

# MultiMeter 44

## Transmitter-regulator with 1, 2 or 3 channels



**MultiMeter 44** is a modular meter that can be configured with one, two or three channels.

It can be delivered with only one measuring channel, with possibility for channel extension by the user.

The three channels can measure the same parameter or three different parameters.

The MultiMeter 44 is very easy to program and use. The customer does not need specific learnings.

MM 44 is the best instrument for DO (dissolved oxygen) measurement in waste water.

It is able to work with amperometric sensor and optical sensor based on the fluorescence principle.



With this instrument CRISON consolidates to the high-performance instrumentation.

MM 44 with the option PROFIBUS DP can be integrated in industrial communication net.



**CRISON**  
— Quality at a reasonable price —

Field or panel mounting instrument, configured with one, two or three measuring channels.

## Key features:

- Simultaneous visualization of all measured parameters.
- Security code prevents measurement interruption by unauthorized personnel. Only authorized personnel have an access to instrument programming and calibration.
- Direct calibration in pH, redox and conductivity, with automatic recognition of the standards and rejection criteria for sensors in poor conditions.
- One single temperature sensor can be used for the temperature compensation in the different channels.
- Alarm and sensor cleaning relays in the basic instrument. Moreover, two limit relays per each measuring channel.
- Two programmable 4-20 mA analogical outputs per each measuring channel. For example, pH and temperature.
- Interface RS 232 as standard.
- Interface RS 485 (optional).
- PROFIBUS (optional).
- Software in 4 languages: Spanish, English, Italian and Catalan.
- Measurements presentation in standard format or in big format.
- *Data Logger* for 400 readings per channel.

## Description

## Advantages:

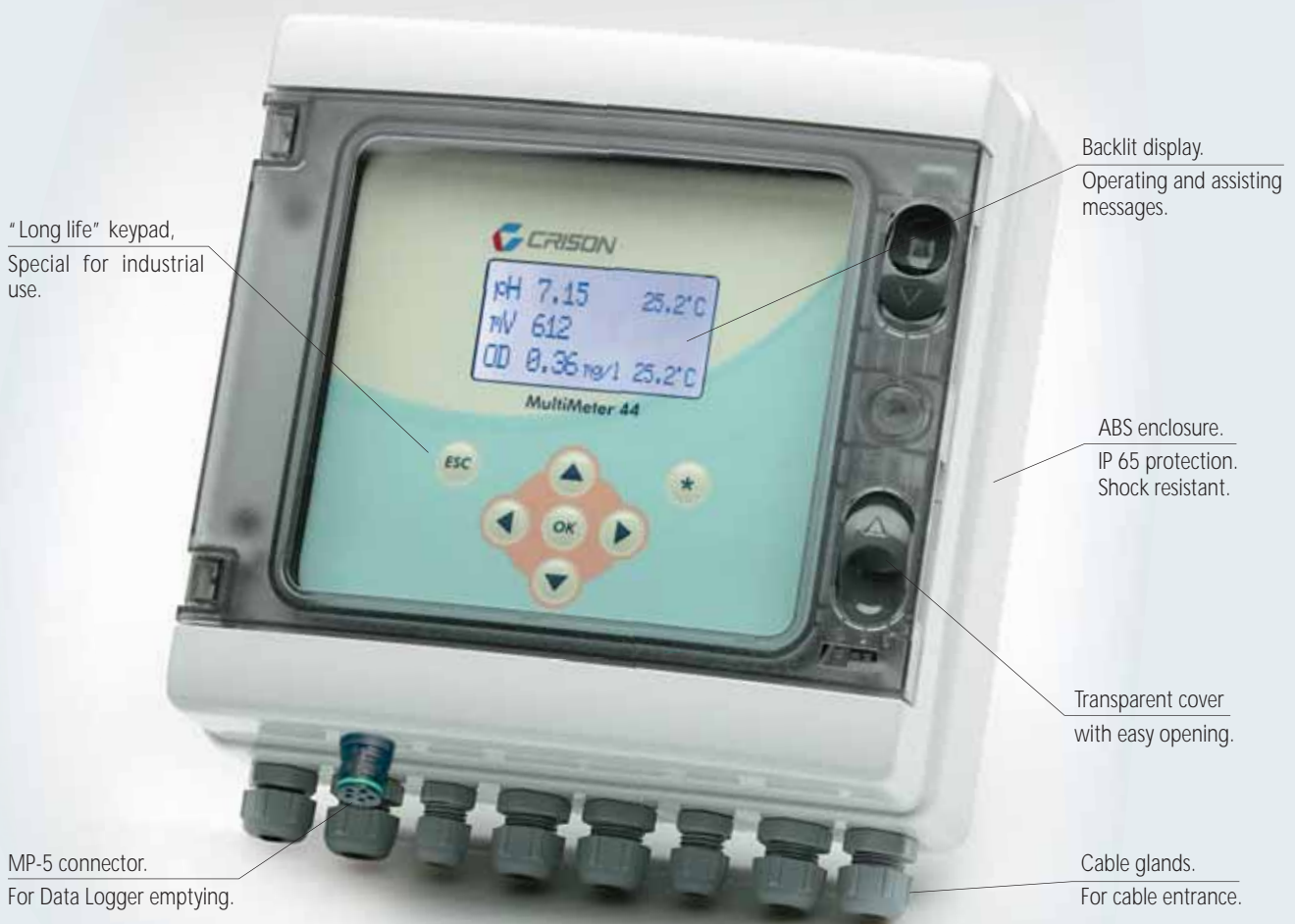
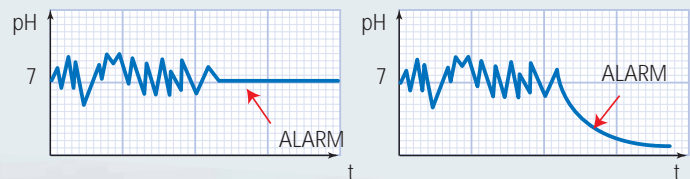
- Up to three instruments in one.
- Instrument very easy to use thanks to the elaborated software.
- Indirect calibration, readjusting any value inside the measuring range, including the temperature without need to dismount the sensors.
- Display and keypad protected by a cover closing hermetically. Protection IP 65.
- Possibility for software updating "in situ".
- Field or panel installation without distinction.
- 5 years guarantee for the instrument.
- Technical support directly from the factory.
- Very competitive price.
- Up to 3 channel extension by the user.

## Maximum security of measurement

The instrument controls continuously the sensors.

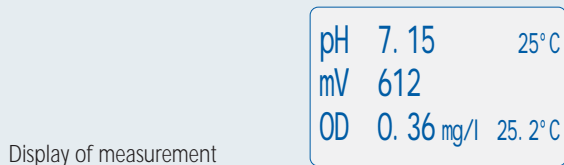
If the sensor's signal does not change during a defined period, an alarm is activated. The alarm activates if there is a sharp signal change too.

On the graph, two examples of pH measurement are shown.



## Two visualization modes

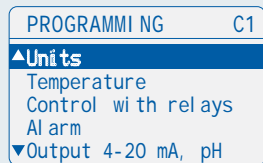
Standard mode.



Information display during calibration



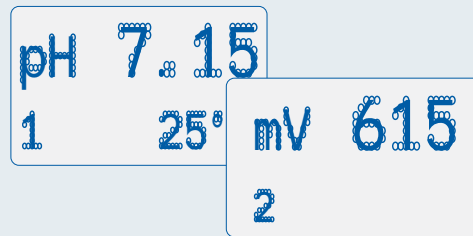
Information display in programming of one channel



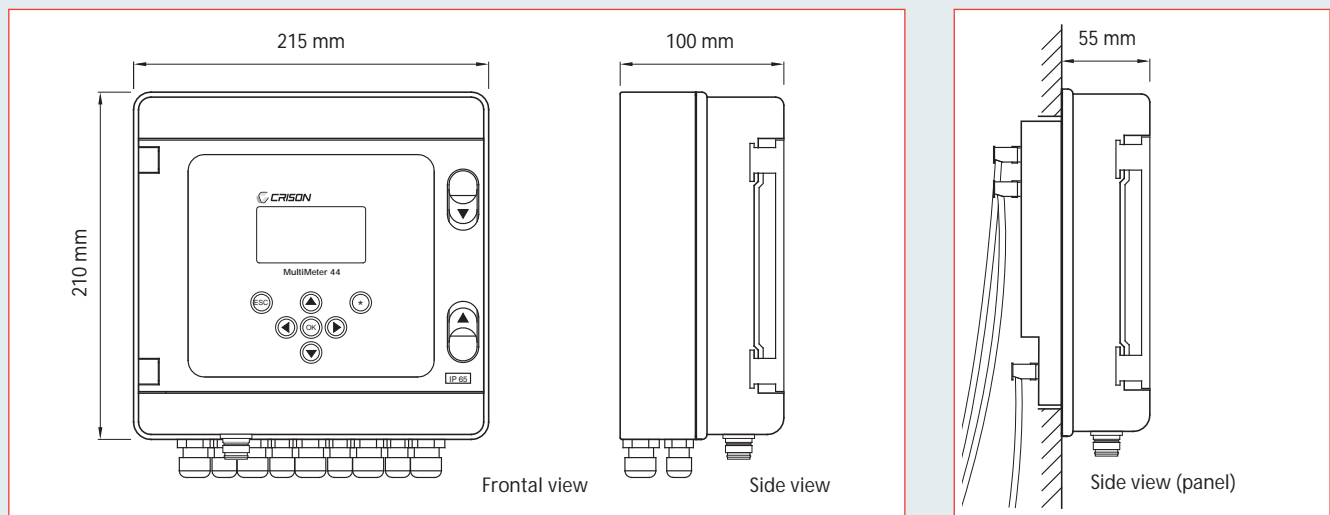
“Big display” mode.

Pressing the key the display changes into “big display” mode.

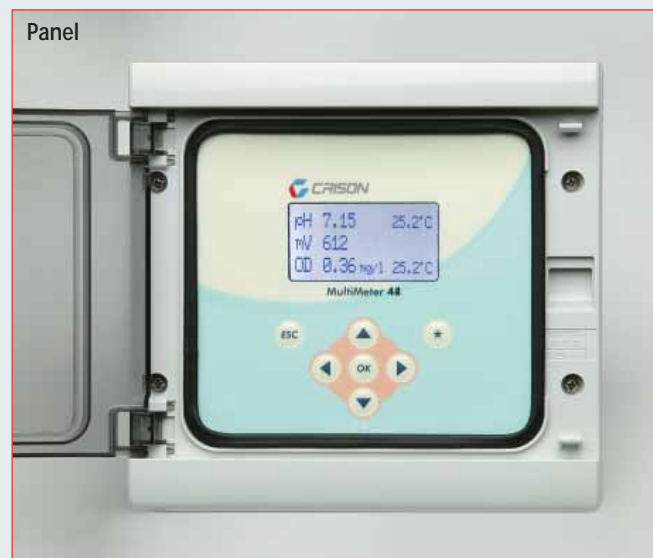
The corresponding data to every measuring channel are appearing successively making possible the visualization from long distance.



## Dimensions



## Installation



## Basic instrument

It is formed by the essential parts of the instrument and by the common parts for all channels such as RS outputs and relays for alarm and sensor cleaning.

It is **non-functional** set that must be completed with measuring/regulating boards required by the user (1, 2 or 3).

**Alarm relay.** This relay can be activated due to different reasons in accordance with the programming of every channel. The reason for alarm activation is shown on the display.

**Sensor cleaning relay.** It is used for activation of an electrovalve or a pump which supplies air or liquid flow over the sensor installed in the corresponding housing.

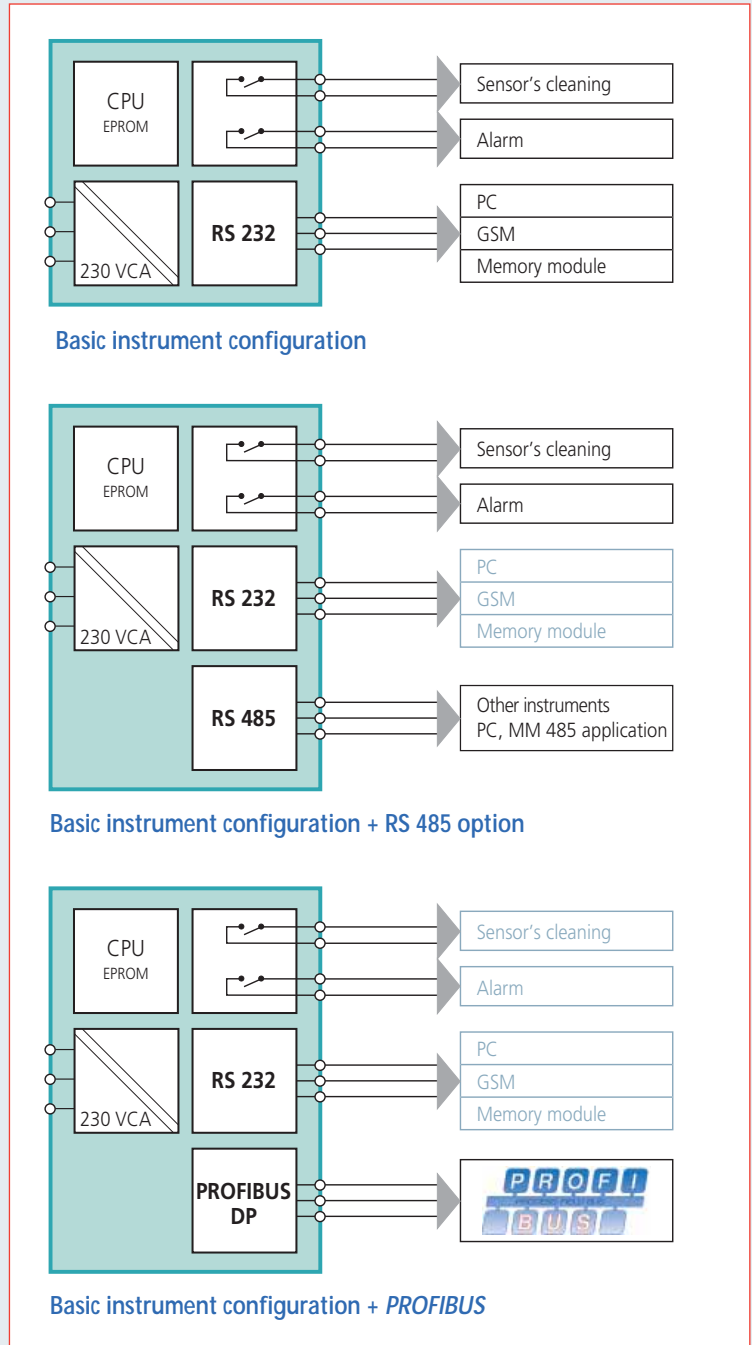
**Communications. 4-20 mA outputs.** Incorporated in every measuring board.

**Interface RS 232.** Included in all instruments independently of their configuration.

**Interface RS 485.** This option must be ordered.

It is used for communication of several instruments with a PC.

**PROFIBUS DP.** This option must be ordered. It is used for the integration of the instrument in *PROFIBUS* system.



## Measuring-regulating boards

Every measuring board includes two **4-20 mA outputs**, one for the measured parameter and the other for the temperature.

The boards include two limits relays that can be programmed without distinction as minimum or maximum limits.

**Regulation ON / OFF:** it is performed by programming suitably the relays that activate and deactivate with a **delay**. The hysteresis is programmable.

**Proportional:**

- Using the limit relays that activate during time proportional to the distance between the real reading and the optimal value.
- Using the 4-20 mA output, programming the value corresponding to the control start.

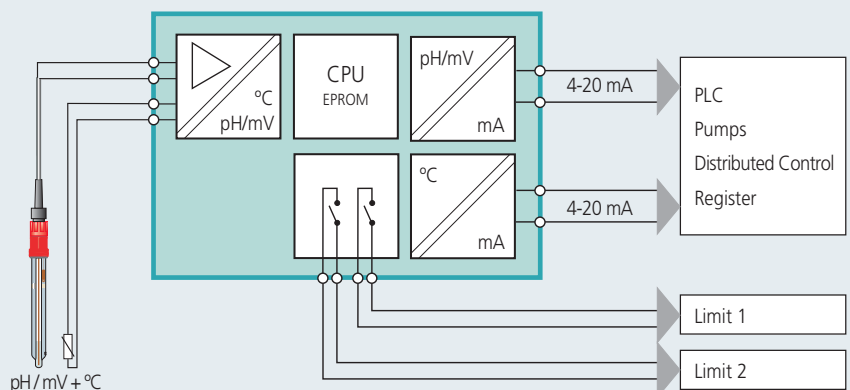
### 44 10 pH ORP °C

#### Board for measurement of pH / redox and °C

The electrodes are connected directly to a terminal strip, no need of special connectors.

The high impedance of the electrode is protected and warranted by the system "Guard Ring".

Redox calibration with standard 220 mV, indirect calibration or by introducing the data of an electrode calibrated previously.

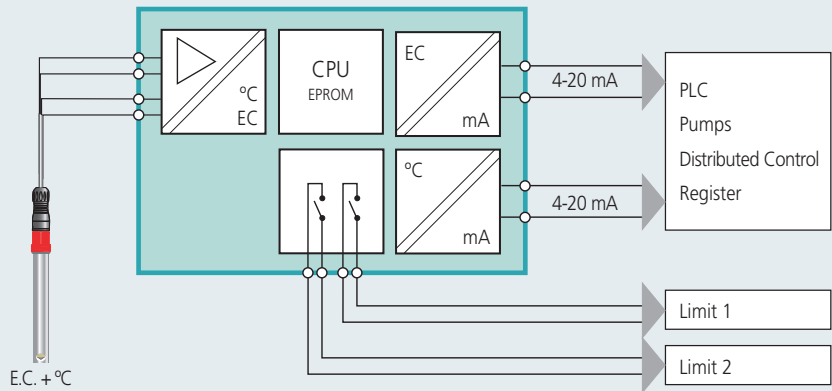


### 44 20 EC °C

#### Board for measurement of conductivity and °C

Electronic circuit with variable frequencies adapted to the conventional cells (platinum) and to the special titanium CRISON cells.

Automatic scale change to obtain maximum resolution. The cable resistance is automatically compensated by the electronic circuit.



### 44 30 DOA °C

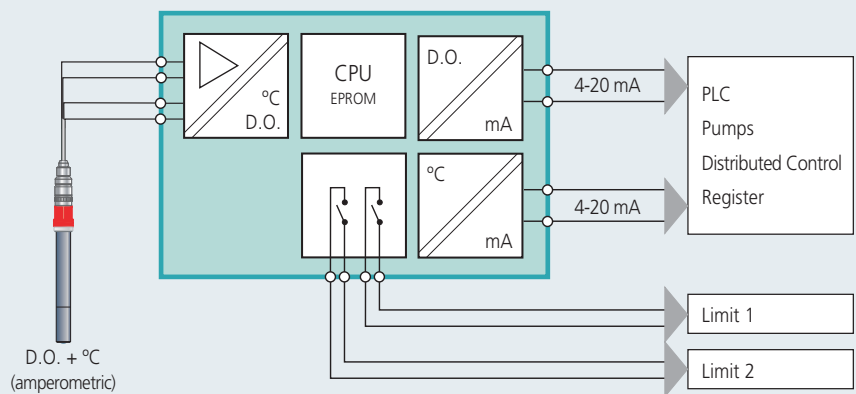
#### Board for dissolved oxygen measurement with amperometric sensor, with membrane

Salinity and atmospheric pressure correction by manual data introduction.

During calibration, the current reading of the electrode is shown, giving indications about electrode conditions.

Calibration possibilities:

- In one point in air with 100% relative humidity.
- Manual calibration at any value at the measuring range.

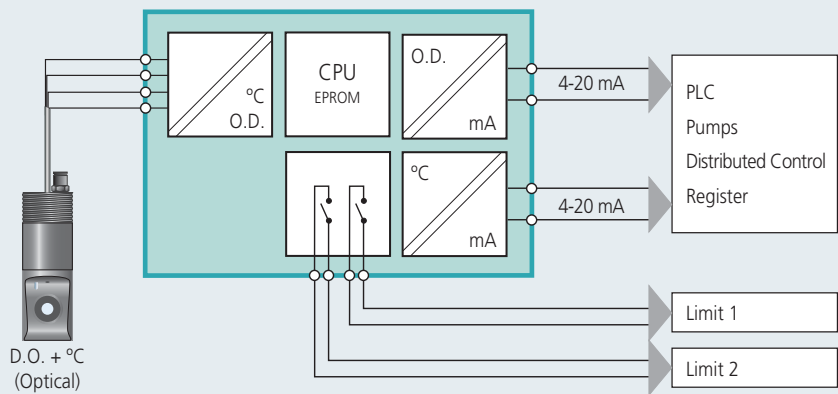


### 44 40 DOo °C

#### Board for dissolved oxygen measurement with optical sensor (fluorescence)

The communication between the sensor and the board uses the protocol MODBUS.

Manual calibration at any value at the measuring range.



### 44 50 Cl<sub>2</sub> °C

#### Board for measurement of free residual chlorine

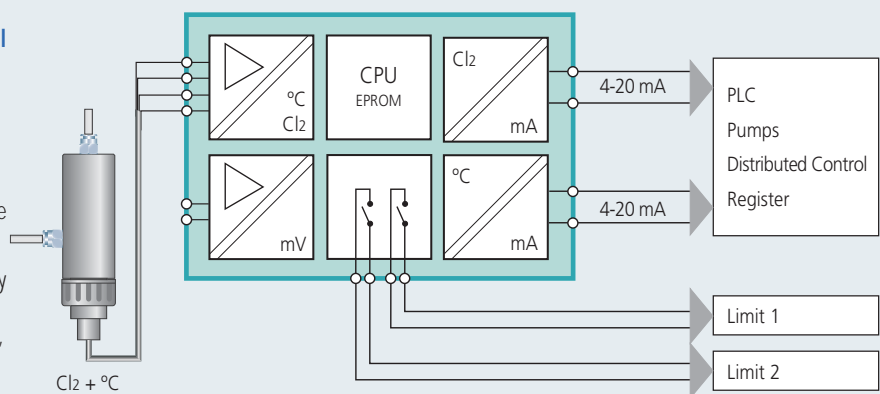
Double signal entrance:

- Amperometric electrode, gold-copper.
- Redox electrode, platinum.

The instrument works exclusively with one of the two sensors.

The amperometric electrode calibrates manually against DPD 1.

The instrument, thanks to the "sensor alarm" detects automatically the possible flow drop.



## Communications

Apart from the two 4-20 mA outputs per each measuring channel, MultiMeter 44 offers several possibilities for digital communication.

### RS 232 Interface

MultiMeter 44 in all versions includes RS 232 interface that can be used for:

- Extracting the information from the Data Logger. For this purpose "memory module" must be connected directly to the external MP-5 connector.
- Sending alarm messages through GSM to a mobile phone.
- Communication with a PC for data sending "on-line", or data extraction from the *Data Logger*. The data can be captured with standard application as *Hyperterminal* of Windows.



### RS 485 interface (optional)

Under order MultiMeter 44 can be supplied with RS 485 interface. In this way, several instruments can be connected to one PC. For this, a RS 485 / USB convertor is required.

The CRISON application MM 485 makes easy the data acquisition.



### PROFIBUS DP output (optional)

Under order MultiMeter 44 can be supplied with PROFIBUS DP output.

PROFIBUS allows the global integration of information proceeding from different instruments.

This is a standard protocol available in the majority of control systems in factories.



## Specifications

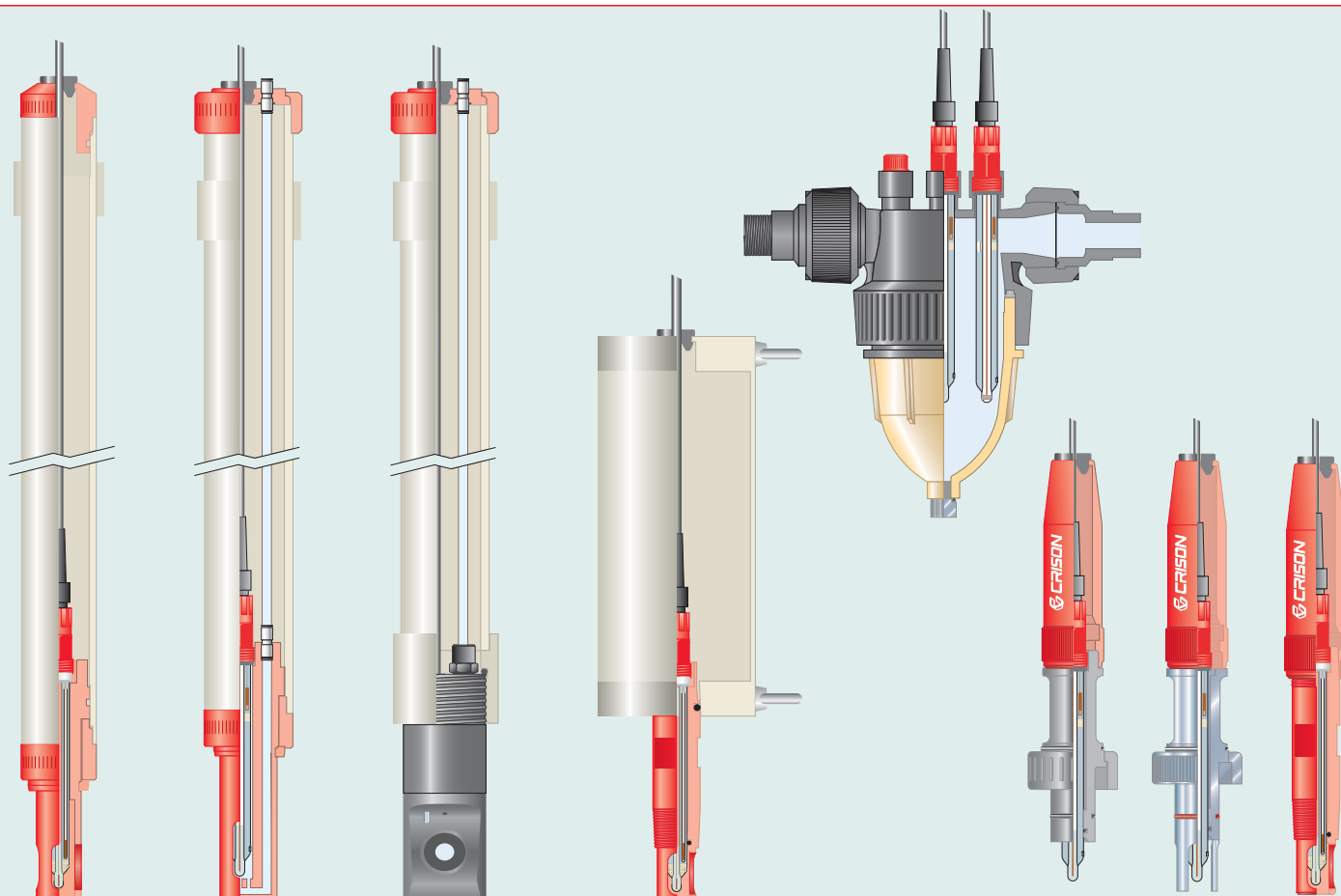
Measuring range	...with pH board	pH -2.00 ... 16.00 mV, ± 2000 Temperature, -20 ... 150 °C
	...with EC board	EC, 0.1 µS/cm ... 500 mS/cm Salt, 5 mg/l ... 278 g/l NaCl T.D.S., 0 ... 199 g/l Resistivity, 5 □ ... 100 MΩ Temperature, -20 ... 150 °C
	...with DO board (Amperometric)	% saturation, 0 ... 200 % Concentration, 0 ... 20 mg/l Temperature, 0 ... 50 °C
	...with DO board (Optical)	% saturation, 0 ... 250 % Concentration, 0 ... 25 mg/l Temperature, 0 ... 50 °C
	...with Cl <sub>2</sub> board	Concentration, 0 ... 5 mg/l Temperature, 0 ... 100 °C mV, ± 2000 (with redox electrode)
Temperature sensor	Pt 1000 for pH, EC and Cl <sub>2</sub> NTC for DO	
Calibration with standards	pH, 1, 2 or 3 buffers among pH 2.00, 4.01, 7.00, 9.21 and 10.90 at 25 °C. mV, in 1 point, 220 mV at 25 °C. EC, 1, 2 or 3 standards among 147 µS/cm, 1413 µS/cm, 12.88 mS/cm and 80.4 mS/cm at 25 °C. DO (Amperometric) in 1 point in air with relative humidity 100 %.	
Indirect calibration	Readjusting any pH, mV, EC, DO, chlorine or temperature value.	
Measuring control	ON/OFF and Proportional.	
Programmable analogical outputs	Two per measured channel. 4...20 mA. Maximum R. 500 Ω.	
Communication	RS 232. RS 485 and PROFIBUS (optional).	
Relays	Contacts, maximum charge: CA < 250 V / < 3 A / < 750 VA.	
Manual verification of installation	Relays actuation and outputs 4-20 mA. SMS message sending.	
Languages	Spanish, Italian, English and Catalan.	
Display	Graphic, backlit liquid crystal, 128 x 64 dots.	
Keypad	7 keys membrane. Material PET with protective treatment.	
Power supply	230 ±10 %, 45-65 Hz (other tensions, please consult). Consumption 6 VA. Protection: class II. Overvoltage category: II.	
Electrical security	According to UNE-EN 61010-1	
E.M.C. (Electromagnetic compatibility)	According to CE, UNE-EN 61000-6-1:2002, UNE-EN 61000-6-2:2002, UNE-EN 61000-6-3:2002 A11, UNE-EN 61000-6-4:2002.	
Ambient conditions	Working temperature: 0...50 °C. Storage temperature: -20...65 °C. Relative humidity < 80 %.	
Enclosure	IP 65 protection. Material, ABS.	
Physical parameters	Weight 1800 g. Size: 210 x 215 x 100 mm.	

## How to order MultiMeter 44

Code	Basic instrument
44 00	MultiMeter 44, wall-mounting, 220 VCA
44 01	MultiMeter 44, wall-mounting, 24 VCA
44 02	MultiMeter 44 P, panel-mounting, 220 VCA
44 03	MultiMeter 44 P, panel-mounting, 24 VCA
<b>NOTA:</b> To order instruments with the option RS 485, add " 485" to the code 44 0X. To order instruments with the option PROFIBUS, add "PRO" to the code 44 0X.	

Code	Electronic boards
44 10	... pH / mV + °C.
44 20	... E.C. + °C
44 30	... D.O. + °C, for amperometric sensor (membrane)
44 40	... D.O. + °C, for optical sensor (fluorescence)
44 50	... Chlorine + °C, for amperometric sensor

## Housings for the correct installation of the sensors



Ask for specific leaflet  
"Electrodes and housings"