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“As long as men are free to ask what they must, free to say what they think, free to think what they will, freedom can never be lost and science can never regress.”

Julius Onnenheimer



Thermocycler for thermal cycles "K96"

WITH FOUR ADAPTER MODULES FOR 0.2ML VIALS, 0.5ML VIALS AND WELLS.
ADJUSTABLE TEMPERATURES FROM 0°C TO 99 °C.



Advanced technology. Peltier effect.

APPLICATIONS

It is used in molecular biology to amplify DNA via a method based in the polymerase chain reaction process.

BASIC PRINCIPLE

The equipment performs a certain quantity of thermal cycles depending on the method used and repeat them many times for a while, and at the end, the initial DNA fragment Fiber have been replicated thousands times.

For a better process output, changes between temperature levels must be made with minimum time. With thermocycler K96, the cycle temperature can be reached in seconds, even if beginning from remote positions of the last set point. These changes take place by keeping a perfect uniformity between different block points.

The system can also be programmed to produce a linear gradient of temperature widthways the block. This achieves that the highest level of productivity points of the process is optimized and located.

FEATURES

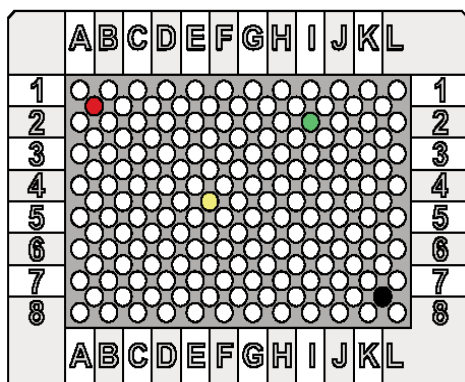
The thermocycler is composed of an inner lid system with heater and with adjustable height in order to perfectly adapt to the samples size. This prevents condensations in the upper side of the samples.

The equipment is based on a heat bomb controlled by continuous electric current and composed by several thermo electrical modules of Peltier effect, a low thermal resistance radiator and a fan convention system.

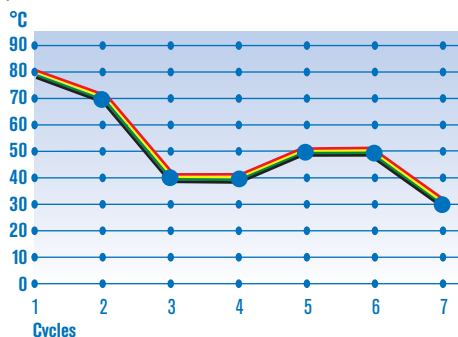
As it is integrated in the same block, this system allows increasing the process output and also fast transferring and extracting the block's temperature, going from the highest temperature level to the lowest in a minimum time.

The powerful control microprocessor allows monitoring the point where the process is at any moment, and showing it on the screen with real-time graphic images.

There is a useful elaborated software for processes organization, accessible by means of the keyboard and a high resolution LCD screen.



384 wells block, with red, yellow, green and black identification in different positions.



Graphic detail that shows temperature perfect uniformity in the different block wells, distinguished by different colours: red, yellow, green, black. It also shows how uniformity is maintained during all the thermal cycle periods, previously programmed in the display.



NEW



INTERCHANGEABLE BLOCKS

Each block incorporates a connector that identifies it and allows the thermocycler to recognize it. There's also an extractor handle which makes easy the block support use.



Thermal cycler door open with a heater system on the back side of the door to avoid condensations.

TECHNICAL SPECIFICATIONS

Temperature range: 0°C to 99°C.

Durability: 99min. 99sec.

Warming-up speed: 3°C/sec.

Cooling down speed: 2.8°C/sec.

Uniformity: At 95°C ±0.4°C.

From 20°C to 75°C ±0.2°C.

Precision: ±0.2°C.

Programmed gradient: From 2°C to 30°C according to the program.

Heater lid: From 70 to 115°C according to the program.

Max. cycles number: 99.

Stored programs: Up to 99.

Graphic display of 14.5cm, 320x240 pixels.

USB output.

CONTROL PANEL

START switch.

Interactive graphic display.

Numeric and functions keyboard.

Height levelling control of the inner lid.

MODEL

Part No.	Height / Width / Depth (exterior) cm	Power supply	Power W	Weight Kg
5109000	25 24 38	220V/50-60Hz	780	7

ACCESSORIES

Interchangeable modules:

A. 96 vials of 0,2 ml. Code: **5109001**

C. 96 vials of 0,2 ml + 77 vials of 0,5 ml. Code: **5109003**

B. 54 vials of 0,5 ml. Code: **5109002**

D. 384 wells Code: **5109004**



Visible range spectrophotometers "V-1100" and "VR-2000"

"V-1100" MODEL WITH MANUAL WAVELENGTH SETTINGS AND AUTOMATIC BLANK.

"VR-2000" MODEL WITH AUTOMATIC WAVELENGTH SETTINGS AND BLANK.

NEW



"V-1100" Part no. 4120025



"VR-2000" Part no. 4120026

APPLICATIONS

They are widely used in colleges and enterprises for general quantitative analysis and experiments based in absorbance measurements.

COMMON FEATURES

High quality silicon photometric diode detector and 1200 lines/mm diffraction grating ensure the high quality accuracy and precision.

Digital display for an easy readout.

Automatic zero and blank (easy to use). Easy switching of transmittance, absorbance and concentration modes, just by pressing one key.

Large sample compartment, which can accommodate 5 to 100mm path length cuvettes with optional holders.

Its pre-aligned design makes it possible to change the halogen lamps by the user himself.

Optional:

Optional software based on Windows® which can expand the applications to standard curve and kinetics.

V-1100 MODEL

Easy of use.

Ergonomic and solid design for a continuous suitable use, for students and workers.

VR-2000 MODEL

Large LCD screen (128x64bits).

It can display a total of 50 groups of data (3 groups per screen).

It can display standard curve and kinetics curve graphic.

The system can also save the test results.

A total of 50 data groups and 10 standard curves can be saved in the RAM memory.

At most 9 standard samples can be used to establish a standard curve.

The curve and the curve equation will be displayed simultaneously on the screen. The unknown concentration solutions, can be measured by the curve.

If one knows the coefficient k and b of the formula: $C=kA+b$, one can input the value directly.

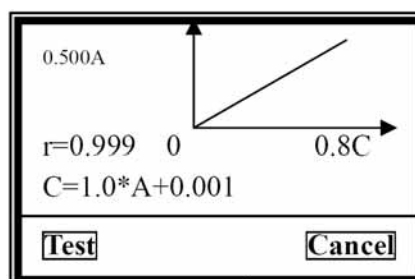
Data is stored in the memory in case of power cut.

ACCESSORIES

(see page 236).

MODEL	V-1100	VR-2000
Part No.	4120025	4120026
Wavelength range	325-1000 nm	
Spectral bandwidth	5 nm	4 nm
Optical system	Single beam, diffraction grating 1200 lines/mm	
Wavelength adjustment	Manual	Automatic
Wavelength accuracy	±2 nm	±1 nm
Wavelength repeatability	1 nm	0,5 nm
Photometric accuracy	±0,3% T	±0,5% T
Photometric repeatability	±0,3% T	
Photometric range	-0,3-3 A, 0-200% T. 0-9999 Concentration	
Stray light	0,5% T	0,3% T
Stability	± 0,004 A/h @ 500 nm	± 0,002 A/h @ 500 nm
LCD Display	3,5 Digits	128x64 pixels
Detector	Silicon	
Sample compartment	10 mm path length standard cuvette (100mm optional)	
Light source	Tungsten lamp	
Output	USB, Parallel port (printer)	
Mains supply	220 V / 50Hz AC or 110 V / 60 Hz AC	
External dimensions (HxWxD)	160 x 480 x 360 mm	180 x 470 x 370 mm
Weight (Kg)	8	12

SPARE	V-1100	VR-2000
Halogen lamp (visible)	4312004	



Graphic display visualized detail of a regression line for concentration calculation. (VR-2000)



Ultraviolet and visible range spectrophotometers "UV-2005" and "UV-3100"

NEW

AUTOMATIC WAVELENGTH POSITIONING AND BLANK SETTING



"UV-2005" Part no. 4120020



"UV-3100" Part no 4120021

APPLICATIONS

Suitable for pharmaceutical and biochemical laboratories, kinetics, quantitative analysis, wavelength scanning, multiple components and DNA/protein analysis.

COMMON FEATURES

Spectrophotometers UV-2005 and UV-3100 have been developed for accurate tests; Its stray light is only of 0.05% T. They are flexible, easy-to-use and maximize value. Value is provided from every day performance. The independent local software provides the following functions: Basic Mode, Quantitative Test, Kinetics and System Utilities.

Data is stored in the memory in case of power cut.

The Special application software provides a complete control of the spectrophotometer from a PC, through the built-in USB port.

Wavelength scanning models can be upgraded when connected to the PC via the special software based in Windows®.

Automatic wavelength settings.

Halogen and deuterium lamps can be switch on/off individually to extend lamp life-time.

Its pre-aligned design makes it possible to change lamps for the user himself.

Large sample compartment for 5-100mm path length cuvettes, with optional holders.

A wide range of optional accessories can also be selected.

UV-2005 MODEL

Large LCD screen (128x64bits).

It can display a total of 200 groups of data (5 groups per screen).

It can display standard curve and kinetics curve graphic.

The system can also save the test results.

A total of 200 data groups and 200 standard curves can be saved in the RAM memory.

UV-3100 MODEL

Absorbance, transmittance and concentration measurements.

It establishes or uses stored calibration equations to measure solutions of unknown concentration.

Spectrum scan of sample at any selected wavelength range with choice of scanning speed and wavelength interval.

Measurement of absorbance changing versus time with reaction rate calculation function.

Measurement at multiple wavelengths to analyse and determine the composition of the mixtures.

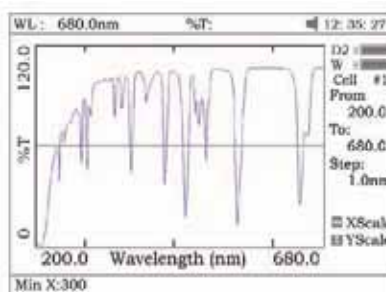
Calculation of concentration and DNA purity.

Note: ratio at other wavelengths can be measured.

ACCESORIES

(see page 236).

MODELS	UV-2005	UV-3100
Part No.	4120020	4120021
Wavelength range	190-1100 nm	
Spectral bandwidth	2 nm	
Optical system	Single beam, diffraction grating 1200 lines/nm	
Wavelength accuracy	±0,5 nm	
Wavelength repeatability	0,3 nm	
Photometric accuracy	±0,3% T	
Photometric repeatability	±0,2% T	
Photometric range	-0,3-3 A, 0-200% T. 0-9999 Concentration	
Stray light	0,05% T @220 nm, 340 nm	
Stability	± 0,002 A/h @ 500 nm	
LCD Display	Graphic(128x64)	Graphic(320x240)
Scanning velocity	-	High,Med, Low.Max 3000 nm/min.
Uniformity	-	± 0,002 A (200-1000nm)
Sample compartment	10mm path length standard cuvette (100mm optional)	
Light source	Halogen and deuterium lamps (pre-aligned)	
Output	USB, parallel port (printer)	
Power requirements	220 V / 50Hz AC or 110 V / 60 Hz AC	
External dimensions(HxWxD)	180 x 470 x 370 mm	160 x 480 x 360 mm
Weight (Kg)	14	16



Graphic display visualized detail of holmium crystal scanning, from a UV3100 spectrophotometer.

SPARE PARTS	UV-2005	UV-3100
Halogen lamp (visible)	4312004	
Deuterium lamp (UV)	4312006	

ACCESSORIES

Thermostatted flow Peltier cuvette holder.

Temperature range: from 15 °C. to 40 °C. in steps of 0.1 °C (ambient temperature \pm 22°C.)

Precision: \pm 0,2 °C.

Sample suction volume: 1, 2, 3, 4, 5, 7.5, 10, 12.5, y 15 ml/min.

LCD Display: 128x64 pixels.



Model

Part No.	Height / Width / Depth (controller) cm	Height / Width / Depth (cuvette holder) cm	Power W	Weight Kg
4120018	11,5 27 17	10 12 7	30	3,5

Cuvette holder

For long cuvettes, pathlength between 1 and 50 nm. Part No. **4120030**

For path length 100 mm. cuvettes. Part No. **4120031**



Part No.4120030



Part No. 4120031



Part No. 4120032

Test tubes holder

For tubes from 10 to 20 mm. Ø Part No. **4120032**

Ink printer (not thermal). Paper 2 1/4" (56 mm) wide roll. Includes power transformer and interface cables. (5V-3A)

Model

Part No.	Height / Width / Depth cm	Weight Kg
4120117	4 16 10	1



Cuvettes for Spectroscopy

FEATURES

Range of polystyrene, glass and quartz cuvettes.

Standard size pathlength 10mm x 45mm high.

Special cuvette pathlength 40mm x 45 mm high (fig 6).

Special cuvette pathlength 4mm x 45 mm high (fig 1).



MODELS

Standard cuvettes

Part No.	Figure	Material	Optical path length	Description	Presentation
5100020	9	Quartz	10 mm	Standard square, "macro"	Pack of 2 units
5100021	9	Glass	10 mm	Standard square, "macro"	Pack of 2 units
5100022	7	Polystyrene	10 mm	Standard square, "macro", disposable	Box of 100 units
5100025	8	Glass	10 mm	Flow through cell, square "micro"	Pack of 2 units

Special cuvettes

Part No.	Figure	Material	Optical path length	Description	Presentation
5100014	6	Glass	40 mm	Rectangular	Pack of 1 unit
5100015	5	Glass	10 mm	Flow through cell. Window 5 x 10 mm	Pack of 1 unit
5100016	4	Glass	10 mm	Standard square, "micro"	Pack of 1 unit
5100017	3	Glass	10 mm	Standard square, "macro" with round lid	Pack of 1 unit
5100018	2	Quartz	10 mm	Semi-micro	Pack of 2 units
5100019	2	Glass	10 mm	Semi-micro	Pack of 2 units
5100023	7	Polystyrene	10 mm	Square Semi-Micro, disposable	Box of 100 units
5100024	1	Glass	4 mm	Square Semi-Micro	Pack of 1 unit



Double Beam Spectrophotometer "UV-2300"

**BAND WIDTH 1.5 nm. TOTAL STABILITY DOUBLE BEAM OPTICS.
AUTOMATIC WAVELENGTH CORRECTION CALIBRATION.
USB DOWNLOAD OF METHODS AND RESULTS.
WIDE RANGE OF ACCESSORIES.**



NEW

APPLICATIONS

Research, chemistry, biotechnology, general spectroscopy analysis applications, environmental applications.

FEATURES

Monochromator high resolution optics that eliminate any optical aberrations, monochromator "Seya-Namioka", manufacturer of exclusive beam technologies and diffraction gratings in Japan.

Bandwidth 1.5 nm in accordance with European pharmacopoeia recommendations. (the relation between the maximum and minimum absorbance in Toluene and Hexane at 0.02% (V/V) should be more than 1.5T).

Several modes of operation including spectral scanning, time base scanning, multi wavelength determinations, peak and trough detection, etc.

Fast spectra scan displayed on a screen covering the whole spectral range: quick scan 3600 nm/minute, range 190 to 1100 nm

Validation function for GLP/GMP:

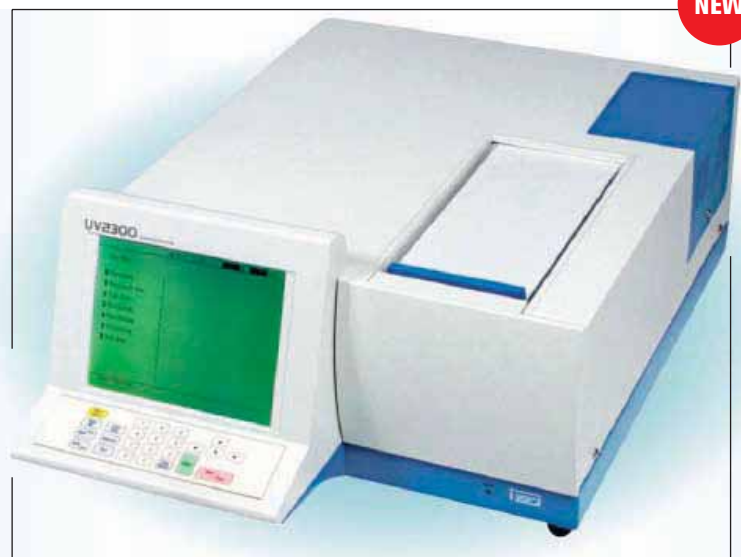
This function maintains and assures the optimum working parameters of the instrument. Parameter such as the wavelength precision and noise are monitored.

Memory facilities of analytical results:

The analytical parameters and results can be stored in the "flash" memory, connected by the USB. The stored information can be stored as text and can be transferred to a computer for reporting using MS WORD/EXCELL.

A DNA/RNA function is fitted to quantify the ratio at 260/280 nm.

Controllable from a computer with application specific optional software: "UV-Analyst Spectrum", (see accessories).



SPECIFICATIONS

Optical system:	Double beam optics.
Wavelength range	190 nm to 1100 nm.
Band pass:	1.5 nm
ABS range:	-2.000 to 3.000 A or 0 to 300% T.
Stray light:	less than 0.05% (220 nm NaI, 340 nm NaNO ₂).
Scan speed:	10, 100, 200, 400, 800, 1200, 2400 and 3600 nm/minute.
Wavelength accuracy:	±0.3 nm.
Photometric accuracy:	± 0.002 A from 0 to 0.5 A. ± 0.004 A from 0.5 to 1.0 A.
Baseline stability:	0.003A/hr (500 nm after 2 hours of use.).
Noise level:	0.003 A (at 500 nm).
Light source:	Deuterium D2 and Halogen lamps.
Built in screen:	LCD back light of 190 x 138 mm.
Connections:	RS232 and parallel port.



"Flash" storage memory,
via USP port.



Constant temperature 6 place
cell changer, 10mm cuvettes,
ideal for Kinetics.
Part No. 5110029

SPARES

Tungsten halogen lamp.
Part No. 5110021

Deuterium lamp (UV).
Part No. 5110022

MODEL	Part No.	Height / Width / Depth cm	Voltage	Weight Kg
UV-2300	5110020	25 50 56	110-220V / 50-60Hz	28

ACCESSORIES

Part No. 5110023	Flow cell 10 mm path length.
Part No. 5110024	Constant temperature single cell holder for 10mm flow cell.
Part No. 5110025	Micro cell holder for 10mm (50 µl) cell.
Part No. 5110026	Long path length cell holder for 100mm cells.
Part No. 5110027	5 Position cell changer for 10mm cuvettes.
Part No. 5110028	Constant temperature cell holder for 10mm cuvettes
Part No. 5110029	6 place constant temperature cell changer for 10mm cuvettes.
Part No. 5110033	Software UV-Analyst Spectrum. Simple and logical, enhanced software for multiple applications and results and manipulation of data, calculation such as DNA/RNA ratios.



Semi Automatic clinical analyser "Photometer S-2000"

LOW PROFILE FUNCTIONAL CLINICAL ANALYSER.

APPLICATIONS

Clinical laboratories, Clinical Biochemistry, Haematology, E.I.A. Electrolytes and Iones.

FEATURES

47 most commonly used Pre-programmed clinical methods: cholesterol, glucose, blood iron, LHD, AST, UREA etc.

Storage for up to 134 methods and up to 1000 stored results.

6 analytical fitting routines: final point, bio-chromatic, regression fit, multi-standard curve, best fit and kinetics.

Graphic display LCD (640 x 240 pixels, 256 colours).

Lamp life save function.

Graphic display.

Quality control of analysis function.

Built in printer.

Control by "roller ball mouse" or "external mouse."

Temperature conditions: 15 °C to 32 °C: Maximum humidity 85%

External heated incubator block, 37 °C (Model 4120012 only).

RS232 out put interface.

SPECIFICATIONS

Solid state photodiode detector.

Bichromatic optical system with 7 filters, 340, 405, 500, 546, 578, 620 and 670 nm.

Band pass: 10 nm.

Flow cell: 30 ul.

Measuring range: from 0.000 to 2.500 ABS.

Resolution: display 0.001 ABS, calculations to 0.0001ABS.

Thermostatted Peltier cuvette holder: 25, 30 and 37 °C Precision ±0.1 °C.

Tungsten halogen lamp of 6V 10 W.

Comes complete with protective cover, spare lamp and two rolls of printer paper.



S-2000 Part No. 4120010



S-2000 Part No. 4120012



MODELS

Part No.	External incubator block	Height / Width / Depth cm	Power rating	Power W	Weight Kg
4120010	No	14 45 33	110-220V/50-60Hz	150	10
4120012	Yes	14 45 33	110-220V/50-60Hz	151	10.1

SPARE. Halogen lamp 6 V 10 W. Part No. 4312015



Digital colorimeter "Clormic"

MICROPROCESSOR CONTROLLED.

AUTOMATIC ZERO ABSORBANCE AND 100% TRANSMITTANCE.

ALPHANUMERIC 20 CHARACTER 2 LINE L.C.D. DISPLAY.

APPLICATIONS

Chemistry Laboratory, quality control, environmental control.

FEATURES

Wavelength range: 400 to 800 nm, by using special filters with a 40 nm band pass.

12 position Filter disc wheel selection .

Standard filters: 420, 440, 490, 520, 550, 580, 620, 680 nm and 4 optionals.

Expanded Absorption range: -0.3 to 3.5 O.D. in real time.

Transmission: 0 to 100 T %.

Photometric accuracy: >1 %.

Photometric precision: ±1 %.

Photometric stability: 0.004 A/hr.

Light source: Long life tungsten lamp.

Detector: Solid state.

Sample chamber: 10 mm cuvettes or test tubes of 12 and 16 mm Ø.

Minimum volume: 1 ml.

Display: Alphanumeric LCD display of 2 lines of 20 characters.

Calculation functions: Transmission T %.

Absorbance, Concentration by factor or standard concentrations.

Calibration: Self adjusting by software.

RS-232 interface.

CONTROL PANEL

ON/OFF switch.

Interactive LCD display.

Numeric and function keypad.



MODEL

Part No.	Built in printer	Height / Width / Depth cm	Power W	Weight Kg
4120009	NO	11 18 28	10	4.5

SPARE

Lamp of 6 V / 6 mm.
Part No. 4512009



Colorimeter "WSD-3"

THE WSD-3 IS A HIGH PRECISION SPECTRAL COLORIMETER FOR MEASURING THE COMPOSITION OF THE COLOUR IN CHROMATIC COMPONENTS. THE OPTICAL SYSTEM WORKS IN A REFLECTION MODE TO EVALUATE THE CHROMATIC COMPONENTS OF ANY SURFACE.



APPLICATIONS

Chromatic, surface composition analyser.
Suitable for research and quality control.

FEATURES

- Illumination/measuring conditions:o/d
- Measuring system:reflection
- Spectral range400 to 700 nm
- Illumination standard:D 65
- Measuring time:10 sec.
- Light source Halogen lamp:6V 12W
- Head entrance diameter:22 / 6 mm
- Field of vision10°
- Reading precision:X,Y ± 0.0001, other scales ± 0.01
- Measuring error:0.1
- Stability {Zero set ≤ 0.1
.....Measuring error ≤ 0.1
.....VPower variation ≤ 0.1
- Measuring precision:.....0.1
- Preheat time:10 min.
- Ambient conditions:0 - 40 °C
- Power requirement:.....220V 50Hz 10%



MODEL

Part No.	Height / Width / Depth cm	Power W	Weight Kg
5120190	29 30 32	23	4.5

SPARE

Halogen lamp 6V/12W.
Part No. **5313040**



Microtiter Strip Reader "Reader M-2000"

STORAGE MEMORY FOR UP TO 59 METHODES INCLUDING: FACTORS, STANDARDS OR CALIBRATION CURVES WITH UP TO 10 STANDARDS. ADDITIONAL CALCULATION FEATURES.

APPLICATIONS

Clinical diagnostics, E.I.A., Veterinary, quality control.

FEATURES

Spectral range: 400 to 700 nm, using interference filters of 10 nm band pass.
Supplied complete with a filter of 450 nm (other wavelengths available consult for options.)
Measuring range: -0.2 to 3.5 O.D.
Photometric accuracy: >1%.
Photometric precision: ±1%.
Light source: Long life LED.

Detector: solid state.
59 method memories.
Curve point editing feature.
Software: ABS. Concentration and polynomial curve fitting with up to 10 standards.
RS-232 output to connect a printer or to a PC.
Interface RS-232.



MODEL

Part No.	Height / Width / Depth cm	Power W	Weight Kg
4120013	11 18 28	7	2

ACCESSORY

Ink printer (not thermal). Paper 2 1/4" (56 mm) wide roll. Interface RS232. Includes power transformer and interface cables. (5V-3A)



Model

Part No.	Height / Width / Depth cm	Weight Kg
4120113	4 16 10	1

SPARE

Lamp of 4 mm Ø 5 V.
Part No. **4313030**



Microplate reader 2100-C

TOTALLY AUTOMATIC TOUCH SCREEN CONTROL.



APPLICATIONS

Clinical diagnostics. Quality control in food analysis, Haematology.

FEATURES

Bi-chromatic optical system with 4 wavelength selection: 405, 450, 492, 630 nm, (other filters from 405 to 700nm available).
 Memory for up to 500 programs, 10000 sample results and 1000 patients.
 Patient data software, laboratory personnel and analysis reports.
 100 typical analysis methods pre programmed.
 Capable of performing up to 12 different tests per plate.
 Calculations: ABS, Cut-Off, Curve fitting: regression, linear, logarithmic, exponential and potential.
 Measuring absorbance range: 0-2.5A
 Displayed absorbance range: 0-3.5A
 Accuracy: $\pm 1.0\%$ or ± 0.007 A.
 Precision: $\pm 0.5\%$ or ± 0.005 A.
 Linearity: $r > 0.995$.
 Resolution: 0.001 ABS (display); 0.0001 ABS (calculated).
 Measuring time: Continuous mode < 5 s, step by step mode < 15 s.
 Output RS-232 for download to a computer or a printer.
 Parallel printer interface.
 Programmable plate vibrating for mixing with control of time and speed.

CONTROL PANEL

LCD display (320 x 240 pixels) of 5.7 inches.
 Operating system WINDOWS CE.
 Operation by touch screen or optional "Mouse" control (mouse not included).



Touch screen control.
New generation technology.

MODEL	Part No.	Height / Width / Depth (exterior) cm	Voltage	Weight Kg
2100-C	5109999	19 45 33	AC 110-250 V / 50-60 Hz	10



Microplate washer 2600-C

COMPLETELY AUTOMATIC. EASY TO USE. 50 WASH PROGRAMS.



APPLICATIONS

Clinical laboratories.
 Blood banks.
 Quality control food laboratories.

FEATURES

Wash head of 8 x 1. (12 x 1 optional).
 Plate wash by 12 x 8 strips or 8 wells/strip.
 Plate clean for flat, round and V bottom plates.
 Automatic wash and rinse processes.
 Reservoirs: 2 litre, wash solution.
 2 litre, waste, with liquid level sensor.
 Memory for up to 50 wash programs.
 Software control of head's depth adjust and horizontal position.
 Wash cycle times from 1 sec. to 2 hrs.
 Wash dosing range: from 50 to 2000ul.
 Dosing resolution: 5% CV (based on 350ul of distilled water)
 Residual volume (after aspiration):
 < 1 μ l (Cells, bottom U and V well plates.)
 < 5 μ l (Cells, bottom of flat well plate.)

CONTROL PANEL

LCD graphic display of 90 x 50mm
 Membrane key pad of 9 keys.
 Emergency stop button.



MODEL	Part No.	Height / Width / Depth (exterior) cm	Voltage	Weight Kg
2600-C	5110000	14 45 33	AC 110-250 V / 50-60 Hz	12



Digital pH-meter "pH-2003"

PORTABLE METER.

FEATURES

Manual temperature compensation from 0 to 60 °C with sample temperature key pad entry (does not read temperature).

Automatic buffer recognition of two of those three buffers: pH4, pH7 and pH9.

Electrode connector: BNC type.

Includes: carry case, pH electrode with support and buffers pH4, pH7 and pH9.

SPECIFICATIONS

	Range	Precision	Resolution
pH:	0 to 14	±0.03	0.01
mV:	±1400	±2	1

Impedance: 5 x 10¹¹ Ohm.

MODEL

Part No.	Height / Width / Depth cm	Power source	Weight Kg
4120300	17 7.5 3	2 x 1.5V batteries	0.5



See "Accessories for pH meters" for selection of electrodes (Page 242).



Digital pH meter "pH-2004"

PORTABLE METER WITH IP65 PROTECTION
AGAINST WATER AND DUST.

FEATURES

Automatic temperature compensation and read out from 0 to 60 °C with temperature sensor Rt-2252. Results memory for up to 250 readings.

Protection against water and dust IP65 (Impermeable to water splashes from any direction.) Automatic buffer recognition and calibration for 1 or 2 buffers, recognition of up to 5 selectable buffers.

RS-232 output to connect a printer or a computer. Electrode connector: BNC type.

Includes: carry case, pH electrode and temperature sensor Rt-2252.

Direct connection to printer Part No. 4120113 (see page 242).

SPECIFICATIONS

	Range	Precision	Resolution
pH:	0 a 14	±0.02	0.01
mV:	±1800	±2	1
T ^a :	0 to 60	±0.5	0.1

Impedance: 1 x 10¹² Ohm.

MODEL

Part No.	Height / Width / Depth cm	Power source	Weight Kg
4120400	20 10 4.5	4 x 1.5V AA Batteries	0.5



ACCESSORY

pH probe and additional temperature sensor, gel filled. Temperature sensor Rt 2252. With IP65 protective connectors.
Part No. **4120401**



ACCESSORY

Portable magnetic stirrer, battery operated and submersible.
Part No. 7001731 for "pH-2003" and "pH-2004" (see page 27).



Digital pH meter "pH-2005"

BENCH TOP MODEL WITH LARGE SCREEN.

FEATURES

Automatic or manual temperature compensation from 0 to 99.9 °C Automatic buffer recognition and calibration of 2 buffers, recognition of up to 3 buffers: pH 4, pH 7 and pH9.21.

RS-232 output to connect a printer or a computer.

Electrode connection BNC.

Temperature sensor connection Rt-2252.

Includes electrode's support stand.

SPECIFICATIONS

	Range	Precision	Resolution
pH:	0 to 14	±0.02	0.01
mV:	±1999	±1	1
T ^a (°C):	0 to 99.9	±0.5	0.1

Impedance: 1 x 10¹² Ohm.



MODEL

Part No.	Height / Width / Depth cm	Weight Kg
4120500	30 20 7.2	1.5

See accessories for electrode, temperature sensor and buffer solutions.
Not compatible with printer Part No. 4120113 (see page 242).



Digital pH meter "pH-2006"

BENCH TOP, LARGE GRAPHIC TOUCH SCREEN CONTROL.

FEATURES

Ergonomic touch screen control functions. Includes support arm.
 Automatic temperature compensation from -5 to 105 °C.
 Up to 5 buffer calibration with 10 buffer recognition.
 Stores up to 200 results.
 RS-232 output to connect a printer or a computer.
 Electrode connector: BNC type.
 Rt-2252 Temperature port.
 Selectable resolution range.
 Direct interface for printer Part No. 4120113 (see accessories).

SPECIFICATIONS

	Range	Precision	Resolution
pH:	-2 to 18	±0.01	0.001
mV:	±1999.9	±0.1	0.01
T ^a (°C):	-5 to 105.0	±0.3	0.1

Impedance: 1 x 10¹² Ohm.

See accessories for electrodes, temperature probes, buffers and printer.



MODEL

Part No.	Height / Width / Depth cm	Weight Kg
4120600	29 20 7	1

ACCESSORIES for pH meters.



Universal arm support.

With holder for up to 4 sensors or electrodes.
 Very stable heavy base.
 Ideal for working at various heights.
 Part No. **1001552**



pH Electrodes

Fig.	Part No.	Range pH	Sensor T ^a	Temperature Range	Electrolyte	Dimensions mm	Material Body	Application
1	4120102	0 - 14	No	0 - 80°	Liquid	Ø 12 x 120	Glass	General laboratory use.
2	4120125	0 - 14	Yes	0 - 60°	Gel	Ø 12 x 120	Epoxy	Protective cover. General laboratory and external use.
3	4120101	0 - 14	No	0 - 60°	Gel	Ø 12 x 120	Epoxy	Protective cover. General laboratory and outside use.
4	4120114	0 - 10	No	0 - 60°	Gel	Ø 12 x 120	Epoxy	Surface analysis, Skin, meat, moist semisolids, culture media.
5	4120104	0 - 14	No	0 - 60°	Gel	Ø 12 x 120	Epoxy	Pointed sensor. Suitable for food, semi-solids, fruit meat etc.
6	4120103	0 - 14	No	0 - 80°	Gel	Ø 8 x 60	Glass	For measuring in tubes. Liquid solutions in general.
7	4120126	0 - 14	Yes	0 - 80°	Liquid	Ø 12 x 120	Glass	Fast response, liquids in general.

Temperature sensors

Fig.	Part No.	Range	Type	Dimensions mm	Material
8	4120121	0-100	Rt-2252	Ø 5 x 120	Stainless steel
9	4120120	0-100	Rt-2252	Ø 12 x 120	Glass

Ion selective electrodes

Part No.	Ion	Range	Limits	Range °C	Range pH
4120168	Chloride Cl ⁻	1-3 x 10 ⁻⁶	35.500 - 1	5-50	1-12
4120174	Nitrate NO ₃ ⁻	1-7 x 10 ⁻⁶	62.000 - 0.4	0-50	2-11
4120177	Potassium K ⁺	1-10 ⁻⁶	39.000 - 0.04	0-50	1-9

pH Buffer solutions.

- 4120107** Flask 250 ml Buffer ±0.02 pH 4.00 at 20 °C; 4.01 at 25 °C
- 4120108** Flask 250 ml Buffer ±0.02 pH 7.02 at 20 °C; 7.001 at 25 °C
- 4120127** Flask 250 ml Buffer ±0.02 pH 9.23 at 20 °C; 9.18 at 25 °C
- 4120109** Frasco 250 ml KCl 3M solution (Electrolyte for pH electrodes)

Ink printer (Not thermal).

For use with pH and conductivity meters.
 Paper 2 1/4" (56 mm) wide roll.
 Interface RS232.
 Includes power transformer and interface cables. (5V-3A)



Model

Part No.	Height / Width / Depth cm	Power source	Weight Kg
4120113	4 16 10	DC 5 V, 3 A	1

MAGNETIC STIRRER "AGIMICRO"

Features

Maximum stir volume: 2 litres.
 Adjustable stir speed from 40 to 1400 r.p.m.
 Excellent chemical resistance.
 Location hole at the back for a retort rod. (Accessory)

Control panel

Mains switch with luminous on indicator.
 Analogue control of speed in r.p.m.

Model

Part No.	Medidas cm	Power source	Weight Kg
7001638	Ø 12 x 5	230 V 1 W	0.5

Supplied complete with a 8 Ø x 32 mm P.T.F.E. coated stir bar.



ACCESSORY

Support bar and electrode clamp.
 Part No. **7001639**



Conductivity meter "CD-2004"

PORTABLE EQUIPMENT WITH IP65 PROTECTION AGAINST WATER AND DUST.

FEATURES

Measures conductivity, TDS and salinity.
Automatic range switching.
Automatic temperature compensation.
Calibration using standards for conductivity, TDS and salinity.
RS-232 output to connect a printer or a computer.
Direct printer connection, see part no. 4120113.
Temperature coefficient programable.
Conductivity cell constant adjustment.
Memory for 250 results.
Ambient protection IP65 (protection against water splashes from any direction).
Includes Carry case, conductivity cell K= 1 and temperature sensor Rt-2252.

SPECIFICATIONS

Reading ranges: (automatic)
Conductivity TDS
0.00 to 19.99 $\mu\text{S}/\text{cm}$ 0.00 to 10.00 mg/L
20.0 to 199.9 $\mu\text{S}/\text{cm}$ 10.00 to 100.0 mg/L
200 to 1999 $\mu\text{S}/\text{cm}$ 100.0 to 1000 mg/L
2.00 to 19.99 mS/cm 1.000 to 10.00 g/L
20 to 199.9 mS/cm 10.00 to 19.99 g/L
(Cell constant K=10) (Cell constant K=5 or 10)
Salinity range: 0.00 to 8.00
Temperature range: 0.0 a 40.0 °C
Precision:
Conductivity: 1.5% base scale
Salinity: 0.20%
Temperature: 0.3 °C



ACCESSORY

Conductivity cell and temperature sensor.

Conductivity cell with epoxy body. Temperature sensor Rt-2252.
IP65 protection connectors. Part No. **4120411**



MODEL

Part No.	Width / Height / Depth cm	Power source	Weight Kg
4120410	21 10 4.5	4 1.5 V batteries	0.5



Conductivity meter "CD-2005"

BENCH TOP METER WITH LARGE SCREEN.

FEATURES

Measures conductivity and TDS.
Automatic or manual setting temperature compensation with fixed coefficient of 2%.
Calibration with standards of conductivity and TDS.
RS-232 output to connect a printer or a computer.
Cell constant adjustment.
Temperature sensor connection Rt-2252.
Temperature measuring range: 0 to 60 °C.

SPECIFICATIONS

Conductivity ranges:
(Manual range change)
0 to 20.00 $\mu\text{S}/\text{cm}$
0 to 200.0 $\mu\text{S}/\text{cm}$
0 to 2000 $\mu\text{S}/\text{cm}$
0 to 10.00 mS/cm
Precision: 1.5% base scale + 1 digit.
TDS ranges: 0 to 1000 mg/L.



MODEL

Part No.	Width / Height / Depth cm	Weight Kg
4120510	30 20 7.2	0.5

Accessories to complement the meter, conductivity cells, temperature sensors and standards (see accessories).
Not compatible with the printer 4120113.

Includes sensor stand.

ACCESSORIES



Conductivity cell

Glass body. Working temperature range 0-100 °C

Fig. Part No. K Sensor T° (°C) Dimensions mm Applications

1	4120220	1	Yes	Ø 12 x 120	General laboratory use up to 2000 μS
3	4120222	0.1	Yes	Ø 12 x 120	Pure water up to 20 μS
4	4120223	10	Yes	Ø 12 x 120	High conductivity up to 200 ms

Temperature sensors

Fig.	Part No.	Range	Type	Dimensions mm	Material
5	4120121	0-100	Rt-2252	Ø 5 x 120	Stainless steel
6	4120129	0-100	Rt-2252	Ø 12 x 120	Glass

Conductivity standards.

4120160 Flask 250 ml Standard ± 0.05 of 1278 $\mu\text{S}/\text{cm}$ at 20 °C; 1413 $\mu\text{S}/\text{cm}$ at 25 °C

4120161 Flask 250 ml Standard ± 0.025 of 4.915 mS/cm at 20 °C; 5.446 mS/cm at 25 °C

4120162 Flask 250 ml Standard ± 0.06 of 11.67 $\mu\text{S}/\text{cm}$ at 20 °C; 12.88 $\mu\text{S}/\text{cm}$ at 25 °C

MAGNETIC STIRRER "AGIMICRO"

Features

Maximum stir volume: 2 litres.
Adjustable stir speed from 40 to 1400 r.p.m.
Excellent chemical resistance.
Location hole at the back for a retort rod. (Accessory)

Control panel

Mains switch with luminous on indicator.
Analogue control of speed in r.p.m.

Model

Part No.	Medidas cm	Power source	Weight Kg
7001638	Ø 12 x 5	230 V 1 W	0.5

Supplied complete with a 8 Ø x 32 mm P.T.F.E. coated stir bar.



ACCESSORY

Support bar and electrode clamp.
Part No. **7001639**



Universal arm support.

With holder for up to 4 sensors or electrodes.
Very stable heavy base. Ideal for working at varying heights.
Part No. **1001552**



NUTRITIONAL AND WATER ANALYSIS APPARATUS

EXTRACTION

Organic nitrogen determination by Kjeldahl "BLOC-DIGEST"
 Steam distillation of protein, PRO-NITRO "M"
 Steam distillation of protein semiautomatic, PRO-NITRO "S"
 Kjeldahl distillation automatic PRO-NITRO "A"
 Extractor for the determination of cellulose and fibre, "DOSI-FIBER"
 Cold extraction unit, "EF-1425"
 Solvent extractor unit for the determination of residues, oils and fats in nutritional and other materials DET-GRAS "N"
 Sample Hydrolysis unit, "HI-1427"
 Wine (Alcohol), distillation unit "DE 1626"

WATER ANALYSIS

Chemical Oxygen Demand in residual water "C.O.D."
 Constant temperature refrigerated incubator cabinets, B.O.D. "MEDILOW S, M, L, LG"
 Flocculator for water analysis, laboratory "FLOCUMATIC"
 Flocculator for water analysis, portable "JARTEST"
 De-mineraliser "LAB-ION"
 Water Distillation unit, "AQUASEL", "L-3" and "AC-L8"

RECOMMENDED METHODS AND EQUIPMENT: PRO-NITRO M, S and A, DOSI-FIBER, EF-1425, HI-1427, DET-GRAS N, BLOC-DIGEST, DE-1626 and C.O.D.*

ANALYSIS OF CEREAL AND DERIVATIVES	Reference	Pro-Nitro M,S and A	Dosi-Fiber	EF-1425	Det-Gras N	Bloc-Digest	HI-1427
Determination index for cellulose	Method Wladesco		YES	YES			
Insoluble fibre in food	Method Van Soest		YES	YES			
Crude Fibre	Method Weende & Wijkströn		YES	YES			
Proteins	Method Kjeldahl	YES				YES	
Soxhlet extraction for fat identification	Soxhlet Extraction				YES		YES
Crude Fat	Soxhlet Extraction				YES		YES
Arsenic	Determination A. A.					YES	
Mercury	Determination A. A.					YES	
ANALYSIS OF MILK AND DERIVATIVES	Reference	Pro-Nitro M,S and A	Dosi-Fiber	EF-1425	Det-Gras N	Bloc-Digest	HI-1427
Crude Fat	Soxhlet Extraction				YES		YES
Crude Protein	Method Kjeldahl	YES				YES	
Casein	Method Kjeldahl through precipitation of casein	YES				YES	
ANALYSIS OF ALCOHOLIC BEVERAGES	Reference	DE-1626	Dosi-Fiber	EF-1425	Det-Gras N	Bloc-Digest	HI-1427
Degree of alcohol	Method Volumetric	YES					
Volatile Acid	Method Volumetric	YES					
Iron	Method Volumetric					YES	
ANALYSIS OF FODDER AND RAW MATERIAS	Reference	Pro-Nitro M,S and A	Dosi-Fiber	EF-1425	Det-Gras N	Bloc-Digest	HI-1427
Raw Cellulose	Method Weende & Wijkströn		YES	YES			
Raw Protein	Method Kjeldahl	YES				YES	
Raw Fat	Soxhlet extraction				YES		YES
Volatile base nitrates	Distillation Kjeldahl	YES					
Soluble Raw Fat en hydrochloric acid and Pipsin	Method Kjeldahl	YES				YES	
Casein total	Method Kjeldahl in casein precipitate	YES					
Phosphorus	Method Photometric					YES	
Hydrocyanic Acid	Distillation in Silver Nitrate	YES					
Pure zolidine	Soxhlet Extraction				YES		YES
ANALYSIS OF FRUIT BEVERAGES AND DERIVATIVES	Reference	Pro-Nitro M,S and A	Dosi-Fiber	DE-1626	Bloc-Digest		
Total Nitrogen	Method Kjeldahl	YES				YES	
Volatile Acids	Distillation measurement				YES		
Arsenic	Dichromate Determination						YES
ANALYSIS OF WATERS	Reference	Pro-Nitro M,S and A	Dosi-Fiber	D.Q.O. /ECO-8/ECO16	Bloc-Digest		
Total Nitrogen	Method Kjeldahl	YES				YES	
Total Phosphorus	Method Photometric					YES	
C.O.D.	Determination by Dichromate				YES		

* Reference: Methods are official publications issued by the MAPA (Ministry of Agriculture, Fisheries and Nutrition) 1993.