JENWAY

Equipment for
Analysis

Spectrophotometers

Flame Photometers

Ion Meters

Fluorimeters
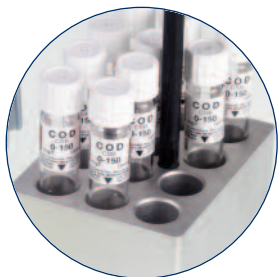
pH Meters

Chloride Meters

Conductivity Meters

Dissolved Oxygen Meters

Contents

Welcome to the new look Jenway analytical catalogue. Jenway is renowned for its electrochemistry and spectroscopy scientific instrumentation, specialising in UV/visible spectrophotometers, flame photometers and portable and laboratory meters for the measurement of dissolved oxygen, pH and conductivity. Applications for the products are diverse and include areas such as food manufacturing, medical, pharmaceutical, agricultural, water related and educational markets.

This edition introduces many new products:

- The long awaited addition of the small, scanning UV/visible spectrophotometer to the 63 series; the new 6315 now completes the range.
- The new look bench electrochemistry range coupled with new advanced pH electrodes provide the perfect solution for analysis within the laboratory.
- The 6800 double-beam spectrophotometer. A first for Jenway, the extensive range of spectrophotometers has been expanded to include a double-beam unit.
- New flame photometers

We hope the larger catalogue with the improved layout makes choosing the correct product much easier than ever before. The technical section includes useful information on selecting the best spectrophotometer for your application and many other useful facts and figures relating to the use of the products.

Jenway products are manufactured in an ISO9001:2000 environment and every step from new product development to after sales service follows documented and traceable procedures. The result is a high standard of service and quality-focused culture committed to total customer satisfaction.

All electrical products produced by Jenway conform to the latest safety directives including the European CE requirements. For total compliance, all products are tested and approved by a fully accredited external test house. We are compliant with the Waste Electrical and Electronic Equipment directive, WEEE and the Restriction of the use of Certain Hazardous Substances, RoHS as introduced in 2006.

All the products featured in this catalogue are available through a wide range of national and international distributors. Technical and application advice is available from the qualified scientists of the Technical Support team at jenwayhelp@bibby-scientific.com. For your local distributor details and up-to-date product information please visit our Jenway website at www.jenway.com. Here you will also find software downloads, as well as information on news and events, exhibitions and seminars, frequently asked questions, and much more. The Jenway brand is committed to providing the very best in electrochemistry and spectroscopy instrumentation as well as the highest level of service, before, during and after the sale.

Some of the most famous names in science...

One of the largest broad based manufacturers of labroatory products worldwide, Bibby Scientific Ltd provides internationally recognised brands with reputations for product quality and high performance. These famous brands are now brought together in a single package to offer an excellent level of quality, service and support.

We manufacture one of the largest ranges of benchtop equipment available under three famous brand names.

stuart®

The extensive Stuart® range includes blood tube rotators, colony counters, hotplates, hybridisation ovens, rockers, shakers, stirrers and water purification systems.

TECHNE

Techne® is a world leader in the manufacture of temperature control equipment, including water baths, Dri-Block® heaters, and molecular biology products such as hybridisation incubators and thermal cyclers.

JENWAY

Jenway® makes a wide range of scientific instruments including UV/Vis spectrophotometers, flame photometers, colorimeters, portable and laboratory meters for the measurement of dissolved oxygen, pH, conductivity and specific ions.

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JENWAY

Chloride Meters

Jenway chloride meters are designed for use in the determination of chloride concentrations in various clinical, food and industrial samples. In fact, all samples can be tested provided that they are of low ionic strength, neutral pH, have low levels of dissolved solids and solid matter and are free from silver halides or other components which may react with the silver electrodes.

Page 2 - Chloride Meter

Chloride Meter

PCLM3 Chloride Meter

- For clinical or industrial applications
- Uses proven coulometric titration principle
- Three sample volumes: 20 and 100µl for clinical and 500µl for industrial
- Simple to operate
- Fast reliable results
- Automatic indication when reagent replacement or electrode cleaning is required

The PCLM3 chloride meter can be used to determine chloride concentrations in numerous types of samples. Biological samples such as serum, plasma, urine, sweat and cerebrospinal fluid are commonly tested. Other samples can be tested provided they are of low ionic strength, neutral pH, have low levels of dissolved solids, low solid matter and are free from silver halides and other components which may react with silver.

PCLM3

Technical Specification

Clinical Meter

Range	10 to 299mmol/l
Sample volume	20µl or 100µl
Reproducibility	±1% for 100µl sample at 100mmol/l
	±1.5% for 20µl sample at 100mmol/l
Linearity	< ±1mmol/l or ±1% of concentration value (whichever is the greater)

Industrial Meter

Range	10 to 999mg/l
Sample volume	500µl
Reproducibility	±3mg/l
Linearity	±3mg/l or 1% (whichever is the greater)
Power	230, 50Hz
Size (w x d x h)	240 x 215 x 160mm
Weight	3.1kg

Ordering Information

Part Code	Description
504 043	PCLM3 clinical chloride meter supplied with buffer, gelatin, clinical chloride standard, 3 silver electrodes, 2 silver anodes, electrode polish, glass beaker, stirrer and tweezers (230V/50Hz)
504 044	PCLM3 industrial chloride meter supplied with buffer, gelatin, industrial chloride standard, 3 silver electrodes, 2 silver anodes, electrode polish, glass beaker, stirrer and tweezers (230V/50Hz)

Consumables

Ordering Information

Part Code	Description
504 053	Pack of 3 silver anodes
504 052	Pack of 3 silver electrodes (1 cathode, 2 detectors)
060 028	Electrode polish
025 011	Acid buffer solution (500ml)
025 013	Chloride standard, clinical, 100mmol/l (180ml)
025 014	Chloride standard, industrial, 200mg/l (180ml)
060 029	Stirrer bars (pack of 10)
024 018	Glass beaker
025 012	Gelatin (30ml)
025 195	Combined acid buffer (500ml)

JENWAY

Colorimeters

Jenway colorimeters are ideal for routine basic colour measurements across the visible range of wavelengths from 400 to 710nm. The easy-to-use controls make also makes them suitable for use in education.

Page 4 - Bench Colorimeter
Page 5 - Accessories

6051 Bench Colorimeter

- Wide wavelength range from 400 to 710nm
- Ideal for routine and educational use
- Easy to use and conventional style controls
- Sample flexibility with many size options
- Mains or battery operated

The 6051 is a general purpose colorimeter, equipped with easy-to-use conventional style controls, making it ideal for routine and educational use.

Standard 10mm square cuvettes, semi-micro volume cuvettes, flow-through or pour in/suck out cells can all be used with the standard sample holder. Excellent sampling flexibility is achieved through the optional cell holder assemblies, allowing the use of 10, 20, and 40mm cells, whilst multiple sampling handling is possible with the four cell carriage. For temperature-dependent measurements a heated cell block is available.

6051

Technical Specification

Wavelength range	400 to 710nm
Wavelength selection	8 in-built gelatin filters: 430, 470, 490, 520, 540, 580, 600 and 710nm
Measurement ranges	0-100%T
	0-1.50Abs
	0.1 to 1000 Conc
Resolution	1%T, 0.01Abs, 0.1 to 1 Conc
Bandwidth	Typically 40nm
Blank drift	2%/hr after 15 minute warm-up
Photometric linearity	1%T
Light source	Tungsten filament lamp
Output	Analogue, 10mV per digit
Power	230V, 50Hz
Size (l x w x d)	300 x 355 x 120mm
Weight	3kg

Ordering Information

Part Code	Description
605 001	6051 colorimeter supplied with 8 built in filters, 10x10mm cell holder, mains leads and plastic cuvettes (230V/50Hz)

Accessories

Ordering Information

Part Code	Description
605 003	10 x 10mm cell holder
605 004	10 x 20mm cell holder
605 005	10 x 40mm cell holder
605 006	4 cell carriage. Manual operation using 10x10mm cuvettes
605 007	Water heated cell block
606 016	400nm interference filter, 10nm bandwidth
606 017	405nm interference filter, 10nm bandwidth
606 018	540nm interference filter, 10nm bandwidth
606 019	620nm interference filter, 10nm bandwidth

Alternative filters can be supplied - details on request

Cells and Cuvettes

Ordering Information

Part Code	Description
035 027	10 x 10mm glass cell
035 086	10 x 20mm glass cell
035 029	10 x 40mm glass cell
035 025	Flow through cell (visible) 1.8ml
035 026	Pour in/suck out cell
060 084	10 x 10mm 3ml plastic cuvettes (pack 100)
060 087	10 x 10mm 1.5ml plastic cuvettes (pack 100)
060 422	Moulded cuvette rack for 16 10x10mm cuvettes
605 064	Tungsten filament lamp

JENWAY

Conductivity Meters

The Jenway range of conductivity meters encompasses seven units ranging from basic portable units and waterproof portables, right through to advanced combined pH and conductivity laboratory meters. All the Jenway meters, even the basic ones have automatic standard recognition to ensure the accuracy of results. Additional modes of analysis such as salinity and resistivity are available on selected units and many are compliant with GLP, providing date stamped and downloadable results.

Conductivity Meter Options

	470	4150	4200	4510	4520
Type	Portable	Portable	Portable	Bench	Bench
Conductivity range	0 to1999mS	0 to1999mS	0 to1999mS	0 to1999mS	0 to 19.99S
Temperature	✓	✓	✓	✓	✓
Temperature units	°C/°F	°C/°F	°C/°F	°C/°F	°C/°F
TDS	✓	✓	✓	✓	✓
Salinity	-	-	✓	-	✓
Resistivity	-	-	✓	-	✓
No. results stored	32	100	100	32	500
GLP compliant	-	-	✓	-	✓
Outputs	-	-	Interface cradle	Analogue RS232	Analogue RS232 IrDA

Combined Conductivity and pH Meter Options

	430	3540
Type	Portable	Bench
Conductivity range	0 to 199.9mS	0.01μS to 1.999S
Temperature	✓	✓
Temperature units	°C/°F	°C/°F
TDS	✓	✓
Salinity	-	✓
Resistivity	-	✓
mV	-	✓
pH range	0.00 to 14.00	-2.000 to 20.000
Results storage	-	250 in each mode
GLP compliant	-	✓
Outputs	-	Analogue RS232

470 Enterprise Conductivity/TDS Meter

- Portable conductivity and TDS meter
- Automatic range selection for optimum resolution
- Automatic or manual calibration
- Storage of up to 32 readings
- 500 hours battery life

The 470 hand held conductivity/TDS meter allows calibration by direct cell constant entry or through the use of standard solutions. The display simultaneously shows temperature compensated conductivity or TDS and temperature. For optimum resolution the best conductivity/TDS range is automatically selected, whilst temperature compensation is achieved using an adjustable temperature coefficient.

470

Technical Specification

Conductivity

Range	6 auto-selected from 0 to 1999mS*
Resolution	0.01µS to 1mS*
Accuracy	±0.5% ±2 digits
Cell constant	0.01 to 19.99
Auto standard recognition	10µS, 84µS, 1413µS, 12.88mS

TDS

Range	6 auto selected from 0 to 1999g/l*
Resolution	0.01mg/l to 1g/l*
Accuracy	±0.5% ±2 digits
EC ratio	0.50 to 0.80

Temperature

Range	-10 to 105°C
Resolution	0.1°C
Accuracy	±0.5°C
ATC and manual	0 to 100°C
Temperature coefficient	0.00 to 4.00%/°C
Reference temperature	18, 20, 25°C
Connector	Mini DIN
Power	2AA batteries
Size (l x w x d)	175 x 75 x 35mm
Weight	250g

* With k>5

Ordering Information

Part Code	Description
470 201	470 conductivity meter supplied with epoxy conductivity cell K=1 (027 298) and batteries (fitted)
470 271	470 conductivity meter supplied with epoxy conductivity cell K=1 (027 298), batteries (fitted) and free carry case

Conductivity Meters

4150 and 4200 Premier Conductivity /TDS Meters

- Portable and waterproof
- Storage of up to 100 results
- Automatic standard recognition, with manual override
- 1 to 3 point calibration
- User selectable temperature coefficient
- Battery indicator with adjustable auto-switch off feature

The Premier units are housed in sealed cases, which along with the screw-on connectors of the compatible probes ensure the units are fully protected against water ingress. The 4200 has additional resistivity, salinity and pure water options in addition to the standard conductivity, TDS and temperature modes and results can be downloaded or printed via the interface cradle.

Technical Specification

4150 and 4200

Conductivity

Range	5 auto-selected ranges from 0 to 1999mS
Resolution	0.01µS to 0.1mS
Accuracy	±0.5% ±2 digits
Cell constant	Settable from 0.015 to 19.99
Auto std. recognition	10µS, 1413µS, 12.88mS (with manual override)

TDS

Range	5 auto-selected ranges from 0 to 199.9g/l
Resolution	0.01mg/l to 0.1g/l
Accuracy	±0.5% ±2 digits

Temperature

Range	-10 to +105°C
Resolution	0.1°C
Accuracy	±0.5°C
ATC range	0 to 100°C
Temperature coefficient	0.00 to 4.00%/°C
Reference temperature	18, 20 or 25°C
Connector	Waterproof
Power	3 x AA batteries
Size (l x w x d)	200 x 80 x 60mm
Weight	370g

4150

4200 only:

- Additional resistivity and salinity modes
- Fully GLP compliant
- Results can be downloaded or printed using optional interface cradle
- 6 language options: English, French, German, Spanish, Italian and Swedish

4200 only

Resistivity

Range	0 to 20Mohms
Resolution	0.01Mohms
Accuracy	±0.5% ±2 digits

Salinity

Range	0 to 99.9g/l
Resolution	0.1g/l
Accuracy	0-35g/l ±1 and 35-99.9 ±3
Clock	24 hour, hours/min/sec or day of month, month and year. Leap year corrected
Outputs	RS232 via interface cradle

Ordering Information

Part Code	Description
553 001	4150 conductivity meter supplied with epoxy bodied conductivity cell/ATC (K=1) (027 233) and batteries
540 001	4200 conductivity meter supplied with epoxy bodied conductivity cell/ATC (K=1) (540 520) and batteries

4200

Conductivity Meters

4510 Bench Conductivity/TDS Meter

- Simultaneous display of conductivity or TDS and temperature
- Automatic selection of range for best resolution
- Calibration by cell constant or standard solutions
- Automatic standard recognition
- Storage of up to 32 results
- Bi-directional RS232 link to printer or PC

The 4510 is easy to use but with the flexibility to meet the broadest range of applications and for those where greater accuracy is required the 4510 has automatic conductivity standard recognition and endpoint detection. Set-up options include cell constant, temperature coefficient and reference temperature. The instrument can store up to 32 readings, which can also be sent to a printer or transferred to computer via DataWay and the RS232 interface.

4510

Technical Specification

Conductivity

Range	6 auto-selected from 0 to 1999mS*
Resolution	0.01µS to 1mS
Accuracy	±0.5% ±2 digits
Automatic std. recognition	10µS, 84µS, 1413µS, 12.88mS
Cell constant	0.010 to 19.999

TDS

Range	6 auto-selected from 0-1999g/l*
Resolution	0.01mg/l to 1g/l
Accuracy	±0.5% ±2 digits
EC Ratio	0.50 to 0.80

Temperature

Range	-10 to 105°C
Resolution	0.1°C
Accuracy	±0.5°C
ATC and manual	0 to 100°C
Temperature coefficient	0.00% to 4.00%
Reference temperature	18, 20 or 25°C
Outputs	Analogue and RS232
Connector	7-pin DIN
Power	9V AC ±10% @ 50/60Hz
Size (l x w x d)	210 x 250 x 55mm
Weight	850g

*With k=10 cell

Ordering Information

Part Code	Description
451 001	4510 conductivity meter supplied with glass conductivity probe with ATC (K=1) (027 013), electrode holder and UK power supply

4510

4520 Bench Conductivity/TDS Meter

- Conductivity, resistivity, TDS and salinity modes
- Special pure water mode for ultra low conductivity measurements
- Storage of 500 results with built in data logger
- Infra-red data link (IrDA) for connection to printer and RS232 link to connect to printer or PC via DataWay software

The 4520 is a high specification laboratory conductivity /resistivity /TDS/salinity and temperature meter that offers additional accuracy with 1, 2 or 3 point conductivity calibration across the wide measurement range of 0 to 19.99S. The dedicated 'pure water' mode ensures the optimum accuracy for this difficult application.

Technical Specification

Conductivity

Range	6 auto-selected from 0 to 19.99S*
Resolution	0.01µS -0.01S
Accuracy	±0.5% ±2 digits
Automatic std. recognition	10µS, 84µS, 1413µS, 12.88mS
Cell constant	0.010 to 19.999
TDS	6 auto selected ranges
Ranges	0-1999g/l*
Resolution	0.01mg/l -1g/l
Accuracy	±0.5% ±2 digits
EC ratio	0.50 to 0.80
Resistivity	
Range	0-20Mohm
Resolution	0.01Mohm
Accuracy	±0.5% ±2 digits
Salinity	
Range	0-99.9g/l
Resolution	0.1g/l
Accuracy	0-35 ±1g/l, 35-99.9 ±3g/l
Temperature	
Range	-10 to 105°C
Resolution	0.1°C
Accuracy	±0.5°C
ATC and manual	0 to 100°C
Temperature coefficient	0.00% to 4.00%/°C
Reference temperature	18, 20 or 25°C
GLP	Calibration reminder interval, alarm outputs and security code protected data
Outputs	Analogue, RS232 and IrDA interface
Connector	7-pin DIN
Power	9V AC ±10% @ 50/60Hz
Size (l x w x d)	210 x 250 x 55mm
Weight	850g

*With k=10 cell

4520

4520

Ordering Information

Part Code	Description
452 001	4520 conductivity meter supplied with glass conductivity probe with ATC (K=1) (027 013), electrode holder and UK power supply

430 Enterprise Conductivity/pH Meter

- Simultaneous display of pH, conductivity and temperature
- Automatic or manual calibration
- Combined pH, conductivity and temperature probe
- Power on self check routine
- Auto-selecting ranges for both TDS and conductivity modes

The easy to use 430 is designed to readily withstand the rigours of field work, while reliably measuring pH and conductivity. The unit allows the simultaneous readout of pH, conductivity or TDS and temperature with switched ranges for both conductivity and TDS measurements.

Technical Specification

pH

Range	0.00 to 14.00 (1 or 2 point calibration)
Resolution	0.01
Accuracy	±0.02
Auto. buffer recognition	4.00, 7.00, 9.22, 10.00

Conductivity

Ranges	5 auto-selected from 0 to 199.9mS
Resolution	0.01μS to 0.1mS
Accuracy	±0.5% ±2 digits
Cell constant	0.01 to 19.99
Automatic std recognition	10μS, 84μS, 1413μS, 12.88mS (with manual override)

TDS

Range	5 auto-selected from 0 to 199.9g/l
Resolution	0.01mg/l to 0.1g/l
Accuracy	±0.5% ±2 digits
EC ratio (TDS)	0.50 to 0.80

Temperature

Range	-9.9 to 99.9°C
Resolution	0.1°C
Accuracy	±0.5°C
ATC and manual	0 to 99.9°C
Temperature coefficient	0.00 to 4.00%/°C
Reference temperature	18, 20 or 25°C
Connector	mini-DIN
Power	2 AA batteries
Size (l x w x d)	175 x 75 x 35mm
Weight	250g

430

Ordering Information

Part Code	Description
430 201	430 conductivity/pH meter supplied with combined pH/conductivity probe (430 231), buffer sachets and batteries (fitted)
430 271	430 conductivity/pH meter supplied with combined pH/conductivity probe (430 231), buffer sachets, batteries (fitted) and free carry case

3540

3540 Bench Combined Conductivity/pH Meter

- Simultaneous display of pH and conductivity
- 2 independent channels to prevent interference between probes
- Additional modes for resistivity, salinity, TDS and mV
- Data logger with auto save/print options
- Storage of up to 500 readings (250 for each mode)

The 3540 is ideal for use in all laboratories where pH and conductivity analyses are required. The setup menu gives quick and easy access to the whole range of instrument, pH and conductivity measurement options. Calibration of both channels is automatic, with the option to select 1, 2 or 3 calibration points. The pH channel can also display mV values if required.

Technical Specification

pH

Range	-2.000 to 20.000
Resolution	0.001/0.01/0.1
Accuracy	±0.003

mV

Range	±1999.9mV
Resolution	0.1mV
Accuracy	±0.2mV

Conductivity

Range	Auto-selected from 0.01µS to 1.999S
Resolution	0.01µS to 1mS
Accuracy	±0.5% ±2 digits

Temperature

Range	-10 to 105°C
Resolution	0.1°C
Accuracy	±0.5°C
ATC and manual	0 to 100°C
Temperature coefficient	0.00 to 4.00%/°C
Reference temperature	18, 20, 25°C
GLP	Calibration reminder interval, operator and sample ID and security coded setup
Outputs	Analogue, RS232 and IrDA interface
Connectors	BNC (pH) and 7-pin DIN (conductivity)
Power	9V AC ±10% @ 50/60Hz
Size (l x w x d)	210 x 250 x 55mm
Weight	850g

3540

Ordering Information

Part Code	Description
354 001	3540 conductivity/pH meter supplied with glass combination pH electrode (924 005), glass conductivity probe (K=1, 027 013), electrode stand and holder, ATC probe (027 500), BNC shorting plug, pH buffers and UK power supply

Conductivity Meters

Conductivity Accessories and Consumables

Conductivity Cells

Ordering Information

Part Code	Description	Unit
027 298	Epoxy bodied conductivity cell, K=1	470
027 801	Epoxy bodied conductivity cell, K=0.1	470
027 802	Epoxy bodied conductivity cell, K=10	470
924 067	Replacement pH electrode	430
430 231	Replacement combined pH/conductivity probe	430
027 233	Epoxy bodied, waterproof, K=1	4150
027 235	Epoxy bodied, waterproof, K=0.1	4150
027 236	Epoxy bodied, waterproof, K=10	4150
027 237	Glass bodied, waterproof, K=1	4150
540 520	Epoxy bodied, waterproof, full range K=1	4200
027 013	Glass bodied, K=1	Bench
027 113	Epoxy bodied, K=0.1	Bench
027 177	Glass bodied, flow-through, K=1	Bench
027 211	Glass free/epoxy, K=0.1	Bench
027 212	Glass free/epoxy, K=1	Bench
027 213	Glass free/epoxy, K=10	Bench
027 900	Ultra-pure water conductivity probe	Bench
027 502	Teflon-coated ATC probe for use with aggressive/ corrosive samples	3540

Enterprise Kit

Ordering Information

Part Code	Description
399 241	Enterprise Kit: 370 pH, 470 Conductivity/TDS and 970 DO$_2$ meters in a customised carry case. Supplied with epoxy combination pH electrode (924 001), ATC probe (027 500), conductivity cell with ATC, K=1 (027 298), DO$_2$ probe (970 231) buffer sachets, spare membranes, KCl fill solution, zero powder and batteries (fitted)

027 298

027 801

027 802

027 233

027 235

027 236

027 237

027 113

027 177

027 213

027 900

Standards and Buffers

Ordering Information

Part Code	Description
025 156	12.88mS conductivity standard (500ml)
025 138	1413µS conductivity standard (500ml)
025 164	84µS conductivity standard (500ml)
025 139	10µS conductivity standard (500ml)
025 165	1382ppm TDS calibration standard (500ml)
025 157	200mV redox standard (500ml)
025 158	300mV standard (500ml)
025 159	465mV standard (500ml)

Enterprise Kit

Printers and PC Software

Ordering Information

Part Code	Description
Portable Meter 4200	
543 001	40 column serial printer with interface cable, paper roll (060 287), ribbon (060 288) and UK power adapter (requires interface cradle)
542 001	Interface cradle supplied with interface cable kit (542 009)
Bench Meters 4510, 4520 and 3540	
037 701	Thermal printer with IrDA, complete with roll of paper (037 702), universal power adapter and interface cable for non-IrDA instruments
050 501	DataWay PC Software: includes CD-ROM and interface cable
037 551	RS232 to USB converter for use with computers without serial ports
037 801	9 way serial cable for connection to PC

Printer

Miscellaneous

Ordering Information

Part Code	Description
033 269	Carry case (470)
033 174	Carry case (4150 and 4200)
033 268	Carry case (430)
060 406	Dust cover (bench meters)
021 007	Battery (470 and 430)

JENWAY

Dissolved Oxygen Meters

Dissolved oxygen measurements are a standard method in water quality analysis. As this technique is often performed out in the field the Jenway range of dissolved oxygen (DO_2) meters includes basic and waterproof portables, as well as an advanced laboratory meter. Accessories for Biological Oxygen Demand (BOD) analysis are available for both portable and bench units.

DO₂ Meter Options

	970	9150	9200	9500
Type	Portable	Portable	Portable	Bench
DO₂ ranges				
% air saturation	-5 to 199	0 to 199	0 to 199	0 to 199
% oxygen saturation	-5 to 25	0 to 25	0 to 25	0 to 25
Concentration (mg/l)	-5 to 19.99	0 to 19.99	0 to 19.99	0 to 19.99
Temperature	✓	✓	✓	✓
Temperature units	°C/°F	°C/°F	°C/°F	°C/°F
Atmospheric pressure correction	✓	✓	✓	✓
Salinity	-	-	✓	-
No. results stored	32	100	100	32
GLP compliant	-	-	✓	-
Outputs	-	-	Interface cradle	Analogue RS232 IrDA

970

970 Enterprise Dissolved Oxygen Meter

- Portable and ideal for field work
- Results as % air saturation, % oxygen or mg/l
- Automatic calibration
- Manual atmospheric pressure and salinity correction
- Storage of up to 32 results

The 970 is a general purpose, hand held dissolved oxygen meter that combines accurate measurement and ease of use in a robust, ergonomic case. The display simultaneously shows % dissolved oxygen or oxygen concentration (mg/l) and temperature. All readings are automatically corrected for temperature with the option to manually enter corrections for pressure and salinity. The 970 is supplied with a single probe with integrated temperature measurement, allowing automatic temperature compensation as standard.

Technical Specification

DO$_2$

Ranges	-5 to 199%
	-5 to 25.0%
	-5 to 19.99mg/l
Resolution	1%, 0.1% or 0.01mg/l
Accuracy	±2% within 10°C of calibration temperature

Temperature

Range	-10 to +105°C
Resolution	0.1°C
Accuracy	±0.5°C
ATC range	0 to +60°C
Power	2 AA batteries
Size (l x w x d)	175 x 75 x 35mm
Weight	250g

Ordering Information

Part Code	Description
970 201	970 dissolved oxygen meter supplied with DO$_2$ probe (970 231), spare membranes, KCl fill solution, zero calibration salts and batteries (fitted)
970 271	970 dissolved oxygen meter supplied with DO$_2$ probe (970 231), spare membranes, KCl fill solution, zero calibration salts, batteries (fitted) and free carry case

9150 and 9200 Premier DO$_2$ Meters

- Portable and waterproof
- Results as % air saturation, % oxygen or mg/l
- Storage of up to 100 results
- Pressure and salinity compensation options
- Menu driven operation
- Simultaneous display of temperature and oxygen readings

9200 only
- BOD$_5$ measurement option
- Fully GLP compliant
- Results can be downloaded or printed using optional interface cradle
- 6 language options: English, French, German, Spanish, Italian and Swedish

Technical Specification

9150 and 9200
DO$_2$
Range	0 to 199%
	0 to 25%
	0 to 19.99mg/l
Resolution	1%, 0.1%, 0.01mg/l
Accuracy	±2% within 10°C of calibration temperature

Temperature
Range	-10 to +60°C
Resolution	0.1°C
Accuracy	±0.5°C
ATC range	-10 to +60°C
Connector	Waterproof
Power	3 AA batteries
Size (l x w x d)	200 x 80 x 60mm
Weight	370g

Model 9200 only
Clock	24 hour, hours/min/sec or day of month, month and year. Leap year corrected
Outputs	RS232 via interface cradle

Ordering Information

Part Code	Description
557 001	9150 dissolved oxygen meter supplied with DO$_2$ probe with ATC (541 520), spare membranes, KCl fill solution, zero calibration powder, membrane protective cap and batteries
541 001	9200 dissolved oxygen meter supplied with DO$_2$ probe with ATC (541 520), spare membranes, KCl fill solution, zero calibration powder, membrane protective cap and batteries

9150

9200

9500

9500 Bench Dissolved Oxygen Meter

- Results as % air saturation, % oxygen or mg/l
- Automatic zeroing and calibration
- Atmospheric pressure and salinity correction
- BOD_5 measurement and calculation
- RS232 for connection to printer or PC and IrDA for cableless printing option

The 9500 is a research meter designed for use in a number of applications including fish farming/breeding, all forms of aquaculture, environmental analysis, pollution control and effluent management. The 9500 includes powerful data logging capabilities with the ability to store 250 DO_2 readings either manually, at timed intervals or on alarmed events. The 9500 also includes full support for the BOD_5 day test protocol and has the ability to store up to 25 BOD data sets, each with up to 10 samples.

Technical Specification

DO_2

Range	0 to 199%
	0 to 25.0%
	0 to 19.99mg/l
Resolution	1%, 0.1%, 0.01mg/l
Accuracy	±2% within 10°C of calibration temperature
Temperature	
Range	-10 to 60°C
Resolution	0.1°C
Accuracy	±0.5°C
ATC/Manual	0 to 60°C
Data Logging	250 readings storage and 20 BOD sets (10 samples per set)
Clock	24 hour, hrs/min/sec or day/month/year, leap year corrected
GLP	Calibration reminder
	Alarm outputs
	Security code protected user data
Outputs	Analogue, RS232 and IrDA
Connector	7-pin DIN
Power	9V AC ±10% @ 50/60Hz
Size (l x w x d)	210 x 250 x 55 mm
Weight	850g

9500

Ordering Information

Part Code	Description
950 001	9500 dissolved oxygen meter supplied with DO_2 probe with ATC (522 023), electrode holder, spare membranes, KCl fill solution, zero calibration salts, adapter bush and UK power supply

Dissolved Oxygen Meters

Enterprise Kit

Ordering Information

Part Code	Description
399 241	Enterprise Kit: 370 pH, 470 Conductivity/TDS and 970 DO_2 meters in a customised carry case. Supplied with epoxy combination pH electrode (924 001), ATC probe (027 500), conductivity cell with ATC, K=1 (027 298), DO_2 probe (970 231) buffer sachets, spare membranes, KCl fill solution, zero powder and batteries (fitted)

DO_2 Probes

Part Code	Description	Unit
970 231	DO_2 probe	970
541 520	DO_2 probe	9150
541 620	BOD probe with bottle adapters, funnel & stirrer	9200
522 016	BOD bottle attachment 2.5°	9200
522 017	BOD bottle attachment 3.0°	9200
522 018	BOD bottle attachment 6.0°	9200
552 050	BOD kit	9500
522 023	DO_2 probe with ATC	9500
522 019	Replacement membranes (3) and KCl fill solution	970 9500
541 550	Replacement membranes (3) and KCl fill solution	9150 9200
541 650	Replacement BOD membranes (3) and KCl fill	9200 9500

Consumables

Part Code	Description
541 553	KCl fill solution for DO_2 probe (30ml)
983 030	Zero calibration powder for DO_2 probe

Printers and PC Software

Part Code	Description
543 001	40 column serial printer supplied with interface cable, paper roll (060 287), ribbon (060 288) and UK power adapter (requires interface cradle) (9200)
542 001	Interface cradle supplied with interface cable kit (542 009) (9200)
037 701	Thermal printer with IrDA supplied with roll of paper (037 702), universal power adapter and interface cable for non-IrDA units (9500)

Miscellaneous

Part Code	Description
033 270	Carry case (970)
033 175	Carry case (9150 and 9200)
060 406	Dust cover (9500)
037 901	Battery operated bench stirrer
903 400	Bench stand with electrode holder (9200)
903 300	Electrode stand and holder (9500)
903 311	Extended length rod for 903 300 (recommended for use with 037 901) (9500)
021 007	Battery (970)

Enterprise Kit

Printer

JENWAY

Flame Photometers

Flame photometry is the only accurate analytical method for determining certain ions concentrations and the Jenway instruments are the ideal, low cost option for measuring sodium, potassium, lithium, barium and calcium. Models for clinical or industrial samples are available.

PFP7 Industrial Flame Photometer

- Designed for industrial analysis
- Supplied with Na, K, Li, Ba and Ca filters
- Low temperature, single channel
- Flame failure safety system
- Operates with propane, butane, natural gas or LPG

The PFP7 is a low temperature, single channel flame photometer that is designed for the routine determination of sodium, potassium, calcium, barium and lithium concentrations. The flame failure safety system makes these products ideal for use in industrial and educational environments. The use of fine and coarse sensitivity controls allows for accurate measurements each and every time.

Technical Specification

Range	0 to 199.9ppm	
Limits of detection	Na	0.2ppm
	K	0.2ppm
	Li	0.25ppm
	Ca	15ppm
	Ba	30ppm
Reproducibility	<1% coefficient of variation for 20 consecutive samples using 10ppm Na set to read 50	
Linearity	< 2% error when 3ppm Na/K and 5ppm Li are set to read 100	
Stability	< 2% drift over 5min when continuously aspirating 10ppm sample set to 50.0	
Specificity	Interference from Na/K and Li equal in concentration to test element will be <0.5%	
Recorder output	Nominal 1.00V for a reading of 100.0	
Services		
Electrical	90-125V or 190-250V @50/60Hz	
Air	Moisture and oil free, 6 litre/min @ 14psi	
Fuel	Propane, butane, natural gas or LPG	
Size (w x d x h)	420 x 360 x 300mm	
Weight	8kg	

PFP7

Ordering Information

Part Code	Description
500 701	PFP7 industrial flame photometer supplied with Na, K, Ba, Ca and Li filters, connecting hoses and clips, compressor plug and drain trap (230V/50Hz)

Note: This product will only operate with the correct type of compressor and gas regulator as specified.

PFP7

PFP7/C Clinical Flame Photometer

- Designed for clinical analysis
- Supplied with Na, K and Li filters
- Low temperature, single channel
- Flame failure safety system
- Operates with propane, butane, natural gas or LPG

The PFP7/C is a low temperature, single channel flame photometer that is specifically designed for use in clinical applications for the determination of sodium, potassium and lithium. The in-built lineariser circuitry of the PFP7/C enables readings of both sodium and potassium to be displayed directly in mmol/l. The series 7 diluter is available for use with the PFP7/C to enable serum samples to be diluted efficiently and accurately to the required ratios.

Technical Specification

Range	120 to 160mmol/l Na
	0 to 10.0mmol/l K
Limits of detection	Na 0.2ppm
	K 0.2ppm
	Li 0.25ppm
Reproducibility	<1% coefficient of variation for 20 consecutive samples using 10ppm Na set to read 50
Linearity	< 2% error when 3ppm Na/K and 5ppm Li are set to read 100
Stability	< 2% drift over 5min when continuously aspirating 10ppm sample set to 50.0
Specificity	Interference from Na/K and Li equal in concentration to test element will be <0.5%
Recorder output	Nominal 1.00V for a reading of 100.0
Services	
Electrical	90-125V or 190-250V @50/60Hz
Air	Moisture and oil free, 6 litre/min @ 14psi
Fuel	Propane, butane, natural gas or LPG
Size (w x d x h)	420 x 360 x 300mm
Weight	8kg

Ordering Information

Part Code	Description
500 801	PFP7/C clinical flame photometer supplied with Na, K and Li filters, connecting hoses and clips, compressor plug and drain trap (230V/50Hz)

Note: This product will only operate with the correct type of compressor and gas regulator as specified.
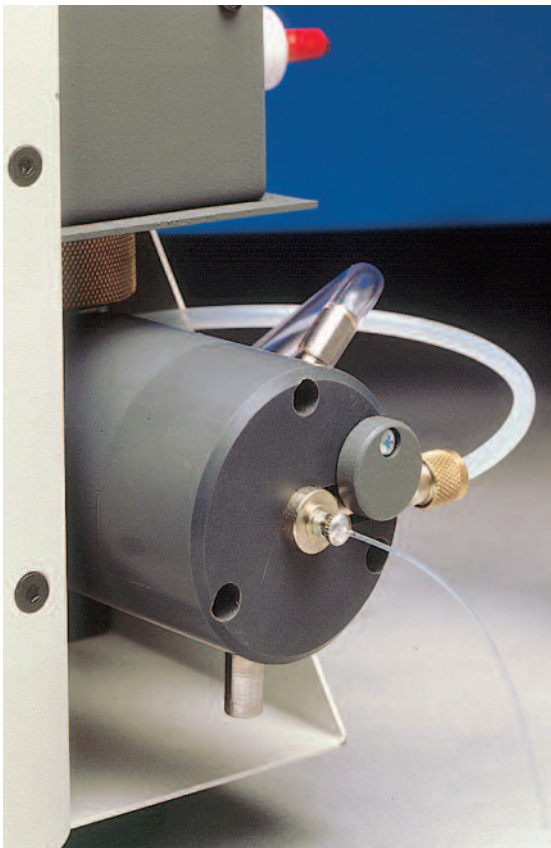
Flame Photometers

Accessories & Consumables

Accessories

Ordering Information

Part Code	Description
535 001	Air compressor (220V/50Hz)
037 001	Series 7 diluter (230V/50Hz)
500 176	Water separator (small)
500 177	Water separator (large)
500 093	Fuel filter
500 178	Butane regulator
500 179	Propane regulator
500 180	Natural gas regulator

Regulators

Clinical Standards (500ml)

Ordering Information

Part Code	Description
025 008	1.00mmol/l Li
025 004	100mmol/l Na, 100mmol/l K
025 006	140mmol/l Na, 5mmol/l K
025 007	120mmol/l Na, 2mmol/l K
025 005	160mmol/l Na, 8mmol/l K
025 027	160mmol/l Na, 80mmol/l K
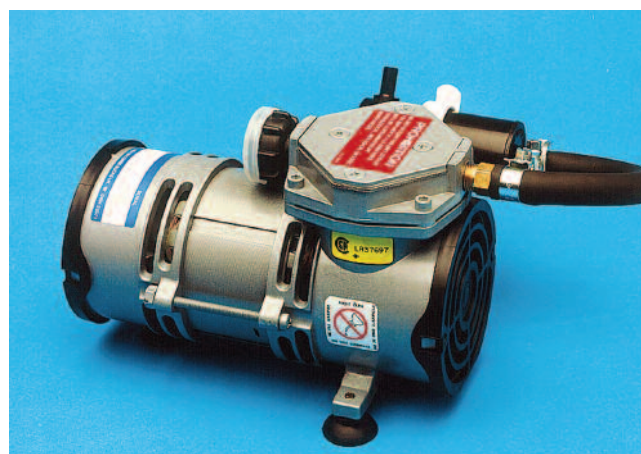
Industrial Standards (500ml)

Ordering Information

Part Code	Description
025 021	1000ppm Na
025 023	1000ppm K
025 024	1000ppm Li
025 025	3000ppm Ba
025 009	1000ppm Ca
025 171	Cleaning solution (1 litre)

Air Compressor

Miscellaneous

Ordering Information

Part Code	Description
500 134	Dust cover
500 172	Minor spares kit
500 173	Major spares kit
037 501	Analogue RS232 data logger: includes dedicated processing software

JENWAY

Fluorimeters

Fluorimetry has applications in water and environmental testing, food analysis and life science research, amongst others. The detection of fluorescence offers one of the most sensitive measurements in the laboratory with concentrations of less than 1ng/ml being routinely detected.

Fluorimeters

Fluorimeters

Feature	62 Series Fluorimeter
Wavelength selection	Intelligent Filter Modules (IFM)
Light source	Pulsed Xenon lamp with press-to-read operation
Expected life of lamp	No replacement required in normal operation
Raw fluorescence readings	Yes
Concentration standard curve	Blank + up to 6 standards
Kinetics, timed option	In both raw fluorescence and concentration modes
Kinetics options	1 reading every 3 to 999 seconds
No. methods stored	20
No. results stored	100 per method
GLP	Method lock with password access
	Time and date stamped results
	Last calibration date and time stored
	Calibration interval set
	Calibration due reminder
	User ID
Outputs	RS232
PC software	Compatible with DataWay (option)
Sample handling	10mm square cuvette holder (standard)
	Heated sample holder (option)
	Sipper pump (option)
Power supply	90 to 230V universal mains adapter
	12V DC input
Size (w x d x h)	365 x 272 x 160mm
Weight	6kg

6270 with Sipper Pump

Technical Specification

	6270	6280	6285
Wavelength range	190 to 1100nm	190 to 650nm	190 to 850nm
Sensitivity*	1μg /ml	<1ng/ml	<1ng/ml
Dynamic range*	5.2×10^4	5.2×10^6	5.2×10^6
Detector	Photodiode	PMT#	PMT#

* Using quinine sulphate

Photomultiplier tube

62 Series Fluorimeters

- High quality optics: pulsed xenon lamp and Total Energy Transfer (TET)
- Intelligent Filter Modules ensure correct filters are fitted for selected method
- Intuitive programming allows fast program creation
- Raw fluorescence or concentration values options
- Standard curve and kinetic functions
- Heated sample holder and sipper pump accessories
- Compatible with DataWay PC software

6270

Three models are available to cover a wide range of applications. The 6280 model is ideal for the most sensitive determinations with emission wavelengths up to 650nm. When higher emission wavelengths are required the 6285 with its red-enhanced detector is the unit of choice. For less sensitive applications and a broader wavelength range up to 1100nm the low cost 6270 unit is more suitable.

With press-to-read operation and Total Energy Transfer (TET) technology the output of the high-energy xenon lamp is maximised and its expected life extended so that it should never need replacing within the normal lifetime of the unit. The high quality optics are complemented by the Intelligent Filter Modules (IFM) that are identified by the unit, generating error messages should the wrong filters be fitted or their positions be incorrect.

Each model offers intuitive operation with a user interface based on logical menus that can be navigated from the simple keypad. Up to 20 methods can be created without restriction and saved for future use. They can also be locked against accidental change by password entry. The permanent time and date tag on every stored reading supports Good Laboratory Practice, while calibration reminders and operator identity can also be entered to support conformance and traceability of results.

All models are powered from an external, universal mains adapter suitable for use from 90V to 230V, while the 12V DC input enables use in vehicles or from suitable battery packs.

Ordering Information

Part Code	Description
627 001	6270 fluorimeter supplied with 100 disposable cuvettes and mains adapter for use on 90 to 230V supply with UK, Euro and US mains leads
628 001	6280 fluorimeter supplied with 100 disposable cuvettes and mains adapter for use on 90 to 230V supply with UK, Euro and US mains leads
628 501	6285 fluorimeter supplied with 100 disposable cuvettes and mains adapter for use on 90 to 230V supply with UK, Euro and US mains leads

Note: Excitation and emission filters are not included and should be purchased as separate items. Please refer to the filter section.

Fluorimeter Accessories

Sipper Pump

The programmable peristaltic sipper pump can be adjusted by the operator to inject a repeatable volume of sample or standard into the chamber of a flow-through cuvette. Other options are:

• Add an air gap to separate samples
• Wash cycle
• Move sample to waste container or return to original vessel
• Pump sample continuously for monitoring a bulk or flowing sample

Technical Specification

Continuous aspiration mode	Flow rate dependant on tubing bore: 12ml/min with supplied tubing
Timed aspiration mode	Sample/air gap/wash
Sample volume	75µl to 9.5ml
Segment run time	Up to 48 seconds
Size (w x d x h)	205 x 190 x 160mm
Weight	1.5kg

Sipper Pump

Heated Cell System

The electrically heated cell holder with its digital control unit ensures samples are always at the same temperature. This can be very important as fluorescence is inversely proportional to temperature, so care must be taken if comparing samples at different ambient temperatures. Temperature can also affect other sample properties, for example the rate of enzymatic reactions.

Technical Information

Temperature range	Ambient +2°C to 60°C
Resolution	0.1°C
Regulation	±0.1°C
Accuracy	±0.5°C
Temperature control	PID
Size (w x d x h)	205 x 165 x 85mm
Weight	0.9kg for controller
	0.4kg for heated block

Heated Cell Block Controller

Ordering Information

Part Code	Description
632 001	Sipper pump, supplied with inlet and outlet tubing (230V/50Hz)
628 200	Heated cell system comprising heated cell holder (628 202), controller (633 004) and connection leads (100 to 240V/ 50/60Hz)

Fluorimeter carry case

PC Software

DataWay PC software allows unlimited storage of programs, results and graphs. It has powerful graphing functions that allow overlays of data for comparison of results. Alternatively data can be exported to other analysis programs such as Excel™.

Ordering Information

Part Code	Description
050 501	DataWay software on a CD-ROM, includes spectrophotometer/fluorimeter interface cable (013 210) and electrochemistry interface cable (013 203)
037 551	RS232 to USB convertor for connection to PCs without serial ports

Field Analysis

When portability or field analysis is important any 62 fluorimeter can be accommodated in the tough carry case.

All the Jenway fluorimeters can be powered from any mains supply (100 to 230V) or a 12V DC supply. When being used in a vehicle an optional cable with a vehicle auxiliary socket (cigarette lighter) can be used. A number of independent battery packs are also available.

Cuvettes

Ordering Information

Part Code	Description
035 120	100µl quartz cell (3 windows)
035 121	500µl glass cell (minimum 320nm, 4 windows with PTFE lid)
035 122	500µl quartz cell (minimum 200nm, 4 windows with PTFE lid)
060 253	10x10mm macro glass cell (UV, 4 windows)
060 254	10x10mm macro glass cell (visible, 4 windows)
060 255	Semi-micro flow cell (UV, 3 windows)
060 247	Pack of 100 (10mm) macro plastic (3ml) cuvettes (visible, 4 windows)

Printers

Ordering Information

Part Code	Description
037 701	40 column serial printer supplied with paper, protective sleeve, serial lead, power supply and UK, EU and US power leads
037 702	Roll of thermal paper

Miscellaneous

Ordering Information

Part Code	Description
033 290	Fluorimeter carry case
021 057	12V connection lead
630 028	Dust cover

Fluorimeter Filters

There are 3 types of filter for the Jenway fluorimeters. The bandpass filters are ideal as excitation filters as they allow only the light between the specified wavelengths through to the sample. For example, UG1 allows all the light between 320 and 380nm through and excludes the light below 320nm and above 380nm. The cut-off and interference filters are normally used as the emission filters where a much narrower range of wavelengths is required. The cut-off filters block all light below the specified wavelength and the interference filters allow the specified wavelength and light +5nm of this through to the sample.

Ordering Information

Part Code	Description
627 126	UG1, 320 to 380nm bandpass filter
627 124	BG28, 380 to 500nm bandpass filter
627 125	VG9, 480 to 580nm bandpass filter
627 131	Glass, 305nm cut-off filter
627 130	Kodak 2B, 395nm cut-off filter
627 129	Kodak 8, 475nm cut-off filter
627 128	Ilford 201, 545nm cut-off filter
627 127	Kodak 29, 610nm cut-off filter

Interference Filters

Ordering Information

Part Code	Wavelength	Part Code	Wavelength
627 141	250nm	627 167	460nm
627 132	254nm	627 136	470nm
627 142	260nm	627 168	480nm
627 143	265nm	627 169	490nm
627 144	270nm	627 170	500nm
627 145	280nm	627 171	510nm
627 146	290nm	627 137	515nm
627 147	295nm	627 172	520nm
627 148	300nm	627 173	530nm
627 149	305nm	627 174	532nm
627 150	310nm	627 175	540nm
627 151	313nm	627 176	546nm
627 152	320nm	627 177	550nm
627 153	326nm	627 178	560nm
627 154	330nm	627 179	570nm
627 155	334nm	627 180	577nm
627 156	337nm	627 181	580nm
627 133	340nm	627 182	590nm
627 140	350nm	627 183	600nm
627 157	360nm	627 184	610nm
627 138	365nm	627 185	620nm
627 158	370nm	627 186	630nm
627 134	380nm	627 187	633nm
627 159	390nm	627 188	640nm
627 135	400nm	627 189	650nm
627 160	405nm	627 190	656nm
627 161	410nm	627 191	660nm
627 162	415nm	627 192	670nm
627 163	420nm	627 193	680nm
627 164	430nm	627 194	690nm
627 165	436nm	627 195	694nm
627 166	440nm	627 196	700nm
627 139	450nm		

JENWAY

Hotplate/ Stirrers

All three ranges of Jenway stirrers, hotplates and hotplate stirrers have a chemically resistant ceramic top plate which makes them suitable for any application. The 1200 range offers a larger heating area for those who need to heat larger vessels or sample volumes and for those customers requiring increased accuracy, PTR temperature probes are available, allowing the actual sample temperature to be measured.

Page 36 - Hotplates, Stirrers and Hotplate Stirrers

Hotplates, Stirrers and Hotplate/Stirrers

- Chemically resistant ceramic top plate
- Easy to clean
- Accurate heat control
- Powerful stirring action
- Larger plate and PTR probe options

Jenway have 3 ranges of hotplate, stirrers and combined hotplate/stirrers, all with ceramic top surfaces and with the hotplates having a maximum plate temperature of 450°C. The 1000 series are economic units that offer the performance required for even the most demanding applications with a powerful stirring action of up to 2000rpm. The units in the 1100 and 1200 ranges offer greater accuracy in temperature control and the option of a PTR temperature probe for accurate sample temperature control. The 1200 units also have a larger plate area for larger sample volumes.

1002 Stirrer

Technical Specification

Hotplates	1001	1201
Maximum plate temperature	>450°C	>450°C
Temperature accuracy	±5°C	±5°C
Power	500W	1200W
Plate dimensions (mm)	210 x 210	290 x 290
Heated area (mm)	150 x 150	200 x 200
Size (w x d x h)	225 x 340 x 85	305 x 410 x 85
Weight	4.2kg	7kg

Stirrers	1002
Stirrer speed	0 to 2000rpm
Power	50W
Plate dimensions	210 x 210mm
Heated area	150 x 150mm
Size (w x d x h)	225 x 340 x 85
Weight	4.2kg

Ordering Information

Part Code	Description
100 171	1001 hotplate (230V/50/60Hz)
120 101	1201 hotplate (230V/50/60Hz)
100 271	1002 stirrer supplied with stirrer bar (230V/50/60Hz)

Hotplates, Stirrers and Hotplate/Stirrers

Hotplate/Stirrers	1000	1100	1200
Maximum plate temperature	>450°C	>450°C	>450°C
Temperature accuracy	±1°C	±1°C	±1°C
Power	500W	500W	1200W
Plate dimensions (mm)	210 x 210	210 x 210	290 x 290
Heated area (mm)	150 x 150	150 x 150	200 x 200
Stirrer speed (rpm)	0 to 2000	100 to 1200	100 to 1200
Size (w x d xh)	225 x 340 x 85	225 x 340 x 85	305 x 410 x 85
Weight	4.2kg	4.5kg	7kg

Hotplate/Stirrers/PTR	1103	1203
Maximum plate temperature	>450°C	>450°C
Temperature accuracy	±1°C	±1°C
PTR probe range	0 to 200°C	0 to 200°C
PTR probe accuracy	±0.5°C	±0.5°C
Power	500W	1200W
Plate dimensions	210 x 210mm	290 x 290mm
Heated area	150 x 150mm	200 x 200mm
Stirrer speed	0 to 2000rpm	100 to 1200rpm
Size (w x d x h)	225 x 340 x 85	305 x 410 x 85
Weight	4.2kg	7kg

Ordering Information

Part Code	Description
100 071	1000 hotplate/stirrer supplied with stirrer bar (230V/50Hz)
110 001	1100 hotplate/stirrer supplied with stirrer bar (230V/50Hz)
120 001	1200 hotplate/stirrer supplied with stirrer bar (230V/50Hz)
110 301	1103 hotplate/stirrer supplied with stirrer bar, temperature probe, probe holder and retort rod (230V/50Hz)
120 301	1203 hotplate/stirrer supplied with stirrer bar, temperature probe, probe holder and retort rod (230V/50Hz)

Hotplate/Stirrer Accessories

Ordering Information

Part Code	Description
100 122	Retort stand
027 288	PTR temperature probe for 1103 and 1203
100 123	Probe holder assembly
060 138	Stirrer bar

Measuring up

With a combination of advanced features and sophisticated software,
the new Jenway 3540 pH & Conductivity Meter makes analysis of water and environmental samples simpler than ever.

- Split screen shows pH and conductivity measurements simultaneously.
- Menu options including adjustable temperature coefficient, reference temperatures and calibration settings
- Displays Resistivity, Salinity and TDS readings
- Good laboratory practice (Cal reminder, Cal status and secure set up)
- Comprehensive GLP and data logging functions
- Quick and simple operation

For more information about Jenway's high sensitivity, low cost, easy to use, intelligent solutions to sample analysis, visit www.jenway.com

JENWAY

Measuring to your requirements

JENWAY

Ion Meters

For some ions the only method to accurately determine low concentrations is via an ion meter in combination with an ion-specific electrode (ISE). Jenway offers a large selection of ISEs and buffers to enable concentrations from as little as 1×10^{-9} to 9.99×10^{9} to be measured.

Ion Meters

3205 Premier Portable Ion/pH Meter

- Combined pH and ion portable, waterproof meter
- Ammonium, calcium, chloride, fluoride and nitrate ion measurements
- Up to 2 point pH and 5 point ion calibration
- Automatic buffer recognition
- Fully GLP compliant
- RS232 interface using optional cradle
- 6 language options

The 3205 portable ion meter is dedicated to the rapid, easy and reliable determinations of ammonium, calcium, chloride, fluoride and nitrate ions with concentrations displayed in mg/l, ppm, %, moles, activity or no units. When performing dedicated ion analysis appropriate ATC parameters will be automatically selected and when combined with the very stable electrode readings all calibrations can be performed in the laboratory prior to analysis in the field. Although customised for dedicated ion analysis the 3205 can also perform measurements of pH, mV and other, non-dedicated ion measurements.

3205

Technical Specification

pH

Range	-2.00 to 16.00
Resolution	0.01
Accuracy	±0.02
Auto buffer recognition	4, 7 and 10.05 (with manual override)
Calibration	User selectable 1 or 2 point

mV

Range	±1999
Resolution	1mV
Accuracy	±1mV

Temperature

Range	-10 to 105°C
Resolution	0.1°C
Accuracy	±0.5°C
ATC range	0 to 100°C
Ion	Multipoint calibration 1 to 5 points
Activity	$1x10^{-9}$ to $9.99x10^{9}$ in integer or exponential format
Concentration units	activity, %, ppm, mg/l, moles, none
Dedicated ions	Ammonium, Calcium, Chloride, Fluoride and Nitrate
Clock	24 hour, hours/min/sec or day of month, month and year. Leap year corrected
Outputs	RS232 via interface cradle
Connector	Waterproof
Power	3 AA batteries
Size (l x w x d)	200 x 80 x 60mm
Weight	370g

Ordering Information

Part Code	Description
539 501	3205 pH and ion meter supplied with pH/temperature probe (027 227), buffer sachets, waterproof connector to S7 electrode lead (013 161), waterproof connector to BNC electrode lead and batteries

3340 and 3345
Bench Ion Meters

- 1 to 5 point ion calibration
- Dual channel ion/ion or ion/pH
- Automatic temperature compensation ion and pH measurements
- Fully GLP compliant
- Direct potentiometry (3340 and 3345)
- Full support of incremental methods (3345 only)

The 3340 and 3345 laboratory pH/ion meters offer a host of valuable features whilst retaining simplicity of operation through the use of structured menus. Both models will store up to 100 readings all of which can be recalled on the LCD screen or down loaded to a printer or PC. Details of the last calibration results are time and date stamped, thus satisfying the requirements of GLP quality assurance protocols.

The 3345 offers additional flexibility with two additional modes of ion analysis: the known addition/subtraction mode allows the determination of ion concentrations much closer to the lower detection limits of the electrodes, whilst multiple sample addition/subtraction allows measurements to be performed in dense and concentrated matrices.

3345

Technical Specification

pH	1, 2 or 3 point calibration
Range	-2.000 to 19.999
Resolution	0.1, 0.01, 0.001
Accuracy	±0.003
Automatic buffer recognition	4, 7 and 10.05 (with manual override)
mV	
Range	±1999
Resolution	0.1mV
Accuracy	±0.2mV
Temperature	
Range	-10 to 105°C
Resolution	0.1°C
Accuracy	±0.5°C
ATC Range	0 to 100°C
Ion	Multipoint calibration 1 to 5 points
Activity	1×10^{-9} to 9.99×10^{9}
Concentration units	Activity, %, ppm, mg/l, M or none
Clock	24 hour, leap year corrected
GLP	Calibration reminder interval (1 to 999 hrs) Timed printout interval
Outputs	Analogue and RS232
Connectors	2 x BNC (ion/pH), 5-pin DIN (temperature), 2mm pin (separate reference electrode)
Power	9V AC 230V
Size (l x w x d)	275 x 240 x 150mm
Weight	1.2kg

Ion Meters Accessories

Ordering Information

Part Code	Description
547 001	3340 dual channel ion meter supplied with glass combination pH electrode (924 005), swing arm electrode holder, ATC probe (027 232), buffer sachets and UK power supply
548 001	3345 dual channel ion meter supplied with glass combination pH electrode (924 005), swing arm electrode holder, BNC to S7 leadless connector (013 173) for connection to ISEs, ATC probe (027 232), buffer sachets and UK power supply

Temperature Probes and Connectors

Ordering Information

Product Code	Description
013 161	Premier to S7 leadless electrode connector
027 232	ATC/temperature probe
013 173	BNC to S7 connector

Printers

Ordering Information

Product Code	Description
543 001	40 column serial printer with interface cable, paper, ribbon and UK power adapter
542 001	Interface cradle supplied with interface cable kit (542 009)
060 287	Paper roll
060 288	Printer ribbon

Miscellaneous

Ordering Information

Product Code	Description
033 162	3205 carry case
544 008	Dust cover
903 200	Swing arm electrode holder
555 001	Bench stirrer, powered by ion meter

Printer

Ion Selective Electrodes

A large number of standard ion selective electrodes (ISEs) are available for use with the Jenway ion meters. The available options include easy to use combined electrodes, separate ion-specific and reference electrodes for increased flexibility or for challenging applications the Jen-Flow Plus combination electrodes.

Ion	Combination Part Code	Mono Part Code
Ammonia	924 328	-
Ammonium	924 302	924 500
Barium	924 307	924 501
Bromide	924 308	924 502
Cadmium	924 309	924 503
Calcium	924 301	924 504
Carbonate	924 311	924 505
Chloride	924 304	924 506
Copper	924 313	924 507
Cyanide	924 314	924 508
Fluoride	924 305	924 509
Iodide	924 316	924 510
Lead	924 317	924 511
Magnesium	924 326	924 522
Mercury	924 318	924 512
Nitrate	924 300	924 513
Perchlorate	924 321	924 515
Potassium	924 322	924 516
Silver	924 323	924 517
Sodium	924 329	924 521
Sulphide	924 324	924 518
Thiocyanate	924 325	924 519
Water Hardness	924 327	924 523

Note: ISEs are supplied without the connecting lead and the mono electrodes require a reference electrode to complete the system.

Jen-Flow Plus Combination Electrodes

- Drift-free readings with complex samples
- Fast response
- Longer lifetime
- Robust, solid state sensing and reference elements
- Easy to clean and maintain

Ordering Information

Part Code	Description
924 702	Ammonium Jen-Flow Plus combination electrode
924 701	Calcium Jen-Flow Plus combination electrode
924 704	Chloride Jen-Flow Plus combination electrode
924 705	Fluoride Jen-Flow Plus combination electrode
924 700	Nitrate Jen-Flow Plus combination electrode
924 722	Potassium Jen-Flow Plus combination electrode

Each Jen-Flow Plus electrode is supplied with connecting lead and 10ml of fill solution.

Reference electrodes for Mono ISEs

Ordering Information

Part Code	Description
924 016	Single junction, calomel, glass bodied reference electrode
924 017	Double junction, AgCl, glass bodied reference electrode
924 036	Single junction, AgCl, glass bodied reference electrode

Ion Meters

Ion Selective Electrode Consumables

Ion	ISAB	1000ppm	Standard 100ppm	10ppm	1ppm
Ammonium	025 129	025 120	025 143	025 142	
Barium	025 099	025 069			
Bromide	025 089	025 053			
Cadmium	025 096	025 063			
Calcium	025 097	025 065	025 145	025 144	
Carbonate	025 132	025 126			
Chloride	025 088	025 051	025 147	025 146	
Cupric	025 093	025 057			
Cyanide	025 091	025 134			
Fluoride	025 107	025 087	025 150	025 149	025 148
Iodide	025 090	025 055			
Lead	025 094	025 059			
Magnesium	025 169	025 167			
Mercury	025 128	025 118			
Nitrate	025 098	025 067	025 152	025 151	
Perchlorate	025 130	025 122			
Potassium	025 127	025 073			
Silver	025 095	025 061			
Sodium	025 101	025 101			
Sulphide	025 092	025 136			
Thiocyanate	025 106	025 085			
Water Hardness	025 100	025 071			

Jen-Flow Plus Electrode Consumables

Ordering Information

Part Code	Description
025 184	Ammonium fill solution (30ml)
025 183	Calcium fill solution (30ml)
024 185	Chloride fill solution (30ml)
024 186	Fluoride fill solution (30ml)
025 182	Nitrate fill solution (30ml)
025 187	Potassium fill solution (30ml)

Ion Selective Electrode Kits

Ordering Information

Part Code	Description
924 402	Ammonium electrode kit comprising ammonium ISE, 1 bottle 1000ppm calibration standard, 1 bottle ISAB and BNC to S7 lead
924 401	Calcium electrode kit comprising calcium ISE, 1 bottle of 1000ppm calibration standard, 1 bottle ISAB and BNC to S7 lead
924 404	Chloride electrode kit comprising chloride ISE, 1 bottle of 1000ppm calibration standard, 1 bottle ISAB and BNC to S7 lead
924 405	Fluoride electrode kit comprising fluoride ISE, 1 bottle of 1000ppm calibration standard, 1 bottle ISAB and BNC to S7 lead
924 400	Nitrate electrode kit comprising nitrate ISE, 1 bottle of 1000ppm calibration standard, 1 bottle ISAB and BNC to S7 lead

JENWAY

pH Meters

The Jenway pH meters range from basic and waterproof portable units, right through to advanced combined pH and conductivity laboratory meters. All models, except the 3505 which is specifically designed for use in education have automatic standard recognition to ensure the accuracy of the results. Redox and ion concentration modes are available on some of the models.

pH Only Meters

	350	370	3150	3205	3505	3510	3520
Portable	✓	✓	✓	✓	-	-	-
Waterproof	-	-	✓	✓	-	-	-
pH range	-2 to 16	-2 to 16	-2 to 16	-2 to 16	-2 to 16	-2 to 20	-2 to 20
mV	-	✓	✓	✓	✓	✓	✓
Redox	-	✓	✓	✓	✓	✓	✓
Ion	-	✓	-	✓	-	-	-
ATC	-	✓	✓	✓	-	✓	✓
No. calibration	1 or 2	1 or 2	1 or 2	1 or 2	-	1, 2 or 3	1, 2 or 3 points
Automatic buffer recognition	✓	✓	✓	✓	-	✓	✓
Results stored	32	32	100	100	-	32	500
GLP compliant	-	-	-	✓	-	-	✓

pH and Conductivity Combined Meters

	430	3540
Portable	✓	-
Waterproof	-	-
pH range	0 to 14	-2 to 20
mV	-	✓
Redox	-	✓
Ion	-	-
ATC	✓	✓
No. calibration points	1 or 2	1, 2 or 3
Automatic buffer recognition	✓	✓
No. results stored	-	500
GLP compliant	-	✓
Conductivity range	0 to 199.9mS	0.01µS to 1.999S

350

350 Enterprise pH Meter

- Simultaneous pH and temperature display
- Storage of up to 32 results
- Automatic or manual calibration 500 hours battery life
- Application specific electrodes and consumables

The 350 is a general purpose portable pH meter offering 1 or 2 point pH calibration and automatic buffer recognition with manual override. It simultaneously displays both the temperature compensated pH readings and the manually set temperature.

Technical Specification

pH

Range	-2.00 to 16.00
Resolution	0.01
Accuracy	±0.02
Manual temperature range	0 to 100°C
Automatic buffer recognition	4.00, 7.00, 9.22, 10.00 (with manual override)
Calibration	User selectable 1 or 2 point
Connector	BNC
Power	2 AA batteries
Battery life	500 hours typical
Size (l x w x d)	175 x 75 x 35mm
Weight	250g

Ordering Information

Part Code	Description
350 201	350 pH meter supplied with epoxy bodied combination electrode (924 001), pH buffer sachets and batteries (fitted)
350 271	350 pH meter supplied with epoxy bodied combination electrode (924 001), pH buffer sachets, batteries (fitted) and free carry case

pH Meters

370 Enterprise Portable pH/mV Meter

- pH, absolute and relative mV ranges
- Automatic or manual calibration
- Automatic or manual temperature compensation
- Simultaneous pH and temperature reading
- Storage of up to 32 results

The 370 hand held pH/mV meter offers simple, yet professional performance with 1 or 2 point calibration and automatic buffer recognition with manual override. The unit simultaneously displays temperature compensated pH readings or electrode potential and temperature.

A comprehensive range of application specific electrodes and consumables are available for use with the 370 meter.

370

Technical Specification

pH

Range	-2.00 to 16.00
Resolution	0.01
Accuracy	±0.02
Automatic buffer recognition	4.00, 7.00, 9.22, 10.00 (with manual override)
Calibration	User selectable 1 or 2 point

mV (absolute or relative)

Range	±1999mV
Resolution	1mV
Accuracy	±1mV

Temperature

Range	-10 to +105°C
Resolution	0.1°C
Accuracy	±0.5°C
ATC /Manual range	0 to 100°C
Connector	BNC
Power	2 AA batteries
Battery life	500 hours typical
Size (l x w x d)	175 x 75 x 35mm
Weight	250g

Ordering Information

Part Code	Description
370 201	370 pH/mV meter supplied with epoxy bodied combination electrode (924 001), ATC probe (027 500), pH buffer sachets and batteries (fitted)
370 271	370 pH/mV meter supplied with epoxy bodied combination electrode (924 001), ATC probe (027 500), pH buffer sachets, batteries (fitted) and free carry case

3150

3150 Premier Portable pH/mV/ Temperature Meter

- Waterproof portable meter
- Automatic temperature compensation
- Storage of up to 100 results
- Automatic buffer recognition
- mV and redox modes
- Comprehensive range of electrodes and consumables

The 3150 pH meter is designed to resist the harshest of field, laboratory and industrial environments. The instrument is fully menu driven via a sealed membrane keypad, with all results being displayed simultaneously on the large display.

The pH sensor of the 3150 incorporates a precision temperature element configured to give accurate temperature compensation, as well as a direct readout of temperature in °C or °F.

Through the use of data logging protocols the 3150 automatically stores up to 100 results in its memory ensuring all results are saved, even in the event of battery failure.

Technical Specification

pH

Range	-2.00 to 16.00
Resolution	0.01
Accuracy	±0.02
Automatic buffer recognition	4, 7 and 10.05 (with manual override)
Calibration	User selectable 1 or 2 point

mV

Range	±1999
Resolution	1mV
Accuracy	±1mV

Temperature

Range	-10 to 105°C
Resolution	0.1°C
Accuracy	±0.5°C
ATC range	0 to 100°C
Connector	Waterproof
Power	3 AA batteries
Size (l x w x d)	200 x 80 x 60mm
Weight	370g

Ordering Information

Part Code	Description
538 001	3150 Premier pH meter supplied with pH/temperature probe (027 227), buffer sachets and batteries

3205 Premier Portable Ion/pH Meter

- Combined pH and ion portable, waterproof meter
- Ammonium, calcium, chloride, fluoride and nitrate ion measurements
- Up to 2 point pH and 5 point ion calibration
- Automatic buffer recognition
- Fully GLP compliant
- RS232 interface using optional cradle
- 6 language options

The 3205 portable ion meter is dedicated to the rapid, easy and reliable determinations of ammonium, calcium, chloride, fluoride and nitrate ions with concentrations displayed in mg/l, ppm, %, moles, activity or no units. When performing dedicated ion analysis appropriate ATC parameters will be automatically selected and when combined with the very stable electrode readings all calibrations can be performed in the laboratory prior to analysis in the field. Although customised for dedicated ion analysis the 3205 can also perform measurements of pH, mV and other, non-dedicated ion measurements.

3205

Technical Specification

pH

Range	-2.00 to 16.00
Resolution	0.01
Accuracy	±0.02
Automatic buffer recognition	4, 7 and 10.05 (with manual override)
Calibration	User selectable 1 or 2 point

mV

Range	±1999
Resolution	1mV
Accuracy	±1mV

Temperature

Range	-10 to 105°C
Resolution	0.1°C
Accuracy	±0.5°C
ATC range	0 to 100°C
Ion	Multipoint calibration 1 to 5 points
Activity	$1x10^{-9}$ to $9.99x10^{9}$ in integer or exponential format
Concentration units	activity, %, ppm, mg/l, moles, none
Dedicated ions	Ammonium, Calcium, Chloride, Fluoride and Nitrate
Clock	24 hour, hours/min/sec or day of month, month and year. Leap year corrected
Outputs	RS232 via interface cradle
Connector	Waterproof
Power	3 AA batteries
Size (l x w x d)	200 x 80 x 60mm
Weight	370g

Ordering Information

Part Code	Description
539 501	3205 pH and ion meter supplied with pH/temperature probe (027 227), buffer sachets, waterproof connector to S7 electrode lead (013 161), waterproof connector to BNC electrode lead and batteries

3505

3505 Bench pH Meter

- General purpose education laboratory pH meter
- Intuitive operation via rotary controls
- pH, temperature and mV mode for redox and electrode diagnosis
- Calibration controls locked during measurement
- Manual or automatic temperature compensation
- Large display
- Battery or mains operated

The 3505 is a simple to use laboratory pH, mV and temperature meter for use in general purpose and educational applications. It utilises rotary controls for mode selection and pH calibration. A novel design feature ensures that inadvertent movement of the calibration controls has no effect during sample measurement. The large display ensures that during demonstrations and when used by groups, all can easily see the clear LCD readout.

Technical Specification

pH

Range	-2.00 to +16.00
Resolution	0.01
Accuracy	±0.02

mV

Range	±1999mV
Resolution	1mV
Accuracy	±1mV

Temperature

Range	-10 to +105°C
Resolution	0.1°C
Accuracy	±0.5°C
ATC range	0 to 100°C
Connector	BNC
Power	9V PP3 battery as standard or optional 9V power supply
Size (l x w x d)	210 x 250 x 55mm
Weight	850g

3505

Ordering Information

Part Code	Description
350 501	3505 pH meter supplied with epoxy combination pH electrode (924 001), electrode stand and holder, ATC probe (027 500), BNC shorting plug, buffer sachets and battery

pH Meters

3510 Bench pH/mV Meter

- Simultaneous readout of pH and temperature
- pH resolution to 3 decimal places
- 1, 2 or 3 point calibration
- Automatic or manual buffer selection
- Storage of up to 32 results
- RS232 connection to printer or PC via DataWay

The 3510 is a versatile, simple to use pH, mV and temperature meter that is ideal for routine analysis. With up to three decimal place resolution and a choice of up to three calibration points the 3510 provides the user with added flexibility where future demands for enhanced performance may be required. A choice of pH calibration buffers to DIN, JIS and NIST standards can be used for automatic calibration, as well as manually entered buffer values.

3510

Technical Specification

pH

Range	-2.000 to +19.999
Resolution	0.001/0.01 0.1
Accuracy	±0.003
Calibration	User selectable 1, 2 or 3 point
Automatic buffer recognition	Jenway (2.00, 4.00, 7.00, 9.20 and 10.00), DIN, NIST, JIS

mV

Range	±1999.9mV
Resolution	0.1/1mV
Accuracy	±0.2mV

Temperature

Range	-10 to 105°C
Resolution	0.1°C
Accuracy	±0.5°C
ATC and manual temperature compensation	0 to 100°C
Outputs	Analogue and RS232
Connector	BNC
Power	9V AC ±10% @ 50/60Hz
Size (l x w x h)	210 x 250 x 55mm
Weight	850g

3510

Ordering Information

Part Code	Description
351 001	3510 pH/mV meter supplied with glass combination pH electrode (924 005), electrode stand and holder, ATC probe (027 500), BNC shorting plug, pH 4, 7 and 10 buffers and UK power supply

3520

3520

3520 Bench pH/mV Meter

- Ideal for quality control and GLP applications
- Up to 3 decimal place resolution
- 1, 2 or 3 point pH calibration
- Automatic or manual buffer selection
- Multiple language options
- Storage of up to 500 results
- RS232 connection to printer or PC or infra red (IrDA) communication
- GLP compliant

The 3520 dynamic pH/mV meter offers research grade specifications with a comprehensive range of features and functions, making it suitable for the broadest range of research, general laboratory, QC and GLP based applications. The built in data logger can store, print or output readings based on a wide range of trigger options, making this model suitable for monitoring and controlling pH levels.

Technical Specification

pH

Range	-2.000 to +20.000
Resolution	0.001 / 0.01 / 0.1
Accuracy	±0.003
Calibration	User selectable 1, 2 or 3 point
Automatic buffer recognition	Jenway (2.00, 4.00, 7.00, 9.20 and 10.00), DIN, NIST, JIS

mV

Range	±1999.9mV
Resolution	0.1/1mV
Accuracy	±0.2mV

Temperature

Range	-10 to 105°C
Resolution	0.1°C
Accuracy	±0.5°C
ATC and manual temperature correction	0 to 100°C
Alarm points	-2.000 to 19.999pH
GLP	Calibration reminder interval (1 to 999hrs) Alarm outputs (open collector and audible). Security code protected data
Outputs	Analogue, RS232 and IrDA
Connector	BNC
Power	9V AC ±10% @ 50/60Hz
Size (l x w x h)	210 x 250 x 55mm
Weight	850g

Ordering Information

Part Code	Description
352 001	3520 pH/mV meter supplied with glass combination pH electrode (924 005), electrode stand and holder, ATC probe (027 500), BNC shorting plug, pH 4, 7 and 10 buffer sachets and UK power supply

pH Meters

430 Enterprise Conductivity/pH Meter

- Simultaneous display of pH, conductivity and temperature
- Automatic or manual calibration
- Power on self check routine
- Calibration diagnostics

The easy to use 430 is designed to readily withstand the rigours of field work, while reliably measuring pH and conductivity. The unit allows the simultaneous readout of pH, conductivity or TDS and temperature with switched ranges for both conductivity and TDS measurements.

Technical Specification

pH

Range	0.00 to 14.00 (1 or 2 point calibration)
Resolution	0.01
Accuracy	±0.02
Automatic buffer recognition	4.00, 7.00, 9.22, 10.00

Conductivity

Ranges	5 auto-selected from 0 to 199.9mS
Resolution	0.01µS to 0.1mS
Accuracy	±0.5% ±2 digits
Cell constant	0.01 to 19.99
Automatic standard recognition	10µS, 84µS, 1413µS, 12.88mS (with manual override)

TDS

Range	5 auto-selected from 0 to 199.9g/l
Resolution	0.01mg/l to 0.1g/l
Accuracy	±0.5% ±2 digits
EC ratio (TDS)	0.50 to 0.80

Temperature

Range	-9.9 to 99.9°C
Resolution	0.1°C
Accuracy	±0.5°C
ATC and manual	0 to 99.9°C
Temperature coefficient	0.00 to 4.00%/°C
Reference temperature	18, 20 or 25°C
Connector	mini-DIN
Power	2 AA batteries
Size (l x w x d)	175 x 75 x 35mm
Weight	250g

430

Ordering Information

Part Code	Description
430 201	430 conductivity/pH meter supplied with combined pH/conductivity probe (430 231), buffer sachets and batteries (fitted)
430 271	430 conductivity/pH meter supplied with combined pH/conductivity probe (430 231), buffer sachets, batteries (fitted) and free carry case

3540 Bench Combined Conductivity/pH Meter

- Simultaneous display of pH and conductivity
- 2 independent channels to prevent interference between probes
- Additional modes for resistivity, salinity, TDS and mV
- Data logger with auto save/print options
- Storage of up to 500 readings (250 for each mode)

The 3540 is ideal for use in all laboratories where pH and conductivity analyses are required. The setup menu gives quick and easy access to the whole range of instrument, pH and conductivity measurement options. Calibration of both channels is automatic, with the option to select 1, 2 or 3 calibration points. The pH channel can also display mV values if required.

3540

3540

Technical Specification

pH

Range	-2.000 to 20.000
Resolution	0.001/0.01/0.1
Accuracy	±0.003

mV

Range	±1999.9mV
Resolution	0.1mV
Accuracy	±0.2mV

Conductivity

Range	Auto-selected from 0.01µS to 1.999S
Resolution	0.01µS to 1mS
Accuracy	±0.5% ±2 digits

Temperature

Range	-10 to 105°C
Resolution	0.1°C
Accuracy	±0.5°C
ATC and manual	0 to 100°C
Temperature coefficient	0.00 to 4.00%/°C
Reference temperature	18, 20 or 25°C
GLP	Calibration reminder interval, operator and sample ID and security coded setup
Outputs	Analogue, RS232 and IrDA interface
Connectors	BNC (pH) and 7-pin DIN (conductivity)
Power	9V AC ±10% @ 50/60Hz
Size (l x w x d)	210 x 250 x 55mm
Weight	850g

Ordering Information

Part Code	Description
354 001	3540 conductivity/pH meter supplied with glass combination pH electrode (924 005), glass conductivity probe (K=1, 027 013), electrode stand and holder, ATC probe (027 500), BNC shorting plug, pH buffers and UK power supply

pH Meters

	924 001 027 027 924 067	924 002	924 005 924 003	924 007	924 010	924 015	924 030	924 034	924 047 924 070	924 049	924 050 924 052	924 051	924 076	924 077	924 078	924 079	924 080
Agar												✓					
Alkalines (High)													✓			✓	✓
Beer	✓		✓	✓		✓			✓	✓	✓	✓	✓	✓	✓	✓	✓
Blood products	★		✓	✓		✓	★		★	✓	★	✓	✓	★	✓	✓	✓
Bread/dough		✓			✓			✓				★					
Cement	★	★	✓	★	★	★		★	★	★		★	✓	★	✓	✓	★
Cosmetics	✓	★	✓	✓	★	★		★	★	✓	✓	✓	✓	✓	✓	✓	★
Dairy products	★	★	✓	✓	✓	★		✓		✓		✓	✓	★	✓	✓	★
Drinking water	★		★			★			★	★	✓			★	★	★	★
Education	✓	★	✓	★	★	✓	★	★	✓	★	✓	✓	✓	✓	✓	✓	✓
Fats/cream		★	★	✓	★			✓		★	★	★	★	★	★	★	★
Field use	✓	✓	★		✶				✓		✓	✓	★	✓	★	★	
Fish products	★	★	★	★	✓	★		✓		★	★	✓	★	★	★	★	★
High temperature																✓	✓
Jam/preserves														✓			★
Lab environmental				★							✓						
Lab flasks										✓					✓		
Low ionic			✓			★				★	✓		✓		✓	✓	
Meat/cheese		★			✓			✓				✓					
Micro samples				✓	★		★	★		★		★					
Paint				✓		✓				✓		✓					✓
Photographic														✓			✓
Soil	★	✓	★	★	✓	★		✓		★	★		★	★	★	★	★
Surface												✓					
Test tubes				★		✓				✓						★	
Tris Buffer							✓				✓						★
Viscous samples		★			★			★				✓		★			

✓   Electrode recommended for this sample type

✶   Electrode would be satisfactory for use with this sample type If the box is left blank this indicates that the electrode is not suitable for this application

924 001

924 002

924 003

924 005

924 007

924 010

924 015

924 030

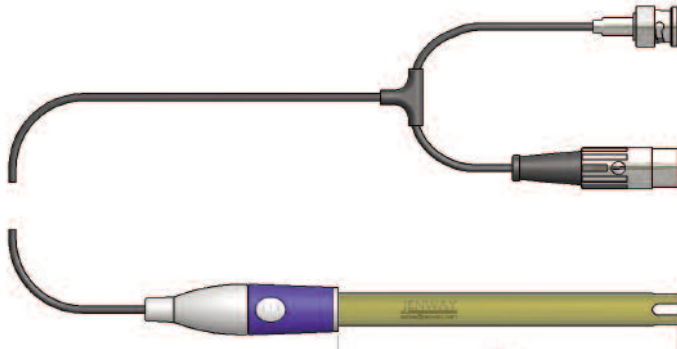924 047

Combination pH Electrodes

Ordering Information

Part Code	Description
924 001	General purpose, epoxy bodied for standard measurements of general solutions (max. temperature 60°C)
924 067	Replacement pH electrode with S7 connector (430, max. temperature 60°C)
924 002	12mm stem spear type, glass bodied for measurement of soil and slurry samples
924 003	Redox (platinum), glass bodied for redox measurements
924 005	General purpose, glass bodied for standard measurements of general solutions
924 007	4.5mm semi-micro, 90mm reach, glass bodied for small volume liquid samples
924 010	Spear type, 6mm stem, glass bodied for small volume soil and slurry samples
924 078	350mm reach probe, glass bodied for measurement in flasks
924 015	Glass electrode, pH only requires separate reference electrode
924 047	3 in 1 pH/temperature, epoxy bodied (bench laboratory meters only, max. temperature 100°C)
924 070	3 in 1 combination pH/temperature, epoxy bodied (370, max. temperature 100°C)

Application Specific Electrodes

Ordering Information

| Part Code	Description
924 049	Life science, 6mm micro, 150mm reach, glass bodied for test tubes and small sample volumes (max. temperature 100°C)
924 030	Tris buffer, semi-micro with 90mm reach, glass bodied for pH measurements in biological buffers, blood and protein samples (max. temperature 50°C)
924 050	Environmental, glass bodied, suitable for low ionic strength solutions and purified water (max. temperature 50°C)
924 068	Environmental pH electrode with S7 connector (430, max. temperature 50°C)
924 051	Food, epoxy bodied, flat membrane, ideal for measurements of food extracts and agar plates (max. temperature 60°C)
924 069	Food pH electrode with S7 connector (430, max. temperature 60°C)
924 077	Jam electrode, epoxy bodied, ideal for measurements of jam and preserves
924 034	Spear knife probe, epoxy based for the measurement of solid samples
924 035	Replacement electrode for spear knife probe
924 076	Difficult applications, glass bodied for measurement of oils, biofuels and non-aqueous samples
924 079	High temperature probe, glass bodied for measurements up to 110°C
924 080	Laboratory electrode, glass bodied for measurement of aggressive chemical solutions

Maximum temperature 80°C, unless otherwise stated

pH Meters

Waterproof Versions (Premier models)

Ordering Information

Part Code	Description
027 227	Waterproof, general purpose, epoxy-bodied with ATC (max. temperature 100°C)
924 052	Waterproof environmental with ATC (max. temperature 50°C)
924 053	Waterproof 12mm stem spear type, glass bodied with ATC
924 054	Waterproof redox (platinum), glass bodied for redox measurements with ATC
924 055	Waterproof Tris buffer, glass bodied for pH measurements in biological buffers, blood and protein samples with ATC (max. temperature 50°C)
924 056	Waterproof food pH electrode with ATC (max. temperature 60°C)
538 014	Adapter lead with waterproof connector to BNC electrode connector
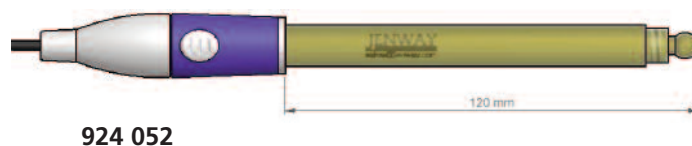
924 052

pH Performance Electrodes

- Quickly reach equilibrium
- Significantly reduced response times
- Far greater reproducibility
- Significantly reduced long-term drift

The advanced Jenway Performance pH electrodes are the electrodes of choice for advanced applications where faster response times and greater reproducibility are required.

924 904

924 905

	924 904	924 905
Beer	✓	✓
Blood products	✓	✓
Cement	★	✓
Cosmetics	✓	✓
Dairy products	✓	✓
Education	★	✓
Fats/cream		★
Field use		★
Fish products	★	★
High accuracy laboratories	✓	✓
Low ionic		✓
Micro samples		✓
Paint		
Soil	★	★
Test tubes		★
Tris Buffer	✓	✓

✓ Electrode recommended for this sample type

★ Electrode would be satisfactory for use with this sample type If the box is left blank this indicates that the electrode is not suitable for this application

Ordering Information

Part Code	Description
924 904	4.5mm semi-micro, 90mm reach, glass bodied for small volume liquid samples, Tris buffers and use in high accuracy laboratories (max. temperature 100°C)
924 905	General purpose, glass bodied for measurements in general solutions, Tris buffers and use in high accuracy laboratories (max. temperature 100°C)

Maximum temperature 80°C, unless otherwise stated

Temperature and Reference Electrodes

924 016

924 017

924 036

Ordering Information

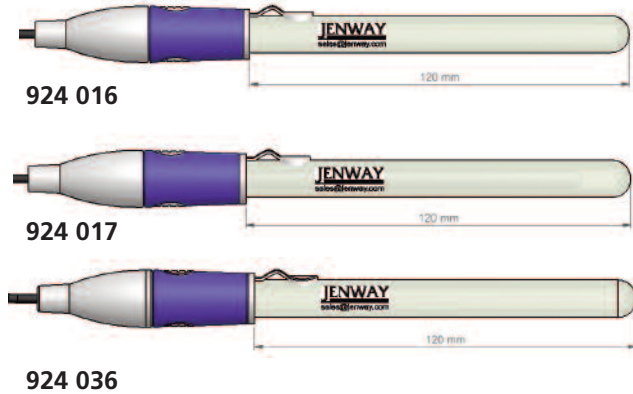| Part Code	Description
027 500	ATC/temperature probe (370, 3505, 3510, 3520 and 3540)
027 502	Teflon-coated ATC probe for use with aggressive/corrosive samples (370, 3505, 3510, 3520 and 3540)
924 016	Single junction, calomel, glass bodied reference electrode (max. temperature 50°C)
924 017	Double junction, AgCl, glass bodied reference electrode (max. temperature 50°C)
924 036	Single junction, AgCl, glass bodied reference electrode (max. temperature 100°C)

Ordering Information

Part Code	Description
399 241	Enterprise Kit: 370 pH, 470 Conductivity/TDS and 970 DO$_2$ meters in a customised carry case. Supplied with epoxy combination pH electrode (924 001), ATC probe (027 500), conductivity cell with ATC, K=1 (027 298), DO$_2$ probe (970 231) buffer sachets, spare membranes, KCl fill solution, zero powder and batteries (fitted)

Buffers and Solutions

Ordering Information

Part Code	Description
025 037	pH 4 buffer (red, 500ml)
025 038	pH 7 buffer (yellow, 500ml)
025 039	pH 10 buffer (blue, 500ml)
025 162	pH 9.22 buffer (500ml)
025 163	pH 2 buffer (500ml)
025 179	pH 4 buffer sachets (pack of 10)
025 180	pH 7 buffer sachets (pack of 10)
025 181	pH 10 buffer sachets (pack of 10)
025 192	pH electrode storage solution (250ml)
025 196	pH electrode fill solution 3M KCl, AgCl saturated (100ml)
025 160	3M KCl pH fill solution
025 161	pH electrode cleaning solution
025 157	Redox standard (200mV) (500ml)
025 158	Redox standard (365mV) (500ml)
025 159	Redox standard (465mV) (500ml)

Printers and PC Software

Ordering Information

Part Code	Description
543 001	40 column serial printer with interface cable, paper roll (060 287), ribbon (060 288) and UK power adapter (requires interface cradle) (3205)
542 001	Interface cradle supplied with interface cable kit (542 009)
060 287	Roll of paper for 40 column printer
060 288	Ribbon for 40 column printer
037 701	Thermal printer with IrDA, complete with roll of paper (037 702), universal power adapter and interface cable for non-IrDA instruments
037 702	Roll of paper for thermal printer
050 501	DataWay PC Software: includes CD-ROM and interface cable
037 501	RS232 to USB converter for use with computers without serial ports
037 801	9 way serial cable for connection to PC

Miscellaneous

Ordering Information

Part Code	Description
033 267	Carry case (350)
033 268	Carry case (370 and 430)
033 162	Carry case (3150 and 3205)
060 406	Dust cover for bench units
021 008	Battery (3505)
021 007	Battery (350, 370 and 430)

JENWAY

Spectrophotometers

UV-visible spectroscopy is the measurement of the absorbance of light at a specific wavelength by a sample within the UV or visible region of the spectrum. It is one of the oldest analytical techniques and is used to identify the presence and concentration of many molecular entities. As spectrophotometers are used in many applications and across multiple industries Jenway have five ranges of visible and UV/visible spectrophotometers, designed to suit a wide range of budgets.

Selecting a Spectrophotometer

Model	Visible	UV	Scanning beam	Single	Split beam	Double beam	Banwidth
6300	✓	-	-	✓	-	-	8nm
6305	✓	✓	-	✓	-	-	8nm
6310	✓	-	✓	✓	-	-	8nm
6315	✓	✓	✓	✓	-	-	8nm
Aquanova	✓	-	-	✓	-	-	8nm
Genova	✓	✓	✓*	✓	-	-	5nm
6400	✓	-	✓	✓	-	-	5nm
6405	✓	✓	✓	✓	-	-	5nm
6500	✓	-	✓	-	✓	-	1.8nm
6505	✓	✓	✓	-	✓	-	1.8nm
6700	✓	-	✓	-	✓	-	4nm
6705	✓	✓	✓	-	✓	-	4nm
6715	✓	✓	✓	-	✓	-	1.5nm
6800	✓	✓	✓	-	-	✓	1.5nm

*restricted scanning ±50nm of selected wavelength

There are five ranges of visible and UV/visible spectrophotometers offered by Jenway, which have been designed to suit a wide range of budgets, industries and applications.

The 63 series are entry-level spectrophotometers that range from the 6300 which is ideal for routine analysis to the 6315 UV/visible scanning spectrophotometer that includes spectrum, kinetics and quantitation modes.

The 64 series visible and UV/visible single-beam scanning spectrophotometers incorporate a wide range of features designed to satisfy the needs of users seeking to maximise the efficiency of routine and specialised spectroscopic procedures.

The 65 series are split-beam visible and UV/visible spectrophotometers with modes for photometrics, kinetics, quantitation, multi-wavelength analysis and spectrum scanning. They are designed to provide users with a high quality system, which offers many advanced post-analysis features required to process spectral information.

The 67 series is a range of split beam visible and UV/visible spectrophotometers that possess a host of novel features. These include a colour touchscreen, secure multi-user operation, a full range of plug-in accessory modules and flash synchronised scanning, which allows the 67 series to achieve scan speeds of 1500nm/min, even when scanning at a resolution of 0.1nm.

The 6800 is Jenway's first true double beam UV/visible spectrophotometer that possesses a robust, traditional design that is complemented by the clear and intuitive, Windows-based, Flight Deck PC software.

Visible Spectrophotometers

	6300	6310	6400	6500	6700
Wavelength					
Range	320 to 1000nm	320 to 1000nm	320 to 1000nm	320 to 1100nm	320 to 1100nm
Bandwidth	8nm	8nm	5nm	1.8nm	4nm
Modes					
Photometrics	✓	✓	✓	✓	✓
Spectrum scan	-	✓	✓	✓	✓
Scan speed (nm / min)	-		1400	1400	1500
Kinetics	-	✓	✓	✓	✓
Quantitation	-	✓	✓	✓	✓
Multi-Wavelength	-	-	✓	✓	✓
Data					
Post-scan analysis	-	✓	✓	✓	✓
File output	-	-	Option	Option	csv or bmp
Removable media	-	-	-		SD, SD/USB
PC Software	✓	✓	Option	Option	✓
Interface	Analogue RS232	Analogue RS232	Analogue RS232	Analogue RS232	Analogue Centronics USB

UV/Visible Spectrophotometers

	6305	6315	6405	6505	6705	6715
Wavelength						
Range	198 to 1000nm	198 to 1000nm	190 to 1100nm	190 to 1100nm	190 to 1100nm	190 to 1100nm
Bandwidth	8nm	8nm	5nm	1.8nm	4nm	1.5nm
Modes						
Photometrics	✓	✓	✓	✓	✓	✓
Spectrum scan	-	✓	✓	✓	✓	✓
Scan speed (nm / min)	-		1400	1400	1500	1500
Kinetics	-	✓	✓	✓	✓	✓
Quantitation	-	✓	✓	✓	✓	✓
Multi-Wavelength	-	-	✓	✓	✓	✓
Data						
Post-scan analysis	-	✓	✓	✓	✓	✓
File output	-	-	Option	Option	csv or bmp	csv or bmp
Removable media	-	-	-	-	SD, SD/USB	SD, SD/USB
PC Software	Supplied	Supplied	Option	Option	Supplied	Supplied
Interface	Analogue RS232	Analogue RS232	Analogue RS232	Analogue RS232 Parallel	Analogue Centronics USB	Analogue Centronics USB

6300 and 6320D Visible Spectrophotometers

- Wavelength range of 320 to 1000nm
- Absorbance, %T and concentration modes
- Multi-parameter display with wavelength and photometric readouts
- Wide range of sampling accessories
- Domed lid of 6320D accepts tubes up to 105mm tall

The 6300 is a high quality, low cost unit for spectrophotometric applications in schools and colleges, as well as in QC and testing procedures for a wide variety of services and industries. The 6320D is based on the 6300 platform and includes a domed lid which accepts taller tubes up to a height of 105mm.

6300

Technical Specification

Wavelength

Range	320 to 1000nm
Resolution	1nm
Accuracy	±2nm
Spectral bandwidth	8nm

Photometrics

Transmittance	0 to 199.9%T
Absorbance	-0.300 to 1.999A
Accuracy	±1%T
Resolution	0.1%T, 0.001A
Stray light	<0.5%T
Noise	<1%
Stability	1%/h after 15 minutes

Concentration

Range	-300 to 1999
Resolution	0.1 to 1
Units	ppm, mg/l, g/l, M, %, blank
Factor	0 to 199.9, 1000 to 9999

Other

Light source	Tungsten halogen lamp
Outputs	Analogue and RS232
Power	<50W
Size (w x d x h)	365 x 272 x 160mm
Weight	6kg

Ordering Information

Part Code	Description
630 501	6300 visible spectrophotometer supplied with mains lead, pack 100 disposable cuvettes, 10 x 10mm cell holder, interface cable and PC application software on CD-ROM* (230V/50Hz)
632 501	6320D visible spectrophotometer supplied with mains lead and dual cell holder (for 10mm square cuvettes and 12.7mm diameter tubes) (230V/50Hz)

* requires free on-line registration

6305 UV/Visible Spectrophotometer

- Wavelength range of 198 to 1000nm
- Xenon lamp
- Easy and intuitive operation
- Absorbance, %T and concentration modes
- Multi-parameter display with wavelength and photometric readouts
- Wide range of sampling accessories

The 6305 is ideal for applications similar to the 6300 requiring measurements in the UV and visible wavelength ranges. Using a single, pulsed xenon lamp the 6305 offers an extended lamp life and high energy throughput in the UV and visible regions.

6305

Technical Specification

Wavelength
Range	198 to 1000nm
Resolution	1nm
Accuracy	±2nm
Spectral bandwidth	8nm, 6nm over UV range

Photometrics
Transmittance	0 to 199.9%T
Absorbance	-0.300 to 1.999A
Accuracy	±1%T
Resolution	0.1%T, 0.001A
Stray light	<0.5%T at 220 and 340nm
Noise	<0.001A at 0A at 400nm
Stability	<0.002A/h after 30 minutes

Concentration
Range	-300 to 1999
Resolution	0.1 to 1
Units	ppm, mg/l, g/l, M, %, blank
Factor	0 to 199.9, 1000 to 9999

Other
Light source	Xenon lamp
Outputs	Analogue and RS232
Power	<50W
Size (w x d x h)	365 x 272 x 160mm
Weight	6kg

Ordering Information

Part Code	Description
635 001	6305 UV/visible spectrophotometer supplied with mains lead, pack 100 disposable cuvettes, 10 x 10mm cell holder, interface cable and PC application software on CD-ROM* (230V/50Hz)

* requires free on-line registration

6310 Visible Scanning Spectrophotometer

- Spectrum scanning across entire range from 320 to 1000nm
- Concentration measurements by direct factor or by quantitation using up to 6 standards
- Kinetics with real time graphical display of sample and standard
- Store up to 50 methods in each mode

The 6310 visible spectrophotometer introduces scanning, kinetics and quantitation modes to this highly successful format. Complete with method storage and supervisory control functions, the 6310 is ideal for routine testing in clinical, veterinary, pharmaceutical and QC laboratories.

6310

Technical Specification

Wavelength
Range	320 to 1000nm
Resolution	1nm
Accuracy	±2nm
Spectral bandwidth	8nm

Photometrics
Transmittance	0 to 199.9%T
Absorbance	-0.300 to 1.999A
Accuracy	±1%T
Resolution	0.1%T, 0.001A
Stray light	<0.5% at 340nm
Noise	<0.001A at 0A at 400nm
Stability	<0.002A/h after 30 minutes

Concentration
Range	-300 to 1999
Resolution	selectable 1, 0.1, 0.01 or 0.001
Calibration	Blank with a single standard or factor

Quantitation
Range	-300 to 1999
Resolution	Selectable 1, 0.1, 0.01 or 0.001
Calibration	Blank with up to 6 standards
Curve correction	Linear regression, interpolation or linear regression through zero

Kinetics
Display	Graphical and calculated concentration value
Calibration	Against standard and factor
Correlation factor	r^2 value displayed with result

Spectrum
Range	Any range between 320 and 1000nm
Scan interval	1, 2 or 5nm, selectable
Analysis	Absorbance and wavelength of peaks and valleys

Other
GLP	Real time clock and calendar, Operator ID Supervisor security (locks all set up parameters) Method display lock
Light source	Tungsten halogen lamp
Outputs	Analogue and RS232
Power	<50W
Size (w x d x h)	365 x 272 x 160mm
Weight	6kg

Ordering Information

Part Code Description

631 001	6310 visible, scanning spectrophotometer supplied with mains lead, pack 100 disposable cuvettes, 10 x 10mm cell holder, interface cable and PC application software on CD-ROM* (230V/50Hz)

* requires free on-line registration

6315

6315 UV/Visible Scanning Spectrophotometer

- Spectrum scanning across the entire range from 198 to 1000nm
- Pulsed xenon lamp
- Quantitation using up to 6 standards

The 6315 is an advanced spectrophotometer with modes for photometrics, spectrum scanning, kinetics, concentration and quantitation. The 6315 will meet the demands of a wide range of applications especially those in clinical, veterinary, environmental, general QC and performance testing areas. With a memory capacity of 50 methods for each mode, the fully open operating system ensures compatibility with reagent kits from most manufacturers as well as enabling full customisation.

Technical Specification

Wavelength
Range	198 to 1000nm
Resolution	1nm
Accuracy	±2nm
Spectral bandwidth	8nm

Photometrics
Transmittance	0 to 199.9%T
Absorbance	-0.300 to 1.999A
Accuracy	±1%T
Resolution	0.1%T, 0.001A
Stray light	<0.5% at 340nm
Noise	<0.001A at 0A at 400nm
Stability	<0.002A/h after 30 minutes

Concentration
Range	-300 to 1999
Resolution	Selectable 1, 0.1, 0.01 or 0.001
Calibration	Blank with a single standard or factor

Quantitation
Range	-300 to 1999
Resolution	Selectable 1, 0.1, 0.01 or 0.001
Calibration	Blank with up to 6 standards
Curve correction	Linear regression, interpolation or linear regression through zero

Kinetics
Display	Graphical and calculated concentration value
Calibration	Against standard and factor
Correlation factor	r^2 value displayed with result

Spectrum
Range	Any range between 198 and 1000nm
Scan interval	1, 2 or 5nm, selectable
Analysis	Absorbance and wavelength of peaks and valleys

Other
GLP	Real time clock and calendar Operator ID Supervisor security (locks all set up parameters) Method display lock
Light source	Xenon lamp
Outputs	Analogue and RS232
Power	<50W
Size (w x d x h)	365 x 272 x 160mm
Weight	6kg

Ordering Information

Part Code	Description
631 501	6315 UV/visible scanning spectrophotometer supplied with mains lead, pack 100 disposable cuvettes, 10 x 10mm cell holder, interface cable and PC application software on CD-ROM* (230V/50Hz)

* requires free on-line registration

Aquanova Environmental Spectrophotometer

- Dedicated to water and environmental testing
- Stores up to 300 test methods
- Pre-loaded with Jenway test kit methods
- Compatible with most commercially available photometric test kits
- Drag and drop test methods from a CD-ROM
- Create new tests using a simple factor or standard curve with up to 6 standards
- PC software included

The Aquanova spectrophotometer and test kits offer the simplest and most convenient laboratory system for measuring a broad range of parameters in water, wastewater, effluent and environmental samples. Although targeted to water and environmental analysis the Aquanova can be used as a standard single beam visible spectrophotometer by selecting the photometrics mode.

Aquanova

Technical Specification

Wavelength

Range	320 to 1000nm
Resolution	1nm
Accuracy	±2nm
Spectral bandwidth	8nm

Photometrics

Transmittance	0 to 199.9%T
Absorbance	-0.300 to 1.999A
Accuracy	±1%T
Resolution	0.1%T, 0.001A
Stray light	<0.5%T
Noise	<1%
Stability	<1%/h

Concentration

Range	-300 to 1999
Resolution	Selectable 1, 0.1, 0.01 or 0.001
Units	blank, ppm, pH, mg/l, g/l, %, mg/kg, IFZ, HZ, mEq, U/ml, mU/l, U/l, µM, mM, M, µg/ml, mg/ml, µg/dl, g/dl, ng/dl, µg/l
Factor	0.001 to 9999.999
Calibration curve	Up to 6 standards

Other

Test memory	300 methods
Results memory	50 results
Clock	Time (24 hour) and date
Timer	1 second to 24 hours, 1second resolution, cal or save on time out
Light source	Tungsten halogen lamp
Outputs	Analogue and RS232
Power	<50W
Size (w x d x h)	65 x 272 x 160mm
Weight	6kg

Ordering Information

Part Code	Description
637 001	Aquanova visible spectrophotometer supplied with mains lead, 9 way serial cable (013 203) and PC application software on CD-ROM (603 436) (230V/50Hz)

Genova Life Sciences Spectrophotometer

- Pre-programmed for DNA/RNA analysis
- DNA purity scan mode
- Pre-loaded protein concentration determination methods
- Standard spectrophotometer functions

The Genova allows the measurement of DNA concentrations and purity ratios using the wavelengths recorded at 260 and 280nm or 260 and 230nm with optional correction at a third wavelength. The purity scan gives a clear, graphic display of DNA purity. This allows any shifted or distorted peaks due to interfering molecules to be identified.

The Genova also contains five pre-programmed methods for the Bradford, Lowry, Biuret, Bicinchonininc acid (BCA) and Direct UV techniques. In all cases the standard procedures may be modified by the user or run as programmed.

Technical Specification

Wavelength
Range	198 to 1000nm
Resolution	1nm
Accuracy	±2nm
Repeatability	±0.5nm
Spectral bandwidth	8nm, 5nm typical at 270nm

Photometrics
Transmittance	0 to 199.9%T
Absorbance	-0.300 to 1.999A
Accuracy	±1%T at 10%T
Resolution	0.1%T, 0.001A
Stray light	<0.5%T at 220 and 340nm
Noise	<0.001A at 0A at 400nm
Stability	<0.002A/h after 30 minutes

Concentration
Range	-300 to 9999
Resolution	Selectable 1, 0.1, 0.01 or 0.001
Units	ppm, mg/l, g/l, M, %, µg/l, µg/ml, mg/ml, ng/ml, blank (mode specific)
Factor	0 to 199.9, 1000 to 9999

Spectrum
Range	Survey scan 50nm either side of set wavelength (250-950nm)
Scan interval	1nm
Analysis	Absorbance and wavelength of peak

Other
GLP	Real time clock and calendar, Operator ID Supervisor security (locks all set up parameters) Method display lock
Light source	Xenon lamp
Outputs	Analogue and RS232
Power	<50W
Size (w x d x h)	365 x 272 x 160mm
Weight	6kg

Ordering Information

Part Code	Description
636 001	Genova UV/visible life sciences spectrophotometer supplied with mains lead, 8 x 750µl UV plastic cuvettes and cell holder (230V/50Hz)
636 005	Genova UV/visible life sciences spectrophotometer supplied with TrayCell, mains lead, 8 x 750µl UV plastic cuvettes and cell holder (230V/50Hz)

Genova

Environmental Test Kits

Ordering Information

Part Code	Description	Range	Number of Tests
025 300	Alkalinity m	5 - 200mg/l $CaCO_3$	100
025 301	Alkalinity p	5 - 300mg/l $CaCO_3$	100
025 302	Aluminium	0.01 - 0.25mg/l	100
025 303	Ammonia	0.02 - 1.0mg/l N	100
025 304	Ammonium LR	0 - 2.5 mg/l N	50
025 305	Ammonium HR	1 - 50 mg/l N	50
025 306	Bromine	0.1 - 6.5 mg/l	100
025 338	Chloride	0.5 - 25 mg/l	100
025 307	Chlorine (Free)	0.05 - 3 mg/l	100
025 308	Chlorine (Total)	0.05 - 3 mg/l	100
025 309	Chlorine Dioxide	0.5 - 2.5 mg/l	100
025 314	Chromium (Hex)	0.02 - 2 mg/l	100
025 313	Chromium (Total)	0.02 - 2 mg/l	100
025 312	COD (HR)	1000 - 15000 mg/l O_2	25
025 310	COD (LR)	0 - 150 mg/l O_2	25
025 311	COD (MR)	100 - 1500 mg/l O_2	25
025 316	Copper (free)	0.5 - 5 mg/l	100
025 315	Copper (Total)	0.5 - 5 mg/l	100
025 317	Fluoride	0.02 - 1.5 mg/l	100
025 318	Hardness Total	2 - 50mg/l $CaCO_3$	100
025 320	Hydrogen Peroxide	0.5 - 1.5mg/l	100
025 321	Iodine	0.05 - 3.6 mg/l	100
025 322	Iron (soluble)	0.1 - 3mg/l	100
025 323	Manganese	0.05 - 4mg/l	100
025 324	Molybdate	0.5 - 30mg/l	100
025 325	Nitrate	1 - 30 mg/l	50
025 326	Nitrite	0.01 -0.5mg/l	100
025 327	Nitrogen Total (LR)	0.5 - 25mg/l	50
025 328	Nitrogen Total (HR)	5 - 150mg/l	50
025 330	Orthophosphate	0.05 - 4mg/l	100
025 329	Oxygen Active	0.1 - 10mg/l	100
025 331	pH	6.5 - 8.4	100
025 332	Potassium	0.5 - 12 mg/l	100
025 333	Silica	0.05 - 3mg/l	100
025 334	Sulphate	2 - 100mg/l	100
025 335	Sulphide	0.05 - 0.5mg/l	100
025 336	Sulphite	0.05 - 4mg/l	100
025 337	Zinc	0.02 - 1mg/l	100

63 Series Accessories
Cell Holders

Order Information

Part Code	Description
630 204	10mm path length cuvette holder
630 005	10 to 100mm path length cuvette holder
630 020	Test tube holder (13mm diameter)
630 021	Test tube holder (25mm diameter)
630 022	Test tube holder (16mm diameter)
634 001	4 position manual cuvette holder
630 304	Micro-cuvette holder with reduced aperture
632 511	Dual cell holder for 10mm cuvettes and 12.7mm diameter tubes (for use with 6320D only)
637 071	Aquanova cell holder
636 024	Cuvette holder adapter (7.5 to 15mm beam height)

Heated Cell and Sipper Pump Options

Order Information

Part Code	Description
632 001	Sipper Pump (EU version)
648 001	Water heated single cuvette holder
633 001	Heated cuvette system supplied with interconnection cables and mains cable (EU, UK and US)
037 201	Water bath and circulator, ambient +5 to 50°C for use with 648 001 (230V)

Printers and PC Software

Order Information

Part Code	Description
050 501	DataWay PC software, supplied with interface cables (Genova)
037 551	RS232 to USB converter for use with computers without a serial port
543 001	40 column printer supplied with interface cable, paper roll and ribbon and UK power adapter
060 287	Paper roll for printer
060 288	Printer ribbon
542 009	Interface cable kit

Miscellaneous

Order Information

Part Code	Description
060 425	24mm diameter screw cap vial for use with Aquanova (pack of 24)
060 426	16mm diameter screw cap vial for use with Aquanova (pack of 20)
037 601	Digester for COD determinations, includes 2 blocks for 12 COD tubes each (230V)
037 603	Digester block for 12 COD tubes
060 422	Moulded cuvette rack for 16 10 x 10mm cuvettes
021 041	DC/AC power converter (for 12V DC supply)
035 088	Visible Calibration Set (6300/6320D/6310/Aquanova)
035 091	UV/Visible Calibration Set (6305/6315/Genova and visible)
630 028	Dust cover
033 290	Storage/carry case (not for use with 6320D or Aquanova)
012 094	Xenon lamp module (6305/6315/Genova)
012 075	Tungsten halogen lamp (6300/6320D/6310/Aquanova) holder (230V/50Hz)

Spectrophotometers

6400 and 6405 Scanning Spectrophotometers

- 6400 Visible (320 to 1100nm)
- 6405 UV/Visible (190 to 1100nm)
- Single beam scanning units
- Easy to use keypad operation
- 5nm bandpass
- Wide range of accessories

The 64 series scanning units are ideal for all routine teaching, laboratory and research environments. Modes are available for photometrics, spectrum, kinetics, multi-wavelength analysis and quantitation* using standard curve methods. These units have full scanning capability with three scan speeds and intervals, baseline correction, instant display of scan, automatic axis scaling, peak and valley data display and capacity to store two scans.

Sample flexibility is a key feature, with cells from 100mm path length down to micro sample capacity being readily accommodated. To further increase flexibility a wide range of accessories are also available.
* requires 8 cell changer accessory

6400

Technical Specification

Wavelength

Range	6400	320 to 1100nm
	6405	190 to 1100nm
Resolution		0.1nm
Accuracy		±1.0nm
Spectral bandwidth		5nm

Photometrics

Transmittance	0 to 199.9%T
Absorbance	-0.300 to 3.000A
Accuracy	±0.1%T at 10%T, ±0.005A at 1.0A
Resolution	0.1%T, 0.001A
Stray light	<0.05% at 340nm
Noise	<0.001A at 0A
Stability	<0.001A/h after 15 minutes

Concentration

Range	-300 to 9999 (resolution dependent)
Resolution	Selectable 1, 0.1, 0.01 or 0.001
Units	ppb, ppm, µg/l, mg/l, M, %, blank
Factor	0.000 to 9999.99

Spectrum

Range	Any range between 320 (6400) or 190 (6405) and 1100nm
Scan speed	Up to 1400nm/min
Scan interval	0.2, 1.0, 5.0nm
Analysis	Absorbance or transmittance and wavelengths of peaks and valleys

Other

Light source	6400	Tungsten halogen lamp
	6405	Tungsten halogen and Deuterium lamps
Lamp changeover		320 to 390nm (6405)
Outputs		Analogue and RS232
Power		200VA
Size (w x d x h)		520 x 330 x 180mm
Weight		15kg

Ordering Information

Part Code	Description
640 001	6400 visible, scanning spectrophotometer supplied with pack 100 disposable cuvettes and mains lead (230V/50Hz)
640 501	6405 UV/visible, scanning spectrophotometer supplied with pack 100 disposable cuvettes and mains lead (230V/50Hz)

6500

6500 and 6505 Scanning Spectrophotometers

- 1.8nm spectral bandwidth
- Split beam optics for high performance
- 8-position automatic cell changer supplied as standard
- Compatible with DataWay PC software
- Post scan analysis includes derivatives and spectral addition/subtraction

The Jenway 65 series are advanced split-beam spectrophotometers with modes for photometrics, kinetics, quantitation, multi-wavelength analysis and spectrum scanning. Comprehensive post-measurement and scan options make these very powerful stand alone instruments. Methods can be created and stored in the internal and removable memory along with any results generated. An 8-position motorised cell holder is included as standard, speeding up analysis, automating the creation of calibration curves and offering auto-log functions across all modes of operation.

Technical Specification

Wavelength

Range	6500	320 to 1100nm
	6505	190 to 1100nm
Resolution		0.1nm
Accuracy		±1nm
Spectral bandwidth		1.8nm

Photometrics

Transmittance	0 to 199.9%T
Absorbance	-0.300 to 3.000A
Accuracy	±0.1% at 10%T, ±0.005A at 1.0A
Resolution	0.1%T, 0.001A
Stray light	<0.05%T at 220 and 340nm
Noise	<0.001A at 0A
Stability	<0.001A/h after warm-up

Concentration

Range	-300 to 9999 (resolution dependent)
Resolution	Selectable 1, 0.1, 0.01 or 0.001
Units	ppb, ppm, µg/l, mg/l, M, %, blank
Factor	0.000 to 9999.99

Spectrum

Range	Any range between 320 (6500) or 190 (6505) and 1100nm
Scan speed	Up to 1400nm/min
Scan interval	0.2, 1.0, 5.0 and 10nm
Analysis	Absorbance or transmittance and wavelengths of peaks and valleys, derivatives, addition, subtraction, smoothing, area under curve

Other

Languages		English, French, German, Italian, Portuguese and Spanish
Light source	6500	Tungsten halogen lamp
	6505	Tungsten halogen and Deuterium lamps
Lamp changeover		320 to 390nm
Outputs		Analogue and RS232
Power		200VA
Size (w x d x h)		520 x 330 x 180mm
Weight		15kg

Ordering Information

Part Code	Description
650 001	6500 visible, scanning spectrophotometer supplied with serial mouse, mouse mat, pack 100 (3.5ml) disposable cuvettes, 8-position multi cell changer and mains lead (230V/50Hz)
650 501	6505 UV/visible, scanning spectrophotometer supplied with serial mouse, mouse mat, pack 100 (3.5ml) disposable cuvettes, 8-position multi cell changer and mains lead (230V/50Hz)

64 and 65 Series Accessories

Cell Holders

Part Code	Description
646 001	Universal test tube holder for 6400/6405 (P)
646 002	Universal test tube holder for 6400/6405 (F)
630 005	Universal cuvette holder, 10 to 100mm path length (F)
634 001	4 position cuvette holder (6400/6405 only)
644 001	Eight-position motorised cuvette changer (P)
644 002	Eight-position motorised cuvette changer (F)
644 003	Eight-position rack for 10mm cuvettes
644 103	Eight-position rack for 40mm cuvettes
644 203	Eight-position rack for 50mm cuvettes
645 001	Vacuum pump (P)
645 002	Vacuum pump (F)
630 304	Micro-cuvette holder with reduced aperture

Heated Cell and Sipper Pump Options

Part Code	Description
642 001	Sipper pump (P)
642 002	Sipper pump (F)
633 001	Heated cuvette system (cuvette holder and external control unit), supplied with interconnection cables and mains cables (EU, UK and USA)
648 001	Water heated single cuvette holder
649 001	Eight-position water jacketed cuvette holder (for 10mm cuvettes)*
643 001	Peltier heated cuvette system comprising heated cuvette block and external power supply module (230V/50Hz) (P)
643 002	Peltier heated cuvette system comprising heated cuvette block and external power supply module (230V/50Hz) (F)
647 001	Temperature controlled sipper system (230V/50Hz) (P)
647 002	Temperature controlled sipper system (230V/50Hz) (F)
037 201	Water bath and circulator, ambient +5 to 50°C for use with 648 001 and 649 001 (230V/50Hz)

* When used with the 64 series part code 644 001 is also required

Printers and PC Software

Part Code	Description
050 501	DataWay PC software, supplied with interface cables
037 551	RS232 to USB converter for use with computers without a serial port
543 001	40 column serial printer supplied with interface cable, paper roll, ribbon, and UK power adapter
542 009	Interface cable kit
641 001	Internal printer (P)
641 002	Internal printer (F)
060 287	Paper roll for printer 543 001
060 288	Printer ribbon for 543 001
650 028	Data card, 1Mb additional memory (6500/6505 only)

Miscellaneous

Part Code	Description
060 422	Moulded cuvette rack for 16 10 x 10mm cuvettes
035 088	Visible range Calibration Standards (6400 and 6500)
035 091	UV/Visible Calibration Standards (6405 and 6505)
640 133	Dust cover
012 075	Tungsten halogen lamp (all models)
640 508	Deuterium lamp (6405 and 6505)

(P) = Packed (F) = Factory fitted

6705

67 Series Visible and UV/Visible Scanning Spectrophotometers

- Colour touch screen display
- High quality, sealed split beam optics for optimum photometric performance
- Secure multi-user operation
- Save to SD/USB memory cards
- Enhanced productivity
- Extensive range of accessories for flexibility and improve productivity

All three instruments have modes for photometrics, spectrum scanning, multi-wavelength analysis, kinetics and quantitation, giving direct concentration results against single or multi-point calibrations. With extensive post measurement tools to ensure results are presented exactly to each users requirements the 67 series also offers significant advances in data portability.

Together, the touch screen and colour display give the fastest, most flexible instrument interface possible. Where fine cursor control is required, using the QWheel™ makes the task easy and precise.

Jenway have developed Secure Multi User Operation for when instruments are shared by a number of users, so access to the instrument functions is controlled through a secure log-in procedure. For maximum security PIN codes can be allocated to individuals, groups or departments and to further increase flexibility each method can be given three levels of security:

Public	Access is free to all users.
Read only	Methods can be accessed by all users, but only modified by the originator.
Personal	Method can only be accessed by the logged in user

The high capacity internal memory of the 67 series can be configured from 256MB, enabling over 1000 methods and results to be stored, up to 2GB, which stores more than 10,000 methods and results.

Removable SD or SD/USB memory cards further increases the flexibility and data transfer and enables the direct transfer of results to a PC via a USB port. Here all data can be viewed, exported, saved or printed for generating reports and standard operating procedures. Copying the SD card to the instrument's internal memory enables the easy cloning of multiple instruments, ensuring common laboratory practice and speeding set-up in busy teaching establishments.

QWheel is a registered trademark of Quantum Research

6700, 6705 and 6715 Visible and UV/visible Spectrophotometers

6700

67 Series

Technical Specification

Wavelength

Range	320 to 1100nm (6700)
	190 to 1100nm (6705, 6715)
Resolution	0.1nm
Accuracy	±1.0nm
Repeatability	±0.2nm
Spectral bandwidth	4nm (6700, 6705)
	1.5nm (6715)

Photometrics

Transmittance	0 to 199.9%T
Absorbance	-0.300 to 3.000A
Accuracy	±0.005A at 1.0A
Resolution	0.1%T, 0.001A
Stray light	<0.1%T at 340nm (6700)
	<0.05% at 220nm (6705, 6715)
Noise	<0.001 at 0A, <0.002 at 2A at 340nm
Stability	<0.001A/h after warm-up

Quantitation

Range	-99999 to +99999
Resolution	Selectable 1, 0.1, 0.01 or 0.001
Calibration	Up to 20 with 5 replicates of each
Units	mEq/l, ppm, mg/l, g/l, %, µg/ml, mg/ml, g/dl, mg/dl, µg/l, ng/l, µg/dl, M, mM, µM, U/l, mU/l, U/ml, blank
Curve fit algorithms	Linear, quadratic and cubic functions

Multi-wavelength

Data points	Up to 4 wavelengths
Calculations	Ratio, difference, formulae with factors

Kinetics

Time limits	0 to 9999 seconds
Calibration	Standard or factor
Analysis	Curve details with mean rate of change plus formula of line of best fit

Spectrum

Range	Any range between 320 (6700) or 190 (6705, 6715) and 1100nm
Scan speed	1500nm/min
Scan interval	0.1nm
Analysis	Auto peaks and valleys, zoom, addition, subtraction, peak ratios, smoothing, area under curve, wavelength table, derivatives, analysis points, overlay

Other

Light source	Tungsten halogen lamp (6700)
	Xenon lamp (6705, 6715)
Configuration	Secure multi-user and free access
Number of users	10 users + supervisor
Methods/results memory	>1000 on internal flash memory or removable media
Removable media	MM/SD memory card or SD/USB memory card
Outputs	USB, Centronics, Analogue
Size (w x d x h)	490 x 390 x 220mm
Weight	7.5kg
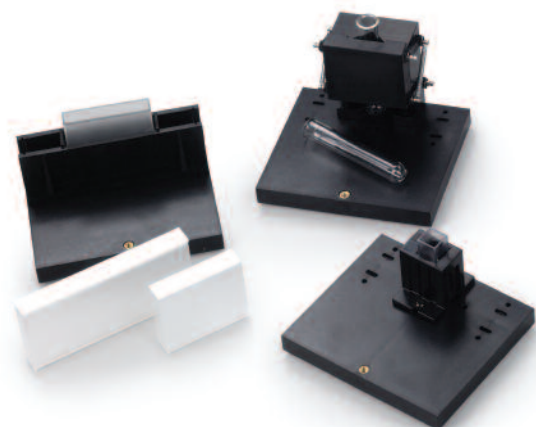
Sample Holders

Eight Position Cuvette Holder

Modules

6700, 6705 and 6715 Visible and UV/visible Spectrophotometers
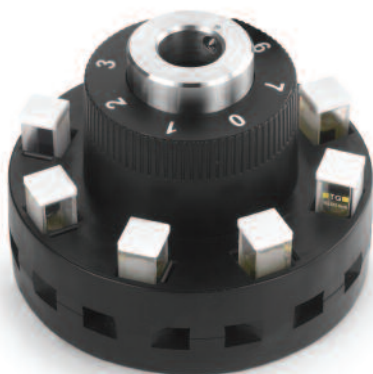
Ordering Information

Part Code	Description
670 0B0	6700 (320-1100nm) fitted with a single 10 x 10 mm cuvette holder
670 0BP	6700 (320-1100nm) fitted with a single 10 x 10 mm cuvette holder and internal thermal 40-column printer
670 0A0	6700 (320-1100nm) fitted with an automated eight-position cuvette holder
670 0AP	6700 (320-1100nm) fitted with an automated eight-position cuvette holder and internal thermal 40-column printer
670 5B0	6705 (190-1100nm) fitted with a single 10 x 10 mm cuvette holder
670 5BP	6705 (190-1100nm) fitted with a single 10 x 10 mm cuvette holder and internal thermal 40-column printer
670 5A0	6705 (190-1100nm) fitted with an automated eight-position cuvette holder
670 5AP	6705 (190-1100nm) fitted with an automated eight-position cuvette holder and internal thermal 40-column printer
671 5B0	6715 (190-1100nm) fitted with a single 10 x 10 mm cuvette holder
671 5BP	6715 (190-1100nm) fitted with a single 10 x 10 mm cuvette holder and internal thermal 40-column printer
671 5A0	6715 (190-1100nm) fitted with an automated eight-position cuvette holder
671 5AP	6715 (190-1100nm) fitted with an automated eight-position cuvette holder and internal thermal 40-column printer

NOTE: All 67 Series spectrophotometers come supplied with 1GB of internal memory, 1GB* SD/USB memory card, 100 disposable cuvettes, instruction manual, power cable and PC software on CD ROM with interface cable.

* Subject to change

67 Series Accessories

The 67 series has been specifically designed to enhance productivity and simply adding an accessory automatically sets the instrument operating parameters. The automated eight position and temperature controlled six position cell holders are the key to improved productivity. Using the dedicated Automation option up to seven samples can be measured sequentially with all results saved or printed automatically.

The Peltier controlled cuvette holder allows precise control of temperature control in the range of 20 to 50°C to a resolution of 0.1°C. A programmable sipper pump enables controlled volumes to be injected into micro and standard flow-through cuvettes. For sensitive applications a combined peltier sipper module is also available. A full range of passive sample holders can also be easily fitted.

Cell Holders

Part Code	Description
660 801	Single cell sample chamber module fitted with 10 x 10mm cuvette holder (630 204)
660 401	Sample chamber with automatic eight-cell changer module fitted
660 403	Additional carrousel for automatic eight-cell changer (for use with 660 401)
660 503	Additional carrousel for water heated automatic six-cell changer (for use with 660 501)
660 901	Single cell sample chamber module fitted with 10mm cuvette/16/24mm diameter tube holder (as Aquanova 637 071)
661 001	Single cell sample chamber module fitted with 10 x 100mm cuvette holder (630 005)
661 101	Single cell sample chamber module fitted with micro cuvette holder with reduced aperture (630 304)
630 204	10mm path length cuvette holder
637 071	Aquanova cell holder (for 10mm square cuvettes, 16 and 24mm diameter tubes)
630 005	10 to 100mm path length cuvette holder
630 304	Micro-cuvette holder with reduced aperture

Heated Cell and Sipper Pump Options

Part Code	Description
648 001	Water heated single cuvette holder
660 501	Sample chamber with water heated automatic six-cell changer module fitted
660 201	Sample chamber with sipper module fitted
660 301	Sample chamber with Peltier module fitted
660 701	Sample chamber with sipper/Peltier module fitted
661 201	Single cell sample chamber module fitted with water heated cuvette holder (648 001)*

Printers and PC Software

Part Code	Description
660 101	Internal printer (packed)
037 702	Paper roll for thermal printer
019 130	256MB SD card for external memory
019 131	512MB SD card for external memory
019 132	1GB SD card for external memory
019 133	2GB SD card for external memory
019 135	1GB SD/USB card for external memory
019 136	2GB SD/USB card for external memory

Miscellaneous

Part Code	Description
660 001	Dust cover
060 422	Moulded cuvette rack for 16 10x10mm cuvettes
035 088	Visible range calibration standards (all models)
035 091	UV/Visible calibration standards (6705/6715)
012 075	Tungsten halogen lamp
012 146	Xenon lamp module

68 Series

68 Series UV/Visible Double Beam Spectrophotometer

- Double beam spectrophotometer with highly stable optics
- 1.5nm spectral bandwidth
- Jenway Flight Deck software included as standard

With the 6800 Jenway introduces the first double beam spectrophotometer to the range. The highly stable optics and 1.5nm spectral bandwidth ensures high resolution and accuracy on every measurement. The Jenway Flight Deck software offers modes for all common measurement methods: photometrics and multi-wavelength, spectrum scanning, time scan and kinetics, quantitation, DNA/RNA and protein measurements. With extensive post-measurement tools and easy export to Excel® the 6800 ensures that all results are presented exactly to your requirements.

Technical Specification

Wavelength

Range	190 to 1100nm
Resolution	0.1nm
Accuracy	±0.3nm
Repeatability	±0.1nm
Spectral bandwidth	1.5nm

Photometrics

Transmittance	0 to 600%T
Absorbance	-3.0000 to 3.0000A
Accuracy	±0.3%T
	±0.002A at 0 to 0.5A, ±0.004A at 0.5 to 1.0A, ±0.008A at 1.0 to 2.0A
Reproducibility	±0.15%T
	±0.001A at 0 to 0.5A, ±0.002A at 0.5 to 1.0A, ±0.004A at 1.0 to 2.0A
Resolution	0.01%T, 0.0001A
Stray light	<0.05%T at 220 and 340nm
Noise	0.0003A
Stability	±0.0003A/h after 2h

Multi-wavelength

Data points	Up to 6 wavelengths
Calculations	Ratio, difference, formulae with factors

Spectrum

Range	Any range between 190 and 1100nm
Scan speed	10 to 3600nm/min (8 speed settings)
Scan interval	0.5, 1, 2 or 5nm, dependent on scan speed
Analysis	Auto peaks and valleys, zoom, addition, subtraction, peak ratios, smoothing, area under curve, wavelength table, derivatives, overlay

Time scan and Kinetics

Time limits	30 to 99999 seconds
Analysis	Slope and formula of line of best fit between any two points

Quantitation

Data points	Up to 3 wavelengths
Concentration range	0-99999
Calibration	Blank with standards or factor

DNA/RNA and Protein

DNA/RNA	Ratio, concentration, A_{320} correction
Protein	Bradford, Lowry, BCA, direct UV

Other

Light source	Tungsten halogen and Deuterium lamps
Lamp changeover	325 to 370nm selectable
Outputs	RS232
Operating system:	CPU: 1GHz Memory: 256Mb Hard disk: 500Mb
Power	200VA
Size (w x d x h)	540 x 560 x 235mm
Weight	27kg

68 Series UV/Visible Double Beam Spectrophotometer

Ordering Information

Part Code	Description
680-SC	6800 double beam spectrophotometer supplied with single cuvette holders (for 10 x 10mm cuvettes in sample and reference), Flight Deck PC software on CD ROM and interconnection cable. (PC required but not supplied - cuvettes not supplied)
680-MC	6800 double beam spectrophotometer supplied with micro-cuvette holders (for 10 x 10mm cuvettes in sample and reference), Flight Deck PC software on CD ROM and interconnection cable. (PC required but not supplied - cuvettes not supplied)
680-LC	6800 double beam spectrophotometer supplied with long path length cuvette holders (for 10, 20, 30, 40, 50 or 100mm path length cuvettes in sample and reference), Flight Deck PC software on CD ROM and interconnection cable. (PC required but not supplied - cuvettes not supplied)
680-TC	6800 double beam spectrophotometer supplied with water thermostated single cuvette holders (for 10 x 10mm cuvettes in sample and reference), Flight Deck PC software on CD ROM and interconnection cable. (PC required but not supplied - temperature controlled water circulator required but not supplied, cuvettes not supplied)

10x10mm Cell Holder

*PC not supplied

6800 Series Accessories

Ordering Information

Part Code	Description
680 081	Single 10 x 10mm cell holder for standard measurements
680 031	Micro cell holder for medical and biochemical applications where sample volumes are strictly limited, allows measurements of sample volumes down to 50µl
680 131	Water heated cell holder for use where sample temperature is critical. This allows absolute temperature control from ambient to 40ºC
680 101	Film holder used to record measurements of filters and film-like samples
680 061	Glass filter holder allows the measurement of solid sheet samples for thickness from 0.5mm up to 5mm
680 111	Rectangular long path cell holder, which can accept cell lengths of 10, 20, 30, 40, 50 and 100mm
068 020	Tungsten halogen lamp (6800)
068 021	Deuterium lamp (6800)

Cuvettes

Disposable Cuvettes and Test Tubes (10mm path length unless stated)
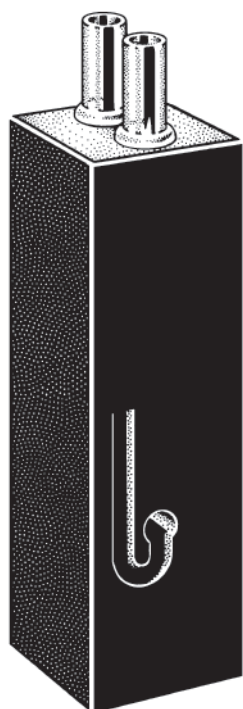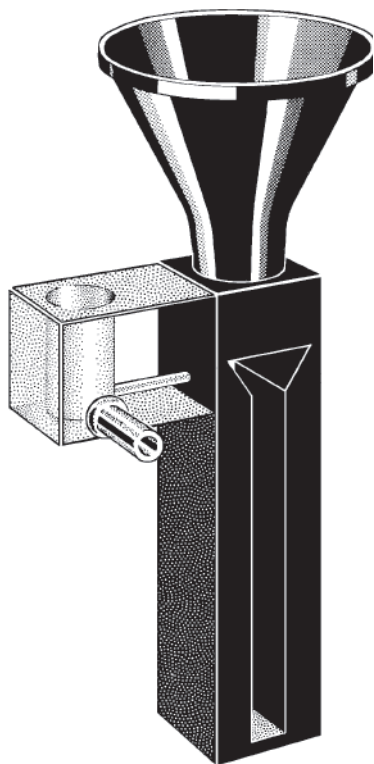
Part Code	Description
060 084	Pack of 100 plastic cuvettes, visible wavelengths only, 2.4 to 4.5ml fill volume
060 229	Pack of 500 plastic cuvettes (5 boxes of 060 084)
060 087	Pack of 100 plastic cuvettes, visible wavelengths only, 1.5 to 3.0ml fill volume
060 230	Pack of 100 plastic cuvettes, UV and visible wavelengths, 2.5 to 4.5ml fill volume
060 232	Pack of 500 plastic cuvettes (5 boxes of 060 230)
060 231	Pack of 100 UV plastic cuvettes, 1.5 to 3.0ml fill volume
035 143	Pack of 100 plastic cuvettes, UV and visible wavelengths, 70µl to 1.5ml fill volume (use with micro cuvette holder)
060 331	Pack of 100 glass test tubes (12 x 75mm)
060 179	Pack of 100 plastic test tubes (12 x 75mm)
060 335	Pack of 50 glass test tubes (24 x 150mm)

Glass and Quartz Cuvettes
(10mm path length unless stated)

Part Code	Description
035 027	Visible (glass) 10mm path length cuvette
035 086	Visible (glass) 20mm path length cuvette
035 029	Visible (glass) 40mm path length cuvette
035 087	Visible (glass) 50mm path length cuvette
035 079	Visible (glass) 100mm path length cuvette
035 123	Visible (glass) micro (500µl) cuvette
035 126	Visible (glass) semi-micro (1ml) cuvette
035 028	UV (quartz) cuvette (2.0 to 3.5ml)
035 124	UV (quartz) ultra micro (50µl) cuvette
035 125	UV (quartz) micro (500µl) cuvette
035 127	UV (quartz) semi-micro (1ml) cuvette
035 138	UV (quartz) ultra-micro (100µl) cuvette
035 139	UV (quartz) ultra-micro (200µl) cuvette
035 249	UV (quartz) ultra-micro (20µl) cuvette

Flow Cells (10mm path length unless stated)

Part Code	Description
035 026	Pour in/Suck out cell
035 025	Visible (glass) flow-through cell 1.8ml
035 045	Visible (glass) flow-through cell 80µl
035 044	UV (quartz) flow-through cell 1.8ml
035 047	UV (quartz) flow-through cell 80µl

TrayCell

- Ideal for DNA, RNA and protein measurements
- Sample volumes as low as 0.7µl
- Sample concentration range from 25 to 4250µg /ml
- Sample is simply wiped away after the measurements, making the TrayCell quick and easy to use
- Prevents dilution and pipetting errors
- Fits all standard 10 x 10mm cuvette holders

The TrayCell is a fibre optic cuvette which can be used with as little as 0.7µl of sample. The cuvette has two caps which give path lengths of either 1mm or 0.2mm, thus creating a 'virtual dilution' of 1:10 or 1:50 of the sample when compared to a measurement with a standard 10 mm cuvette

Technical Specification

Light Path	0.2mm or 1mm
Error of light path	± 0.02mm
Volume	0.7-5µl
Wavelength range	190 to 1100nm
Maximum temperature	50°C

Ordering Information

Part Code	Description
035 262	Tray Cell for ultra-micro sample volumes from 0.7 to 5 µl compatible with Genova, 6705 and 6715 spectrophotometers, supplied complete with caps for 1mm and 0.2mm path length operation
035 263	Replacement 1mm path length cap for TrayCell
035 264	Replacement 0.2mm path length cap for TrayCell

JENWAY

Technical Information

Technical Information

Service & Repair

Our dedicated service staff are on hand to help in the unlikely event that your Jenway equipment develops a fault. Please contact them by one of the following means with a clear description of the problem:

E-mail: service@bibby-scientific.com
Tel: +44 (0) 1785 810475
Fax: +44 (0) 1785 810471

On occasion it may be necessary for your equipment to be sent back to our Service Department for repair. In this case please contact the Service Department for a reference number which you should include with your faulty equipment. Please also ensure you include a clear description of the fault and a completed copy of our Decontamination Certificate. This is available as a downloadable pdf file at www.jenway.com, or contact us and we will be happy to fax you a copy. Please clearly mark the package for the attention of the Service Department and post to the following address:

Bibby Scientific Ltd T/As Jenway
Beacon Road
Stone
Staffordshire
ST15 0SA
United Kingdom

All replacement parts are guaranteed for 6 months and where ever possible, returned equipment is turned around in 5 working days.

Please contact our Service Department for further information on onsite repairs and equipment calibration services.

Technical Support

Jenway have a dedicated Technical Support team who are on hand to help with any applications advice and questions you may have about our products and how to use them. The team is made up of experienced laboratory scientists whose backgrounds include chemistry, biochemistry, cell and molecular biology. There are two fully equipped laboratories which are used for developing applications, testing new products and assisting with customer protocols. We aim to respond to queries on the same day if at all possible. If you have any technical queries concerning any of our products you may call our dedicated Technical Support phone line or email us at the following address:

E-mail: jenwayhelp@bibby-scientific.com
Tel: +44 (0)1785 810433
Fax: +44 (0) 1785 810471

Bibby Scientific

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www.jenway.com

Registered Office: 4 Felstead Gardens, Ferry Street,
London E14 3SB. Registered No. 6581141
BS EN ISO 9001:2000 registered company

EC Declaration of Conformity

Jenway Model PFP7 Flame Photometer complies with the following European Standards:

EN 50081-1:1992 Electromagnetic compatibility - Generic emission standard

EN 50082-1:1992 Electromagnetic compatibility - Generic immunity standard

EN 61010-1:2001 Safety requirements for electrical equipment for measurement, control and laboratory use

Following the provision of:

EMC Directive - 89/336/EEC and
Low Voltage Directive - 73/23/EEC

Carl Warren
General Manager, Jenway,
Gransmore Green, Felsted, Dunmow,
Essex, CM6 3LB, England

JENWAY

CE Conformity

At Jenway we rigorously test our electrical products against the CE and safety standards in place. In addition, the majority of our products are independently tested by an accredited test house. This is reinforced by comprehensive technical and manufacturing data which is available for inspection upon request. Copies of the Confirmity Certificates may be downloaded from our website www.jenway.com

WEEE & RoHS Regulations

The Waste Electrical and Electronic Equipment legislation ("the WEEE Regulations Directive 2002/96/EC") is now in force in the UK. The primary purpose of the WEEE directive is the prevention of waste electrical and electronic equipment, and to require the re-use, recycling and other forms of recovery as to reduce such waste disposal to landfill or incineration.

The restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations 2005 ("the RoHS Regulations Directive 2002/95/EC") have now been passed into UK legislation. The primary purpose of these regulations is to restrict the use of lead, mercury, cadmium, hexavalent chromium, polybrominated biphenyls (PBB) or polybrominated diphenyl ethers (PBDE) in new electrical and electronic equipment put on the market in the European Union after July 1, 2006.

As a responsible manufacturer, Bibby Scientific will comply with such regulation as it affects our products and will continue to promote "clean" environmental manufacturing practices.

Certificate of Registration

QUALITY MANAGEMENT SYSTEM - ISO 9001:2000

This is to certify that:

Bibby Scientific Limited
T/A Jenway
Gransmore Green
Felsted
Dunmow
CM6 3LB
United Kingdom

Holds Certificate No: FM 537210

and operates a Quality Management System which complies with the requirements of ISO 9001:2000 for the following scope:

Marketing, design, manufacture and service of analytical and electrochemical instrumentation.

This registration was previously certified under BSI Certificate FM 22474, originally issued from 15/12/1992.

For and on behalf of BSI:

Head of Compliance & Risk (UK)

Originally registered: 23/04/2008   Latest Issue: 23/04/2008   Expiry Date: 13/09/2009

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BSI
Management Systems

ISO9001:2000

The Jenway quality assurance system was first approved in 1992, and is currently certified to the International Quality Standard BS EN ISO 9001:2000. This means that Jenway is committed to providing the highest quality products, services and customer satisfaction.

The scope of our certificate No. FM537210 is: Marketing, design, manufacture and service of analytical and electrochemical instrumentation.

Further details of certification may be downloaded from our website: www.jenway.com

Certificate No: **FM 537210**

Technical Information

Selecting a Spectrophotometer

Do you need a visible or a UV/visible spectrophotometer?

UV-Visible spectroscopy is the measurement of the absorbance at a specific wavelength by a sample within the UV or visible regions of the spectrum. It is one of the oldest analytical techniques and is used to identify the presence and concentration of many molecular entities. Therefore the first question to ask is whether a visible or UV/visible spectrophotometer is required? The near UV region is considered to be from 200 to 380 nm and the visible region from 380 to 800 nm. Jenway have extended the ranges of some of the visible and UV/visible spectrophotometers up to 1100 nm, which is considered to be in the NIR part of the spectrum.

Is scanning capability required?

Many applications require an option for spectrum scanning i.e. measuring the absorbance at each wavelength within a region of the spectrum. However some laboratories only require scanning to 'trouble shoot' the occasional problem. The cost of the instrument is significantly reduced if scanning is not required.

What types of samples are being measured?

The majority of samples in UV/visible spectroscopy are liquid which are usually measured in 10mm glass or quartz silica cuvettes depending upon the wavelength range required. Glass is only suitable for the visible region, whereas quartz must be used in the UV region and is also useable in the visible region. A 10mm cuvette typically holds 2 to 3ml of sample. However for applications such as DNA or protein assays where the amount of sample is limited Jenway offer micro cell holder accessories and micro cuvettes that allow the accurate measurement of volumes down to 20µl. With the TrayCell sample volumes as low as 0.7µl can be used. For extra sensitivity in sample measurement Jenway offer a range of long path cell holders up to 100 mm. Some specific applications require measurement of solid samples for which Jenway provides glass filter and film holder accessories.

Optics system: single beam or double beam?

Jenway spectrophotometers are available with single, split-beam or double beam optics. Single beam spectrophotometers are lower cost instruments, with the baseline to compensate for changes in lamp output intensity and blank absorbance being stored prior to taking the sample measurement. The instrument automatically compensates for the stored baseline when the sample is measured. In contrast double beam instruments record the sample and reference simultaneously, resulting in the instrument electronics compensating for the reference in real time. Double beam instruments tend to offer better stability in the UV region and are necessary when the blank or sample solutions are unstable or transient.

Which light source?

UV/visible spectrophotometers generally use two light sources to ensure the spectral irradiance is of sufficient intensity over the entire wavelength range. In these instruments the most common light sources used are tungsten halogen lamps for the visible range and deuterium lamps for the UV wavelengths, with a source selector to switch between the lamps. Jenway also offer a range of UV/visible and visible spectrophotometers that use a pulsed xenon lamp. The pulsed xenon lamp offers a good intensity continuum over both the UV and visible parts of the spectrum and has the added advantage of a much increased expected lifetime.
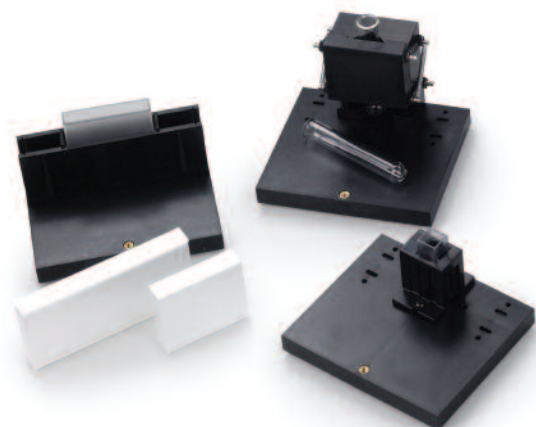
67 Series

6505

Aquanova

Is it a requirement to store methods and results?

To speed up the time taken for sample processing and to reduce user error, modern laboratories often have the requirement for spectrophotometers to save both methods and results. Jenway spectrophotometers offer a range of storage media from internal memory storage through to removable media such as SD and SD/USB cards.

Is it necessary to increase sample throughput?

In commercial laboratories the need to increase sample throughput and reduce sample handling leads to the need for automated sample introduction by using either a multi-cell changer or a sipper system. Multi-cell changers can be used in manual or automatic operation and are often used for enzyme kinetic assays. Sippers improve sample throughput by using a peristaltic pump to introduce precise volumes of sample into a flowcell.

Is sample temperature control required?

Some analyses such as enzyme kinetics require the absorbance change to be measured over time and often require the sample's temperature to be controlled electrically (peltier control) or by circulating water through the sample holder. Temperature control options are available for all Jenway spectrophotometers.

Does the spectrophotometer need to be connected to a PC?

Different measurements can require a differing degree of post-scan data manipulation. Jenway spectrophotometers offer a wide-range of post scan manipulation options and all can be connected to a PC.

Spectrophotometric Quantitation of Nucleic Acids

Spectrophotomeric Conversions

A_{260} = 1 (1cm detection path)	Concentration (µg /ml water)
dsDNA	50
ssDNA	33
ssRNA	40
Oligonucleotide	20 - 30

Pure DNA has an A_{260}/A_{280} ratio of 1.8-2.0 in 10mM Tris-Cl, pH 8.5

Pure RNA has an A_{260}/A_{280} ratio of 1.9-2.1 in 10mM Tris-Cl, pH 7.5

Flame Photometry: Wavelengths of Elements

When sodium is introduced into a flame, it emits a radiation in the yellow region of the visible spectrum. The table below gives details of the measurable atomic flame emissions of the alkali and alkaline earth metals in terms of the emission wavelength and the colour produced.

Element	Emission Wavelength (nm)	Flame Colour
Barium (Ba)	554	Lime Green
Calcium (Ca)	662*	Orange
Lithium (Li)	670	Red
Potassium (K)	766	Violet
Sodium (Na)	589	Yellow

*Note: Calcium is measured by using the calcium hydroxide band emission at 622nm as the calcium main atomic emission occurs at 423nm.

Voltage Variants

Chloride Meters

Part Code	Description
504 055	PCLM3 clinical chloride meter supplied with buffer, gelatin, clinical chloride standard, 3 silver electrodes, 2 silver anodes, electrode polish, glass beaker, stirrer and tweezers (110V/60Hz)
504 057	PCLM3 industrial chloride meter supplied with buffer, gelatin, industrial chloride standard, 3 silver electrodes, 2 silver anodes, electrode polish, glass beaker, stirrer and tweezers (110V/60Hz)

Colorimeters

Part Code	Description
605 078	6051 colorimeter supplied with 8 in-built filters, 10 x 10mm cell holder, mains lead and plastic cuvettes (115V/60Hz)

Conductivity Meters

Part Code	Description
451 101	4510 conductivity meter supplied with glass conductivity probe with ATC (K=1) (027 013), electrode holder and US power supply
451 201	4510 conductivity meter supplied with glass conductivity probe with ATC (K=1) (027 013), electrode holder and EU power supply
451 301	4510 conductivity meter supplied with glass conductivity probe with ATC (K=1) (027 013), electrode holder and 230V leaded power supply
452 101	4520 conductivity meter supplied with glass conductivity probe with ATC (K=1) (027 013), electrode holder and US power supply
452 201	4520 conductivity meter supplied with glass conductivity probe with ATC (K=1) (027 013), electrode holder and EU power supply
452 301	4520 conductivity meter supplied with glass conductivityn probe with ATC (K=1) (027 013), electrode holder and 230V leaded power supply
354 101	3540 conductivity/pH meter supplied with glass combination pH electrode (924 005), glass conductivity probe (K=1, 027 013), electrode stand and holder, ATC probe (027 500), BNC shorting plug, pH buffers and US power supply
354 201	3540 conductivity/pH meter supplied with glass combination pH electrode (924 005), glass conductivity probe (K=1, 027 013), electrode stand and holder, ATC probe (027 500), BNC shorting plug, pH buffers and EU power supply
354 301	3540 conductivity/pH meter supplied with glass combination pH electrode (924 005), glass conductivity probe (K=1, 027 013), electrode stand and holder, ATC probe (027 500), BNC shorting plug, pH buffers and 230V leaded power supply
543 201	40 column serial printer with interface cable, paper roll (060 287), ribbon (060 288) and EU power adapter (4200)
543 501	40 column serial printer with interface cable, paper roll (060 287), ribbon (060 288) and US adapter (4200)

Dissolved Oxygen Meters

Part Code	Description
950 101	9500 dissolved oxygen meter supplied with DO_2 probe with ATC (522 023), electrode holder, spare membranes, KCl fill solution, zero calibration salts, adapter bush and US power supply
950 201	9500 dissolved oxygen meter supplied with DO_2 probe with ATC (522 023), electrode holder, spare membranes, KCl fill solution, zero calibration salts, adapter bush and European power supply
950 301	9500 dissolved oxygen meter supplied with DO_2 probe with ATC (522 023), electrode holder, spare membranes, KCl fill solution, zero calibration salts, adapter bush and 230V leaded power supply

Flame Photometers

Part Code	Description
500 731	PFP7 industrial flame photometer supplied with Na, K, Ba, Ca and Li filters, connecting hoses and clips, compressor plug and drain trap (110V/60Hz)
500 831	PFP7/C clinical flame photometer supplied with Na, K and Li filters, connecting hoses and clips, compressor plug and drain trap (110V/60Hz)
535 002	Air compressor (110V/60Hz)
037 002	Series 7 diluter (110V/60Hz)

Fluorimeters

Part Code	Description
632 031	Sipper pump, supplied with inlet and outlet tubing (110V/60Hz)

Hotplate/Stirrers

Part Code	Description
100 151	1001 hotplate (110V/50/60Hz)
120 151	1201 hotplate (110V/50/60Hz)
100 251	1002 stirrer supplied with stirrer bar (110V/60Hz)
100 051	1000 hotplate/stirrer supplied with stirrer bar (110V/60Hz)
110 051	1100 hotplate/stirrer supplied with stirrer bar (110V/60Hz)
120 051	1200 hotplate/stirrer supplied with stirrer bar (110V/60Hz)
110 351	1103 hotplate/stirrer supplied with stirrer bar, temperature probe, probe holder and retort rod (110V/60Hz)
120 351	1203 hotplate/stirrer supplied with stirrer bar, temperature probe, probe holder and retort rod (110V/60Hz)

Ion Meters

Part Code	Description
547 101	3340 dual channel ion meter supplied with glass combination pH electrode (924 005), swing arm electrode holder, ATC probe (027 232), buffer sachets and US power supply
547 201	3340 dual channel ion meter supplied with glass combination pH electrode (924 005), swing arm electrode holder, ATC probe (027 232), buffer sachets and EU power supply
547 301	3340 dual channel ion meter supplied with glass combination pH electrode (924 005), swing arm electrode holder, ATC probe (027 232), buffer sachets and 230V leaded power supply
548 101	3345 dual channel ion meter supplied with glass combination pH electrode (924 005), swing arm electrode holder, BNC to S7 leadless connector (013 173) for connection to ISEs, ATC probe (027 232), buffer sachets and US power supply
548 201	3345 dual channel ion meter supplied with glass combination pH electrode (924 005), swing arm electrode holder, BNC to S7 leadless connector (013 173) for connection to ISEs, ATC probe (027 232), buffer sachets and EU power supply
548 301	3345 dual channel ion meter supplied with glass combination pH electrode (924 005), swing arm electrode holder, BNC to S7 leadless connector (013 173) for connection to ISEs, ATC probe (027 232), buffer sachets and 230V leaded power supply

pH Meters

Part Code	Description
351 101	3510 pH/mV meter supplied with glass combination pH electrode (924 005), electrode stand and holder, ATC probe (027 500), BNC shorting plug, pH 4, 7 and 10 buffers and US power supply
351 201	3510 pH/mV meter supplied with glass combination pH electrode (924 005), electrode stand and holder, ATC probe (027 500), BNC shorting plug, pH 4, 7 and 10 buffers and European power supply
351 301	3510 pH/mV meter supplied with glass combination pH electrode (924 005), electrode stand and holder, ATC probe (027 500), BNC shorting plug, pH 4, 7 and 10 buffers and 230V leaded power supply
352 101	3520 pH/mV meter supplied with glass combination pH electrode (924 005), electrode stand and holder, ATC probe (027 500), BNC shorting plug, pH 4, 7 and 10 buffer sachets and US power supply
352 201	3520 pH/mV meter supplied with glass combination pH electrode (924 005), electrode stand and holder, ATC probe (027 500), BNC shorting plug, pH 4, 7 and 10 buffer sachets and European power supply
352 301	3520 pH/mV meter supplied with glass combination pH electrode (924 005), electrode stand and holder, ATC probe (027 500), BNC shorting plug, pH 4, 7 and 10 buffer sachets and 230V leaded power supply
354 101	3540 conductivity/pH meter supplied with glass combination pH electrode (924 005), glass conductivity probe (K=1, 027 013), electrode stand and holder, ATC probe (027 500), BNC shorting plug, pH buffers and US power supply
354 201	3540 conductivity/pH meter supplied with glass combination pH electrode (924 005), glass conductivity probe (K=1, 027 013), electrode stand and holder, ATC probe (027 500), BNC shorting plug, pH buffers and EU power supply
354 301	3540 conductivity/pH meter supplied with glass combination pH electrode (924 005), glass conductivity probe (K=1, 027 013), electrode stand and holder, ATC probe (027 500), BNC shorting plug, pH buffers and 230V leaded power supply

Spectrophotometers

Part Code	Description
630 531	6300 visible spectrophotometer supplied with mains lead, pack 100 disposable cuvettes, 10 x 10mm cell holder, interface cable and PC application software on CD-ROM (110/60Hz)
632 521	6320D visible spectrophotometer supplied with mains lead and dual cell holder (for 10mm square cuvettes and 12.7mm diameter tubes) (110V/60Hz)
635 031	6305 UV/visible spectrophotometer supplied with mains lead, pack 100 disposable cuvettes, 10 x 10mm cell holder, interface cable and PC application software on CD-ROM (110V/60Hz)
631 031	6310 visible, scanning spectrophotometer supplied with mains lead, pack 100 disposable cuvettes, 10 x 10mm cell holder, interface cable and PC application software on CD-ROM (110V/60Hz)
631 531	6315 UV/visible scanning spectrophotometer supplied with mains lead, pack 100 disposable cuvettes, 10 x 10mm cell holder, interface cable and PC application software on CD-ROM (110V/60Hz)
637 031	Aquanova visible spectrophotometer supplied with mains lead, 9 way serial cable (013 203) and PC software (603 436) (110V/60Hz)
636 031	Genova UV/visible life sciences spectrophotometer supplied with mains lead, 8 x 750μl UV plastic cuvettes, and cell holder (110V/60Hz)
636 035	Genova UV/visible life sciences spectrophotometer supplied with TrayCell, mains lead, 8 x 750μl UV plastic cuvettes and cell holder (110V/60Hz)
632 031	Sipper pump, supplied with inlet and outlet tubing (110V/60Hz)
037 202	Water bath and circulator, ambient +5 to 50°C for use with 648 001 (115V/60Hz)
543 201	40 column printer supplied with interface cable, paper roll (060 287) and ribbon (060 288) and EU power adapter
543 501	40 column printer supplied with interface cable, paper roll (060 287)and ribbon (060 288) and US adapter
037 602	Digester for COD determinations, includes 2 blocks for 12 COD tubes each (115V)
640 031	6400 visible, scanning spectrophotometer supplied with pack 100 (3.5ml) disposable cuvettes and mains lead (110V/60Hz)
640 531	6405 UV/visible, scanning spectrophotometer supplied with pack 100 (3.5ml) disposable cuvettes and mains lead (110V/60Hz)
650 031	6500 visible, scanning spectrophotometer supplied with serial mouse, mouse mat, pack 100 (3.5ml) disposable cuvettes, 8-position multi-cell changer and mains lead (110V/60Hz)
650 531	6505 UV/visible, scanning spectrophotometer supplied with serial mouse, mouse mat, pack 100 (3.5ml) disposable cuvettes, 8-position multi-cell changer and mains lead (110V/60Hz)
643 031	Peltier heated cuvette system comprising heated cuvette block and external power supply module (110V, 60Hz) (P)
643 032	Peltier heated cuvette system comprising heated cuvette block and external power supply module (110V, 60Hz) (F)
647 031	Temperature controlled sipper system (110V/60Hz) (P)
647 032	Temperature controlled sipper system (110V/60Hz) (F)
037 202	Water bath and circulator, ambient +5 to 50°C for use with 648 001 and 649 001 (115V/60Hz)

(P) = Packed

(F) = Factory fitted

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