



# EVOLUTION EW<sup>2</sup> Pool

The Full Control of Swimming Pool Water

Man. 071EWC v.06

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Company with quality system compliant to UNI EN ISO 9001 standards

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## WARNINGS



This manual is dedicated to the technical personnel responsible of the installation, management, and maintenance of the plants. The manufacturer assumes no responsibility for damages or malfunctions occurring after intervention by non-authorized personnel, or not compliant with the instructions prescribed in this manual.

**PRIOR TO PERFORM ANY OPERATION IT IS MANDATORY TO READ THE WHOLE MANUAL!**

The manufacturer declares that the information contained in this manual is consistent with technical and safety specifications of the device to which the manual refers.

The manual must be kept by the user and/or personnel responsible for the management and maintenance of the device. In the event of deterioration or loss, a copy may be requested from the manufacturer.



Based on its design and construction, this instrument complies with the essential safety requirements and the following EC directives:

2006/95/EC (ex EEC 73/23); 2004/108/EC (ex EEC 89/336); EEC 93/68.

The relevant harmonized standards on Safety, Immunity and emission have also been applied.

## HEALTH AND SAFETY

The manufacturer cannot be held responsible for accidents or damage resulting from inappropriate use of the device, as well as from even partial failure to comply with the safety regulations and intervention procedures described in this manual.

During the configuration and subsequent use of the device, incorrect operating situations may occur that are not foreseen in this manual. These anomalies can sometimes be caused by environmental factors or by fortuitous failures that cannot be foreseen by the manufacturer.



All maintenance or repair must be performed with the system isolated both electrically and hydraulically.

## WASTE DISPOSAL



Disposal of the electronic device and consumables must be carried out in compliance with current local regulations.

The manufacturer can modify the instrument or the technical manual without advanced notice.

## **Warranty**

All STEIEL products are warranted for a period of 12 months from the delivery date.

Warranty is not valid if all instructions of installation, maintenance, and use, are not strictly followed by the user.

Local regulations and applicable standards have also to be followed.

The warranty does not extend to any damage caused by incompetence or negligence in the use of the device or by poor or omitted maintenance.

Any repair or modification made to the device by the user or unauthorized technicians will result in the forfeiture of the warranty.

Failure to comply with the methods of intervention and use of the device described in this manual will result in the forfeiture of the warranty.

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## INTRODUCTION



EVOLUTION EW<sup>2</sup> Pool is a measurement and control unit dedicated to the treatment of swimming pool water, both for private / residential and commercial / public use. In fact, it can be combined with different types of sensors for chlorine measurements, both direct and indirect.

The control unit is also equipped with a sample water flow input and an external consent for unit start/stop. Minimum level inputs for chemical products are also available.

The wall installation, complete with sensor-holder, requires very little space.

- Instruments with **software dedicated to swimming pool applications**.
- **Two measurement inputs for pH electrode and ORP electrode / amperometric sensor**.
- Inputs for pH and ORP electrodes on BNC connectors.
- Input for amperometric sensor to be wired on terminal block.
- Input for Pt100 or Pt1000 sensor, with **automatic detection** of sensor type, for temperature measurement and compensation.
- **User-friendly interface** with intuitive menus and four multi-function softkeys.
- Three-level configuration protected by **three different passwords**.
- Large graphic display with **backlight colour changing** according to instrument status.
- Adjustment outputs at 230V (115V), contact type or pulse, to drive dosing pump or other chlorine feeding device, freely configurable in On-Off / PWM / PFM mode.
- Two analog outputs (0/4-20 mA), configurable for adjustment or signal repetition.
- Two inputs for level sensor, configurable at one or two stages.
- Input to monitor sample water flow.
- Pause (external consent) digital input to disable all outputs.
- Alarm relay output.
- Two **outputs for timed control of flocculant and anti-algae dosing pumps**.
- **"EcoMode" function** to reduce dosing and therefore save chemicals, controlled by an external contact or timer.
- **Internal RTC** for time schedule setting and data saving with date/time label.
- **USB port** for parameters' configuration, data downloading and system updating.
- Communication options: RS485 serial port with Modbus RTU protocol or, alternatively, **inbuilt Steielynx gateway**.
- Power supply: **100-240 V~**.
- Watertight IP65 casing, suitable for installation in damp technical rooms.
- Extremely fast and easy installation, with attachment to a wall bracket.
- **Can be combined with the exclusive and patented STEIEL easy+fix system**, for a compact assembly of the sensor-holder, directly attached to the instrument case.

### AVAILABLE MODELS

- **EW<sup>2</sup> Pool pH/ORP**: Measurement inputs for pH electrode and ORP electrode.
- **EW<sup>2</sup> Pool pH/Chlorine**: Measurement inputs for pH electrode and amperometric sensor.

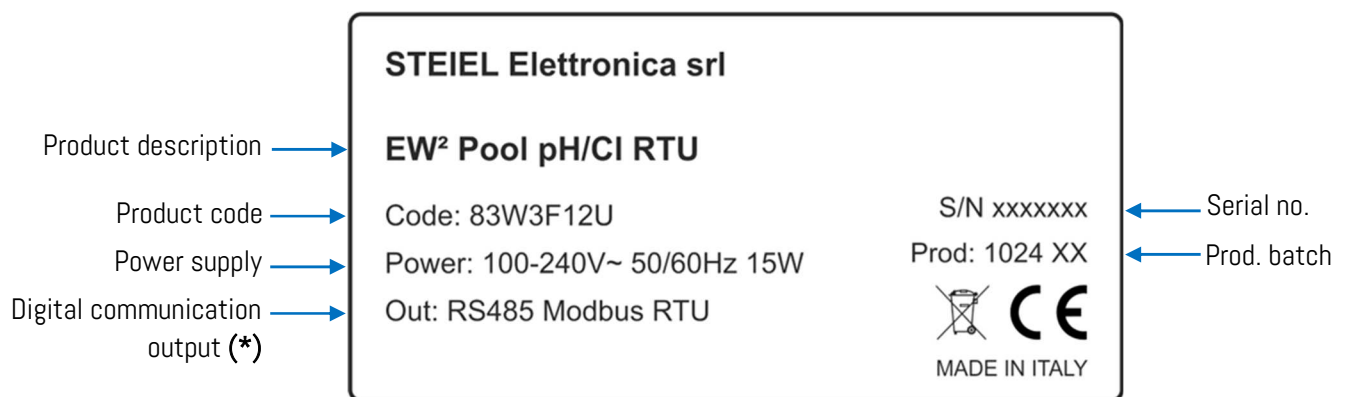


## PACKING LIST

The instrument is supplied complete with:

- Wall-mounting bracket with screws and dowels
- Instruction manual

## PRODUCT LABEL (example)



(\*) Available options: No communication / RS485 Modbus RTU / SteieLynx WiFi/LAN / SteieLynx 3G/4G.



Do not remove the instrument label! It is in fact necessary to communicate the product code and/or serial number for correct identification of the spare parts.

**Removing or tampering with the label completely invalidates the warranty!**



## DESCRIPTION OF THE INSTRUMENT





## TECHNICAL DATA

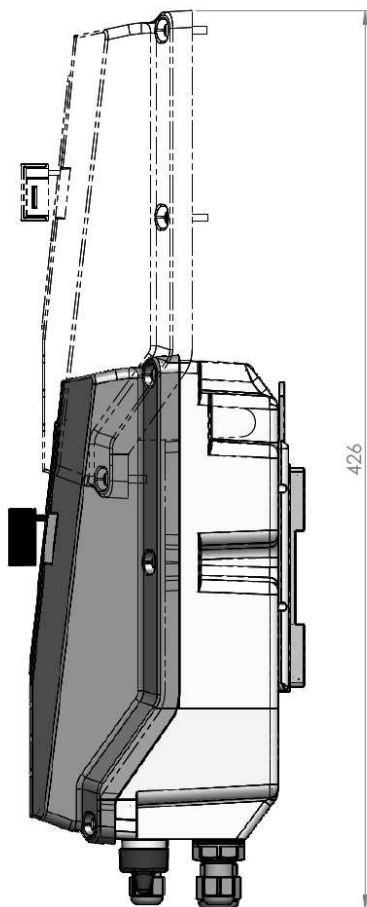
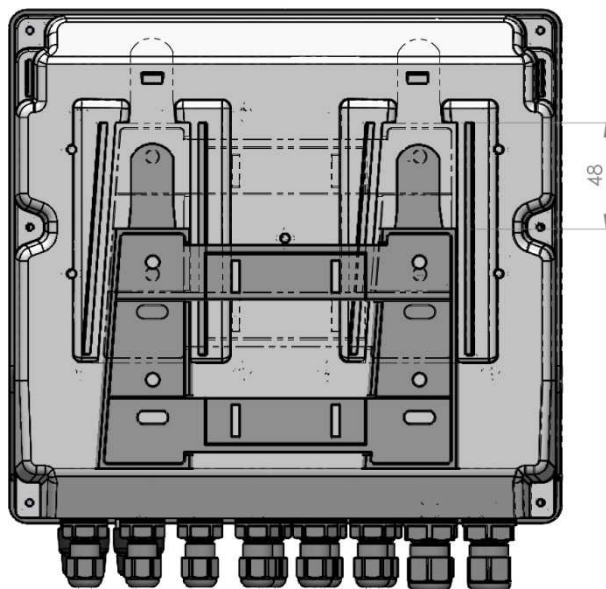
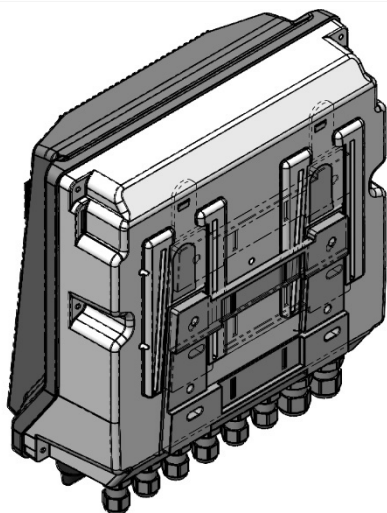
|                      |                                                                                                                                                                                                                |                                                                                                                                     |
|----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|
| Power supply         | standard: 100-240 V~ / 50/60 Hz / 15 W<br>standard cable with Schuko plug (other options on request)                                                                                                           |                                                                                                                                     |
| Protection fuse      | T 500mA                                                                                                                                                                                                        |                                                                                                                                     |
| pH measurement input | pH:                                                                                                                                                                                                            | electrode input on BNC connector; range: 0.00 ...14.00 pH                                                                           |
| Cl measurement input | ORP:                                                                                                                                                                                                           | electrode input on BNC connector; range: -2000 ... +2000 mV                                                                         |
|                      | CLE:                                                                                                                                                                                                           | open amperometric cell; input on terminal block;<br>range: 0 ... 5.00 ppm Cl (Br)                                                   |
|                      | CAC:                                                                                                                                                                                                           | probe closed with membrane, signal in mV or mA (depending on model);<br>input on terminal block; ppm range, depending on used probe |
| Measurement inputs   | Precision 0.3% FS / repeatability 0.2% FS                                                                                                                                                                      |                                                                                                                                     |
| Temperature input    | for PT100 / PT1000 sensor, with automatic detection; input on terminal block;<br>precision < 0.3% FS / repeatability 0.2% FS                                                                                   |                                                                                                                                     |
| Adjustment outputs   | 2x 230V~ (*), for On-Off / PWM control                                                                                                                                                                         |                                                                                                                                     |
|                      | 2x contact type, 5A @ 250V~, for On-Off / PWM control                                                                                                                                                          |                                                                                                                                     |
|                      | 2x pulse type, max 3 Hz, for PFM control                                                                                                                                                                       |                                                                                                                                     |
|                      | 1x flocculant pump, 230V~ (*), timed control                                                                                                                                                                   |                                                                                                                                     |
|                      | 1x anti-algae pump, 230V~ (*), timed control                                                                                                                                                                   |                                                                                                                                     |
| Alarm relay          | 1x normally energized / de-energized contact, 12V 10A @ 250V~                                                                                                                                                  |                                                                                                                                     |
| Analog outputs       | 2x 0/40 mA, configurable for repetition or adjustment, max 500 Ohm                                                                                                                                             |                                                                                                                                     |
| Digital inputs       | 2x NO/NC contact inputs for level sensors of acid (pH) + chlorine tanks                                                                                                                                        |                                                                                                                                     |
|                      | 1x EXT.CONST, NO/NC contact, for external consent / pause                                                                                                                                                      |                                                                                                                                     |
|                      | 1x sample water flow, NO/NC contact, for NPN proximity sensor                                                                                                                                                  |                                                                                                                                     |
|                      | 1x Eco Mode, NO/NC contact                                                                                                                                                                                     |                                                                                                                                     |
| Timer                | Inbuilt RTC, with CR2032 buffer battery                                                                                                                                                                        |                                                                                                                                     |
| Communication        | USB port on the front panel, protected by a watertight cover; for configuration uploading / saving, datalogger downloading and FW updating.<br><b>Note:</b> the USB key must be formatted with FAT filesystem. |                                                                                                                                     |
|                      | Optional RS485 serial port with Modbus RTU protocol or, alternatively, inbuilt SteieLynx gateway                                                                                                               |                                                                                                                                     |
| Datalogger           | Storage capacity: max 8000 data (measurements, events, alarms), complete with date/time label                                                                                                                  |                                                                                                                                     |
| Protection rate      | IP65                                                                                                                                                                                                           |                                                                                                                                     |
| Dimensions           | 250 x 231 x 101 mm (cable-glands not included)                                                                                                                                                                 |                                                                                                                                     |
| Weight               | Approx. 1 kg                                                                                                                                                                                                   |                                                                                                                                     |

- (\*) These outputs supply the same voltage that the instrument is powered by; therefore, in the case of 115V~ power supply, a voltage of 115V~ will be provided.



## INSTALLATION

The instrument has been designed for an extremely quick wall vertical installation, thanks to the supplied bracket. You just need to drill four holes for the bracket fixing screws, then attach the instrument.



Please refer to the indicated overall dimensions, to allow the opening of the case to easily perform wiring or other operations, as the addition of a SteieLynx module for the remote control of the system.

The instrument's casing can be opened by unscrewing the closing screws and the front part is firmly hanged to the back casing.

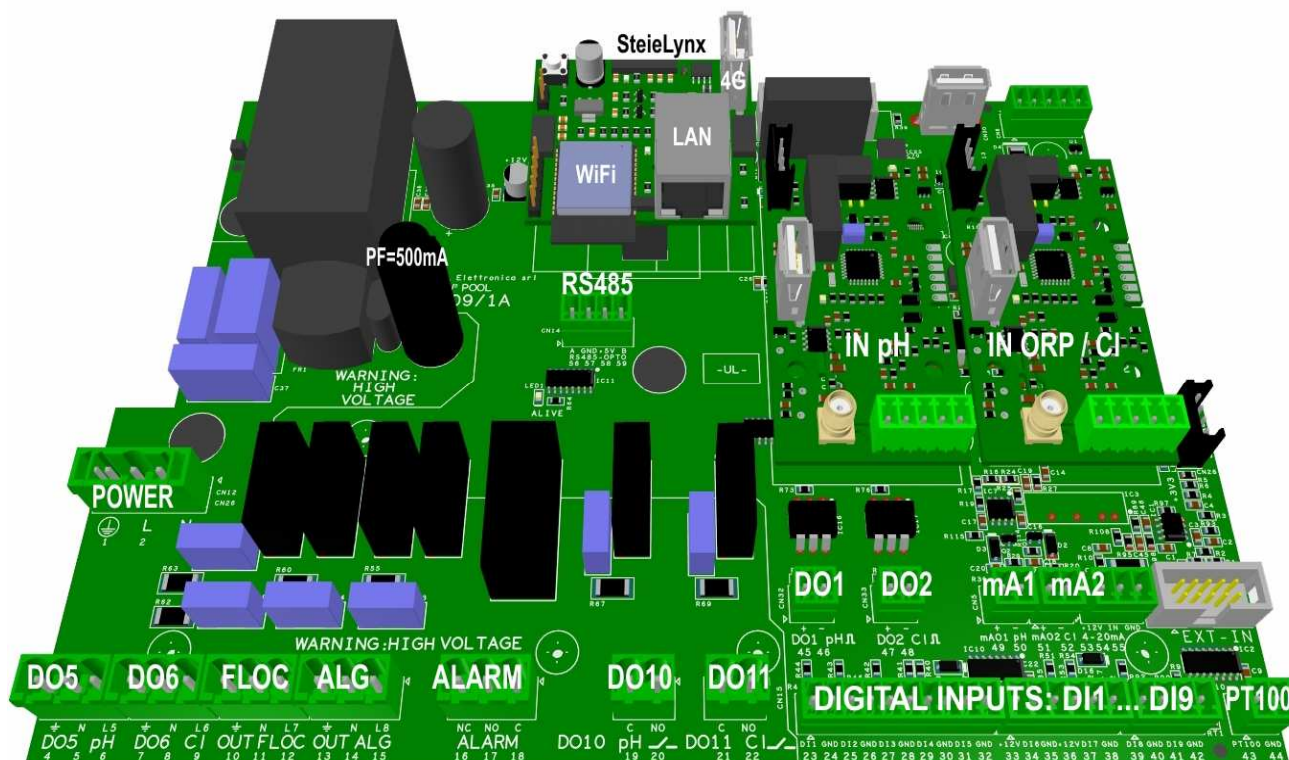




## WIRING INSTRUCTIONS



The electronic board is suitably protected according to high safety standards; anyway, it is recommended to unplug the instrument before any intervention on the terminal blocks!



| Block  | Pin - nr. | Pin - name  | Function                                                                                        |
|--------|-----------|-------------|-------------------------------------------------------------------------------------------------|
| POWER  | 1         | PE (earth)  | Power supply, 100-240 V~                                                                        |
|        | 2         | L (phase)   |                                                                                                 |
|        | 3         | N (neutral) |                                                                                                 |
| DO5 pH | 4         | PE (earth)  | 230V~ output for On-Off / PWM adjustment, controlled by pH measurement → acid dosage            |
|        | 5         | N (neutral) |                                                                                                 |
|        | 6         | L5 (phase)  |                                                                                                 |
| DO6 CI | 7         | PE (earth)  | 230V~ output for On-Off / PWM adjustment, controlled by measure 2 (ORP / ppm) → chlorine dosage |
|        | 8         | N (neutral) |                                                                                                 |
|        | 9         | L6 (phase)  |                                                                                                 |



**WARNING!** In case of pump wired to a 230V~ output (or 115V~, depending on the voltage powering the instrument), for possible adjustment of the dosing strokes, you need to power the pump by starting the "Output Test" mode from the SERVICE menu (see "Configuration" section for more details).



| Block      | Pin - nr. | Pin - name            | Function                                                                                                                       |                                                                                                                                                              |
|------------|-----------|-----------------------|--------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|
| OUT FLOC   | 10        | PE (earth)            | 230V~ output for the On-Off control of the flocculant dosing pump                                                              |                                                                                                                                                              |
|            | 11        | N (neutral)           |                                                                                                                                |                                                                                                                                                              |
|            | 12        | L7 (phase)            |                                                                                                                                |                                                                                                                                                              |
| OUT ALG    | 13        | PE (earth)            | 230V~ output for the On-Off control of the anti-algae dosing pump                                                              |                                                                                                                                                              |
|            | 14        | N (neutral)           |                                                                                                                                |                                                                                                                                                              |
|            | 15        | L8 (phase)            |                                                                                                                                |                                                                                                                                                              |
| ALARM      | 16        | NC (normally closed)  | Contact type output, alarm relay                                                                                               |                                                                                                                                                              |
|            | 17        | C (common)            |                                                                                                                                |                                                                                                                                                              |
|            | 18        | NA (normally open)    |                                                                                                                                |                                                                                                                                                              |
| DO10 pH    | 19        | C (common)            | Contact type output for On-Off / PWM adjustment, controlled by pH measurement → acid dosage                                    |                                                                                                                                                              |
|            | 20        | NA (normally open)    |                                                                                                                                |                                                                                                                                                              |
| DO11 Cl    | 21        | C (common)            | Contact type output for On-Off / PWM adjustment, controlled by measure 2 (ORP / ppm) → chlorine dosage                         |                                                                                                                                                              |
|            | 22        | NA (normally open)    |                                                                                                                                |                                                                                                                                                              |
| DI1        | 23        | DI1 (digital input 1) | Red wire                                                                                                                       | Input for Level 1 pH (acid tank)                                                                                                                             |
|            | 24        | GND                   | Black wire                                                                                                                     |                                                                                                                                                              |
| DI2        | 25        | DI2 (digital input 2) | Red wire                                                                                                                       | Input for Level 2 pH (acid tank)                                                                                                                             |
|            | 26        | GND                   | Black wire                                                                                                                     |                                                                                                                                                              |
| DI3        | 27        | DI3 (digital input 3) | Ext.Cons. digital input, configurable as NO/NC                                                                                 |                                                                                                                                                              |
|            | 28        | GND                   |                                                                                                                                |                                                                                                                                                              |
| DI4        | 29        | DI4 (digital input 4) | EcoMode digital input, configurable as NO/NC                                                                                   |                                                                                                                                                              |
|            | 30        | GND                   |                                                                                                                                |                                                                                                                                                              |
| DI6 (*)    | 33        | +12V                  | Brown wire                                                                                                                     | Sample Water digital input (NPN sensor), to monitor sample water flow                                                                                        |
|            | 34        | DI6 (digital input 6) | Black wire                                                                                                                     |                                                                                                                                                              |
|            | 35        | GND                   | Blue wire                                                                                                                      |                                                                                                                                                              |
| DI8        | 39        | DI8 (digital input 8) | Red wire                                                                                                                       | Input for Level 1 Cl (chlorine tank)                                                                                                                         |
|            | 40        | GND                   | Black wire                                                                                                                     |                                                                                                                                                              |
| DI9        | 41        | DI9 (digital input 9) | Red wire                                                                                                                       | Input for Level 2 Cl (chlorine tank)                                                                                                                         |
|            | 42        | GND                   | Black wire                                                                                                                     |                                                                                                                                                              |
| PT100      | 43        | PT100 (probe signal)  | Input for Pt100 / Pt1000 sensor.<br><i>Note: In case of 3-wire sensor, connect the two wires of the same colour to pin 43.</i> |                                                                                                                                                              |
|            | 44        | GND                   |                                                                                                                                |                                                                                                                                                              |
| DO1 pH     | 45        | + (DO1, positive)     | Pulse output for proportional adjustment (PFM) controlled by pH measurement → acid dosage                                      |                                                                                                                                                              |
|            | 46        | - (DO1, negative)     |                                                                                                                                |                                                                                                                                                              |
| DO2 Cl     | 47        | + (DO2, positive)     | Pulse output for proportional adjustment (PFM) controlled by Cl measure (ORP / ppm) → chlorine dosage                          |                                                                                                                                                              |
|            | 48        | - (DO2, negative)     |                                                                                                                                |                                                                                                                                                              |
| mA1 pH     | 49        | mA +                  | 0/4-20 mA output controlled by measure 1 (pH)                                                                                  |                                                                                                                                                              |
|            | 50        | mA -                  |                                                                                                                                |                                                                                                                                                              |
| mA2 Cl     | 51        | mA +                  | 0/4-20 mA output controlled by measure 2 (chlorine)                                                                            |                                                                                                                                                              |
|            | 52        | mA -                  |                                                                                                                                |                                                                                                                                                              |
| RS485 (**) | 56        | A                     | Green wire                                                                                                                     | Serial port with Modbus RTU protocol (alternatively, integrated SteiLynx board can be mounted, including WiFi module, LAN port and USB plug for 3G/4G modem) |
|            | 57        | GND                   | /                                                                                                                              |                                                                                                                                                              |
|            | 58        | +5V                   | /                                                                                                                              |                                                                                                                                                              |
|            | 59        | B                     | Yellow wire                                                                                                                    |                                                                                                                                                              |

(\*) In case of contact type flow sensor (2 wires), connect it to pins 34 and 35.

(\*\*) The wire colours refer to STEIEL serial cables.



## MEASUREMENT INPUTS

|                      |                                                 |                |             |                |            |            |
|----------------------|-------------------------------------------------|----------------|-------------|----------------|------------|------------|
| IN pH                | pH Measurement: input wired to a BNC connector  |                |             |                |            |            |
| IN ORP               | ORP Measurement: input wired to a BNC connector |                |             |                |            |            |
| IN Chlorine<br>(ppm) | Pin nr.                                         | CAC probes, mV |             | CAC probes, mA | CLE12 cell |            |
|                      | 1                                               | +12V           | Green wire  | mA+            | /          | /          |
|                      | 2                                               | GND            | Yellow wire | /              | Cu         | Blue wire  |
|                      | 3                                               | /              | /           | mA -           | Pt         | Brown wire |
|                      | 4                                               | IN             | White wire  | /              | /          | /          |
|                      | 5                                               | /              | Brown wire  | /              | /          | /          |

**Notes:**

- For pin **numbering**, refer to the silkscreen on the electronic board.
- **SteieLynx**: integrated gateway board (optional).



## POWER-ON

At first power-on, the instrument asks to select the display interface language and to set the internal clock to the current date and time, also selecting the preferred visualization format for the date.

- **Language** → Italiano / English / Español / Français
- **Date / time** → Format → dd-mm-yyyy / mm-dd-yyyy / yyyy-mm-dd

Once completed these operations, you need to **set measure 2** accordingly with the used sensor.

**Please note that this setting is performed at the factory according to the specifications given at the order.**

- **Measure 2** → ORP – range -2000 ... +2000 mV
  - CAC mV → chose the specific model from the provided list (\*)
  - CAC mA → chose the specific model from the provided list (\*)
  - CLE (open cell) – range 0 ... 5 ppm

(\*) List of CAC probes:

| PROBE MODEL |    | MEASURE RANGE | MEASURED PARAMETER      |                               |
|-------------|----|---------------|-------------------------|-------------------------------|
|             |    | ppm           | Description             | Visualization                 |
| CAC-CLI     | XB | 0.01 ... 0.5  | Active free chlorine    | Cl                            |
|             | B  | 0.02 ... 2.0  |                         |                               |
|             | SW | 0.1 ... 10.0  |                         |                               |
| CAC-CLO     | B  | 0.02 ... 2.0  | Available free chlorine | Cl                            |
|             | M1 | 0.1 ... 10.0  |                         |                               |
| CAC-CTO     | M1 | 0.05 ... 5.0  | Total chlorine          | CIT                           |
|             | M2 | 0.1 ... 10.0  |                         |                               |
| CAC-BRO     | M  | 0.1 ... 10.0  | Total bromine           | Br                            |
| CAC-HYP     | XB | 1.0 ... 50.0  | Hydrogen peroxide       | H <sub>2</sub> O <sub>2</sub> |
|             | B  | 5 ... 200     |                         |                               |

**Note:** Measure 1 is always associated to pH.

Upon the next power-ups, the display first shows the company name (STEIEL) and then a screen indicating the instrument model/version and the hardware (HW) / firmware (FW) revisions of the electronic boards, before switching to the stand-by screen.



| EVOLUTION EW <sup>2</sup>   |         |          |       |
|-----------------------------|---------|----------|-------|
| EW <sup>2</sup> Pool pH/CAC |         |          |       |
|                             | Main B. | Meas. B. |       |
| Rev. HW                     | 0.0.1   | 0.0.1    | 0.0.1 |
| Rev. FW                     | 99.9.9  | 0.0.1    | 0.0.1 |

Main board

pH input board

Chlorine input board

**Note:** For quick restoration of the unit's configuration, it is recommended to save it on a USB stick before performing a reset of the instrument.



## DESCRIPTION OF THE DISPLAY INTERFACE

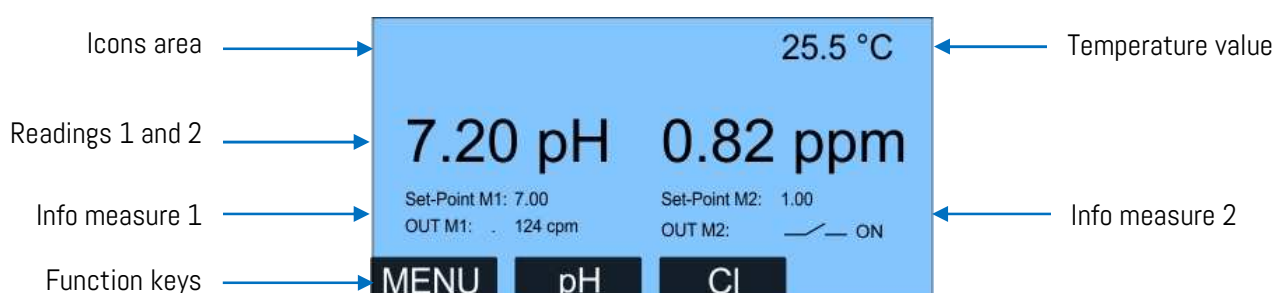
The EVOLUTION EW<sup>2</sup> Pool unit features a graphic display with RGB backlight, changing colour according to the instrument status.

Moreover, up to 4 virtual keys are provide, changing function depending on the menu / mode and defining the action of the corresponding buttons on the front command panel of the instrument.

At the top left, graphic icons or short texts are displayed for a quick indication of the instrument status or the active functions (e.g., Timer, EcoMode, etc.)

At the top right, the temperature measurement detected by the connected Pt100 (or Pt1000) sensor is shown or the reference value set via software (with the indication "man"), in case of missing or not functioning sensor.

### Stand-by screen (example)

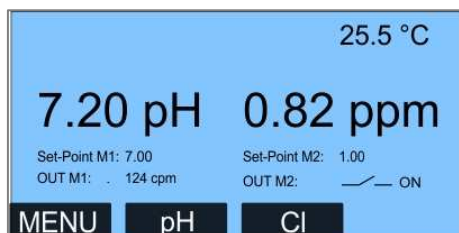


### Graphic icons (or texts) at the top left of the display and related RGB backlight

|                                                                                     |                                                                                    |                                                                         |
|-------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------|
| No text or icon                                                                     | → Normal operation                                                                 | → blue backlight                                                        |
| ECO MODE                                                                            | → Indicates active EcoMode input                                                   | → blue backlight                                                        |
|  | → Indicates active Timer function                                                  | → blue backlight during TIMER ON<br>→ orange backlight during TIMER OFF |
| OFF                                                                                 | → Indicates instrument in manual STOP due to START/STOP button pressed             | → orange backlight                                                      |
| EXT. CONS.                                                                          | → Indicates instrument in pause status due to the activation of Ext. Cons. contact | → orange backlight                                                      |
|  | → Active alarm (with related msg.)<br>→ Alarm automatically reset                  | → red backlight<br>→ blue backlight                                     |



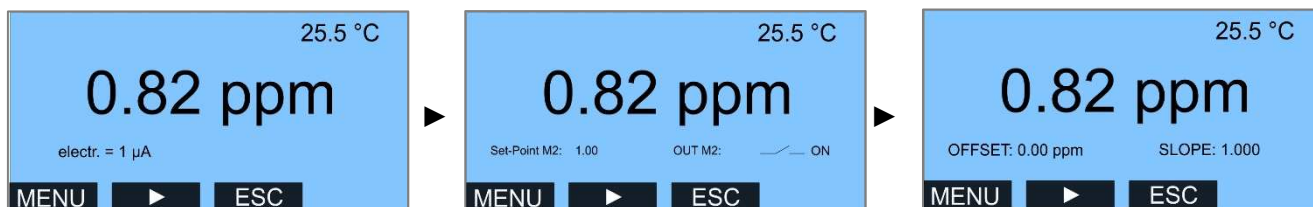
## Secondary screens (measurement info)



From the stand-by screen you can access the secondary screens, which provide info about each measurement (SetPoint, sensor and dosing head, etc.), by pressing respectively the "pH" or "Cl" button.

The info is contained in one or more screens, which can be scrolled through by pressing the ► key.

Example of secondary screens for Chlorine measurement:





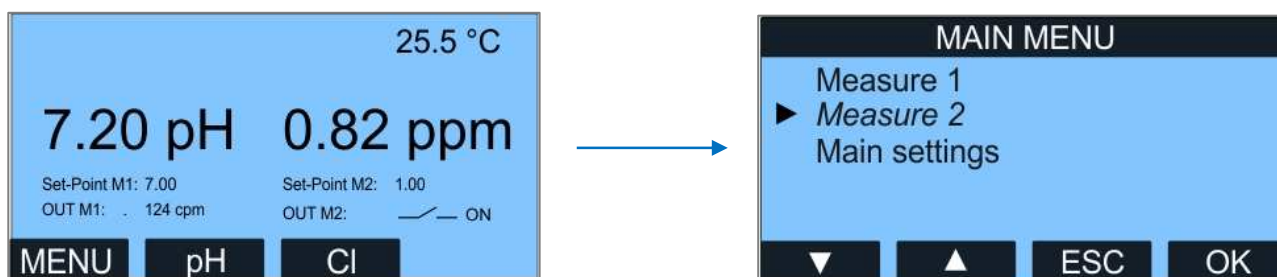
## CONFIGURATION

To access the instrument configuration menus, from the stand-by screen, press the keys corresponding to the virtual MENU button.

If a protection password has been set, the instrument will ask for inserting it to access the configuration mode and will enable only the levels unlocked by the entered password (see the Appendix section for more details).

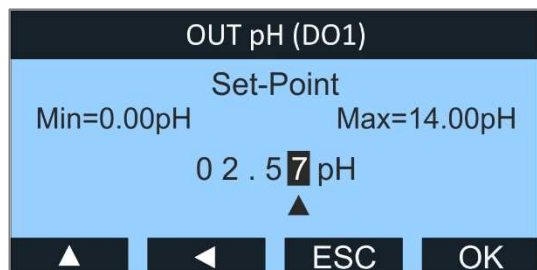
Now, select the desired option scrolling the available ones with the arrow keys ▲▼, confirm with OK and proceed through the various submenus to configure the instrument.

If no key is pressed for 2 minutes, the system automatically returns to the starting screen (stand-by); the instrument will remain in OFF status (outputs disabled and display with orange backlight) and it will have to be reactivated by the operator pressing the START/STOP button.



### Command sequence to enter / edit values

Example:



Once selected and confirmed an editable parameter, a screen will activate with the highlighted editable field indicated by a cursor.

Please note that:

- The up-arrow key ▲ increases the value.
- The left-arrow key ◀ moves the cursor to the next position.
- The OK key saves the modifications and quits the editing mode.
- The ESC key quits the editing screen without saving the modifications.



## AVAILABLE MENUS

### **Measure 1 (pH)**

- **OUTPUTS** Adjustment output (On-Off / PWM / PFM)  
mA1 Output
- **INPUTS** Input for level sensor of acid tank
- **CALIBRATION** pH Sensor
- **LIMITS** Alarm thresholds

### **Measure 2 (ORP, CAC, CLE)**

- **OUTPUTS** Adjustment output (On-Off / PWM / PFM)  
mA2 Output
- **INPUTS** Input for level sensor of chlorine tank
- **CALIBRATION** ORP or amperometric (CLE, CAC) sensor
- **LIMITS** Alarm thresholds

### **Main settings**

- **COMM. OUTPUTS CONF.** pH output with Chlorine error  
Chlorine output with pH error  
Startup delay  
Status of instrument at startup  
Status of outputs in editing
- **COMM. INPUTS CONF.** External consent  
Sample Water flow  
EcoMode  
Temperature
- **pH PRIORITY** Function which ensures to dose chlorine at the right pH
- **ALARMS** Control of alarm conditions and alarm relay
- **DISPLAY** Info to be displayed for the two measurement channels
- **USB** Datalogger  
Operations via USB port
- **TIMER** Setting of switching on / off times and outputs to drive
- **CONNECTIVITY** Control of the Modbus RTU communication
- **SERVICE** Alarm list and other functions reserved to technical personnel
- **SYSTEM** Password setting  
Selection of display language  
Date/time setting  
Read-only technical info



## MEASURE pH MEASURE ORP (mV) / Cl (ppm - CAC, CLE)

For each measurement channel, you can configure the operating parameters of the adjustment output, analog output and level input; set alarm thresholds; perform sensor calibration.

### OUTPUTS

#### ➤ Adjustment output

When connecting pumps or other devices to dose acid (pH) and chlorine in swimming pool water, the corresponding control output must be enabled and configured with the desired operating mode.

Depending on the device type to be controlled, three different wirings are possible (also see the "Wiring instructions" section for more details):

| Terminal block | Type                 | Adjustment   | Associated measurement |
|----------------|----------------------|--------------|------------------------|
| D05 pH         | 230V~ (115V~)        | On-Off / PWM | pH                     |
| D010 pH        | Voltage-free contact |              |                        |
| D01 pH         | Pulse signal         |              |                        |
| D06 Cl         | 230V~ (115V~)        | On-Off / PWM | ORP (mV), ppm          |
| D011 Cl        | Voltage-free contact |              |                        |
| D02 Cl         | Pulse signal         |              |                        |

Configuration options for the adjustment outputs, with their specific parameters, are listed below:

Output **Disabled**

Output **Enabled**

→ On-Off:

Adjustment with constant dosage till the set-point.

Parameters to be set:

- **Setpoint** (adjustment end point)
- **Hysteresis** (tolerance range around the set-point, within which the output status does not change)
- **Direction** (typically, for swimming pools the setting is "Acidification" for pH and "Chlorination" for chlorine)
- **Max dosage** (max time within which the regulation must reach the set-point; if the output remains active for longer than the set time, the dosage is stopped, and an alarm is generated)
- **Delay ON / Delay OFF** of the relay (time tolerance range to avoid relay commutations due to irrelevant fluctuations)

Output **Enabled**

→ PWM:

Proportional adjustment on time base.

Parameters to be set:

- **Setpoint** (adjustment end point)
- **Proportional band** (measurement range within which the duty cycle adjusts the activation  $T_{ON}$  and deactivation  $T_{OFF}$  times proportionally to the distance between the real time reading and the set-point to reach)
- **Direction** (typically, for swimming pools the setting is "Acidification" for pH and "Chlorination" for chlorine)
- **Max dosage** (max time within which the regulation must reach the set-point; if the output remains active



for longer than the set time, the dosage is stopped, and an alarm is generated)

- **Duty cycle** (sets the overall time of the proportional band, to be sized according to the specific installation)
- **T min.** (minimum  $T_{ON}$  and/or  $T_{OFF}$  period to avoid too fast commutations of the output, which could damage the connected dosing device)

Output **Enabled**

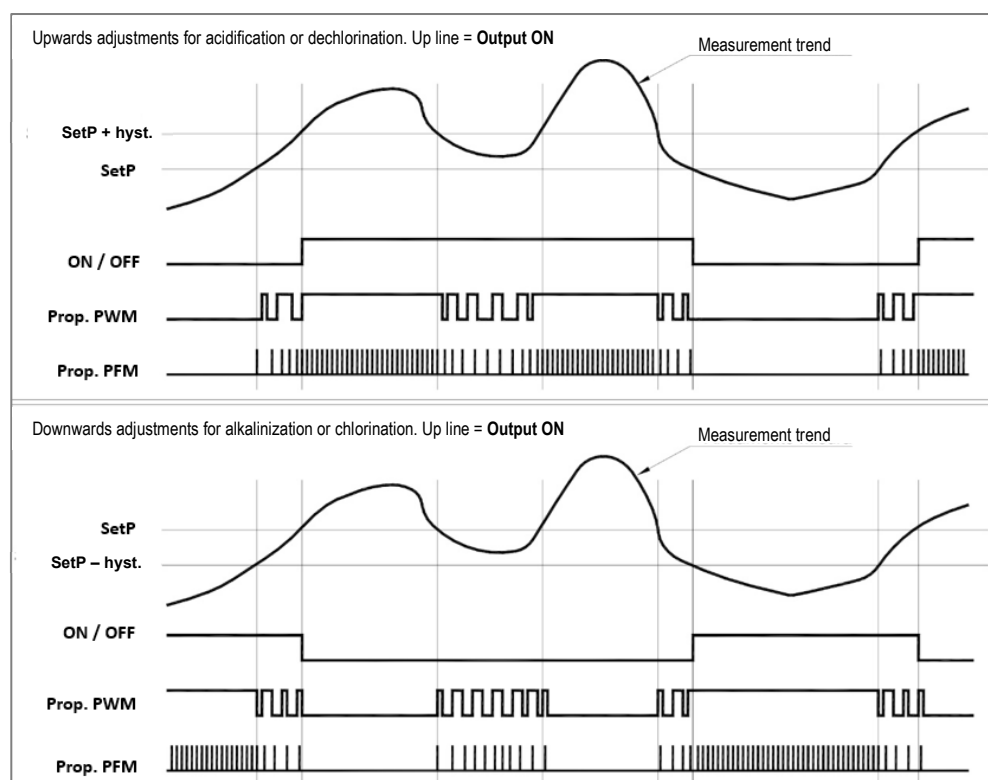
→ **PFM:**

Proportional adjustment with pulse signal which controls a dosing pump with pulse input.

Parameters to be set:

- **Setpoint** (adjustment end point)
- **Proportional band** (measurement range within which the output is modulated from the set "Frequency MIN" value to the "Frequency MAX" one, proportionally to the distance between the real time reading and the set-point to reach)
- **Direction** (typically, for swimming pools the setting is "Acidification" for pH and "Chlorination" for chlorine)
- **Max dosage** (max time within which the regulation must reach the set-point; if the output remains active for longer than the set time, the dosage is stopped, and an alarm is generated)
- **Frequency MIN / Frequency MAX** (these values limit the frequency range within which the output pulses are modulated, depending on the distance between the real time reading and the set-point to reach)

Graphical representation of the three adjustment modes: On-Off, PWM and PFM







## MAIN SETTINGS

### COMMON OUTPUTS CONFIG.

- **pH output upon Chlorine error** → OFF / ON (**default**)  
This parameter allows to set if keep adjusting pH upon an error which stops the chlorine dosage.
- **Chlorine output upon pH error** → OFF (**default**) / ON  
This parameter allows to set if keep adjusting chlorine upon an error which stops the acid (pH) dosage.
- **Start-up delay** → Enter value (5" ... 30')  
This parameter allows to enter a stand-by time at the instrument power-on, during which all outputs are disabled to avoid errors due to unreliable readings by not correctly polarized sensors.
- **Status at start-up** → Remember (**default**) / Always ON / Always OFF  
This parameter allows to set the instrument status in case of reboot. You can decide to resume the status before the shut-down ("Remember"), or to have the instrument active ("Always ON") or disabled ("Always OFF").
- **Status of outputs in editing** → Disabled (**default**) / Enabled  
This parameter allows to set the status of all adjustment outputs during the unit configuration. It is recommended to keep them disabled to avoid anomalous dosages due to transient settings.

### COMMON INPUTS CONFIG.

- **Ext. Cons. (DI3)**  
Digital pause / external consent input, to be connected, for example, to the contactor of the filtration / recirculation pump of the swimming pool. If used, it must be enabled and appropriately configured.

Input **Disabled (default)**

Input **Enabled**

→ Type

→ NO / NC (**default**)

→ Delay ON / Delay OFF (time tolerance for the instrument answer on the opening / closing of the input contact)

- **Sample Water (DI6)**  
Input to be connected to an NPN proximity sensor to monitor the sample water flow. Upon flow lack, an alarm is generated. **If used, the input must be enabled and appropriately configured.**

Input **Disabled (default)**

Input **Enabled**

→ Type

→ NO / NC (**default**)

→ Delay ON / Delay OFF (time tolerance for the instrument answer on the opening / closing of the input contact)

**Note:** In case of restoration of default settings, if a flow sensor is connected to this input, the instrument will automatically detect it and ask to confirm if enabling it.

Sample water  
sensor detected.  
Enable?

ESC

OK





## pH PRIORITY

This function allows to activate the chlorine dosage only after reaching a right pH value, to ensure a reliable disinfection with no waste of chemical product.

If the function is enabled, at power-on the instrument checks and adjusts only the pH to bring it at a value between the max and min set-points, within a certain time interval (max time).

If the operation is successful, once the required pH level is reached, chlorine adjustment is also activated; if the action fails, an alarm is generated.

- Disabled (**default**)
- Enabled
  - Max time (enter value)
  - Set-point pH min
  - Set-point pH max

## DISPLAY

This menu allows to customize some visualizations on the stand-by screen.

In fact, for each measurement channel you can select for which enabled outputs to show the relative information, by flagging the corresponding item in the proposed list.

- **Measure pH** → Display output → List of outputs enabled for pH
- **Measure Cl / ORP** → Display output → List of outputs enabled for Cl / ORP

## USB

This menu sets the functionality of the USB port and datalogger.

**Note:** the USB key must be formatted with FAT filesystem.

- **Datalogger**
  - Data and events (complete with date, time and device ID) are saved in the datalogger and can be exported as file.csv.
  - These are: measurement values, switches of the START/STOP button, sensor calibrations, reset requests, access to password-protected menus, access attempts with wrong password, instrument power-ons / power-offs due to voltage drops, list of occurred alarms.
  - Sampling time (set the time interval between two measurement savings:  
measure 1, measure 2, temperature)
  - Export data (file csv) (with USB key inserted, asks to confirm before exporting the datalog file)
  - Device ID (enter the ID code of the instrument)

The following actions can be performed only with USB key inserted and after operator confirmation:

- **Save conf.** Save current configuration on the USB key (file.csv)
- **Load conf.** Load current configuration from USB key (file.csv)
- **FW updating**



## TIMER

The unit features an internal clock, which allows to schedule timed actions through 25 independent and fully configurable timers.

To each timer you can associate the control of a specific output, set the switching on / switching off times and choose in which day(s) of the week to enable it.

- **TIMER 1 / TIMER 2 / TIMER 3 / TIMER 4 / .... / TIMER 25**
  - Timer ON (activation time)
  - Timer OFF (switching off time)
  - Enable Timer (day of the week setting)
  - Mode
    - Instrument (adjustment outputs)
    - Flocculant
    - Anti-algae
    - **Eco Mode** (this function can also be activated by an external contact, which always takes priority over timed schedule)
    - **Super chlorination** (chlorine dosage, without considering the adjustment set-point; all controls are disabled, and the action can be manually stopped before the set time only pressing the START/STOP button)

## CONNECTIVITY

This menu controls the possibly communication of the unit. You can use the RS485 serial line with Modbus RTU protocol (standard), by setting the communication speed and the instrument ID code.

Alternatively, the **SteieLynx** gateway is available as an integrated board for remote control via web app.

- Disabled
- Enabled
  - Modbus RTU
  - Baud rate
  - ID

## SERVICE

This menu is reserved for qualified and authorized technical personnel.

- **Alarm list** Allows to display the list of last alarms, complete with date and time.  
Example:

| ALARM LIST                |    |
|---------------------------|----|
| 16-Feb-2023 11:13 - LIV 1 |    |
| 16-02-2023 09:26 - LIV 1  | ✓  |
| 16-02-2023 09:13 - LIV 1  |    |
| 16-02-2023 07:15 - FLOW   | ✓  |
| 16-02-2023 07:13 - FLOW   |    |
| 16-02-2023 05:34 - LIV 2  | ✓  |
| 16-02-2023 05:23 - LIV 2  |    |
| ▼                         | ▲  |
| ESC                       | OK |

- **Inputs test** Allows to force all inputs to check their functioning.
- **Outputs test** Allows to force all outputs (digital and analog), to check the functioning of the connected devices (e.g., dosing pumps); during this operation all controls are disabled
- **Meas. pH/Cl simulation** Allows to force each measurement channel individually, to check the operation of the corresponding adjustment outputs



- **Reset**
  - Alarm history (Delete the saved list of alarms)
  - Datalogger (Delete saved list of measurements)
  - Calibration pH / CI (Delete the offset and slope data of each measurement, restoring factory values)
  - Measure autosest (Function reserved for the repair technician, in case of replacement of the input board or measurement sensor type)
  - Factory reset (Full restoring of factory settings; the instrument will need to be reconfigured)

## SYSTEM

This menu is reserved for qualified and authorized technical personnel.

- **Password**

Allows to enter three different passwords, for three different access levels to the instrument menus, to prevent interventions by unauthorized personnel.

***Note:** For further details about the different protection levels of the three passwords, see the "Appendix" section at the end of this manual.*

  - Disabled (**default**)
  - Enabled
    - Technician
    - Operator
    - Calibration
- **SOFTKEY 4**

Allows to customize the function of the fourth virtual key to directly access to the calibration of the two measurement channels, to the USB port control menu or to the check of inputs/outputs status.

  - Disabled (**default**)
  - Enabled
    - CAL
      - Calibration pH
      - Calibration CI
    - USB
    - I/O
- **Set date/time**

Allows to set current date / time and choose the displaying format for the date, exactly as at first power-on of the unit.
- **Language**

Allows to change the language of display interface.
- **FW updating**

With USB key inserted, you can update the instrument FW.
- **Info**

Read-only displaying of the following technical info:  
FW and HW version / Instrument model and input types / S/N of power board and input boards / POWER ON and operating time hour-counter / Log nr. of alarms / Internal temperature



## TABLES OF PARAMETERS

### MEASURE pH

#### OUTPUTS

|                   |                      |                   | Valid values                   | Default value |
|-------------------|----------------------|-------------------|--------------------------------|---------------|
| Adjustment output | Disabled             |                   |                                |               |
|                   | Enabled / On-Off     | Setpoint          | 0.00 ... 14.00 pH              | 7.20 pH       |
|                   |                      | Hysteresis        | 0.05 ... 6.00 pH               | 0.30 pH       |
|                   |                      | Direction         | Acidification / Alkalinization | Acidification |
|                   |                      | Max dosage        | 00 :00 ... 08 :00 hh : mm      | 00 :00        |
|                   |                      | Delay ON          | 00 :00 ... 10 :00 mm : ss      | 00 :00        |
|                   |                      | Delay OFF         | 00 :00 ... 10 :00 mm : ss      | 00 :00        |
|                   | Enabled / PWM        | Setpoint          | 0.00 ... 14.00 pH              | 7.20 pH       |
|                   |                      | Proportional band | 0.05 ... 14.00 pH              | 1.00 pH       |
|                   |                      | Direction         | Acidification / Alkalinization | Acidification |
|                   |                      | Max dosage        | 00 :00 ... 08 :00 hh : mm      | 00 :00        |
|                   |                      | Duty cycle        | 00 :30 ... 10 :00 mm : ss      | 01 :00        |
|                   |                      | T.min             | 0 ... 5 sec                    | 5 sec         |
|                   | Enabled / PFM        | Setpoint          | 0.00 ... 14.00 pH              | 7.20 pH       |
|                   |                      | Proportional band | 0.05 ... 14.00 pH              | 1.00 pH       |
|                   |                      | Direction         | Acidification / Alkalinization | Acidification |
|                   |                      | Max dosage        | 00 :00 ... 08 :00 hh : mm      | 00 :00        |
|                   |                      | Frequency MIN     | 0 ... 180 cpm                  | 0             |
|                   |                      | Frequency MAX     | Freq. min ... 180 cpm          | 100           |
| mA (1) output     | Disabled             |                   |                                | Disabled      |
|                   | Enabled / Repetition | Range             | 0-20 o 4-20 mA                 | 4-20 mA       |
|                   |                      | Value at 0/4 mA   | 0.00 ... 14.00 pH              | 0.00 pH       |
|                   |                      | Value at 20 mA    | 0.00 ... 14.00 pH              | 14.00 pH      |
|                   |                      | Value upon error  | 0 ... 21 mA                    | 21 mA         |
|                   | Enabled / Adjustment | Setpoint          | 0.00 ... 14.00 pH              | 7.20 pH       |
|                   |                      | Range             | 0-20 o 4-20 mA                 | 4-20 mA       |
|                   |                      | Proportional band | 0.05 ... 14.00 pH              | 1.00 pH       |
|                   |                      | Value upon error  | 0 ... 21 mA                    | 3 mA          |
|                   |                      | Direction         | Acidification / Alkalinization | Acidification |
|                   |                      | Max dosage        | 00 :00 ... 08 :00 hh : mm      | 00 :00        |

#### INPUTS

|             |          |         | Valid values              | Default value |
|-------------|----------|---------|---------------------------|---------------|
| Level input | Disabled |         |                           | Disabled      |
|             | Enabled  | Contact | NO / NC                   | NO            |
|             |          | Type    | Mono-stage / Double stage | Mono-stage    |

#### LIMITS

|               |          | Valid values      | Default value |
|---------------|----------|-------------------|---------------|
| Threshold MIN | Disabled |                   | Disabled      |
|               | Enabled  | 0.00 ... 14.00 pH |               |
| Threshold MAX | Disabled |                   | Disabled      |
|               | Enabled  | 0.00 ... 14.00 pH |               |



## MEASURE ORP (mV)

### OUTPUTS

|                   |                      |                   | Valid values                  | Default value |
|-------------------|----------------------|-------------------|-------------------------------|---------------|
| Adjustment output | Disabled             |                   |                               |               |
|                   | Enabled / On-Off     | Setpoint          | -2000 ... +2000 mV            | 680 mV        |
|                   |                      | Hysteresis        | 5 ... 500 mV                  | 30 mV         |
|                   |                      | Direction         | Chlorination / Dechlorination | Chlorination  |
|                   |                      | Max dosage        | 00 :00 ... 08 :00 hh : mm     | 00 :00        |
|                   |                      | Delay ON          | 00 :00 ... 10 :00 mm : ss     | 00 :00        |
|                   |                      | Delay OFF         | 00 :00 ... 10 :00 mm : ss     | 00 :00        |
|                   | Enabled / PWM        | Setpoint          | -2000 ... +2000 mV            | 680 mV        |
|                   |                      | Proportional band | 5 ... 2000 mV                 | 50 mV         |
|                   |                      | Direction         | Chlorination / Dechlorination | Chlorination  |
|                   |                      | Max dosage        | 00 :00 ... 08 :00 hh : mm     | 00 :00        |
|                   |                      | Duty cycle        | 00 :30 ... 10 :00 mm : ss     | 01 :00        |
|                   |                      | T.min             | 0 ... 5 sec                   | 5 sec         |
|                   | Enabled / PFM        | Setpoint          | -2000 ... +2000 mV            | 680 mV        |
|                   |                      | Proportional band | 5 ... 2000 mV                 | 50 mV         |
|                   |                      | Direction         | Chlorination / Dechlorination | Chlorination  |
|                   |                      | Max dosage        | 00 :00 ... 08 :00 hh : mm     | 00 :00        |
|                   |                      | Frequency MIN     | 0 ... 180 cpm                 | 0             |
|                   |                      | Frequency MAX     | Freq. min ... 180 cpm         | 100           |
| mA (2) output     | Disabled             |                   |                               | Disabled      |
|                   | Enabled / Repetition | Range             | 0-20 o 4-20 mA                | 4-20 mA       |
|                   |                      | Value at 0/4 mA   | -2000 ... +2000 mV            | -2000 mV      |
|                   |                      | Value at 20 mA    | -2000 ... +2000 mV            | +2000 mV      |
|                   |                      | Value upon error  | 0 ... 21 mA                   | 21 mA         |
|                   | Enabled / Adjustment | Setpoint          | -2000 ... +2000 mV            | 680 mV        |
|                   |                      | Range             | 0-20 o 4-20 mA                | 4-20 mA       |
|                   |                      | Proportional band | 5 ... 2000 mV                 | 50 mV         |
|                   |                      | Value upon error  | 0 ... 21 mA                   | 3 mA          |
|                   |                      | Direction         | Chlorination / Dechlorination | Chlorination  |
|                   |                      | Max dosage        | 00 :00 ... 08 :00 hh : mm     | 00 :00        |

### INPUTS

|             |          |         | Valid values              | Default value |
|-------------|----------|---------|---------------------------|---------------|
| Level input | Disabled |         |                           | Disabled      |
|             | Enabled  | Contact | NO / NC                   | NO            |
|             |          | Type    | Mono-stage / Double stage | Mono-stage    |

### LIMITS

|               |          | Valid values       | Default value |
|---------------|----------|--------------------|---------------|
| Threshold MIN | Disabled |                    | Disabled      |
|               | Enabled  | -2000 ... +2000 mV |               |
| Threshold MAX | Disabled |                    | Disabled      |
|               | Enabled  | -2000 ... +2000 mV |               |



## MEASURE Cl (Chlorine with CLE12, ppm)

### OUTPUTS

|                   |                      |                   | Valid values                  | Default value |
|-------------------|----------------------|-------------------|-------------------------------|---------------|
| Adjustment output | Disabled             |                   |                               |               |
|                   | Enabled / On-Off     | Setpoint          | 0.00 ... 5.00 ppm             | 1.00 ppm      |
|                   |                      | Hysteresis        | 0.00 ... 2.50 ppm             | 0.20 ppm      |
|                   |                      | Direction         | Chlorination / Dechlorination | Chlorination  |
|                   |                      | Max dosage        | 00 :00 ... 08 :00 hh : mm     | 00 :00        |
|                   |                      | Delay ON          | 00 :00 ... 10 :00 mm : ss     | 00 :00        |
|                   |                      | Delay OFF         | 00 :00 ... 10 :00 mm : ss     | 00 :00        |
|                   | Enabled / PWM        | Setpoint          | 0.00 ... 5.00 ppm             | 1.00 ppm      |
|                   |                      | Proportional band | 0.05 ... 5.00 ppm             | 0.50 ppm      |
|                   |                      | Direction         | Chlorination / Dechlorination | Chlorination  |
|                   |                      | Max dosage        | 00 :00 ... 08 :00 hh : mm     | 00 :00        |
|                   |                      | Duty cycle        | 00 :30 ... 10 :00 mm : ss     | 01 :00        |
|                   |                      | T.min             | 0 ... 5 sec                   | 5 sec         |
|                   | Enabled / PFM        | Setpoint          | 0.00 ... 5.00 ppm             | 1.00 ppm      |
|                   |                      | Proportional band | 0.05 ... 5.00 ppm             | 0.50 ppm      |
|                   |                      | Direction         | Chlorination / Dechlorination | Chlorination  |
|                   |                      | Max dosage        | 00 :00 ... 08 :00 hh : mm     | 00 :00        |
|                   |                      | Frequency MIN     | 0 ... 180 cpm                 | 0             |
|                   |                      | Frequency MAX     | Freq. min ... 180 cpm         | 100           |
| mA (2) output     | Disabled             |                   |                               | Disabled      |
|                   | Enabled / Repetition | Range             | 0-20 o 4-20 mA                | 4-20 mA       |
|                   |                      | Value at 0/4 mA   | 0.00 ... 5.00 ppm             | 0.00 ppm      |
|                   |                      | Value at 20 mA    | 0.00 ... 5.00 ppm             | 5.00 ppm      |
|                   |                      | Value upon error  | 0 ... 21 mA                   | 21 mA         |
|                   | Enabled / Adjustment | Setpoint          | 0.00 ... 5.00 ppm             | 1.00 ppm      |
|                   |                      | Range             | 0-20 o 4-20 mA                | 4-20 mA       |
|                   |                      | Proportional band | 0.05 ... 5.00 ppm             | 0.50 ppm      |
|                   |                      | Value upon error  | 0 ... 21 mA                   | 3 mA          |
|                   |                      | Direction         | Chlorination / Dechlorination | Chlorination  |
|                   |                      | Max dosage        | 00 :00 ... 08 :00 hh : mm     | 00 :00        |

### INPUTS

|             |          |         | Valid values              | Default value |
|-------------|----------|---------|---------------------------|---------------|
| Level input | Disabled |         |                           | Disabled      |
|             | Enabled  | Contact | NO / NC                   | NO            |
|             |          | Type    | Mono-stage / Double stage | Mono-stage    |

### LIMITS

|               |          | Valid values      | Default value |
|---------------|----------|-------------------|---------------|
| Threshold MIN | Disabled |                   | Disabled      |
|               | Enabled  | 0.00 ... 5.00 ppm |               |
| Threshold MAX | Disabled |                   | Disabled      |
|               | Enabled  | 0.00 ... 5.00 ppm |               |



## MEASURE Cl (CAC Probe, ppm)

### OUTPUTS

|                   |                      |                   | Valid values                  | Default value |
|-------------------|----------------------|-------------------|-------------------------------|---------------|
| Adjustment output | Disabled             |                   |                               |               |
|                   | Enabled / On-Off     | Setpoint          | 0.00 ... FS ppm               | 1.00 ppm      |
|                   |                      | Hysteresis        | 0.00 ... 50% FS ppm           | 5% FS ppm     |
|                   |                      | Direction         | Chlorination / Dechlorination | Chlorination  |
|                   |                      | Max dosage        | 00 :00 ... 08 :00 hh : mm     | 00 :00        |
|                   |                      | Delay ON          | 00 :00 ... 10 :00 mm : ss     | 00 :00        |
|                   |                      | Delay OFF         | 00 :00 ... 10 :00 mm : ss     | 00 :00        |
|                   | Enabled / PWM        | Setpoint          | 0.00 ... FS ppm               | 1.00 ppm      |
|                   |                      | Proportional band | 0.05 ... FS ppm               | 10% FS ppm    |
|                   |                      | Direction         | Chlorination / Dechlorination | Chlorination  |
|                   |                      | Max dosage        | 00 :00 ... 08 :00 hh : mm     | 00 :00        |
|                   |                      | Duty cycle        | 00 :30 ... 10 :00 mm : ss     | 01 :00        |
|                   |                      | T.min             | 0 ... 5 sec                   | 5 sec         |
|                   | Enabled / PFM        | Setpoint          | 0.00 ... FS ppm               | 1.00 ppm      |
|                   |                      | Proportional band | 0.05 ... FS ppm               | 10% FS ppm    |
|                   |                      | Direction         | Chlorination / Dechlorination | Chlorination  |
|                   |                      | Max dosage        | 00 :00 ... 08 :00 hh : mm     | 00 :00        |
|                   |                      | Frequency MIN     | 0 ... 180 cpm                 | 0             |
|                   |                      | Frequency MAX     | Freq. min ... 180 cpm         | 100           |
| mA (2) output     | Disabled             |                   |                               | Disabled      |
|                   | Enabled / Repetition | Range             | 0-20 o 4-20 mA                | 4-20 mA       |
|                   |                      | Value at 0/4 mA   | 0.00 ... FS ppm               | 0.00 ppm      |
|                   |                      | Value at 20 mA    | 0.00 ... FS ppm               | FS ppm        |
|                   |                      | Value upon error  | 0 ... 21 mA                   | 21 mA         |
|                   | Enabled / Adjustment | Set point         | 0.00 ... FS ppm               | 1.00 ppm      |
|                   |                      | Range             | 0-20 o 4-20 mA                | 4-20 mA       |
|                   |                      | Proportional band | 0.05 ... FS ppm               | 10% FS ppm    |
|                   |                      | Value upon error  | 0 ... 21 mA                   | 3 mA          |
|                   |                      | Direction         | Chlorination / Dechlorination | Chlorination  |
|                   |                      | Max dosage        | 00 :00 ... 08 :00 hh : mm     | 00 :00        |

### INPUTS

|             |          |         | Valid values              | Default value |
|-------------|----------|---------|---------------------------|---------------|
| Level input | Disabled |         |                           | Disabled      |
|             | Enabled  | Contact | NO / NC                   | NO            |
|             |          | Type    | Mono-stage / Double stage | Mono-stage    |

### LIMITS

|               |          | Valid values    | Default value |
|---------------|----------|-----------------|---------------|
| Threshold MIN | Disabled |                 | Disabled      |
|               | Enabled  | 0.00 ... FS ppm |               |
| Threshold MAX | Disabled |                 | Disabled      |
|               | Enabled  | 0.00 ... FS ppm |               |



## MAIN SETTINGS

### COMM. OUTPUTS CONF.

|                               |  |  | Valid values                      | Default value |
|-------------------------------|--|--|-----------------------------------|---------------|
| pH output with Chlorine error |  |  | OFF / ON                          | ON            |
| Chlorine output with pH error |  |  | OFF / ON                          | OFF           |
| Start-up delay                |  |  | 5 sec ... 30 min                  | 5 sec         |
| Status at start-up            |  |  | Remember / Always ON / Always OFF | Remember      |
| Outputs status in editing     |  |  | Disabled / Enabled                | Disabled      |

### COMM. INPUTS CONF.

|              |                    |           | Valid values           | Default value |
|--------------|--------------------|-----------|------------------------|---------------|
| Ext. Cons.   | Disabled           |           |                        | Disabled      |
|              | Enabled            | Type      | NO / NC                | NC            |
|              |                    | Delay ON  | 2 ... 10 sec           | 2 sec         |
|              |                    | Delay OFF | 2 ... 10 sec           | 2 sec         |
| Sample Water | Disabled           |           |                        |               |
|              | Enabled            | Type      | NO / NC                | NC            |
|              |                    | Delay ON  | 0 ... 10 sec           | 2 sec         |
|              |                    | Delay OFF | 0 ... 10 sec           | 2 sec         |
| Eco Mode     | Disabled           |           |                        | Disabled      |
|              | Enabled            | Type      | NO / NC                | NC            |
|              |                    | Setpoint  | 0 ... Adj. Setpoint Cl |               |
| Temperature  | Mode               |           | Auto / Manual          | Auto          |
|              | Range (meas. unit) |           | °C / °F                | °C            |

### pH PRIORITY

|             |          |                 | Valid values                  | Default value |
|-------------|----------|-----------------|-------------------------------|---------------|
| pH PRIORITY | Disabled |                 |                               | Disabled      |
|             | Enabled  | Max time        | 00 :00 ... 59 :59 mm : ss     | 01 :00        |
|             |          | Setpoint pH min | 0.00 pH ... Set-point pH max  | 6.80 pH       |
|             |          | Setpoint pH max | Set-point pH min ... 14.00 pH | 7.50 pH       |

### DISPLAY

|         |                                                                                    |
|---------|------------------------------------------------------------------------------------|
| DISPLAY | Measure pH → List of enabled outputs for pH to be displayed on the stand-by screen |
|         | Measure Cl → List of enabled outputs for Cl to be displayed on the stand-by screen |



## ALARMS

|                         |                                       |                                    | Valid values                                     | Default value      |
|-------------------------|---------------------------------------|------------------------------------|--------------------------------------------------|--------------------|
| <b>Alarm conditions</b> | Events that can generate an alarm (*) |                                    | OFF / AUT / MAN                                  |                    |
| <b>OUT Alarm</b>        | Disabled                              |                                    |                                                  | Disabled           |
|                         | Enabled                               | Type                               | Relay normally energized / normally de-energized | Normally energized |
|                         |                                       | Alarms associated to the relay (*) | Yes / No                                         |                    |

(\*) List of events that can generate an alarm condition and trigger alarm relay switching:

|                                                       |     |
|-------------------------------------------------------|-----|
| Threshold MIN pH exceeded / Threshold MAX pH exceeded | OFF |
| Threshold MIN Cl exceeded / Threshold MAX Cl exceeded | OFF |
| Level 1 pH / Level 2 pH                               | AUT |
| Level 1 Cl / Level 2 Cl                               | AUT |
| Under Range pH / Over Range pH                        | AUT |
| Under Range Cl / Over Range Cl                        | AUT |
| Max dosage time pH / Max dosage time Cl               | OFF |
| Sample Water (lack of sample water flow)              | AUT |
| pH priority                                           | OFF |

## USB

|     |                            |               | Valid values         | Default value |
|-----|----------------------------|---------------|----------------------|---------------|
| USB | Datalogger                 | Sampling time | 1, 5, 15, 30, 60 min | 5 min         |
|     |                            | Export data   | File .csv            |               |
|     |                            | Device ID     | 0 ... 250            | 0             |
|     | Save current config on USB |               | File .csv            |               |
|     | Load config file from USB  |               | File.csv             |               |
|     | Update FW                  |               |                      |               |
|     |                            |               |                      |               |

### Notes:

- The USB key must be formatted with FAT filesystem
- All data / events are saved complete with date / time / temperature
- The data / events saved in the datalogger are:
  - Measurements (pH, Cl, temperature) read according to the set sampling time
  - Switches of the START/STOP button
  - Sensor calibrations
  - Reset requests
  - Access to menus protected by technician / operator / calibration passwords
  - Access attempts with wrong password
  - Power-ons / offs of the unit
- Alarms are saved with the codes listed here below, complete with date / time indication:
 

|                               |                               |
|-------------------------------|-------------------------------|
| <b>AL01:</b> Threshold min pH | <b>AL09:</b> Threshold min Cl |
| <b>AL02:</b> Threshold max pH | <b>AL10:</b> Threshold max Cl |
| <b>AL03:</b> Lelel1 pH        | <b>AL11:</b> Lelel1 Cl        |
| <b>AL04:</b> Lelel2 pH        | <b>AL12:</b> Lelel2 Cl        |
| <b>AL05:</b> Under Range pH   | <b>AL13:</b> Under Range Cl   |
| <b>AL06:</b> Over Range pH    | <b>AL14:</b> Over Range Cl    |
| <b>AL07:</b> T. max dosage pH | <b>AL15:</b> T. max dosage Cl |
| <b>AL18:</b> No flow          |                               |
| <b>AL19:</b> pH priority      |                               |



## TIMER

|         |              | Action                                 |                                                                                               |
|---------|--------------|----------------------------------------|-----------------------------------------------------------------------------------------------|
| TIMER 1 | TIMER ON     | Enter activation time                  |                                                                                               |
|         | TIMER OFF    | Enter switching off time               |                                                                                               |
|         | Enable Timer | Choose the day of the week for Timer 1 |                                                                                               |
|         | Timer mode   | Associate timer to:                    | Instrument (adjustment outputs)<br>Flocculant<br>Anti-algae<br>Eco Mode<br>Super chlorination |

**Note:** The unit features 25 independent TIMERS, each one functioning as described here above for TIMER 1.

## CONNECTIVITY

|              |          |            |           | Valid values                                        | Default value |
|--------------|----------|------------|-----------|-----------------------------------------------------|---------------|
| CONNECTIVITY | Disabled |            |           |                                                     | Disabled      |
|              | Enabled  | Modbus RTU | Baud rate | 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115400 | 1200          |
|              |          |            | ID        | 00 ... 31                                           | 00            |

## SERVICE

|         |                     | Azione                                                                                                                                                                             |
|---------|---------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| SERVICE | Alarm list          | List of the occurred alarm events                                                                                                                                                  |
|         | Inputs test         | Functioning test of all inputs                                                                                                                                                     |
|         | Outputs tests       | Functioning test of dosing heads                                                                                                                                                   |
|         | Meas. pH simulation | Forcing the two measurement channels (individually), to check the behaviour of related dosing heads, without the measurement sensors necessarily being connected to the instrument |
|         | Meas. Cl simulation |                                                                                                                                                                                    |
|         | Reset               | Alarm history<br>Datalogger<br>Calibration of measure pH<br>Calibration of measure Cl<br>Measurements autoset<br>Factory reset                                                     |

## SYSTEM

|                  |          |                                                                                                                                                                     | Valid values                            | Default value |
|------------------|----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------|---------------|
| Password         | Disabled |                                                                                                                                                                     |                                         | Disabled      |
|                  | Enabled  | Technician                                                                                                                                                          | 0000 ... 9999                           | 0000          |
|                  |          | Operator                                                                                                                                                            | 0000 ... 9999                           | 0000          |
|                  |          | Calibration                                                                                                                                                         | 0000 ... 9999                           | 0000          |
| Softkey 4        | Disabled |                                                                                                                                                                     |                                         | Disabled      |
|                  | Enabled  |                                                                                                                                                                     | CAL / USB / I/O                         |               |
| Set date / time  |          | Date / time setting for the internal clock and selection of the date displaying format                                                                              |                                         |               |
| Language         |          |                                                                                                                                                                     | Italiano / English / Français / Español |               |
| FW Updating      |          | With USB key inserted, the unit asks confirmation to update the FW                                                                                                  |                                         |               |
| Info (read-only) |          | FW and HW version / Instrument model / S/N of power board and input boards / Hour-counter of POWER ON and operating time / Log nr. of alarms / Internal temperature |                                         |               |



## CALIBRATION

### MEASURE 1 (pH)

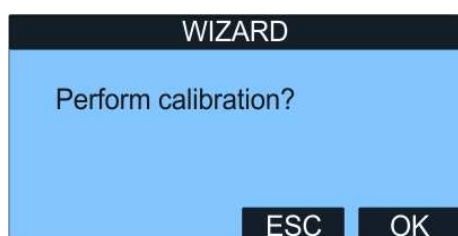
#### Available options:

- Wizard (2 points)
- Comparison (1 point)
- Buffer solutions (1 or 2 points)
- Reset calibrations
- Info

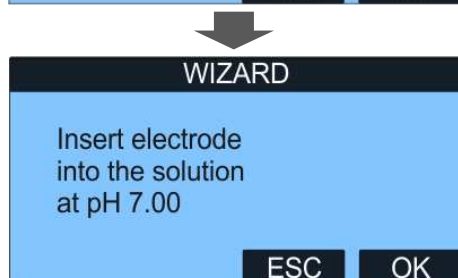
#### WIZARD PROCEDURE

Messages are displayed which guide the operator with step-by-step instructions to perform a two-point pH calibration, with pH7 and pH4 (or pH9) buffer solutions.

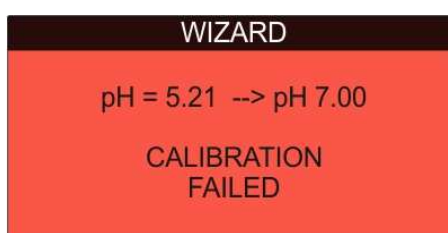
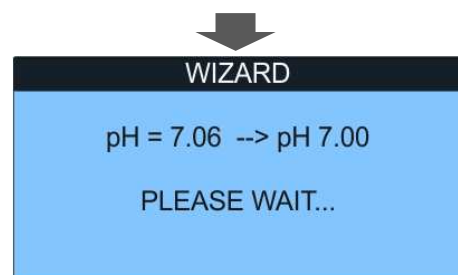
This procedure is recommended when precise measurement is required, also suitable for unskilled personnel.



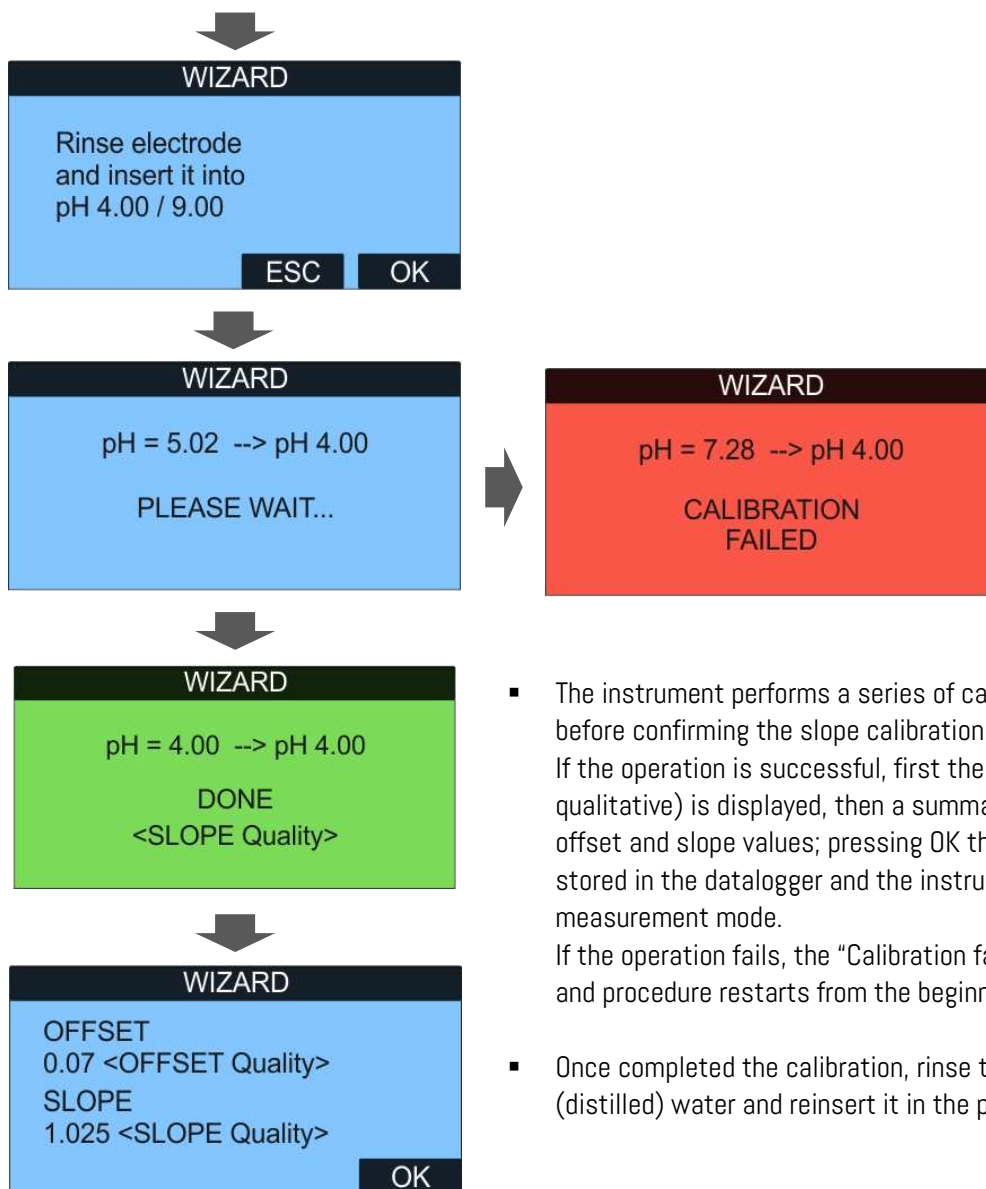
- Remove sensor from probe-holder.
- Rinse it with clean (distilled) water and let it drip dry, without rubbing it with paper or rags.
- Press OK.



- Follow display instructions.



- The instrument performs a series of calculations and checks before confirming the offset calibration. If the operation is successful, the offset value (numeric and qualitative) is displayed, and the unit automatically moves to the second point (slope). If it fails, the "Calibration failed" error is generated and procedure restarts from the beginning.



- The instrument performs a series of calculations and checks before confirming the slope calibration. If the operation is successful, first the slope value (numeric and qualitative) is displayed, then a summary screen of the new offset and slope values; pressing OK the calibration data are stored in the datalogger and the instrument resumes to normal measurement mode. If the operation fails, the "Calibration failed" error is generated and procedure restarts from the beginning.
- Once completed the calibration, rinse the sensor with clean (distilled) water and reinsert it in the probe-holder.

## COMPARISON CALIBRATION PROCEDURE

One-point calibration via comparison with a reference instrument.

This procedure is recommended for a quick check / adjustment of the sensor.

- Leave the sensor in the probe-holder.
- Take a water sample from the probe-holder (through the dedicated outlet).
- Measure the pH value with a reliable reference instrument (not photometer).
- Adjust the value with the arrow keys and confirm.
- The calibration data are stored in the datalogger and the instrument resumes to normal measurement mode. If the operation fails, the "Calibration failed" error is generated and procedure restarts from the beginning.

## CALIBRATION PROCEDURE WITH BUFFER SOLUTIONS

One or two-point calibration, with pH7 and pH4 (or pH9) buffer solutions.

The two-point procedure is recommended when a precise measurement is required, while the faster one-point calibration is suitable for a quick check / adjustment of the sensor.

- Remove sensor from probe-holder.
- Rinse it with clean (distilled) water and let it drip dry, without rubbing it with paper or rags.





- Select Offset calibration and confirm.
- Immerse the sensor in pH7 solution and wait for stable reading.
- Press OK to confirm.
- If the operation is successful, the offset value (numeric and qualitative) is displayed, and the unit automatically moves to the second point (slope).  
If it fails, the "Calibration failed" error is generated and procedure restarts from the beginning.
- Rinse it with clean (distilled) water and let it drip dry, without rubbing it with paper or rags.
- Select Slope calibration and confirm.
- Immerse the sensor in pH4 (or pH9) solution and wait for stable reading.
- Press OK to confirm.
- If the operation is successful, first the slope value (numeric and qualitative) is displayed, then a summary screen of the new offset and slope values; pressing OK the calibration data are stored in the datalogger and the instrument resumes to normal measurement mode.  
If the operation fails, the "Calibration failed" error is generated and procedure restarts from the beginning.
- Once completed the calibration, rinse the sensor with clean (distilled) water and reinsert it in the probe-holder.

### **Notes after sensor calibration**

**Qualitative indication about the electrode status:**

| Excellent / Good            | Discrete                              | Calibration failed |
|-----------------------------|---------------------------------------|--------------------|
| Electrode properly working. | Have a new spare electrode available. | See note. *        |

\* A calibration error can be due to the following causes:

- 1) Wrong or polluted buffer solution.
- 2) Dirty electrode; clean it properly.
- 3) During cleaning, the electrode was rubbed with paper or cloths and charged electrostatically; immerse it in pH4 buffer for approx. 20 minutes.
- 4) Air bubble in the sensitive bulb, due to the electrode wrong (horizontal or upside down) position for too long; place it vertically and wait for the air to go upwards.
- 5) The electrode bulb has been left drying; immerse it in pH4 buffer for 1 hour.
- 6) The electrode cable is damaged or oxidized; replace it.
- 7) The cable connector is moist or oxidized; dry and clean it.
- 8) The electrode is exhausted and must be replaced with a new one.

**Note:** Buy your pH electrode shortly before the replacement time, avoiding long storage; store it in a fresh area, with the bulb always immersed in storage solution.

## **RESET CALIBRATIONS**

Calibrations of pH input are deleted, and factory calibration data are restored.

## **INFO**

The unit displays the date/time of last calibration, and the offset and slope values of the sensor.



## MEASURE ORP

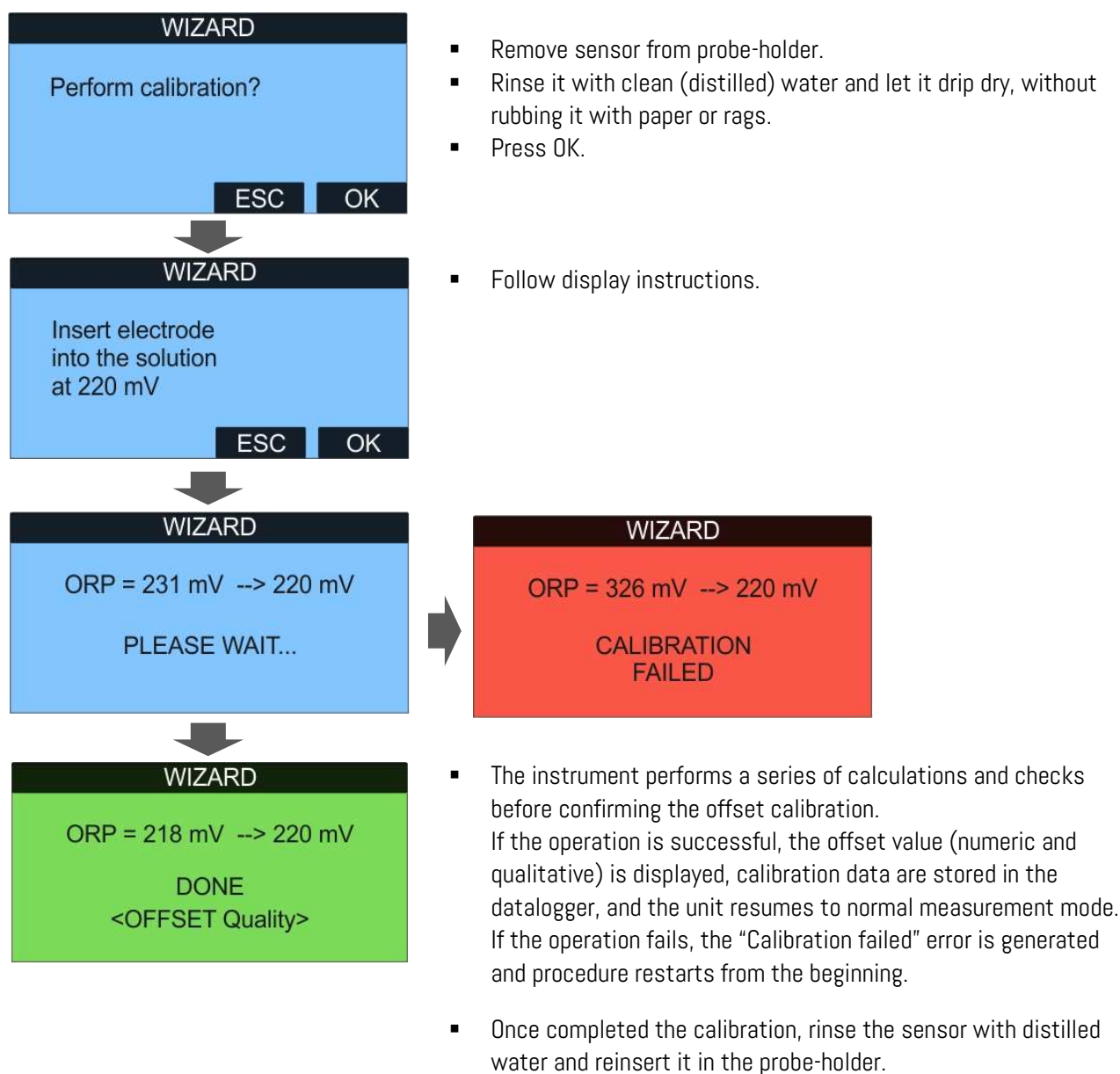
### Available options:

- Wizard (1 point)
- Comparison (1 point)
- Buffer solution (1 point)
- Reset calibrations
- Info

### WIZARD PROCEDURE

Messages are displayed which guide the operator with step-by-step instructions to perform one-point (offset) ORP calibration, with a standard solution, e.g., 220 mV.

This procedure is recommended when precise measurement is required, also suitable for unskilled personnel.





## COMPARISON CALIBRATION PROCEDURE

One-point (offset) calibration via comparison with a known value. This procedure is recommended for a quick check / adjustment of the sensor.

The comparison can be done using a reference instrument or a standard calibration solution.

1. Procedure with reference instrument:
  - Leave the sensor in the probe-holder.
  - Take a water sample from the probe-holder (through the dedicated outlet).
  - Measure the ORP value with a reliable reference instrument.
  - Adjust the value with the arrow keys and press OK to confirm.
  - The calibration data are stored in the datalogger and the instrument resumes to normal measurement mode. If the operation fails, the "Calibration failed" error is generated and procedure restarts from the beginning.
2. Procedure with standard calibration solution:
  - Remove sensor from probe-holder.
  - Rinse it with clean (distilled) water and let it drip dry, without rubbing it with paper or rags.
  - Immerse the sensor in the calibration solution and wait for stable reading.
  - If necessary, adjust the value with the arrow keys and press OK to confirm.
  - If the operation is successful, the offset value (numeric and qualitative) is displayed, the calibration data are stored in the datalogger, and the unit automatically resumes to normal measurement mode.
  - If the operation fails, the "Calibration failed" error is generated and procedure restarts from the beginning.
  - Once completed the calibration, rinse the sensor with clean (distilled) water and reinsert it in the probe-holder.

### Notes after sensor calibration

Qualitative indication about the electrode status:

| Excellent / Good            | Discrete                              | Calibration failed |
|-----------------------------|---------------------------------------|--------------------|
| Electrode properly working. | Have a new spare electrode available. | See note. *        |

\* A calibration error can be due to the following causes:

- 1) Wrong or polluted buffer solution.
- 2) Dirty electrode; clean it properly.
- 3) Air bubble in the sensitive bulb, due to the electrode wrong (horizontal or upside down) position for too long; place it vertically and wait for the air to go upwards.
- 4) The electrode bulb has been left drying; immerse it in pH4 buffer for 1 hour.
- 5) The electrode cable is damaged or oxidized; replace it.
- 6) The cable connector is moist or oxidized; dry and clean it.
- 7) The electrode is exhausted and must be replaced with a new one.

**Note:** Buy your ORP electrode shortly before the replacement time, avoiding long storage; store it in a fresh area, with the bulb always immersed in storage solution.

## RESET CALIBRATIONS

Calibrations of ORP input are deleted, and factory calibration data are restored.

## INFO

The unit displays the date/time of last calibration and the offset value of the sensor.



## MEASURE CI (CLE / CAC)

### Available options:

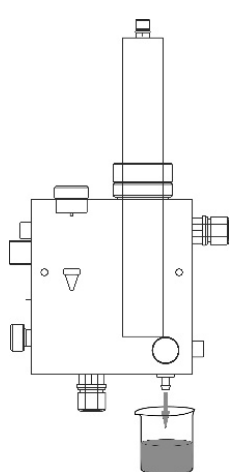
- Calibration
- Reset calibrations
- Info



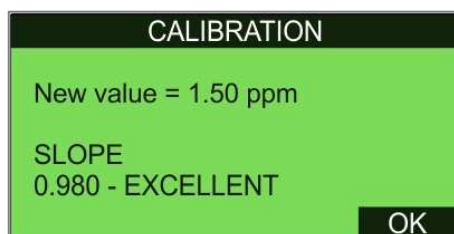
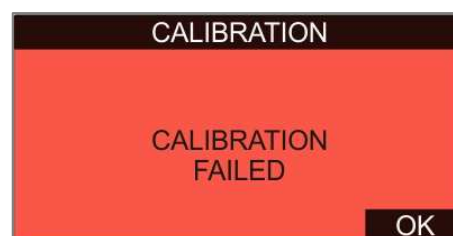
### CALIBRATION PROCEDURE

One-point (slope) calibration, for comparison with a reference instrument (e.g., chlorine analysis with DPD method).

The zero point (offset) calibration is performed at the factory and generally does not require any intervention.



- Leave the sensor in the probe-holder.
- Take a water sample from the probe-holder (through the dedicated outlet).
- Perform the analysis with a reliable reference photometer.
- Use the arrow keys to adjust the display value to that measured by the photometer, then confirm with OK.



- Calibration data is stored in the datalogger, and the unit automatically resumes to normal measurement mode.

### RESET CALIBRATIONS

Calibrations of CI input are deleted, and factory calibration data are restored.

### INFO

The unit displays the date/time of last calibration and the slope value of the sensor.



### Notes after sensor calibration

Qualitative indication about the probe status:

| Excellent / Good         | Discrete                                                                  | Calibration failed |
|--------------------------|---------------------------------------------------------------------------|--------------------|
| Sensor properly working. | The probe will need to be serviced shortly; procure standard spare parts. | See note. *        |

\* A calibration error can be due to the following causes:

- 1) The DPD method has been performed incorrectly.
- 2) There are interferences in water.
- 3) The flow rate of sample water is unstable and / or out of the recommended range; check that the flow sensor is correctly installed in the probe-holder and that measure conduct walls are clean.
- 4) Dirty sensor; clean it properly.
- 5) The sensor needs maintenance (e.g. replacement of the membrane/electrolyte for CAC probe or damaged platinum electrode to be replaced in CLE cell).

**Warning! For sensors maintenance, always refer to the specific technical manual.**

- 6) The sensor is exhausted and must be replaced with a new one.

### Notes for CLE (Cu/Pt) sensor:

This cell provides no thermo-compensated chlorine readings and, therefore, gives different signals depending on water temperature and conductivity. If these two parameters are stable over time, they are compensated with the calibration procedure.

To have thermo-compensated measurements you need to connect a temperature sensor to the control unit.

The cell in ideal working conditions (temperature 25 °C and water conductivity 400 µS/cm) has a slope of 1. In the case of water temperature and conductivity values significantly different from the ideal ones, the sensor slope increases, up to a maximum value of 5, with consequent decrease of the measurement range, as shown in the table here below.

| Sensor slope | Measure full scale [ppm] |
|--------------|--------------------------|
| 1.0          | 5.00                     |
| 2.0          | 2.5                      |
| 3.0          | 1.6                      |
| 4.0          | 1.2                      |
| 5.0          | 1                        |

It may therefore happen that an O.R. (Over Range) error message is displayed, even if the measurement does not exceed 5 ppm (nominal full-scale value of the cell). This occurs due to an increase in the slope value, automatically calculated after a sensor calibration, and consequent reduction of the measurement range.

If the probe works at low temperature / conductivity values or in the event of oxidation of the electrodes, the slope can decrease up to 1/3 of the ideal value, but the measurement range does not change.

### Notes for CAC sensors:

- If the sensor displays unstable or too low values, check that the electrolyte gel has not been consumed, especially if the water temperature is above 30 °C; if necessary, top up.
- If sensor cannot be calibrated, replace the membrane and repeat the procedure.
- If these operations do not solve the problem, contact the technical support service.



**Warning! For correct operations of the CAC sensor, replace the membrane every 6 months (see specific manual for details).**

## PASSWORD PROTECTION LEVELS

The instrument configuration menu is structured on three access levels, which can be protected by three different passwords, to prevent incorrect configurations by unauthorized personnel.

- The **TECHNICIAN password** allows complete access to all the menus and submenus of the unit; level reserved for the installer / system engineer.
- The **OPERATOR password** allows to set a series of parameters for customizing the adjustments based on the needs of the specific system; level reserved for the pool manager.
- The **CALIBRATION password** allows limited access to non-critical parameters; level reserved for personnel in charge of ordinary pool maintenance.

|                              |             |                   |                   |         |                   |          |
|------------------------------|-------------|-------------------|-------------------|---------|-------------------|----------|
| Measure pH<br><br>Measure Cl | Outputs     | Adjustment output | Disabled          | Enabled | On-Off            | Setpoint |
|                              |             |                   | Hysteresis        |         |                   |          |
|                              |             |                   | Direction         |         |                   |          |
|                              |             |                   | Max dosage        |         |                   |          |
|                              |             |                   | Delay ON          |         |                   |          |
|                              |             |                   | Delay OFF         |         |                   |          |
|                              |             |                   | PWM               |         | Setpoint          |          |
|                              |             |                   |                   |         | Proportional band |          |
|                              |             |                   |                   |         | Direction         |          |
|                              |             |                   |                   |         | Max dosage        |          |
|                              |             |                   |                   |         | Duty cycle        |          |
|                              |             |                   |                   |         | T.min             |          |
|                              |             |                   | PFM               |         | Setpoint          |          |
|                              |             |                   |                   |         | Proportional band |          |
|                              |             |                   |                   |         | Direction         |          |
|                              |             | Max dosage        |                   |         |                   |          |
|                              |             | Frequency MIN     |                   |         |                   |          |
|                              |             | Frequency MAX     |                   |         |                   |          |
|                              |             | Out mA (1) (2)    | Disabled          | Enabled | Repetition        |          |
|                              |             |                   |                   |         |                   |          |
|                              |             |                   | Range             |         |                   |          |
|                              |             |                   | Setpoint          |         |                   |          |
|                              |             |                   | Proportional band |         |                   |          |
|                              |             |                   | Value upon error  |         |                   |          |
|                              |             |                   | Adjustment        |         | Direction         |          |
|                              | Max dosage  |                   |                   |         |                   |          |
|                              |             |                   |                   |         |                   |          |
|                              |             |                   |                   |         |                   |          |
|                              | Inputs      |                   |                   |         |                   |          |
|                              | Calibration | Wizard            |                   |         |                   |          |
|                              |             | Comparation       |                   |         |                   |          |
|                              |             | Buffer solutions  |                   |         |                   |          |
| Reset calibrations           |             |                   |                   |         |                   |          |
| Info                         |             |                   |                   |         |                   |          |
| Limits                       |             |                   |                   |         |                   |          |

|               |                    |                  |                 |
|---------------|--------------------|------------------|-----------------|
| Main settings | Com. Outputs conf. |                  |                 |
|               | Com. Inputs conf.  | External consent |                 |
|               |                    | Sample water     |                 |
|               |                    | Eco Mode         |                 |
|               |                    | Temperature      |                 |
|               | pH priority        |                  |                 |
|               | Alarms             | Alarm conditions |                 |
|               |                    | OUT Alarm        |                 |
|               | Display            |                  |                 |
|               | USB                | Datalogger       | Sampling time   |
|               |                    |                  | Export data     |
|               |                    |                  | Device ID       |
|               |                    | Save config.     |                 |
|               |                    | Load config.     |                 |
|               |                    | FW updating      |                 |
|               | Timer              |                  |                 |
|               | Connectivity       |                  |                 |
|               | Service            | Alarm list       |                 |
|               |                    | Outputs test     |                 |
|               |                    | Inputs test      |                 |
|               |                    | pH/Cl simulation |                 |
|               |                    | Reset            | Alarm history   |
|               |                    |                  | Datalogger      |
|               |                    |                  | Calibrations pH |
|               |                    |                  | Calibrations Cl |
|               |                    |                  | Measure autoset |
|               |                    |                  | Factory reset   |
|               |                    |                  | Technician      |
|               | System             | Password         | Operator        |
|               |                    |                  | Calibration     |
|               |                    |                  |                 |
|               |                    | Softkey 4        |                 |
|               |                    | Set date/time    |                 |
|               |                    | Language         |                 |
|               |                    | FW updating      |                 |
|               |                    | Info             |                 |

## CODING SYSTEM FOR EW<sup>2</sup> Pool INSTRUMENTS

83W3

|                                                                     |                                      |                                                                                                                        |
|---------------------------------------------------------------------|--------------------------------------|------------------------------------------------------------------------------------------------------------------------|
| <div>↓</div>                                                        | <div>↓</div>                         | <div>↓</div>                                                                                                           |
| A = no plug<br>F = <b>Schuko plug</b><br>G = UK plug<br>B = US plug | 11 = ORP<br>12 = Amperometric sensor | 0 = No communication<br>U = RS485 Modbus RTU<br>Y = inbuilt SteieLynx Wi-Fi/LAN<br>G = inbuilt SteieLynx with modem 4G |
| Power supply 100-240V~                                              | M2 input                             | Communication                                                                                                          |

**Example 1:** EW<sup>2</sup> Pool pH/ORP with inbuilt SteieLynx Wi-Fi/LAN, cable with Schuko plug

**Part no.:** 83W3 F 11 Y

**Example 2:** EW<sup>2</sup> Pool pH/Chlorine with RS485/Modbus RTU communication, cable with Schuko plug

**Part no.:** 83W3 F 12

