



Thermocycler for thermal cycles

Spectrophotometers

Colorimeters

Microtiter strip reader and water quality meter

Microplate reader and washer

pH-meters

Conductivity meter

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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 Oppenheimer*

COMECTA Thermocycler for thermal cycles "B960"

FOR 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.

NEW DESIGN

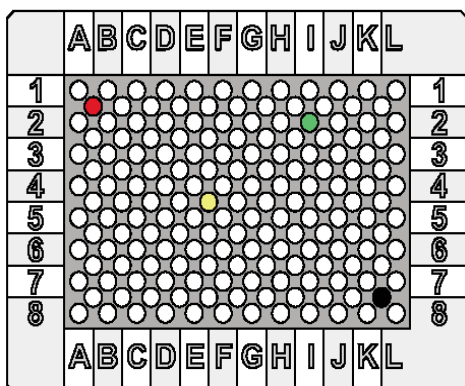
RS232

USB

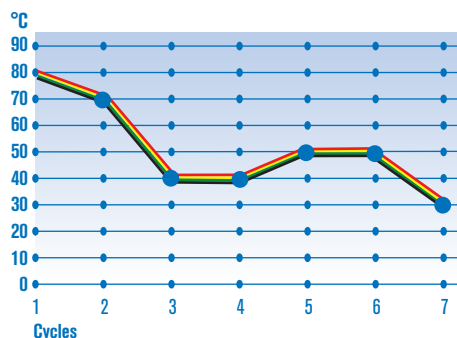


INTERCHANGEABLE BLOCKS

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.



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.

TECHNICAL SPECIFICATIONS

Temperature range: 0°C to 99°C.

Durability: 99min. 99sec.

Warming-up speed: 4°C/sec.

Cooling down speed: 4°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.

Temperature range gradient: 30-99 °C.

Heater lid: From 70 to 115°C according

to the program.

Max. cycles number: 299.

Stored programs: Up to 1000.

Graphic display of 14.5cm, 320x240 pixels.

USB 2.0, LAN and RS232 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 27 38	220V/50-60Hz	780	7,8

ACCESSORIES

Interchangeable modules:

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

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

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

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.



"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.

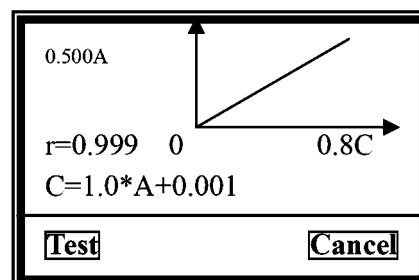
ACCESSORIES

Professional software. Part No. 4312001

(see page 241).

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	4312007



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



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

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 lifetime. 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.

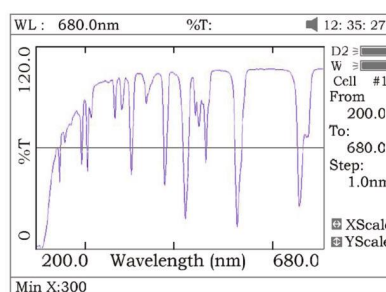
Calculation of concentration and DNA purity.

Note: ratio at other wavelengths can be measured.

ACCESSORIES

(see page 241).

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)	4312007	
Deuterium lamp (UV)	4312006	

ACCESSORIES

Thermostatted flow Peltier cuvette holder (only compatible with UV-2005 and UV-3100 models)

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

Precision: ± 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



COMECTA Cuvettes for Spectroscopy

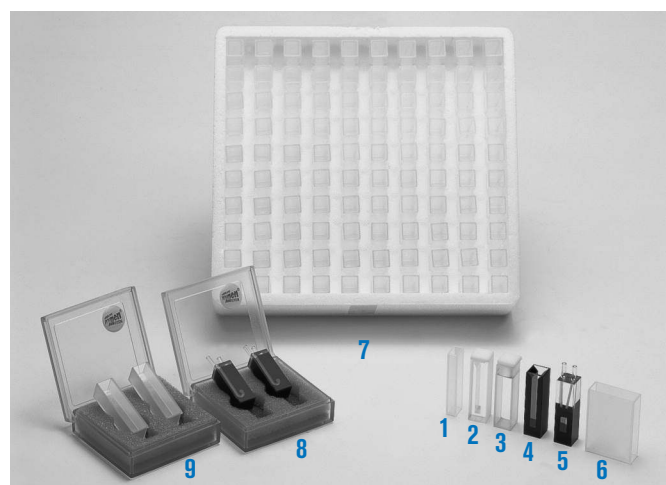
FEATURES

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	5 mm	Square Semi-Micro	Pack of 1 unit

COMECTA Double Beam Spectrophotometer "UV-2300 II"

**BAND WIDTH 1.5 nm. TOTAL STABILITY DOUBLE BEAM OPTICS.
AUTOMATIC WAVELENGTH CORRECTION CALIBRATION.
USB PORT FOR DATA STORAGE.
WIDE RANGE OF ACCESSORIES.**

**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.

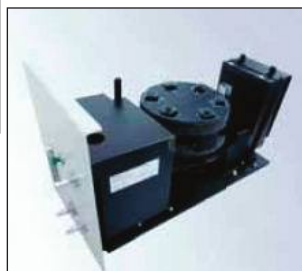
Controllable from a computer with application specific optional software: **"UV-Analyst Spectrum"**, (see accessories).

**SPECIFICATIONS**

Optical system:	Double beam optics.
Wavelength range:	190 nm to 1100 nm.
Band pass:	1.5 nm
ABS range:	-3.000 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:	0.0003A/hr (500 nm after 2 hours of use.).
Noise level:	0.0003 A (at 500 nm).
Light source:	Deuterium D2 and Halogen lamps.
Built in screen:	LCD back light of 165 x 122 mm.
Connections:	RS232 and parallel port.



USB port. "Flash" memory not included.



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 II	5110020	26 50 59	110-220V / 50-60Hz	29

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%
 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.



MODEL

Part No.	Height / Width / Depth cm	Power rating	Power W	Weight Kg
4120010	14 45 33	110-220V/50-60Hz	150	10

ACCESSORY

Metallic thermostat dry block "BIO-BATH"

Small size with a fixed temperature of 37 °C with check thermometer, 8 tube positions for 75x13 VAC tubes.

Note: Accelerates the extraction of plasma for faster results and waiting time for the patient.

MODEL

Part No.	Height / Width / Depth (exterior) cm	Stability °C	Power W	Weight Kg
7001561	8.8 9.6 7	0.5	8	0.5



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 30 nm band pass.
 12 position Filter disc wheel selection .
 Standard filters: 420, 440, 490, 520, 550, 580, 620 and 680 nm.
 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**



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.
interference filter 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**



Multi-parameter water quality meter "MP-2006"

LARGE TOUCH SCREEN. TO MEASURE PH, ORP, CONDUCTIVITY, TDS, SALINITY, DISSOLVED OXYGEN, IONS & TEMPERATURE SUPPLIED WITH ELECTRODES: OF CONDUCTIVITY, PH, DISSOLVED OXYGEN AND TEMPERATURE PROBE.



FEATURES

5.7 inches touch screen.
Capacity to store up to 2200 sets of data. GLP method. Possibility of storing, printing and deleting measuring data. USB and RS-232 ports for PC connection.
Measuring modes: continuous, timing and balance measuring modes.



TECHNICAL DATA

	Range	Accuracy	Resolution
pH:	-2 to +19,999	±0,002 FS	0,001
ORP:	±1999,99 mV	±0,03 FS	0,01 mV
Conductivity:	0,001 µS to +199,9mS	±0,5 FS	0,001µS
TDS:	0,000 mg/L to 19.99g/L	±0,5 FS	0,001 mg/L
Salinity:	(0,0 to 8,00)%	±0,1%	0,1%
Dissolved oxygen:	0,00 to 19.99 mg/L	±0,5 mg/L	0,01 mg/L
Ions:	0 to 19990(ug/L, mol/L)	±0,5%	±1
T°:	-0,5 to +135	±0,5 FS	0,1

MODEL

Code	Height / Width / Depth cm	Power	Weight Kg
4120700	29 20 7	230V/50-60Hz	1

ACCESSORIES

Standard electrodes of pH, conductivity and temperature. See page 247.

Special electrodes:

Code	Electrode type	Working temperature	Body material	Measure mm	Code	Electrode type	Working temperature	Body material	Measure mm
4120183	Platinum	0-50°	Glass	Ø 12 x 120	4120189	Calcium	5-60°	Glass	Ø 12 x 120
4120184	Platinum-2	0-50°	Glass	Ø 12 x 120	4120190	Nitrate	5-60°	Glass	Ø 12 x 120
4120185	Antimony	0-50°	ABS	Ø 12 x 120	4120191	Copper	5-60°	Glass	Ø 12 x 120
4120186	Tungsten	0-50°	Glass	Ø 12 x 120	4120192	Chloride	5-60°	Glass	Ø 12 x 120
4120187	Silver	0-50°	ABS	Ø 12 x 120	4120193	Oxygen	5-40°	ABS	Ø 12 x 120
					4120194	Reference	5-55°	Glass	Ø 12 x 120

COMECTA 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).

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

ACCESSORIES

Software for data transfer to computer. Part No. 5109997

COMECTA 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 and pH electrode.

SPECIFICATIONS

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

Impedance: 5×10^{11} 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 247).



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 247).

Universal arm support not included. Part No. 1001552 (see page 248).

SPECIFICATIONS

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

Impedance: 1×10^{12} 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



Part No. 1001552



ACCESSORY

pH probe and additional temperature sensor, gel filled. Temperature sensor Rt 2252. With IP65 protective connectors.

Part No. **4120401**



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° (°C):	0 to 99.9	±0.5	0.1

Impedance: 1×10^{12} 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 247).



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° (°C):	-5 to 105.0	±0.3	0.1

Impedance: 1×10^{12} 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.



pH Electrodes

Fig.	Part No.	Range pH	Sensor T°	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	Glass	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

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

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**



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

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 programmable.
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 to 40.0 °C
Precision:
Conductivity: 1.5% base scale
Salinity: 0.20%
Temperature: 0.3 °C



RS232

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	4120220.1	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 mS/cm at 20 °C; 1413 mS/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 mS/cm at 20 °C; 12.88 mS/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**



Kjeldahl digestion unit

Steam distillation unit kjeldahl “Pro-Nitro M”

Automatic NaOH dosage and temporized stop.

Steam distillation unit kjeldahl “Pro-Nitro S”

Automatic boracic and Naoh dosage, sample drainage and temporized stop.

Steam distillation unit kjeldahl “Pro-Nitro A”

Fully automatic operation. From reagent dosage to the titration

Extractor for fats and oils “Det-Gras N”

Extractor for determination of cellulose and fibre

Alcohol disitillation

“DQO” and “DBO” water analysis

Flocculator and water distiller

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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
Determination index for cellulose	Method Wladesco		YES	YES		
Insoluble fibre in food	Method Van Soest		YES	YES		
Crude Fibre	Method Weende & Wijkström		YES	YES		
Proteins	Method Kjeldahl	YES				YES
Soxhlet extraction for fat identification	Soxhlet Extraction				YES	
Crude Fat	Soxhlet Extraction				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
Crude Fat	Soxhlet Extraction				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
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
Raw Cellulose	Method Weende & Wijkström		YES	YES		
Raw Protein	Method Kjeldahl	YES				YES
Raw Fat	Soxhlet extraction				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	
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.



Dry block for Determination of Organic Nitrogen by the Kjeldahl method



Models Macro and Micro

- THE EQUIPMENT FOR THE DETERMINATION OF ORGANIC NITROGEN IS MADE OF TWO BASIC ELEMENTS:
- BLOCK DIGESTER (MINERALISATION) WITH PROGRAMMABLE TEMPERATURE CONTROL AND GLASSWARE (MACRO 250 ml AND MICRO 100 ml).
 - DISTILLATION UNIT "PRO-NITRO M", "PRO-NITRO S" (SEMI-AUTOMATIC) AND "PRO-NITRO A" (AUTOMATIC).



Digestion Block "Bloc-digest"

FEATURES

- Minimal sample manipulation
- Uniform heating.
- Capacity to store 20 programs of 4 steps for temperature and time.
- RS-232 port for temperature register and digestion programming from a PC.
- Gas collection system that does not require special water jet pumps.
- Supplied complete with:
 - 1 metal heater block.
 - 1 programmer for time and temperature
 - 1 tube support rack
 - 1 gas collector
 - Digestion tubes.



Complete unit with: Dry-block connected to a programmable process unit, (time and temperature) rack support for tubes and fume extractor.

MODELS - COMPLETE UNIT MACRO

MACRO	Part No.	No. of positions
Bloc Digest 6	4000629	6
Bloc Digest 12	4000630	12
Bloc Digest 20	4000631	20

MODELS - COMPLETE UNIT MICRO

MICRO	Part No.	No. of positions
Bloc Digest m 12	4001047	12
Bloc Digest m 24	4001048	24
Bloc Digest m 40	4001049	40

ACCESSORIES: EXTRACTION SYSTEM AND NEUTRALIZATION OF ACID VAPOURS



- Reduces water consumption, no requirement for a constant connection for mains water.
- Prevents emission of gas vapours and acidic water to waste.
- Low noise level (<65dBA)
- Re circulating pump made from chemically resistant materials

"Scrubber" unit

Part No.	Height / Width / Depth (exterior) cm	Weight Kg
4001611	32 31 16	2

It is supplied with 3 Kg. acid vapours neutralizer solution.

Spare part:

3 Kg. acid vapours neutralizer solution.

Part No. 4001610

Specially designed to absorb and neutralize vapours generated in the Kjeldahl digestion processes.

Composed of a "Scrubber unit" that blocks the passage and neutralizes the condensed acids, and a re-circulating water pump that produces sufficient vacuum to aspirate the vapours.

It is essential to put the "Scrubber" unit together with the neutralizer solution between the digestion block and the re-circulating pump. Digester "Bloc Digest 20" requires 2 "Scrubber" units for a proper neutralization of fumes. Note: Pump with part number 4001612 has 2 suction inlets.

Water recirculation vacuum pump

Part No.	Height / Width / Depth (exterior) cm	Vacuum level bar	Pump rate Litres/minute	Weight Kg
4001612	44 39 28	0.98	10	10

PARTS LIST AND ACCESSORIES

Heating blocks

To function correctly it is important to include in the purchase the controller unit for time and temperature RAT-2, The block should not be connected directly to the mains supply.



Models	Part No.	No. of positions	Ø tube mm	Height / Width / Depth (exterior) cm	Temperature °C	Power W	Weight Kg
MACRO	4000507	6	42	18 33 28	45 to 450	1500	18
MACRO	4000508	12	42	18 39 33	45 to 450	2100	25
MACRO	4000509	20	42	18 44 39	45 to 450	2500	31
MICRO	4001050	12	26	18 33 28	45 to 450	1500	16
MICRO	4001051	24	26	18 39 33	45 to 450	2100	22
MICRO	4001052	40	26	18 44 39	45 to 450	2500	27

Process programmer for time / temperature RAT-2. Part No. 4001538

Features

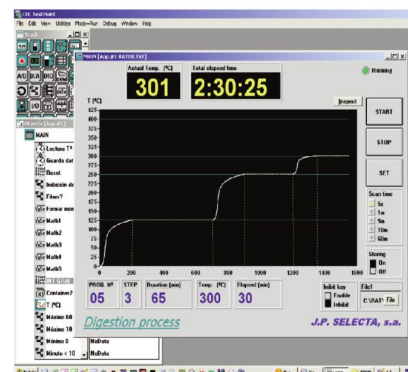
Temperature range from 45 °C to 450 °C.
Memory for 20-4 steps programs.
Maximum time per step: 600 minutes.
Acoustic indication for digestion end of program.
Two selectable temperature gradients: kjeldahl/D.Q.O.
Temperature sense breakage alarm.
Independent control of safety maximum temperature.
Bidirectional RS-232 serial connection. For temperature registration and digestion program edition with the RAT connected to a PC.
Software included.



Electronic controller RAT-2

Control Panel

The control panel and the RAT-2 display allow the creation and execution of the digestion program. During the digestion, it shows the block temperature, the elapsed time in the program step.



The software included makes easier the digestion program edition and the digester temperature register.

Tube support rack.

Made of chemically treated no corrosive Dural, with handles and side panel that prevents heat loss.



Fume extraction

Unit for collecting fumes supplied with a support rack. Made of borosilicate glass and stainless steel.



Models	Part No.	No. of places	Height / Width / Depth (exterior) cm
MACRO	4005071	6	15 17.5 12.5
MACRO	4005081	12	15 23 18
MACRO	4005091	20	15 28.5 23.5
MICRO	4001053	12	15 17.5 12.5
MICRO	4001054	24	15 23 18
MICRO	4001055	40	15 28.5 23.5

Models	Part No.	No. of places	Height / Width / Depth (exterior) cm
MACRO	4005072	6	15 18 12
MACRO	4005082	12	15 23 18
MACRO	4005092	20	15 29 23
MICRO	4001056	12	15 18 12
MICRO	4001057	24	15 23 18
MICRO	4001058	40	15 29 23



Digestion and distillation tube Series MACRO of 250 ml volume. Graduated to 100 ml 42 mm Ø x 300 mm high. Part No. 4042300



Tube for digestion and distillation Series MICRO of 100 ml volume. 26 mm Ø x 300 mm high. Part No. 4001045



Water jet pump for vacuum extraction. Made of PVC designed for the fume extraction of the 20 and 40 place models. Part No. 4000633



Water Jet pump for vacuum extraction. Metallic, suitable for the extraction of fumes for the 6, 12 and 24 place models. Part No. 7000293



Steam distillation unit Kjeldahl "Pro-Nitro M"

DETERMINATION OF ORGANIC NITROGEN (KJELDAHL METHOD).
AUTOMATIC NaOH DOSAGE AND TEMPORIZE STOP.

Steam distillation Kjeldahl unit.

Simple secure systematic analysis suitable for small to Medium throughput of samples.

FEATURES

Steam distillation system.

Compact steam generator with safety over temperature thermostat and over pressure device.

Safety door, the system will not operate if the door is open.

"Tube in place" sensor: if the tube is not located, the dosing process of NaOH will not take place.

Universal adapter for digestion/distillation tubes MACRO (Ø 42 mm) and MICRO (Ø 26mm)

Small footprint, saves bench top space: The H₂O and NaOH reservoirs are placed within the unit.

Stainless steel case with reinforced ABS plastic front.

Automatic distillate titration kit. (See accessories).

SPECIFICATIONS

Measuring range: from 0.2 to 200 mg of Kjeldahl Nitrogen.

Programmable distillation time.

Nitrogen recovery >99.5%

Distillation speed: from 35-40ml/minute

Typical distillation time: from 7-10 minutes.

Water consumption rate: from 80-100 litres/Hr.

Steam generator water consumption: 2,5 Litres/ Hr.

Water reservoir for steam generator: 6 litres

NaOH reservoir: 2 Litres.

ALARMS

Low water level for the steam generator.

Safety door open or no distillation/digestion tube in place.

Steam generator over temperature.

AUTOMATED SEQUENCES

Open and closure of cooling water to the cooling coil.

Automatic load of NaOH once the distillation has started.

Select NaOH volume.

Stop at the end of the pre-set programmed time.

ADDITIONAL REQUIREMENTS

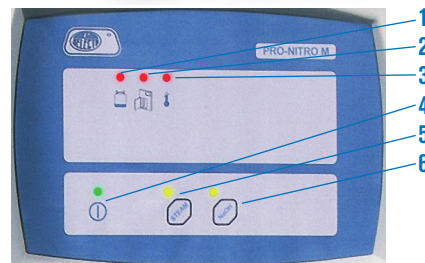
To complete Kjeldahl Nitrogen analysis a digestion block is also required.

(See Bloc Digest pages 251 and 252).

MODEL

Part No.	Height / Width / Depth cm	Power W	Weight Kg
4002627	75 50 50	1800	30

Supplied with a MACRO Ø 42mm tube, set of reagent containers and tubing.



CONTROL PANEL

1. Low water indicator.
2. Door open or no tube presence indicator.
3. Over temperature indicator.
4. Mains on indicator.
5. Push button and indicator start/stop distillation.
6. NaOH volume selection.

ACCESSORIES

Tube for digestion and distillation Series MICRO of 100 ml volume.

Part No. **4001045**

Digestion and distillation tube Series MACRO of 250 ml volume.

Part No. **4042300**



Adapter kit for automatic determinations. Vessel with location positions for pH electrode, stirrer and reagents and distillate sample.

Part No. **4001724**



Polycarbonate conical flasks durable. CAPACITY 250 ml

Part No. **5310100** with cap.

Part No. **5310101** without cap.





Steam distillation unit Kjeldahl Semi-Automatic "Pro-Nitro S"

**DETERMINATION OF ORGANIC NITROGEN (KJELDAHL METHOD).
AUTOMATIC BORACIC AND NaOH DOSAGE, SAMPLE DRAINAGE AND TEMPORIZED STOP.**



Semi-automatic steam distillation Kjeldahl unit. Simple secure systematic analysis suitable for medium to large throughput of samples.

FEATURES

Steam distillation system. Compact steam generator with safety over temperature thermostat and over pressure device. Safety door, the system will not operate if the door is open.

"Tube in place" sensor: if the tube is not located, the dosing process of NaOH will not take place.

Universal adapter for digestion/distillation tubes MACRO (Ø 42mm) and MICRO (Ø 26 mm).

Small footprint, saves bench top space: The H₂O, NaOH and H₃BO₃ reservoirs are placed within the unit.

Empty Digestion/Distillation tube system.

Stainless steel case with reinforced ABS plastic front.

Green LED 2 digit display.

Distillation program: (Add NaOH, Add Boric Acid, Distillation time, Empty tube.)

Automatic distillate titration kit. (See accessories).

SPECIFICATIONS

Measuring range: from 0.1 to 200 mg Nitrogen.

Programmable distillation time.

Nitrogen recovery >99.5%

Distillation speed : from 35-40ml/minute

Typical distillation time: from 7-10 minutes.

Water consumption rate: from 80-100 litres/Hr.

Steam generator water consumption: 2.5 Litres/ Hr.

Water reservoir for steam generator: 6 litres

NaOH reservoir: 2 Litres.

Boric Acid reservoir: 2 Litres

ALARMS

Low water level for the steam generator.

Safety door open or no distillation/digestion tube in place.

Steam generator over temperature.

AUTOMATIC

Single push button to start the distillation cycle:

- Boric acid dosing

- Start distillation.

- NaOH dosing

- Stop Distillation (Programmed time transpired.)

- Acoustic indicator at the end of the cycle.

ADDITIONAL REQUIREMENTS

To complete Kjeldahl Nitrogen analysis a digestion block is also required.

(See Bloc Digest pages 251 and 252).

MODEL

Part No.	Height / Width / Depth cm	Power W	Weight Kg
4002851	75 50 50	1800	32

Supplied complete with a MACRO Ø 42 mm tube, set of connection tubes, set of reservoirs.

ACCESSORIES

Tube for digestion and distillation Series MICRO of 100 ml volume.

Part No. **4001045**

Digestion and distillation tube Series MACRO of 250 ml volume.

Part No. **4042300**



Adapter kit for automatic determinations. Vessel with location positions for pH electrode, stirrer and reagents and distillate sample.

Part No. **4001724**



Polycarbonate conical flasks durable. CAPACITY 250 ml

Part No. **5310100** with cap.

Part No. **5310101** without cap.



CONTROL PANEL

1. Illuminated indicator. Steam generator

2. Low water in the steam generator

3. Door open or no tube present indicator.

4. Over temperature indicator.
5. Push button and display to select parameters.

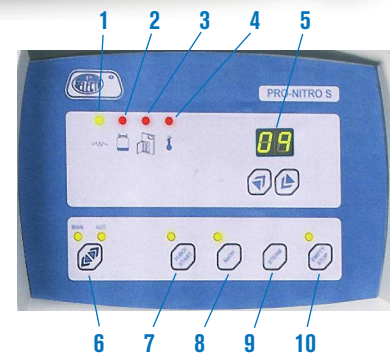
6. Mode push button, Manual or Automatic.

7. Push button, dose Boric Acid/Push button START in automatic mode.

8. Dose NaOH push button.

9. Push button, start the distillation in manual mode.

10. Push Button, empty sample tube.





Automatic steam distillation unit Kjeldahl "Pro-Nitro A"



DETERMINATION OF ORGANIC NITROGEN (KJELDAHL METHOD)
FULLY AUTOMATIC OPERATION. FROM THE REAGENT DOSAGE TO THE TITRATION.



Steam distillation system Kjeldahl, complete with automated "ON-LINE" analysis (evaluation in real time). For systematic precise analysis, with minimum personnel intervention, simple and safe. Adequate for a laboratory with a medium to large throughput of samples.

The Kjeldahl steam distillation unit «PRO-NITRO A» evaluates the distillate at the same time as it is produced (evaluation «On-Line»), the evaluation and distillation are completed as one operation, reducing drastically the analysis time. This type of evaluation offers the following additional advantages: detects the point where the sample no longer produces Nitrogen, which means that, the distillation stops at the optimum maximum Nitrogen recovery and does not prolong the analysis longer than necessary.

The titration is a colorimetric method and is accepted by AOAC and does not require any periodic calibration.

FEATURES

Distillation by steam generation.

Automatic «On-line» colorimetric evaluation.

Steam generator with safety thermostat, over temperature and over pressure device.

Safety, door closed, that prevents distillation if open.

Detects that a digestion/distillation tube is present. This prevents the dosing of NaOH if there is no tube located.

Universal adapter for MACRO (Ø 42 mm) and MICRO (Ø 26 mm)distillation tubes.

Space saving in the laboratory: the reservoirs for the H₂O, NaOH, Boric Acid and HCl are located inside the unit.

Empties the digestion/distillation tubes and the collector automatically.

Automatic stop when distillation is complete.

Large LCD display of 20 x 4 characters.

RS232 output to results printer.

Main system made from stainless steel with an ABS plastic front.

SPECIFICATIONS

Measuring range: 0.2 to 200 mg Nitrogen.

Nitrogen recovery:> 99.5%

Distillation speed: from 35 to 45 ml/minute

Coolant water consumption: 80 to 100 litres per hour.

Steam generator water consumption: 2.5 Litre/Hr.

Steam generator water reservoir capacity: 6 litres.

NaOH reservoir capacity: 2 Litres.

Boric Acid reservoir capacity: 2 Litres.

Titratant reagent reservoir capacity: 2 Litres.

Evaluation precision: 1.5%

Minimum reagent dose 0.01ml.

ALARMS

Low water level for the steam generator.

Safety door open or no distillation/digestion tube in place.

Steam generator over temperature.

ADDITIONAL REQUIREMENTS

To complete Kjeldahl Nitrogen analysis a digestion block is also required.

(See Bloc Digest pages 251 and 252).



MODEL

Part No.	Height / Width / Depth cm	Power W	Weight Kg
4002430	75 50 50	1800	38

Supplied complete with a MACRO Ø 42 mm tube, set of connection tubes, set of re-reservoirs, 250 ml. of mixed indicator 4.8 and 100 gr. of sulphate ammonium.

AUTOMATION

Closing and opening of the condenser cooling water in line with the distillation process.

Dosing of Boric Acid.

Dosing of NaOH once the distillation has started.

Select NaOH and Boric Acid volume.

«On-line» evaluation of distillate.

Auto detection of the end of the distillation process.

Special functions to maximise performance.

Special functions for maintenance.

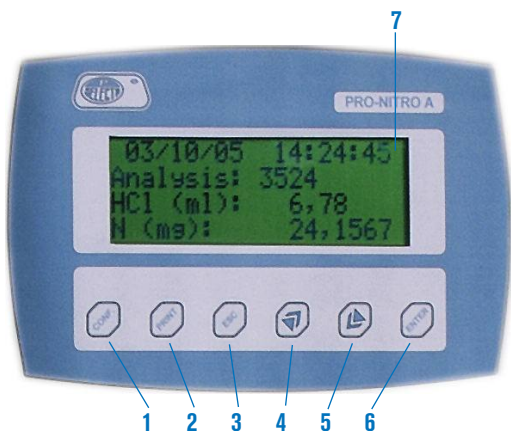
REAGENTS

All the reagents used in the «PRO-NITRO A» are easily located:

- Solution of 30-40% NaOH.

- Solution of Boric Acid at 1% concentration (approx.) with mixed indicators (Bromo-cresol green and methyl red).

- Reagent for titration: HCl or H₂SO₄ from 0.05N or 0.25N adjusted to 0.001 Normal.



CONTROL PANEL

1. Menu to configure the date, time and selectable parameters.
2. Print the analysis information using the optional printer 4120113, purchased as an accessory.
3. <<ESC>> to cancel changes and escape from the menu.
4. Increase values and navigation through the menu.
5. Decrease values and navigate through the menu.
6. <<ENTER>> to accept changes to parameters and navigation through the menu.
7. LCD display to visualise parameters and results

ADVANTAGES

Excellent precision on results.
 Complete Nitrogen recovery from the sample.
 Minimum operator intervention.
 No calibration required.
 Minimum analysis time.

RESULTS

The results can be downloaded to a printer (Optional), required for GLP, and includes the following data:

- Consecutive unrepeatable I.D. number of analysis.
- Date and time.
- Volume of NaOH.
- Volume of Boric acid.
- Reagent normality.
- Nitrogen detected.

15/10/05 12:16:08
Analysis Nr: 087598
NaOH: 75ml.
Boric: 25ml.
Normality: 0.1503
Results:
Reagent: 10.521ml
Nitrogen: 22.1382mg

ACCESSORIES



Ink printer (not thermal paper), size (4/6/10 cm) suitable for use with the PRONITRO A.
 Paper 2 1/4" (56 mm) wide.
 Interface RS232.
 Includes interface and mains cables.
 Part No. **4120113**

Digestion and distillation tube. Series MACRO of 250 ml volume. Graduated to 100 ml 42 mm Ø x 300 mm high.
 Part No. **4042300**



Tube for digestion and distillation. Series MICRO of 100 ml volume. 26 mm Ø x 300 mm high.
 Part No. **4001045**



QUALITY CONTROL INFORMATION

ALL OF THE KJELDAHL DISTILLATION UNITS 4002430 REQUIRE A PROTOCOL ASSAY FOR THE RECOVERY OF NITROGEN WHEN MANUFACTURED. THESE RESULTS COME WITH THE EQUIPMENT AND ARE VALID FOR IQ AND OQ CLARIFICATION.

COMPLEMENT



Digital colorimeter "Pro-A 520"

MICROPROCESSOR CONTROLLED.
 AUTOMATIC ZERO ABSORBANCE AND 100% TRANSMITTANCE.
 ALPHANUMERIC 20 CHARACTER 2 LINE L.C.D. DISPLAY.

APPLICATIONS

Reagent preparation for Pro-Nitro A.

FEATURES

Wavelength range: 400 to 800 nm, by using special filters.
 Standard filter: 520 nm.
 Expanded Absorption range: -0.3 to 3.5 O.D.
 Transmission: 0 to 100 T %.
 Photometric accuracy: >1 % @ 1.000 A.
 Photometric precision: ±1 % @ 1.000 A.
 Photometric stability: 0.004 A/hr. @ 0.000 A.
 Light source: Long life tungsten lamp.
 Detector: Solid state.
 Sample chamber: 10 mm cuvettes.
 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.

SPARE

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

MODEL

Part No.	Built in printer	Height / Width / Depth cm	Power W	Weight Kg
4120029	NO	11 18 28	10	4.5



Solvent recovery extractor for fats and oils “Det-gras N”

FOR THE DETERMINATION OF FATS BY SOXHLET METHOD.
SAFETY PROTECTION IP65.

Equipment for the extraction of fats and soluble substances that will dissolve in solvents. Based on the Soxhlet methods by Randall, the DET-GRAS-N extracts fats (and or other substances) from the sample by dissolving them in a solvent. If compared to the classic standard soxhlet method, a time saving of between 30-70% can be obtained due to a two stage extraction process and high speed in obtaining high temperatures.

APPLICATIONS

Practically all methods of classic soxhlet extraction can be substituted by the DET-GRAS N. Typical fat determinations are: in meat products, animal fodder, pre-prepared foods, fish etc. Also suitable for the extraction of soluble components in paper paste, textile fibres etc.

FEATURES

Heating by protected electric heater, distributed throughout the radiator surface that provides homogeneous heating throughout the samples.

Electrical safety according to IP65.

Robust temperature control by a durable thermocouple.

Safety over temperature device.

Outer case made of solvents resistant epoxy coated steel.

Extractions can be completed using glass or cellulose thimbles.

Compatible with most common solvents: Petroleum ether. Diethyl ether, hexane, acetone acetonitrile etc.

Supplied complete with 2 sets of seals, adapters for different solvent types.

Typical extraction time (food fats) 50 minutes.

SPECIFICATIONS

Cellulose extraction thimbles \varnothing_{ext} 26 x 60 mm.

Working temperature of 90 to 240 °C.

Solvent recovery 60 to 80 %.

Solvent volume (by sample): up to 50 ml.

Program memories: 16.

Extraction time <<boiling>>: from 0 to 99 minutes.

Extraction time <<rinsing>>: from 0 to 99 minutes.

Time to recuperate solvents: from 0 to 99 minutes.



CONTROL PANEL

LCD display of 2 lines of 20 characters.

Keypad with 4 push buttons to select temperature, time and programs.

MODELS

Part No.	No. of places	Height / Width / Depth cm	Water consumption litres/minute	Power W	Weight Kg
4002841	2	70 45 40	1	200	19
4002842	6	70 75 40	2	600	25

Supplied with	model 6 places	model 2 places
Cellulose sample thimbles	25	25
Thimble rack	3	1
Support rack beakers	3	3
Aluminium tubes for thimble support	6	2
Extraction support for thimbles	18	6
Aluminium solvent beakers	18	6
Magnetic tongs for thimble manipulation	1	1
Tongs for manipulation of Aluminium beakers	1	1
Support rack	1	1
Transporting support handles	1	1
Butyl Joints	6	2
Vitron Joints	6	2



Accessories supplied with the 6 place model.



Extractor for the determination of cellulose and fibre “Dosi-fiber”

APPLICATIONS

Total Fibre (WEENDE, VAN SOEST or similar). Dietary fibre. Neutral detergent fibre. Acid detergent fibre. Other extraction processes which do not use acetic acid, acetic trichloric acid or nitric acid. Textile fibre. Wood and paper fibre.

EQUIPMENT DESCRIPTION

Integral extraction and filtration.

No sample transfer reduces the risk of sample loss, since the tubes, crucibles and filter are transferred with the samples in place.

Excellent results due to reproducible operating conditions.

Easy sample handling due to the special crucible support stand.

Versatile and precise test procedure that allows the samples to be weighed at various stages in the extraction process.

FEATURES

Rugged external case with a “RILSAN” protective coating. All equipment components; condenser, valves, heater, compressed air valves and controls are all protected within the main case. Infrared heating elements.

CONTROL PANEL

Mains illuminated ON/OFF switch.

Switch for compressed air pump.

Heating element with electronic control.

TECHNICAL DATA

Sample size: 0.5 to 3 g (Normally 1 g).

Reproducibility: approximately $\pm 1\%$ for fibre level between 5-30 %.

Measuring range: 0.1 to 100 %.

Cooling water consumption: 1 litre/minute.

EQUIPMENT

Comes complete with: crucible with a porosity P-2, Crucible support rack, heater lid and holder manipulator.

MODELS

Part No.	No. of places	Height / Width / Depth (exterior) cm	Power W	Weight Kg
4000599	4	56 43 32	1000	19
4000623	6	56 57 32	1500	25



6 places extractor, part no. 4000623.

ACCESSORIES

Double hotplate for reagents.

Power consumption 1750 W.

Part No. 4000634

Beaker for reagents.

Part No. 1000635



SPARES

Support rack

4 crucibles.

Part No. 4000600

Support rack

for 6 crucibles.

Part No. 4000624

Crucibles

with a P - 2 porosity.

Part No. 4000601

EQUIPMENT FOR THE DETERMINATION OF TOTAL DIETARY FIBRE, ENZYMIC METHOD

THE DETERMINATION OF TOTAL DIETARY FIBRE BY THE ENZYMIC METHOD (AOAC, AACC) IS VERY DIFFERENT TO THE WEENDE AND THE DE VAN SOEST METHODS. THE EQUIPMENT FOR THIS ANALYSIS DEPENDS ON THE ENZYME KIT THAT YOU ARE GOING TO USE. ONCE THE TYPE OF ENZYME KIT IS SELECTED THE KIT INSTRUCTIONS WILL INDICATE THE NECESSARY EQUIPMENT TO COMPLETE THE ANALYSIS. THE COLD EXTRACTION UNIT EF-1425 PART NO 4001425 AND THE RECIPROCAL BATH PART NO 6032011 ARE FREQUENTLY USED (SEE PAGE 91).



Cold extraction unit “EF-1425”

DESCRIPTION

Specifically designed unit for cold extraction of up to 6 samples simultaneously, using acetone or other solvents. Complements the Dosi-Fiber for the analysis of crude fibre.

Components: 1 litre receptacle for solvent recovery, suction tube and 6 adapters to hold the filtration crucibles Part No. 4000601.

A pump or jet pump will be required to connect to the suction tube.

Comes complete with: blank stoppers in the case that not all of the 6 crucible places are used and a 1 litre solvent recovery vessel.

FEATURES

Stainless steel AISI 304, extractor, modular construction, easy to use and fast removal for efficient cleaning.

Support and crucible rack, made from hardened glass.

MODEL

Part No.	Height / Width / Depth (exterior) cm	Weight Kg
4001425	45 20 34	3

ACCESSORY

Jet pump.

Part No. 7000293





Oenological Distillation unit "DE-1626"

APPARATUS TO OBTAIN THE DISTILLATION OF ALCOHOL FROM ALCOHOLIC BEVERAGES IN ACCORDANCE WITH CEE NO. 2676/90 (WINE ANALYSIS) AND CEE NO. 2870/2000 (ANALYSIS OF SPIRITS.)

APPLICATIONS

Degree of alcohol in wines, Degree of alcohol in spirits, Volatile acids and Sorbic acid.

FEATURES

Vapour distillation.

Designed especially to obtain the distillation of wines and spirits to determine the alcohol grade by volume, volatile acid, ascorbic acid and other components.

Distillation volume up to 400 ml.

Auto stop at the end of the distillation.

Simple operation with minimum service.

Vapour generator protection system.

- Tube Ø 42 mm for volatile acid samples.

- Tube Ø 52 mm for volatile acid samples and 100 ml proof alcohol.

- Tube Ø 80 mm for samples of 200 ml for proof alcohol.

- 200 ml Matrix flask to collect distillate.

TECHNICAL SPECIFICATIONS

Validated to the criteria of CEE No. 2676/90 and CEE No. 2870/2000
Distillation speed: 30-40 ml/min (Recover of 200 ml of distillate in 5/6 minutes).

Condenser coolant water rate: 80-100 l/hr.

Generator water consumption: 1 and 1.25 ml for each ml of distillate.

Vapour generator power: 2400 W.

CONTROL PANEL

Control Panel.

Electronic controller.

Mains switch.

START Push button.

STOP Push button.

ADD Push button.

By the use of the ADD button allows the distillate to set burette level, then, there is no need to fill up with water to a level of 200 ml.

VALIDATION

The oenological DE-1626 has been validated by the oenological laboratory INCAVI in Vilafranca del Penedés. This laboratory has completed analysis from the distillation unit DE-1626 for the determination of alcohol proof by volumetric analysis, following the criteria of CEE No 2676/90 and CEE 2870/2000. They have analysed samples of hydrated alcohol, different wines and spirits with a high alcohol content. The unit was successfully appraised by the laboratory.

MODEL

Part No.	Height / Width / Depth cm	Power W	Weight Kg
4001626	90 30 30	2400	20

Supplied with tubes and flasks Ø 42, 52 and 80 mm and a 200 ml matrix flask.



Automatic termination of final distillation at 200 ml of distillate. By using the ADD function small quantities of distillate can be added to accurately fill the matrix flask to the mark without having to add water to the distillation.



ACCESSORIES



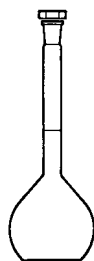
Glass tube adapters.

Part No.	Dimensions
4042300	Ø 42 x 300 mm
1001422	Ø 52 x 300 mm
1000646	Ø 80 x 300 mm



Support rack for 6 tubes, made of stainless steel.

Part No.	Suitable tubes dimensions
4000648	Ø 42 mm
4001473	Ø 52 mm
4001613	Ø 80 mm



Matrix flask 200 ml.
Part No. **1001636**

Alcoholmeters, graduations in 0.1 grade alcohol.

Part No.	Graduations
1001629	0 - 10
1001630	10 - 20
1001631	20 - 30
1001632	30 - 40
1001633	40 - 50
1001634	50 - 60
1001635	90 - 100



Alcoholmeters stand 6 places.
Part No. **1000015**

COMPLEMENTS FOR THE OENOLOGICAL DISTILLER "DE-1626"

ALL BASIC WINE ANALYSIS WITH A SIMPLE MANUAL EQUIPMENT, COMPOSED OF: OENOLOGICAL ANALYSER PHOTOMETER "M-3000", MICRO-CENTRIFUGE "CENCOM-1" AND DRY-BLOCK THERMOSTAT "ENOBLOC".



Oenological analyser photometer "M-3000"

SMALL BENCHTOP ANALYSER.

FOR COLOR MEASUREMENT, FOLIN-CIOCALTEAU INDEX AND FOR ENZYMATIC ANALYSIS.

APPLICATIONS

With the oenological application photometer, the following determinations can be performed:

1. Wine colouring intensity (absorbances addition at: 420, 520 and 620 nm.)
2. Folin index (polyphenols).
3. Grapes phenolic colour and maturity by means of *Cromoenos*® method.
4. Enzymatic analysis for grape juice, grape juice-wine and wine. Acids: acetic, malic, gluconic and lactic, glucose, fructose and glycerine.

FEATURES

Wavelength range: from 340 to 750 nm, with interference filters with a 10 nm band pass.

Manual filter selection (12 positions filter disc).

Supplied with filters: 340, 420, 520, 620 and 750nm.

Other optional filters possible.

ABS, T% and concentration reading.

ABS reading range: from -0.3 to 3.5 OD.

T% reading range from 0 to 100%T.

Concentration range: from 0.001 to 9.999

Photometric accuracy: 1%.

Precision: ±1 %.

Photometric stability: better than 0.004 A/h.

Light source: halogen lamp 6V/12W.

Cell holder for 10 mm. path length cuvettes.

Internal calibration by software.

CONTROL PANEL

Filter change knob.

Numeric keypad and for functions.

Alphanumeric display with interactive messages.

RS-232 interface for connection to printer or computer.

MODEL

Part No.	Height / Width / Depth mm	Power W	Weight Kg
4120019	11 18 28	35	3



SPARE

Halogen lamp 6 V 12 W.

Part No. **4313040**

Note: A visible ultraviolet range spectrophotometer UV-2005 is needed for a total polyphenols index determination (absorbance 280 nm) and the *Cromoenos*® method exact and accurate measurement.

Part no. 4120020. Page: 240

ACCESSORIES

Glass cuvettes 10 mm. path length. 2 units pack. Part No. **5100021**

Glass cuvettes 1 mm. path length. 2 units pack. Part No. **4120034**

Polystyrene cuvette, semi-micro, 10 mm. path length. 100 units box. Part No. **5100023**

Cuvettes adapter of 1 mm. Part No. **4120033**

COMECTA Microcentrifuge "Cencom III"

FOR MICROTUBES OF 2,2/1,5, 0,5 AND 0,2 ML.

DIGITAL ELECTRONIC CONTROL OF SPEED AND TIME. ADJUSTABLE SPEED UP TO 14500 r.p.m.

FEATURES

ABS external case.

Maintenance free induction drive motor.

Rubber suspended motor which reduces the vibrations.

High speed microcentrifuge that minimizes the samples over temperature.

Extremely quiet operation.

For 12 microtubes with identification code.

Polycarbonate upper lid.

Peephole on the lid to visualize the centrifuge inside.

CONTROL PANEL

Start switch.

Push button Start/Stop.

LCD display indicating time and speed.

Time selector push button.

Speed selector push button.

Push button ▲ increase different parameters.

Push button ▼ decrease different parameters.

Push button motor drive rotation for quick acceleration

Short/Spin.

Push button open lid when cycle has ended.

MODEL

Part No.	Tubes capacity	Height/ Width/ Depth (exterior) cm	Max. speed r.p.m.	R.c.f.(xg)	Power W	Time selected	Weight Kg
5022010	12	15 21 25	14500	14000	105	till 99' 99"	4



OPTIC
ivymen[®]
SYSTEM

NEW
DESIGN

Comes complete with 12 adapters of 0,5 and 0,2ml.



Metallic thermostat dry block "Enobloc"

APPLICATIONS

To use the enzymatic reagents performing at full capacity, it is recommended to incorporate the thermostat dry-block incubator for tubes/cuvettes at a fixed temperature of 35 °C.

Part No. **7001570**

Capacity: 15 cuvettes pathlength 10 mm, which can be macro or semi-micro of 1,5 ml..

MODEL

Part No.	Height / Width / Depth (exterior) cm	Stability °C	Power W	Weight Kg
7001570	11 18 28	±0,5	10	2,4



Cromoenos® is a registered trademark by Bioenos S.L

<http://www.bioenos.com>

(for analytical applications, please check out the website).

APPARATUS FOR WATER ANALYSIS



Thermo reactor for determining COD Chemical Oxygen Demand of waste water plants

STANDARD TO C.E.E. AND UNE 77-004.
REFLUX METHOD.

FEATURES

Composed of a Hot block for 6,12 or 20 samples, process programmer and lifting racks. Uniform heating throughout the block to all samples. Automatic temperature and time control during digestion.

C.O.D. unit comprises of:

- 1 metallic hot block.
- 1 Processor for temperature and time.
- 1 Support rack for tubes.
- 1 Support rack for condensers.
- C.O.D. tubes with an aperture of 29/32.
- Condensers for C.O.D.

MODELS - EQUIPMENT DESCRIPTION

	Part No.	No. of places
DQO. - 6	4000638	6
DQO. - 12	4000639	12
DQO. - 20	4000640	20



INDIVIDUAL PARTS LIST AND SPARES

Hot block. This block cannot be used without the RAT controller of temperature and time.



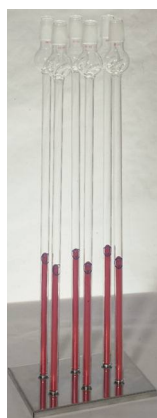
Part No.	No. of places	Ø tube mm	Height / Width / Depth (exterior) cm	Temperature °C	Power W	Weight Kg
4000507	6	42	18 33 28	45 - 450	1500	18
4000508	12	42	18 39 33	45 - 450	2100	25
4000509	20	42	18 44 39	45 - 450	2500	31



System programmer for temperature/time RAT-2. Part No. 4001538

Condenser tube support.

- Part No.
4000643 6 places.
4000644 12 places.
4000645 20 places.



Tube support rack.

Made of chemically treated dural sheet metal, with handles and removable panels that maintain the heat around the tubes and allow the user to examine the samples during the process.

- Part No.
4005071 for C.O.D. 6 (block 4000507).
4005081 for C.O.D. 12 (block 4000508).
4005091 for C.O.D. 20 (block 4000509).



Features

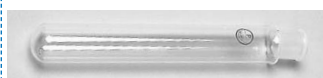
Display of time, temperature and program. Selectable temperature from 45 to 450 °C. Memory capacity: 10 programs of 5 stages of each program. Maximum time per stage: 600 minutes. Visual and acoustic alarm at the end of the cycle. Alarm if the temperature probe fails.

Control Panel

- Mains switch.
- Temperature display.
- Push button to select temperature.
- Push button to increase value.
- Push button to start.
- Push button to stop.
- Push button to decrease value.
- Push button to select time.
- Display time and program number
- Push button to select program.

Tubes for C.O.D.

Part No. 1000641



Condenser tubes for C.O.D. process.

Part No. 1000642





Laboratory flocculator "Flocumatic"

FOR THE DETERMINATION OF THE NECESSARY AGENTS REQUIRED FOR SEDIMENTATION.
DIGITAL ELECTRONIC CONTROL OF SPEED AND TIME FUNCTIONS.
NEW LIGHTING SYSTEM.

NEW
DESIGN

Maximum torque per stirring unit is 40 Ncm. Maximum viscosity 30.000 mPas.

APPLICATIONS

Optimization of coagulant additives and poly-electrolytes for surface and residual water treatment.

Evaluation of the efficiency of an absorbent in toxic agents.

Polyvalent. Without transmissions by belt. Due to its powerful torque it allows stirring and mixing high viscosity substances.

FEATURES

Stirring equipment for 4 or 6 places that accommodates beakers up to 1000 ml tall shape or 2000 ml short shape.

Stirring speed from 15 to 200 r.p.m.

Silent running.

Adjustable timer from 1 to 999 minutes or continuous operation.

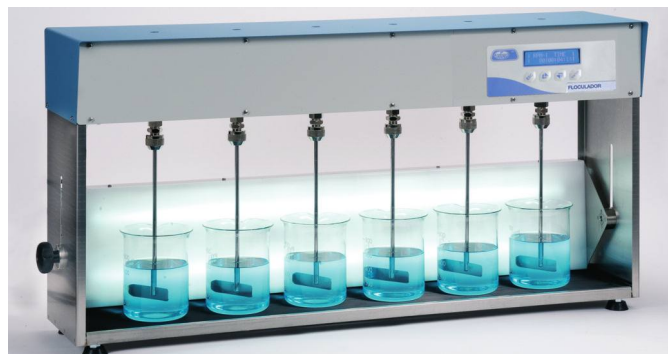
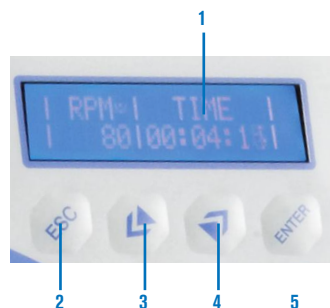
Easily adjusted height over head stir, bars made of AISI 304 stainless steel are easily fixed in position.

Two vertical and horizontal adjustable illumination units can be placed in the unit. This adjustable accessory allows the light angle to be varied according to the samples being run. An original Selecta design. See accessories part numbers 3000821 and 3000823, 4 and 6 place models that obtain simultaneous front and back lighting.

The main case of the unit is made of epoxy coated steel, with AISI 304 stainless steel supports with anti slip rubber feet.

CONTROL PANEL

1. Alphanumeric display. Indicates rpm and time.
2. Parameter invalidate button.
3. Parameter value decrease button.
4. Parameter value increase button.
5. Parameter validation button.



Flocculator "Flocumatic" with horizontal and vertical illumination (6 places).



Flocculator "Flocumatic" with horizontal illumination (4 places).

MODELS

Part No.	No. of places	Speed r.p.m.	Height / Width / Depth (exterior) cm	Illumination power W	Power W	Weight Kg
3000820	4	15 - 200	52 70 23	40	160	24
3000822	6	15 - 200	52 99 23	50	170	36

ACCESSORIES

Illumination units, simultaneous lighting horizontal and vertical.

Part No.	Model part No.	Places
3000821	3000820	4 places.
3000823	3000822	6 places.



Portable flocculator "4P-M"

FOUR POSITIONS. WITH ILLUMINATION.

FEATURES

Mains voltage or portable connection to a cigarette lighter within a car (12 V DC), for achieving analysis for a site chemical dose measurements of waste water treatment plants.

Head stirrers made of AISI 304 stainless steel with variable height.

Suitable for vessels up to 1 litre capacity.

CONTROL PANEL

1. Alphanumeric display. Indicates rpm and time.
2. Parameter invalidate button.
3. Parameter value decrease button.
4. Parameter value increase button.
5. Parameter validation button.



MODEL

Part No.	Height / Width / Depth (exterior) cm	Power W	Power supply	Weight Kg
3000835	37 25 27	20	12 volts	6

ACCESSORY.

Carrying case.

Part No. **3000836**





Water distiller "Aquasel"

DISTILLATION CAPACITY: 3 AND 6 LITRES/HOUR.

Made from stainless steel and glass, easy disassembly for cleaning and storage.

COMMON FEATURES

Easy to use, suitable for continuous distilled water requirements. Boiler unit and heater element made of AISI 304 stainless steel, with lid and condenser made of borosilicate glass. The glassware pressure seal connection is an original Selecta design. Safety system cuts off power to the heater element if there is not enough water. Distilled water produced is pyrogen free.

MODELS	Part No.	Distillation capacity l/h	Water consumption l/min	Conductivity at 20 °C	Ø / Height (ext.) cm	Power W	Weight Kg
Aquasel 4	4903004	3	1	3 µs/cm	18 43	2400	5
Aquasel 6	4903006	6	2	3 µs/cm	23 68	4800	8

Supplied complete with silicon seals.



Distillation still "L-3"

DISTILLATION CAPACITY: 3 LITRE PER HOUR.

FEATURES

Made entirely of borosilicate glass. Functions: automatic with continuous water production. Produces distilled water of a high purity, free of pyrogens and metal ions. Equipped with quartz heater elements and protection device using a safety thermostat that is activated in the case of low water pressure to the condenser or boiler unit. The unit automatically reactivates when the water pressure is restored. Suitable for wall mounting.

MODEL

Part No.	Distillation capacity l/h	Water consumption l/min	Conductivity at 20 °C	Height / Width / Depth (exterior) cm	Power W	Weight Kg
4903000	3	1	3 µs/cm	34.5 56 19	2200	4.5



Water distiller "D-4 Large" and "D-10 Large"

DISTILLATION CAPACITY: 4 AND 10 LITRES/HOUR.

FEATURES

Equipment entirely made of borosilicate glass. Automatic operation. Continuous production of high purity distilled water, free of dissolved gases, metals, salts and pyrogens. Spiral heating system. Double safety system: 1. By a presostat that turns the heater off in case of lack of water supply. 2. Water level device that avoids the computer to function until the heating element is covered with water.

CONTROL PANEL

Power switch.
Lack of water flow indicator lamp.

MODEL

Part No.	Distillation capacity l/h	Water consumption l/min	Conductivity at 20° C	Height / Width / Depth (exterior) cm	Power W	Weight Kg
4903001	4	1	2 µs/cm	69 28 30	3000	6,3
4903015	10	2	1,5 µS/cm	96 36 40	6600	23





Water distillers, “AC-L4” and “AC-L8”

DISTILLATION CAPACITY: 3.5 AND 8 LITRES/HOUR.

FEATURES

Tank and heating element made from stainless steel.
 External case made from epoxy covered steel.
 Easily dismantled for cleaning and service. All seals made from silicon.
 In the case of over temperature or low water supply, a safety thermostat cuts power to the heater.
 Water supply tube 3/4” mm.
 Distilled water tube connection Ø 12 mm.
 Voltage: 230 V / 50/60 Hz

CONTROL PANEL

Illuminated power switch.
 Safety switch thermostat with rearm system.

MODELS	Part No.	Distillation capacity l/h	Water consumption l/min	Conductivity at 20 °C	Height / Width / Depth cm	Power W	Weight Kg
AC-L4	4903007	4	1	2 µs/cm	44 25 23	3000	8
AC-L8	4903008	8	1,4	2 µs/cm	61 26 26	6000	14



Water distillers “L-4 Cabinet” and “L-8 Cabinet”

DISTILLATION CAPACITY: 4 AND 8 LITRES/HOUR.

FEATURES

Equipment entirely made of borosilicate glass, with protective case with transparent plastic door that allows an easy access to the glass and heating elements.
 The water distiller incorporates a boiler, a large surface cooling and two heating elements with protective quartz.
 Desktop model with device to hang it on the wall.
 Continuous production of high purity distilled water free of dissolved gases, metals, salts and pyrogens.
 Easy to dismantle for a complete cleaning.
 Automatic operation.
 Totally automatic operation:

- The equipment disconnects when the distilled water tank is full.
- The equipment reconnects when emptied.
- Automatic operation of the distiller.

Double safety system: 1. By a thermostat that turns the heater off in case of lack of water supply. 2. Water level device that avoids the computer to function until the heating element is covered with water.

CONTROL PANEL

Start up main switch.
 Light indicators of heating, cleaning, of lack of water and tank full.

MODEL

Part No.	Distillation capacity l/h	Water consumption l/min	Conductivity at 20° C	Height / Width / Depth (exterior) cm	Power W	Weight Kg
4903002	4	1	1.5 µs/cm	40 69 26	1x3000	12
4903016	8	2	1,5 µS/cm	48 69 40	2x3000	22



NEW

Note on the outlet water: Depending on the inlet water quality, it can be of type II or III (according to ASTM). All parameters have been tested under standard laboratory conditions.

NEW



Water distillers “R-4 Reser” and “R-8 Reser”

DISTILLATION CAPACITY: 4 AND 8 LITRES/HOUR.
 STORAGE TANK: 8 LITRES.

FEATURES

External case epoxy covered.
 Cooling and heating elements made of stainless steel.
 Easy to dismantle for cleaning.
 Thermostat that disconnects the heater when there's lack of water supply.
 Monitoring function that disconnects the distiller when the storage tank is complete full, and resumes as it empties.
 Distilled water dispenser located in the front part.
 Distilled water and water supply racords of 3/4 inch.
 Desktop model with device to hang it on the wall.

CONTROL PANEL

Illuminated power switch.
 Lack of water flow indicator lamp.

MODEL

Part No.	Distillation capacity l/h	Water storage tank l	Water consumption l/min	Conductivity at 20° C	Height / Width / Depth (exterior) cm	Power W	Weight Kg
4903005	4	8	1	1,5 µs/cm	50 63 32	1x3000	24
4903017	8	16	1,4	1,5 µS/cm	60 71 34	2x3000	34





Water double distillation “L-4B”

DISTILLATION CAPACITY: 4 LITRES/HOUR.

OPTIC
ivymen[®]
SYSTEM

FEATURES

Made completely from borosilicate glass with protective case that has easy access to the heater elements and glass parts.

Automatic function and continuous production.

Produces high quality double distilled water free from pyrogen and metallic ions.

It functions through a dual distillation process:

The distilled water from the first stage is collected by the heater reservoir of the second stage, that starts the double distiller function when the water's level is optimum, thus providing double distilled process.

Protection with a safety thermostat is activated if there is insufficient cooling water. Reactivated automatically when the water supply is re-established.

Water flow stop if there is an electrical fault.

If it is required to store the distilled water and to prevent over filling, the system stops, switches off power and disconnects the water flow when is full.

Voltage: 230 V / I, 50/60 Hz = 26.8 A

MODEL

Part No.	Distillation capacity l/h	Water consumption l/min	Conductivity at 20 °C	Height/Width/Depth cm	Power W	Weight Kg
4903010	4	2	0.5 µs/cm	48 69 40	2x3000	22



SPARES

Heater element made of quartz. Part No **4903011**

Glass still, borosilicate glass (the equipment comes with 2 condensers. Price provided is for 1 spare condenser). Part No. **4903012**

Condenser, borosilicate glass (the equipment comes with 2 condensers. Price provided is for 1 spare condenser). Part No. **4903014**



Water distiller, specially for autoclaves “Dest-4”

DISTILLATION CAPACITY: 1.2 LITRES/HOUR. INTERNAL CAPACITY 4 LITRES.

FEATURES

Case made from thermo resistant plastic. Internal stainless steel. Cooling by forced air through a condenser. Without glass heater elements, Easy to use. Safety cut out if over temperature due to insufficient water.

Supplied complete with a 4 litres plastic bottle and three dispenser tap with filter.

Note: for daily use it is recommended to change the filter every 3 months.



MODEL

Part No.	Distillation capacity l/h	Conductivity µs/cm	Ø	Height cm	Power W	Weight Kg
4001729	1.2	5	29	39	750	3.5

SPARE. Dispensing filter tip. Part No. **4001730**

Descaler “C-3”

APPLICATIONS

Pre-treated water that contains large quantities of CaCO₃ (lime). For general laboratory use.

Recommended for use with distillation units where water hardness is above 25° french.

TECHNICAL SPECIFICATIONS

Metal container of AISI 304 stainless steel with regeneration of salt by using a two way reverse valve system. Resin capacity: 12 litres. Regeneration salt: 2 Kg. Regeneration cycle: 1200 litres to 60° french / 4800 litres to 35° french.

Regeneration cycle for distillation of: 300 to 800 litres.

Maximum mains water pressure: 4.5 Kg/cm².

Maximum supplied admissible hardness: 60° french.

Out put hardness: 1° french.

External measurement: 62 cm high x 19 cm Ø.

Weight: 20 Kg.

Part No. **0703052**



Comes complete with in and out 3/4" tubing.

50 Litre distilled water reservoir

FEATURES

Recommended for the storage of distilled water. Made of high density polyethylene.

50 litre capacity, with handles and dispenser tap. 15cm Ø top lid with stopper.

Dimensions: 68 cm high x 35 cm Ø.

Part No. **0106006**

0106006

ACCESSORY

Water reservoir trolley.

Robust steel trolley with epoxy coating.

Lockable wheels, Inner section for holding jars and carboys etc.

Fits containers 38 cm Ø.

Height 48 cm.

Part No **5903049**

5903049