A Precision Cutting Machine

Vise Travel: 200 mm  
 Motor Power: 1HP (750W) / 2HP (1500W) / Noise Level  
 Noise Level (Idling): 70~72dB / 70~74dB / 70~75dB  
 Abrasive Wheel (Diameter & Arbor): Ø230 x Ø31.75mm / Ø255 x Ø31.75mm  
 Flange Diameter: Ø60  
 Feed Rate: 15~150 mm/min (can be customized)  
 Feed Method: Manual: Hand wheel control  
 Auto: home point return after cutting  
 Rotational Speed: 3000RPM(60Hz) / 2500RPM(50Hz)  
 Vise: Dual quick push clamp vise  
 Pump Motor Power: 1/8HP (95W) (Three phases)  
 Recirculation Cooling System: 50L



- Standard viseDual quick push clamp vise  
 - With the right/left vise a movement 25mm in X-axis



Recirculation coolant system (Standard)  
 - Quick connector  
 - Built in coolant fluid level gauge easy to check the water level  
 - Metal filtration panel prevent sample from falling into tank during cutting

## PRECISO-CL Series CL50 Low Speed Diamond Saw

Motor Power: 120W  
 Noise Level: 62~68dB  
 Sample Dim. Max.(mm): Ø50mm  
 Diamond Blade: Ø5"~ Ø7"  
 Loading Pressure: 0~700g  
 Cutting Method: Gravity-fed system, the blade stop rotating once cutting finished  
 Rotational Speed: 150~2000 RPM  
 Vise (Standard): Long type kit  
 Horizontal Movement: 40mm  
 Coolant tank Capacity: 1 L



## PRESIDON-ML SERIES MA Semi-Auto Mounting Press

Sample Dia.: Ø25mm / Ø32mm / Ø40mm / Ø50mm  
 Driven Method: Hydraulic  
 Sample Dia.: 1pc/per time - Note 1  
 Noise level (Idle Running): 62~73dB / 63~75dB  
 Heating Power: 1200W / 1600W  
 Motor Power: 1760W / 2160W  
 Heating Time: Max.30 minutes  
 Cooling: Turn on the water switch after heating until temperature drop to the room temperature  
 Pressure Adding: 60 kg/cm2 ( 852psi )



- Pressure adding suggestions:  
 60 kg/cm2  
 - Not lower than 30 kg/ cm2



Ok light on after heating

Add pressure manually while pressure lower than 60 kg/cm2 during operation

Turn on the water after heating



## PLATO-HA Series FRSD-A/B Grinder / Polisher

Platen Dia. (mm): Ø203.2mm(8") / Ø254mm(10") / Ø304.8mm(12")  
 Platen Quantity: 2  
 Sample Quantity/Size: A3/B3: 3pc, Ø25/Ø32/Ø40mm / A5/B5: 5pc, Ø25/Ø32mm  
 Operation Method: Auto  
 Noise Level (Idling): 49~54dB / 52~56dB / 54~59dB  
 Motor Power Of Platen: 250Wx2 / 370Wx2  
 Rotational Speed Of Platen: 50~600rpm  
 Head Motor Power: 25W  
 Head Rotational Speed: 60rpm  
 Cooling System: 2 sets  
 Timer: Max. 99 minutes 59 seconds  
 Machine Type: Table top



Tilt Up Design  
 - Allow easy, unhindered access to the sample holder and plate



## SMOO-TR Series TR15 Spin Coater

Sample Quantity: 1  
 Coat Range: Small than Ø150mm, glass panel  
 Vacuum Suction Material: Aluminum alloy  
 Control Panel: Touch penal control  
 Suction Way: Vacuum suction  
 Vacuum Pressure: Pressure gauge display  
 Pump Suction Hole: 1/4 inch PT, Ø10mm pipe  
 Exhaust Pipe: 1/4 inch PT, Ø6mm pipe  
 Motor Power: 120W  
 Rotational Speed: 150~8000rpm  
 Type: Table top



Sample Tank  
 - Easy to observe and put samples



**NITROGEN/PROTEIN DETERMINATION - KJELDAHL**  
**DKL AUTOMATIC KJELDAHL DIGESTION UNITS + JP PUMP & SMS SCRUBBER**



DKL 20

Aluminum block technology for excellent temperature transmission, precision and homogeneity on the entire block, simplified operation ensured.

- The fastest
- Maximum temperature of 450 °C
- Excellent temperature stability
- Automated sample lowering/raising
- Pre-installed methods
- TEMS™ technology for savings in Time, Energy, Money, Space

Tubes (Other models also available)

<b>DKL 8</b> 8 x 250ml	<b>DKL 12</b> 12 x 250/400ml
<b>DKL 20</b> 20 x 250/400ml	<b>DKL 42/26</b> 42 x 100ml



DKL WITH JP & SMS

**NITROGEN/PROTEIN DETERMINATION - KJELDAHL**  
**UDK AUTOMATIC KJELDAHL DISTILLATION UNITS**



UDK 169 & AutoKjel

Unparalleled technology along with premium materials for extremely reliable results in terms of the quantification of nitrogen and protein content.

- Patent pending titanium condenser, unparalleled performance
- PATENTED steam generator, no pressure involved
- Automated reagents addition (depending on the model)
- TEMS™ technology for savings in Time, Energy, Money, Space

<b>UDK 129</b> Distillation unit	<b>UDK 139</b> Semi-automatic distillation unit
<b>UDK 149</b> Fully automatic distillation unit, titrator connection	<b>UDK 159</b> Kjeldahl analyzer with colorimetric titrator

**NITROGEN/PROTEIN DETERMINATION - DUMAS**  
**NDA DUMAS NITROGEN ANALYZER**



NDA

Precise nitrogen and protein determination in a flash. The best solution for high productivity, offering unique benefits and fully unattended operation.

- Accurate results in only 3-4 minutes
- Extendable autosampler, up to 4x30-pos. discs
- LOD: 0.001 mg N with Helium, the lowest on the market
- DriStep™, LoGas™ and TEMS™ saving features
- Total control of the unit and data management through the intuitive DUMASoft™ software
- Premium quality consumables for reliable results

<b>NDA 701</b> Helium as carrier gas	<b>NDA 702</b> Helium or Argon as carrier gas
---	--

**CRUDE FAT DETERMINATION**  
**AUTOMATIC SOLVENT EXTRACTOR - SER 158 SERIES**



A fully automated solvent extractor capable of a high sample throughput, offering state-of-the-art technology for a fast, precise and accurate fat determination in complete safety according to Randall or Twisselmann techniques.

- Great range of applications for fat determination and sample preparation
- Vast set of accessories for a wide range of applications
- Up to 4 SER 158 units independently controlled with a single ControlPad managing up to 24 active positions

**BIOCHEMICAL OXYGEN DEMAND (BOD)**  
**BOD EVO SENSOR SYSTEM**



**BOD EVO**  
**SENSOR SYSTEM 6**  
(Other models also available)

BOD analysis is widely used as an indication of the degree of organic pollution of water and is carried out on a given water sample at certain temperature over a specific period.

- Wireless technology
- No need to open the incubator as the signal passes through it
- No need to take notes as results are delivered to PC
- Total control of the unit and data management through BOD Wireless DataBox™ & BODSoft™ software
- Real time analysis



**COOLED INCUBATORS**  
**FTC & FOC SERIES**



FOC 215E

- Energy saving, A+ class cooling system
- Display showing internal temperature
- Auto-Tuning thermoregulation system
- Wireless technology

<b>FTC 120</b> Constant temperature, 20 °C
<b>FOC 120E</b> Settable temperature, 3 - 50 °C
<b>FOC 120I</b> Settable temperature, 3 - 50 °C Internal transparent door
<b>FOC 200E</b> Settable temperature, 3 - 50 °C
<b>FOC 200I / 200IL</b> Settable temperature, 3 - 50 °C Internal transparent door

**FLOCCULATORS, JAR TESTERS**  
**FP4, JLT & FC S SERIES**

- Continuously variable stirring speed
- Height adjustment of the stirring blades during operation
- Easier reading (central lighting or backlit)



JLT 4

<b>FP4</b> - 4-pos. portable model - Settable speed up to 200 rpm - Timer function
<b>JLT 4 &amp; JLT 6</b> - 4 or 6 positions - Settable speed up to 300 rpm - Digital display for speed and time setting
<b>FC4S &amp; FC6S</b> - 4 or 6 positions - Individual settable speed, up to 200 rpm



CRV Pro

**Highest reliability for stable operation and long product lifespan**

- Reduced risk of chemical attacks and oil breakdown by diluting chemical vapors with a larger oil chamber
- Slowing down corrosion by cool running operation
- Provides a measure of protection from sublimed chemical vapors with coating on pump module and oil case

**Extended oil change intervals for less maintenance costs**

- Less oil consumption by cool running operation
- Extended usability of oil due to high dilution effect by a larger oil chamber

**Model: 2034C-02**

**FOR ROTARY EVAPORATOR**

- Evaporation
- Filtration
- Vacuum Ovens
- Rotary Evaporation/Distillation
- Concentrators
- Gel Dryers
- Pumping harsh vapors & gases

**FEATURES**

- PTFE construction for aggressive vapors & gases
- Vacuum to 2 torr, throughput to 70 L/min
- No water or oil
- Quiet operation

**DryFast PUMPS FOR ROTARY EVAPORATORS**

provide the powerful vacuum needed for demanding evaporation without the use of oil pumps prone to solvent induced failure. Use DryFast Ultra 2torr (2.7mbar) ultimate vacuum to strip DMF fast. Use the DryFast tuneable vacuum adjustment to optimize your evaporation. Choose from four DryFast models to fit your evaporation needs.



**Chemical Resistant Diaphragm Pumps MPC 301Z**

*Ideal for chemical application*

- The diaphragm pump MPC 301 Z is a two-stage pump. It is compact and functional. Maintenance and service are quick and easy to carry out. The pump operates extremely quietly. The diaphragm pump MPC 301 Z is designed for:
- Conveying and compressing neutral and aggressive gases and vapors
  - Generation of vacuum up to an ultimate pressure <5 mbar
  - Use in physical and chemical laboratories



**Laboratory Vacuum Systems LVS105T-10ef**

- Ideal for rotary evaporator distillation application
- Compact, dry-running, chemical resistant pump systems, the ideal solution for many applications in chemical laboratories and research
- Almost 100% solvent recovery
- Ranges of applications: vacuum distillation, laser technology, packaging industry, environmental technology, vacuum concentrators, vacuum drying
- Ecoflex Laboratory Vacuum Systems are equipped with a vacuum controller and a chemical resistant diaphragm pump with appropriate speed control. The pumping speed can be precisely controlled, e.g. for gentle distillations
- Ultimate vacuum: <2 mbar
- Pimping Speed 50/60Hz: 1.8 / 2.0 m³/h



**LOW NOISE LEVEL**

Exceptionally quiet for undisturbed work.

**FORCED OIL LUBRICATION**

Ensures moving parts are bathed in fresh oil. Equilibrates temperature, minimizes oil breakdown, and prolongs mechanical life.

**ANTI-SUCK BACK VALVE**

Prevents oil from being sucked into application in the event of a power failure.

**GAS BALLAST**

Minimizes entrained chemicals in pump oil. Protects pump from condensable liquids from application such as water, acetyl nitrile, etc.

**cUL and CE CERTIFICATION**

Compliance with local regulations and safety directives for safety operation.

**SIZED TO FIT YOUR APPLICATION**

Modern and compact design to fit different applications and performance requirements.

**DUAL VOLTAGE MOTOR**

IP44 Motors are switchable from 115V to 240V for global use. Each pump includes power cord suitable for country of use.

PARAMETER	UNIT	CRVpro 4	CRVpro 6	CRVpro 8
<b>Free Air Displacement</b>				
- @ 50Hz	m³/h (L/min)	4 (67)	6 (100)	8 (133)
- @ 60Hz	CFM (L/min)	2.8 (78)	4.2 (118)	5.6 (158)
<b>Pumping speed</b>				
- @ 50Hz	m³/h (L/min)	3.8 (63)	5.1 (85)	7.3 (122)
- @ 60Hz	CFM (L/min)	2.7 (77)	3.7 (105)	5.1 (143)
<b>Ultimate pressure</b>				
- Without gas ballast partial	mbar (Torr)		5x10 <sup>-4</sup> (4x10 <sup>-4</sup> )	
- Without gas ballast total	mbar (Torr)		2x10 <sup>-3</sup> (1.5x10 <sup>-3</sup> )	
- With gas ballast total	mbar (Torr)		7x10 <sup>-2</sup> (5x10 <sup>-2</sup> )	

**Model: 2534C-02**

**STANDARD DUTY OIL-FREE**

- Aspiration / filtration
- Desiccation
- Replace water aspirator
- Vacuum Drying
- Chamber Roughing

**FEATURES**

- Vacuum and Pressure : to 60 Torr (27.6"Hg) and 106 Pascal (100 PSIG)
- Size: 34 L/min
- No Water or Oil
- Vacuum and Pressure Regulators and Gauges : simple to adjust, monitor vacuum level and delivery pressure
- Inlet Water Trap : float ball rises to seal off pump from accidental ingestion of water
- Muffler : quiets pump and filters discharge air

**STANDARD DUTY DRY PISTON PUMPS FOR VACUUM FILTRATION**

are effective for filtering aqueous solutions that are not strongly acidic or basic. These attractively priced pumps are oil-free and loaded with powerful features for filtration; vacuum and pressure adjustments with gauges, liquid traps at inlet & outlet, liquid shutoff at inlet, and noise reduction.



**Model: 2511C-75**

**ASPIRATION/FILTRATION**

- Degassing
- Aspiration / filtration
- Desiccation
- Replace water aspirator
- Vacuum Drying
- Chamber Roughing

**FEATURES**

- 1.2-L collection receiver with automatic shutoff
- Bleach Resistant Construction
- Inline hydrophobic filter
- Oil-Free
- Portable
- Vacuum Regulator
- WOB-L Piston Technology

**VERSATILE MODEL 2511C-75**

standard duty, oil-free station is an economical, portable solution for aspirating, filtering or rinsing. Added accessories include 1.2 liter autoclavable, bleach resistant collection receiver, vacuum regulator & gauge, hydrophobic inline filter, automatic shut-off and vacuum regulator to simplify use.



If undelivered, please return to:-

## **Metrotest Sdn Bhd**

No 30-1, Jalan BPM 4,  
Taman Bukit Piatu Mutiara,  
75150 Melaka

Email: [metrotest168@gmail.com](mailto:metrotest168@gmail.com)  
Telephone: 06-2817839  
Website: <https://metrotest.com.my>