

Eligere



 **ETATRON**

IT	NORME DI INSTALLAZIONE, USO E MANUTENZIONE
UK	INSTALLATION, USE AND MAINTENANCE RULES
FR	NORMES D'INSTALLATION, D'UTILISATION ET DE MAINTENANCE
ES	NORMAS DE INSTALACIÓN, USO Y MANTENIMIENTO
PT	NORMAS PARA INSTALAÇÃO, USO E MANUTENÇÃO
DE	REGELN FÜR INSTALLATION, NUTZUNG UND WARTUNG



CODE DMU 00249ML1-A (02-2025)



(IT) DIRETTIVA "RAEE" SUI RIFIUTI DI APPARECCHIATURE ELETTRICHE ED ELETTRONICHE, AGGIORNATA A L'ULTIMA EDIZIONE

Il simbolo sotto riportato indica che il prodotto non può essere smaltito come normale rifiuto urbano. Le Apparecchiature Elettriche ed Elettroniche (AEE) possono contenere materiali nocivi per l'ambiente e la salute e pertanto devono essere oggetto di raccolta differenziata: smaltite quindi presso apposite discariche o riconsegnate al distributore a fronte dell'acquisto di una nuova, di tipo equivalente o facente le stesse funzioni. La normativa sopracitata, alla quale rimandiamo per ulteriori particolari e approfondimenti, prevede sanzioni per lo smaltimento abusivo di detti rifiuti.

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(UK) WASTE OF ELECTRICAL AND ELECTRONIC EQUIPMENT DIRECTIVE (WEEE, RAEE in Italy) UP TO LAST EDITION

The marking shown below indicates that the product cannot be disposed of as part of normal household waste. Electrical and Electronic Equipment (EEE) can contain materials harmful to health and the environment, and therefore is subject to separate waste collection: it must be disposed of at appropriate waste collection points or returned to the distributor against purchase of new equipment of similar type or having the same functions. The directive mentioned above, to which make reference for further details, provides for punitive actions in case of illegal disposal of such waste.

—

(FR) DIRECTIVE "RAEE" MISE À JOUR DE LA DERNIÈRE ÉDITION CONCERNANT LES REBUTS D'APPAREILLAGES ÉLECTRIQUES ET ÉLECTRONIQUES

Le symbole ci-dessous indique que le produit ne pas être éliminé comme un normal déchet urbain. Les Appareillages Électriques et Électroniques (AEE) peuvent contenir des matériaux nocifs pour l'environnement et la santé et doivent donc faire l'objet de collecte différenciée: éliminés donc auprès de décharges prévues à cet effet ou rendus au distributeur pour l'achat d'un nouveau, de type équivalent ou ayant les mêmes fonctions. La réglementation susmentionnée, à laquelle nous vous renvoyons pour les détails et les approfondissements ultérieurs, prévoit des sanctions pour la mise en décharge abusive desdits rebus.

—

(ES) DIRECTIVA "RAEE" ACTUALIZADO A LA ÚLTIMA EDICIÓN SOBRE RESIDUOS DE APARATOS ELÉCTRICOS Y ELECTRÓNICOS

El símbolo que se muestra abajo indica que el producto no puede eliminarse como un residuo urbano normal. Los Aparatos Eléctricos y Electrónicos (AEE) pueden contener materiales nocivos para el medio ambiente y la salud y por tanto tienen que ser objeto de recogida selectiva: por consiguiente tienen que eliminarse en vertederos apropiados o entregarse al distribuidor cuando se adquiera uno nuevo, del mismo tipo o con las mismas funciones. La normativa mencionada arriba, a la que remitimos para más detalles y profundizaciones, prevé sanciones por la eliminación clandestina de dichos residuos.

—

(PR) DIRETRIZ "RAEE" ATUALIZADO À ÚLTIMA EDIÇÃO SOBRE RESÍDUOS DE EQUIPAMENTOS ELÉTRICOS E ELETRÔNICOS

O símbolo referido abaixo indica que o produto não pode ser eliminado como resíduo urbano normal. Os Aparelhos Elétricos e Eletrônicos (AEE) podem conter materiais nocivos ao ambiente e à saúde e, portanto, devem ser objeto de coleta seletiva: eliminados, portanto, através de depósitos apropriados ou pelo reenvio ao distribuidor para a aquisição de um novo, de tipo equivalente ou que realize as mesmas funções. A normativa referida acima, à qual nos referimos para detalhes complementares e esclarecimentos, prevê sanções no caso de eliminação inadequada de tais resíduos.

—

(DE) RICHTLINIE "WEEE" AKTUALISIERT AUF DIE LETZTE EDITION ÜBER ELEKTRO- UND ELEKTRONIK-ALTGERÄTE

El símbolo que se muestra abajo indica que el producto no puede eliminarse como un residuo urbano normal. Los Aparatos Eléctricos y Electrónicos (AEE) pueden contener materiales nocivos para el medio ambiente y la salud y por tanto tienen que ser objeto de recogida selectiva: por consiguiente tienen que eliminarse en vertederos apropiados o entregarse al distribuidor cuando se adquiera uno nuevo, del mismo tipo o con las mismas funciones. La normativa mencionada arriba, a la que remitimos para más detalles y profundizaciones, prevé sanciones por la eliminación clandestina de dichos residuos.



CERTIFICATE OF CONFORMITY



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AS MANUFACTURER OF CHEMICAL DOSING PUMPS

**series: eControl, eSelect, AG-Select, AG-S/Control,
ePhoton, Laundry Control System, Flow Meter PN**

Under our own responsibility we declare conformity in accordance with the
following directives:

2014/30/UE: "Electromagnetic Compatibility"

2014/35/UE: "Low voltage"

2012/19/UE: "RAEE"

In addition, in accordance with the following regulations:

UNI EN ISO 12100:2010, CEI EN 60204-1:2016, CEI EN 55014-1:2017

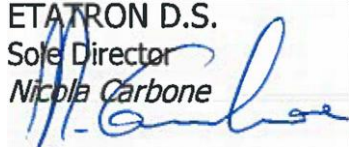
This certificate confirms equipment supplied  marked and technical documentation
including operating manual and spare parts manual.

This declaration conforms to the above directive an integral
part of the manufacturer operating manual.

ETATRON D.S.

Sole Director

Nicola Carbone



(Rome) Italy, Date: 01/01/2019

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1 WARNINGS

Read the warnings below carefully. They provide important information regarding safe installation, use and maintenance. Store this manual with the utmost care for future reference.

The device is built to a professional standard. Its durability and electrical and mechanical reliability will be more efficient if it is used properly and maintenance is carried out on a regular basis.

CAUTION: Any work or repairs inside the device must be carried out by qualified and authorised personnel. We assume no liability due to failure to comply with this rule.

WARRANTY: 1 year (excluding parts subject to normal wear where applicable, namely: valves, fittings, pipe clamps, tubes, filter and injection valve). Improper use of the device will void this warranty. The warranty is understood as ex-works or authorised distributors.

Symbols used in the manual

		
FORBIDDEN Precedes information regarding safety. Indicates a forbidden operation.	CAUTION Precedes very important text to protect the health of exposed persons or the machine itself.	NOTICE Precedes information concerning use of the equipment.

Transport and handling

The device must be transported as indicated on the box. Shipping by any means, even if free of carriage of the purchaser or recipient, is carried out at the purchaser's risk. Complaints for missing materials must be submitted within 10 days of arrival of the goods. Whereas defective material within 30 days of receipt. If the device is to be replaced, this must be agreed upon with authorised personnel or the authorised distributor.

Intended use of the device

The device must be solely employed for the use it has been expressly built for, i.e. to check the pH/Rx measurement. Any other use is considered improper and therefore dangerous. The device is not intended to be used for any applications not foreseen at the design stage. For further explanations, the customer must contact our offices for information on the type of instrument in their possession and its correct use. The manufacturer shall not be held liable for any damage resulting from improper, erroneous or unreasonable use.

Risks

After removing the packaging, check the integrity of the device. If in doubt, do not use it and contact a qualified technician. The packing materials (such as plastic bags, polystyrene, etc.) must not be left within the reach of children since they are potentially dangerous.

Before connecting the device, make sure that the rating corresponds to that of the mains. The rating is displayed on the adhesive label on the device itself.

The execution of the electrical system must comply with the standards that define professional workmanship in the country where the system is made.

Use of any electrical equipment implies observance of some fundamental rules. In particular:

- do not touch the device with wet or damp hands or feet (e.g. swimming pools);

- do not leave the device exposed to atmospheric agents (rain, sun, etc.);
- do not allow the device to be used by children or persons incapable of using it without surveillance.
- In case of failure and/or malfunctioning of the device, switch it off and do not tamper with it. For any repairs, please contact our service centres and request the use of original spare parts. Failure to comply with the above can jeopardise the safety of the pump.
- If you decide to no longer use a device, it is recommended to make it inoperable by unplugging it from the mains.
- Make sure it is switched off electrically (both polarities), disconnecting the conductors from the contact points of the mains by opening the omnipolar switch with at least 3 mm between the contacts.

Assembly of the instrument

All instruments produced are normally supplied already assembled. For wall installation see paragraph “Wall assembly”.

Disassembling the Instrument

Always pay the utmost attention when disassembling the instrument or before performing maintenance on it. Always disable electrical connections beforehand.

2 ELIGERE INSTRUMENT

2.1 MAIN FEATURES

	ELIGERE							
	03 PH-RX-CL	01 CI	01 pH(Rx)	01 CD	01 CD COOL	02 PH(RX)-CD	02 PH(RX)-CL	02 PH-RX
Device manufactured according to standards	X	X	X	X	X	X	X	X
Case made of: ABS plastic	X	X	X	X	X	X	X	X
128x64 backlit display	X	X	X	X	X	X	X	X
Can be fitted with level probe (to check chemicals) (not included)	X	X	X	X	X	X	X	X
Output relay for setpoint values	X	X	X	X	X	X	X	X
mA outputs	X	X	X	X	X	X	X	X
AUX external unit remote control output	X	X	X	X	X	X	X	X
RS485 / Ethernet external module connection	X	X	X	X	-	X	X	X
Proximity sensor input	X	X	X	X	X	X	X	X
PT100 temperature sensor input	X	X	X	X	X	X	X	X
100/240 VAC power supply 50/60 Hz single-phase (maximum $\pm 10\%$ fluctuations are permitted); on demand 12/24 V	X	X	X	X	X	X	X	X

2.2 GENERAL FEATURES

2.2.1 ELIGERE 03 PH-RX-CL model

ELIGERE 03 PH-RX-CL is a multi-purpose measurement instrument with a triple measurement parameter suitable for measuring the PH, RX (Redox) and CL Chlorine parameter (ppm).

The ELIGERE 03 range, jointly with the high quality performance and function, offers many features that make it versatile and easy to use.

- The PH measurement parameter can be changed into RX by simple programming and by using the RX electrode.
- Ethernet (LAN) or WiFi connection with internal or external module, with proprietary ETACLOUD cloud software. Modbus TCP connection available.
- Programming timed AUX outputs; Programming switch-on time.

Two types of programming menus:

- **BASIC:** for non-expert users (END USER).
- **EXPERT:** for installer, and/or person trained on the instrument.

2.2.2 ELIGERE 01 Cl model

ELIGERE 01 Cl is a multi-purpose instrument for a single parameter suited for measuring the Free (Residual) or Total CHLORINE by using the relevant sensor.

The ELIGERE 01 series offers whole high quality performance in terms of measurement and functions that make it possible to meet most requirements for an instrument. It offers many features that make it extremely versatile and easy to use.

The chlorine measurements may be chosen based on the type of sensor used and relevant measurement range:

- Residual Chlorine or Total Chlorine measurements using the respective sensors and buffer solutions of reference;
- Ion-selective type membrane sensors with operational ranges 0-2 Cl ppm (preset); 0-20 Cl ppm; 0-20 Cl ppm (Total);
- Open type chlorine amperometric cell (model CLC) with operational range 0-10 Cl ppm
- Ethernet (LAN) or WiFi connection with internal or external module, with proprietary ETACLOUD cloud software. Modbus TCP connection available.
- Timed AUX output programming; Adjustable real-time timer; switch-on time programming.

Two types of programming menus:

- **BASIC:** for non-expert users (END USER).
- **EXPERT:** for installer, and/or person trained on the instrument.

2.2.3 ELIGERE 01 pH(Rx) model

ELIGERE 01 pH(Rx) is a multi-purpose instrument for a single parameter suitable for measuring the PH or RX parameter (Redox).

The ELIGERE 01 series offers whole high quality performance in terms of measurement and functions that make it possible to meet most requirements for an instrument.

A set of features that make it extremely versatile and easy to use.

- The PH measurement parameter can be changed into RX by simple programming and by using the RX electrode.
- Ethernet (LAN) or WiFi connection with internal or external module, with proprietary ETACLOUD cloud software. Modbus TCP connection available.
- Timed AUX output programming; Adjustable real-time timer; switch-on time programming.

Two types of programming menus:

- **BASIC:** for non-expert users (END USER).
- **EXPERT:** for installer, and/or person trained on the instrument.

2.2.4 ELIGERE 01 CD model

ELIGERE 01 CD is a compact system with ELECTRIC CONDUCTIVITY (EC) regulator. In many cases, conductivity is directly connected to total dissolved solids (TDS): conductivity offers an approximate value of TDS concentration, generally by approximately ten percent.

The ELIGERE 01 CD device, together with the high quality performance in terms of measurement and operation, is able to meet most requirements of instruments and offers a number of features that make it extremely versatile and easy to use.

The regulator varies from constant K 1 up to 20.00 mS and up to 200.00 mS (the latter with graphite sensor electrodes) and the K 5 constant reaches up to 2,000 μ S; it is recommended not to exceed 100.00 mS.

Two types of programming menus:

- **BASIC:** for non-expert users (END USER).
- **EXPERT:** for installer, and/or person trained on the instrument.

2.2.5 ELIGERE 01 CD COOL model

ELIGERE 01 CD COOL is a multi-purpose instrument for a single parameter suitable for measurements of cooling towers, specifically designed for cooling water treatment, abatement operations of air purifiers and humidifiers or any industrial conditioning system. The controller is able to interact with other process equipment such as: a range of conductivity sensors (based on the measurement range); flow meters; drain solenoid valves.

ELIGERE 01 CD COOL offers high quality performance in terms of measurements and functionality which make it extremely versatile and easy to use such as:

- The instrument can work with probes from K0.6 to K10 depending on the working range.
- Monitoring 2 modes for bleeding operations; 4 inhibitor metering modes; 2 Controls of biocidal product metering pumps.
- RS485 connection with internal or external module, with proprietary ETACLOUD cloud software. Modbus TCP connection available.

2.2.6 ELIGERE 02 PH(RX)–CD model

ELIGERE 02 PH(RX)–CD is a multi-purpose instrument suitable for measuring the pH or RX parameter (REDOX) and CONDUCTIVITY.

ELIGERE 02 PH(RX) – CD offers high quality performance in terms of measurements and functionality which make it extremely versatile and easy to use, such as:

- The PH measurement parameter may be changed into RX by simple programming and by using the RX electrode;
- The conductivity measurements are in microsiemens and millisiemens;
- The operating range of the instrument is a constant from K0.6 to K10 depending on the working range;
- Timed AUX outputs programming; Adjustable real-time timer; switch-on time programming.
- Ethernet (LAN) or WiFi connection with internal or external module, with proprietary ETACLOUD cloud software. Modbus TCP connection available.

Two types of programming menus:

- **BASIC:** for non-expert users (END USER).
- **EXPERT:** for installer, and/or person trained on the instrument.

2.2.7 ELIGERE 02 PH(RX)–CL model

ELIGERE 02 PH(RX)–CL is a multi-purpose measurement instrument with double a measurement parameter suitable for measuring the PH or RX parameter (Redox) and Free (Residual) or Total CHLORINE.

The ELIGERE 02 range, jointly with the high quality performance and function, offers many features that make it versatile and easy to use.

- The PH measurement parameter may be changed into RX by simple programming and by using the RX electrode;
- The Residual or Total Chlorine measurements may be chosen based on the type of sensor used relative to the range:
 - ion-selective membrane sensors with operational ranges 0-2 Cl ppm (preset); 0-20 Cl ppm; 0-20 Cl ppm (Total);
 - open type chlorine amperometric cell (model CLC) with operational range 0-10 Cl ppm
- Ethernet (LAN) or WiFi connection with internal or external module, with proprietary ETACLOUD cloud software. Modbus TCP connection available.
- Timed AUX outputs programming; Adjustable real-time timer; switch-on time programming.

Two types of programming menus:

- **BASIC:** for non-expert users (END USER).
- **EXPERT:** for installer, and/or person trained on the instrument.

2.2.8 ELIGERE 02 PH–RX model

ELIGERE 02 PH–RX is a multi-purpose measurement instrument with a double measurement parameter suitable for measuring the PH and RX parameter (Redox).

The ELIGERE 02 range, jointly with the high quality performance and function, offers many features that make it versatile and easy to use.

- The PH measurement parameter can be changed into RX by simple programming and by using the RX electrode.
- Ethernet (LAN) or WiFi connection with internal or external module, with proprietary ETACLOUD cloud software. Modbus TCP connection available.
- Timed AUX outputs programming; Adjustable real-time timer; switch-on time programming.

Two types of programming menus:

- **BASIC:** for non-expert users (END USER).
- **EXPERT:** for installer, and/or person trained on the instrument.

2.3 DIMENSIONS OF THE INSTRUMENT

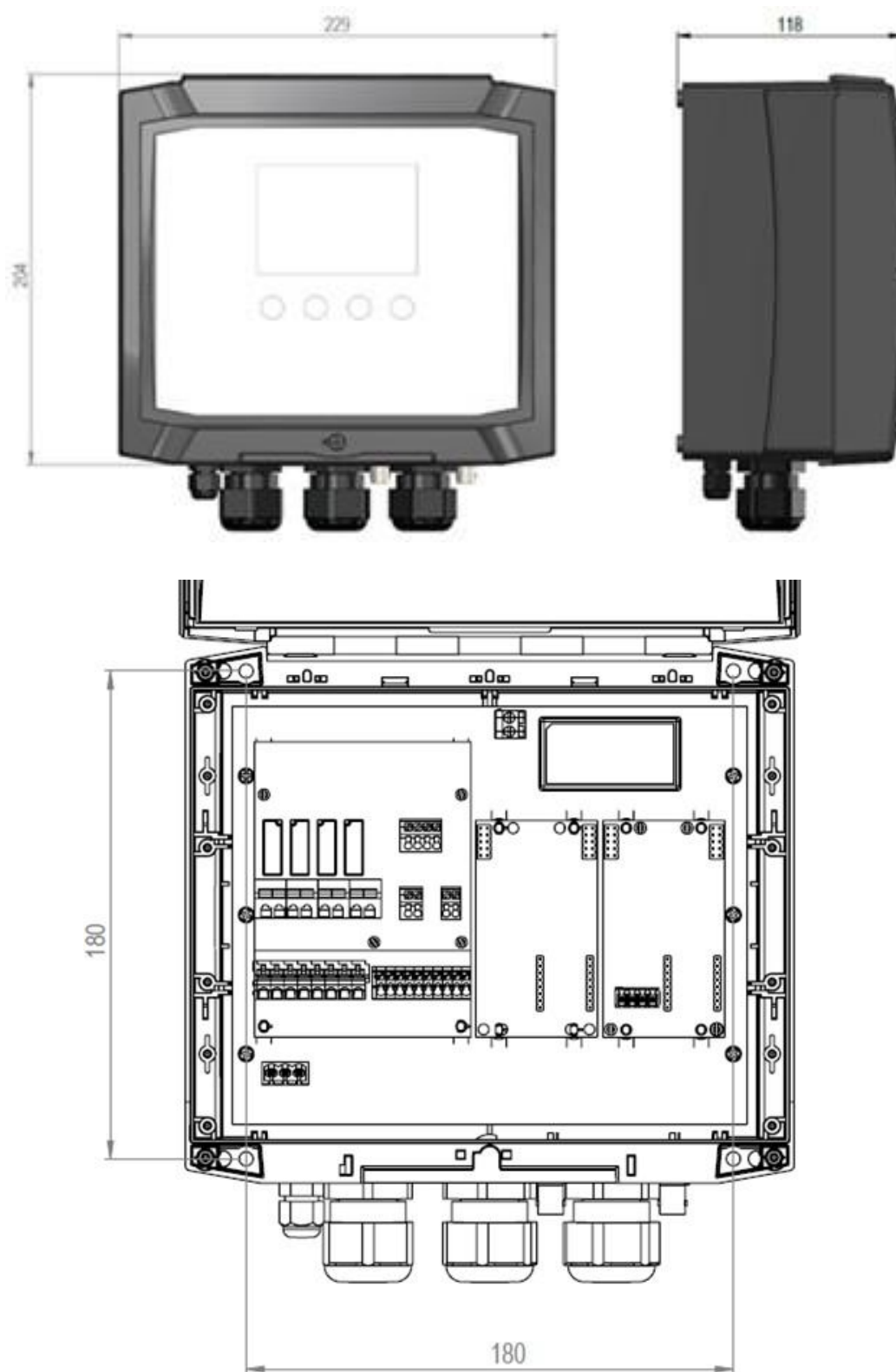


Fig. 2.1 - Instrument dimensions

3 TECHNICAL SPECIFICATIONS OF THE INSTRUMENT

	ELIGERE							
	03 PH-RX-CL	01 CI	01 pH(Rx)	01 CD	01 CD COOL	02 PH(RX)-CD	02 PH(RX)-CL	02 PH-RX
PH measurement range:								
0 pH 14 pH (0 100 °C)	x	-	x	-	-	x	x	x
Resolution ±0.01 pH Accuracy 0.5% of electrode input signal	x	-	x	-	-	x	x	x
Input resistance > 10 ¹² Ohm	x	-	x	-	-	x	x	x
Zero calibration: ±10% adjustment range from calibration point	x	-	x	-	-	x	x	x
Gain calibration: ±10%	x	-	x	-	-	x	x	x
Hysteresis: 0.05 pH (programmable)	x	-	x	-	-	x	x	x
Timed PWM impulses: activation point: 1.50 pH (programmable)	x	-	x	-	-	x	x	x
RX (Redox) measurement range								
-1000 mV +1000 mV	x	-	x	-	-	x	x	x
Input resistance > 10 ¹² Ohm	x	-	x	-	-	x	x	x
Resolution ±1mV Accuracy 0.5% of electrode input signal	x	-	x	-	-	x	x	x
Hysteresis: 10 mV (programmable)	x	-	x	-	-	x	x	x
Hysteresis: 0.05 pH (programmable)	x	-	x	-	-	x	x	x

	ELIGERE							
	03 PH-RX-CL	01 Cl	01 pH(Rx)	01 CD	01 CD COOL	02 PH(RX)-CD	02 PH(RX)-CL	02 PH-RX
Timed PWM impulses: activation point: 150 mV (programmable)	x	-	x	-	-	x	x	x
Chlorine Cl ppm (free or total) or generic PPM measuring range Membrane type sensors								
0-2 Cl ppm = Resolution 0.01 Cl ppm Hysteresis/PWM point = 0.050 Cl ppm	x	x	-	-	-	-	x	-
0-20 Cl ppm = Resolu- tion 0.10 Cl ppm Hysteresis/PWM point = 0.50 Cl ppm	x	x	-	-	-	-	x	-
0-200 Cl ppm = Resolu- tion 1.0 Cl ppm Hysteresis/PWM point = 5 Cl ppm	x	x	-	-	-	-	x	-
CL 0 – 5 ppm	x	x	-	-	-	-	x	-
0 – 2 ppm	x	x	-	-	-	-	x	-
0 – 20 ppm	x	x	-	-	-	-	x	-
0 – 200 ppm	x	x	-	-	-	-	x	-
0 – 2000 ppm	x	x	-	-	-	-	x	-
0 – 20000 ppm	x	x	-	-	-	-	x	-
Chlorine Cl ppm (free) Open type cell measuring range								
0-10 Cl ppm (Open type cell) / Resolution 0.10 Cl ppm Hysteresis/PWM point = 0.50 Cl ppm	x	x	x	-	-	-	x	-

ELIGERE								
	03 PH-RX-CL	01 Cl	01 pH(Rx)	01 CD	01 CD COOL	02 PH(RX)-CD	02 PH(RX)-CL	02 PH-RX
Temperature Settings								
Manual or automatic off-set (auto with temperature probe PT100) Resolution 0.1% °C Accuracy: ±0.5% °C	x	x	x	x	x	x	x	x
Temperature probe range								
0/100 °C	x	x	x	x	x	x	x	x
Power supply / Consumption								
Universal power supply 100÷250Vac/ 5W at 240Vac	x	x	x	x	x	x	x	x
Power supply unit assures electrical protection (instead of fuse)	x	x	x	x	x	x	x	x
Display								
Backlit 128x64 display; Visible display area 70x37 mm	x	x	x	x	x	x	x	x
Delay on start-up								
Relay delay on switch-on, programmable for each setpoint	x	x	x	x	x	x	x	x
Level / Relay remote control								
Level delay	x	x	x	x	x	x	x	x
Chemical additive level (level switch not included)	x	x	x	x	x	x	x	x
	3	1	1	1	3	2	2	2

ELIGERE								
03 PH-RX-CL	01 Cl	01 pH(Rx)	01 CD	01 CD COOL	02 PH(RX)-CD	02 PH(RX)-CL	02 PH-RX	
Outputs								
SETPOINT RELAY output								
(set-point 1) PH (or RX) ON-OFF / PWM mode volt- age-free, relay 5Amax 230Vac	x	x	x	x	x	x	x	x
	4	2	2	2	3	3	3	3
AUX RELAY output								
(AUX1) AUX outputs ON-OFF external equipment volt- age-free, relay 5A max 230Vac	x	x	x	x	x	x	x	x
	3	1	1	1	-	2	2	2
ALARM RELAY output								
ALARM Voltage-free contact, re- lay 5A max 230Vac	x	x	x	x	x	x	x	x
Flow sensor (proximity switch)								
Blocks outlet operations if there is no flow in the probe socket	x	x	x	x	x	x	x	x
4/20mA output								
Adjustable (500 Ω max- imum input impedance), with galvanic separa- tion.	x	x	x	x	x	x	x	x
	3	2	2	2	2	2	2	2
Unit load								
Inductive load 1A at 230Vac	x	x	x	x	x	x	x	x

	ELIGERE							
	03 PH-RX-CL	01 Cl	01 pH(Rx)	01 CD	01 CD COOL	02 PH(RX)-CD	02 PH(RX)-CL	02 PH-RX
Operating temperature								
Ideal temperature 5°C-40°C, resistance up to 0°C-45°C. Possibly dry environment, altitude up to 2000m, Relative humidity 80% for temperature up to 31°C linearly decreasing to 50% of relative humidity at 40°C. Pollution degree 2.	x	x	x	x	x	x	x	x
Noise level								
Irrelevant	x	x	x	x	x	x	x	x
Transport and storage conditions								
-5 to 60 °C in a dry environment	x	x	x	x	x	x	x	x
UPON REQUEST. Optional features included with control via Ethernet/RS485								
ETACLOUD software ETHERNET/WIFI connection, RS485 ON EXTERNAL MODULE, OR DIRECTLY ON INTERNAL MODULE	x	x	x	x	-	x	x	x

4 INSTALLATION



Install the instrument in a dry place, away from heat sources at a maximum room temperature of 40°C. Comply with standards in force in the different countries regarding electrical installation (Fig. 4.1).

If the power cord does not have a plug, the equipment must be connected to the mains by means of an omnipolar disconnecting switch with at least 3 mm distance between the contacts. All the power supply circuits must be interrupted before accessing the connection devices.

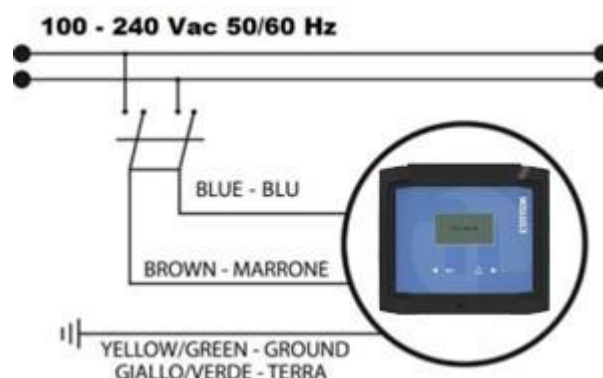


Fig. 4.2 - Electrical connection

4.1 WALL INSTALLATION

The wall-mounting plugs are supplied with the device.

Always use a suitable type of plug for the support available; the layout of the holes to be drilled in the support is shown in Figure 4.3.

- To access the 4 mounting holes: remove the plugs on the mounting points (A) located on each corner of the instrument.
- Use a Phillips screwdriver to unscrew the four screws underneath the plugs; open the front panel.

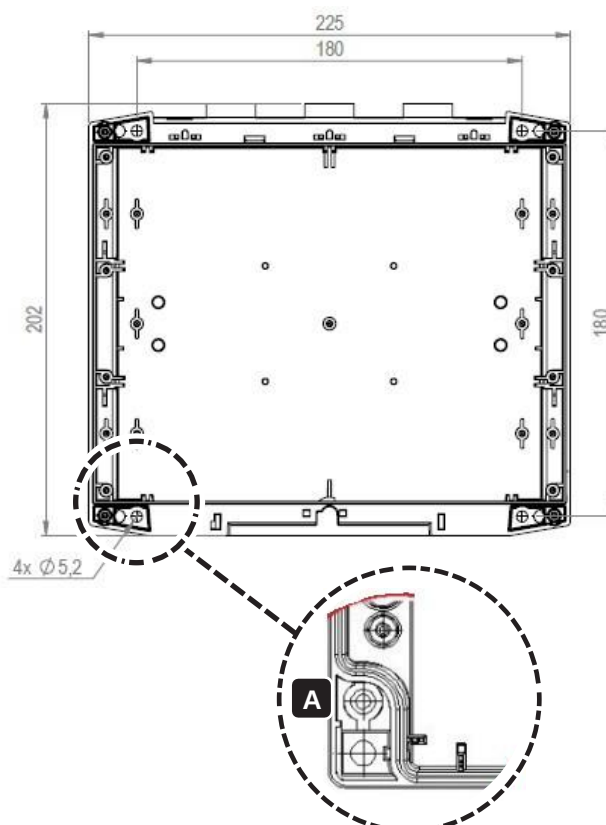


Fig. 4.3 - Box detail

The casing has 4 captive screws to quickly open/close the cover, thereby allowing for easy access for commissioning and servicing, as well as assuring excellent seal for long-lasting operation

- Install the unit in a dry place away from heat sources. Max room temperature 40°C.
- Strictly comply with the regulations in force in the various countries regarding electrical systems.
- Fit the instrument on the wall using the screws supplied

4.2 DIAGRAM OF ELECTRICAL CONNECTIONS

To connect the accessories and peripheral devices to the instrument, remove the front cover screws, using a Phillips screwdriver to reach the connecting terminal boards.

The terminal boards consist of spring terminals for quick coupling of the wires. Press the square “slotted” pin with a small flat headed screwdriver and insert the stripped wire in the corresponding terminal.



ATTENTION!

Exert slight pressure on the spring pin to avoid irreparably damaging the terminal board.

Do not connect more than one device to each pin.

Run the wires to be connected through the cable glands on the case wall.

4.2.1 ELIGERE 03 PH-RX-CL connection diagram

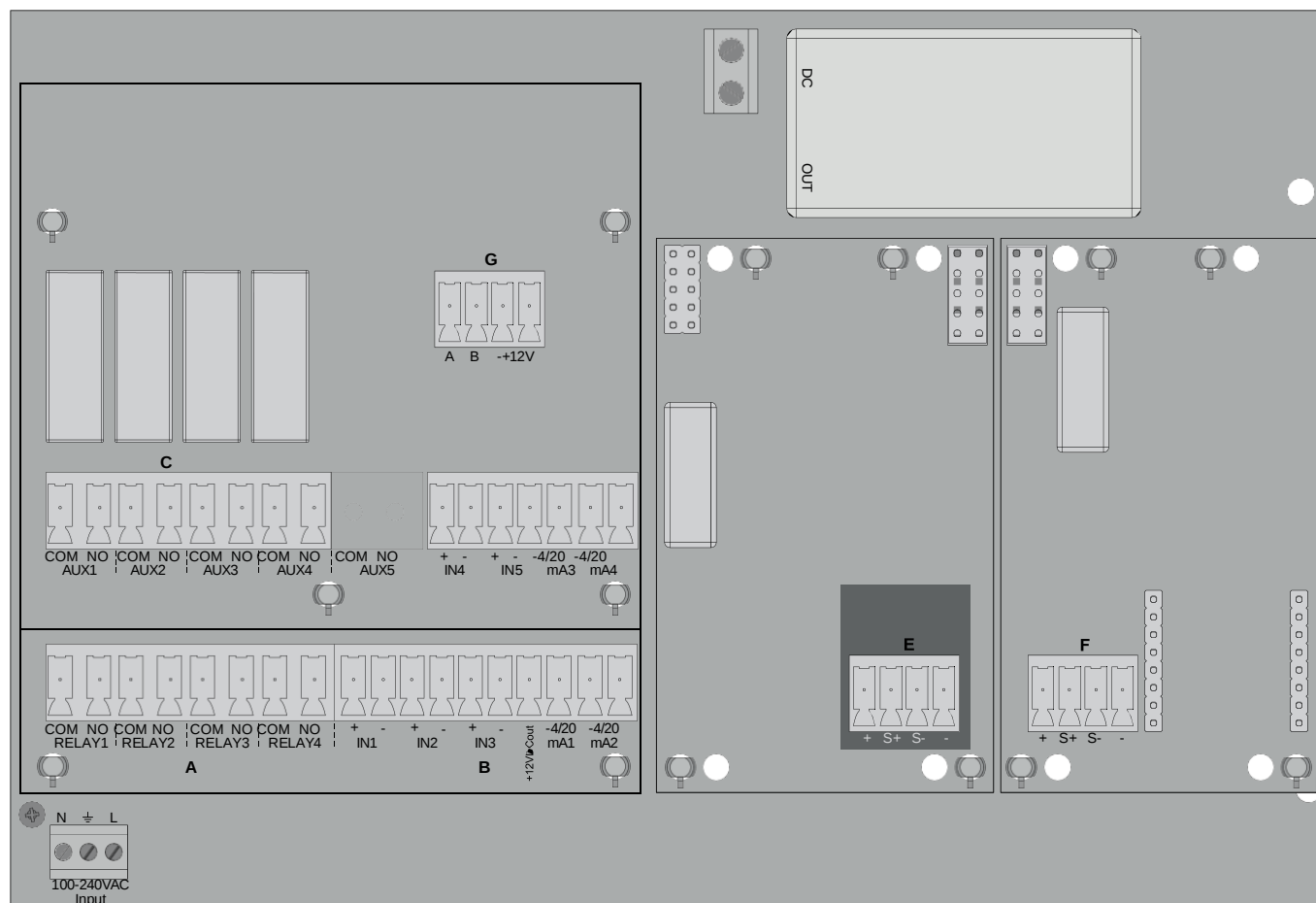


Fig. 4.4 - Connection diagram

TERMINAL BOARD “A”		
Relay 1	COM	Setpoint 1 pH (o RX) ON-OFF / PWM output relay timed pulses
	NO	
Relay 2	COM	Setpoint 2 pH (o RX) ON-OFF / PWM output relay timed pulses
	NO	
Relay 3	COM	Setpoint 3 Redox (ORP) ON-OFF / PWM output relay timed pulses
	NO	
Relay 4	COM	Setpoint 4 CL Chlorine ON-OFF / PWM output relay timed pulses
	NO	
TERMINAL BOARD “B”		
IN 1	+	Digital input level probe 1 for the chemical tank
	-	
IN 2	+	Digital input level probe 2 for the chemical tank
	-	
IN 3	+	Proximity Sensor input BLACK wires
	-	Proximity Sensor input BLUE wires
+12VDC	+	12 VDC output of the Proximity Sensor BROWN wire

4-20 mA1 -	+	(+)Proportional output pH (or RX) 4-20mA1 for metering pump mA, PLC, data collection	
	-	(-)Proportional output 4-20mA1/mA2 for metering pump mA, PLC, data collection	
4-20 mA2	+	(+)Proportional output Redox (ORP) 4-20mA2 for metering pump mA, PLC, data collection	
TERMINAL BOARD “C”			
AUX 1	COM	Auxiliary ON-OFF AUX output for remote equipment with Timer programming	
	NO		
AUX 2	COM	Auxiliary ON-OFF AUX output for remote equipment with Timer programming	
	NO		
AUX 3	COM	Auxiliary ON-OFF AUX output for remote equipment with Timer programming	
	NO		
AUX 4	COM	ON-OFF ALARM relay output for external signalling device	
	NO		
TERMINAL BOARD “D”			
IN 4	+	Digital Input level probe 3 for the chemical tank	
	-		
4/20mA3	+	Proportional output Chlorine 4-20mA3 for metering pump mA, PLC, data collection	
	-		
TERMINAL BOARD “E”			
+	PT100 temperature probe (RED wire)		
S +	PT100 temperature probe (BLUE wire)		
S -	PT100 temperature probe (GREEN wire)		
-	PT100 temperature probe (YELLOW wire)		
TERMINAL BOARD “F”			
	NEW membrane Chlorine sensor	Open Chlorine cell	OLD membrane Chlorine sensor
-	BLUE Wire	Not Connected	White Wire
+	White Wire	Not Connected	Brown Wire
M	Brown Wire	BLUE Wire	Green Wire
0	Black Wire	Brown Wire	Yellow Wire
TERMINAL BOARD “G”			
A	ORANGE wire	Connection for RS485 / ETHERNET external module. For connection to the ETACLOUD , the external KIT CONNECT module must be connected (NOT included with the instrument) code KST0000101 KIT CONNECT X INSTRUMENTS SERIES M	
B	YELLOW wire		
-	BLACK wire		
+	Not Connected		



REMEMBER: unit with universal voltage 100-250 VAC ($\pm 10\%$) or 9-24VDC. If the real voltage is constantly at the limit (minimum or maximum), or when the peaks are far above the mentioned range, the unit input is electrically protected against voltage fluctuations; outside the range mentioned above, the instrument does not work and the printed circuit must be replaced. **It is recommended** to use voltage protections, check the earthing system and, when other equipment is connected in parallel, use a transducer. Furthermore, ETATRON **recommends** installing a UPS (genset) to assure continuity thus ensuring no data are lost. A system that is set up without following the proper electrical design rules, without an earthing system, with frequent ON/OFF operations, might directly undermine the printed circuit.

4.2.2 ELIGERE 01-CI connection diagram

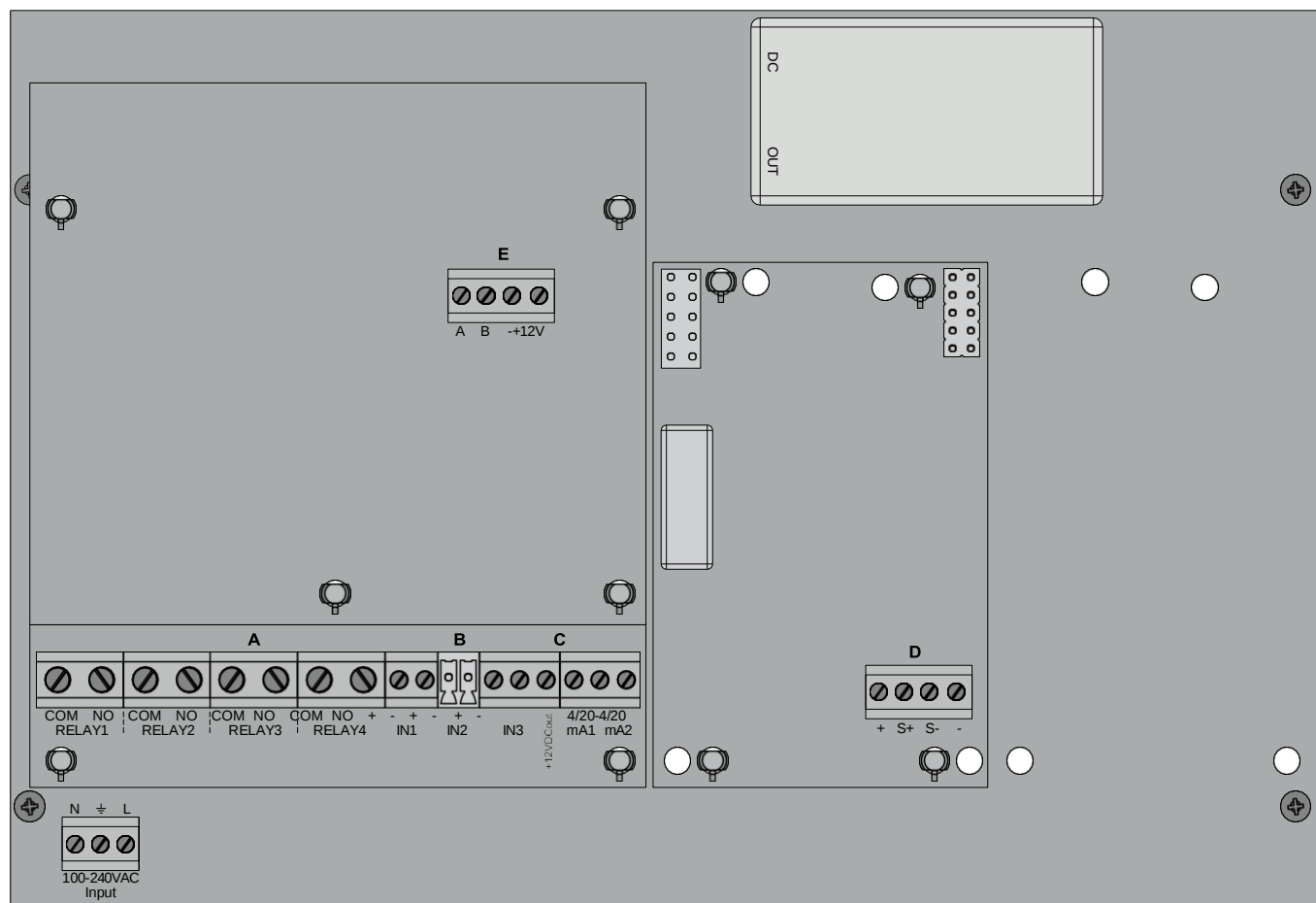


Fig. 4.5 - Connection diagram

TERMINAL BOARD “A”		
Relay 1	COM	Setpoint 1 CL CHLORINE ON-OFF / PWM output relay timed pulses
	NO	
Relay 2	COM	Setpoint 2 CL CHLORINE ON-OFF / PWM output relay timed pulses
	NO	
Relay 3	COM	Auxiliary ON-OFF AUX output for remote equipment with Timer programming
	NO	
Relay 4	COM	ALARM ON-OFF relay output for external signalling device
	NO	
TERMINAL BOARD “B”		
IN 1	Digital input of the level probe for the chemical tank	
IN 2	NOT Connected	
IN 3	Proximity Sensor input BLACK + / BLUE – wires	
TERMINAL BOARD “C”		
+12VDC out	12 VDC output of the Proximity Sensor BROWN wire	
4/20 mA1	(+) Proportional output CI CHLORINE 4-20 mA1 for metering pump mA, PLC or data collection	
-	(-) Proportional output CI CHLORINE 4-20 mA2 for metering pump mA, PLC or data collection	
4/20 mA2	(+) Proportional output CI CHLORINE 4-20 mA2 for metering pump mA, PLC or data collection	

TERMINAL BOARD “D”			
+	PT100 temperature probe (RED wire)		
S +	PT100 temperature probe (BLUE wire)		
S -	PT100 temperature probe (GREEN wire)		
-	PT100 temperature probe (YELLOW wire)		
TERMINAL BOARD “E”			
A	ORANGE wire	Connection for RS485 / ETHERNET external module. For connection to the ETACLOUD , the external KIT CONNECT module must be connected (NOT included with the instrument) code KST0000101 KIT CONNECT X INSTRUMENTS SERIES M	
B	YELLOW wire		
-	BLACK wire		
+	Not Connected		
TERMINAL BOARD “G”			
	NEW membrane Chlorine sensor	Open Chlorine cell	OLD membrane Chlorine sensor
-	BLUE Wire	Not Connected	White Wire
+	White Wire	Not Connected	Brown Wire
M	Brown Wire	BLUE Wire	Green Wire
0	Black Wire	Brown Wire	Yellow Wire

4.2.3 ELIGERE 01 pH(RX) connection diagram

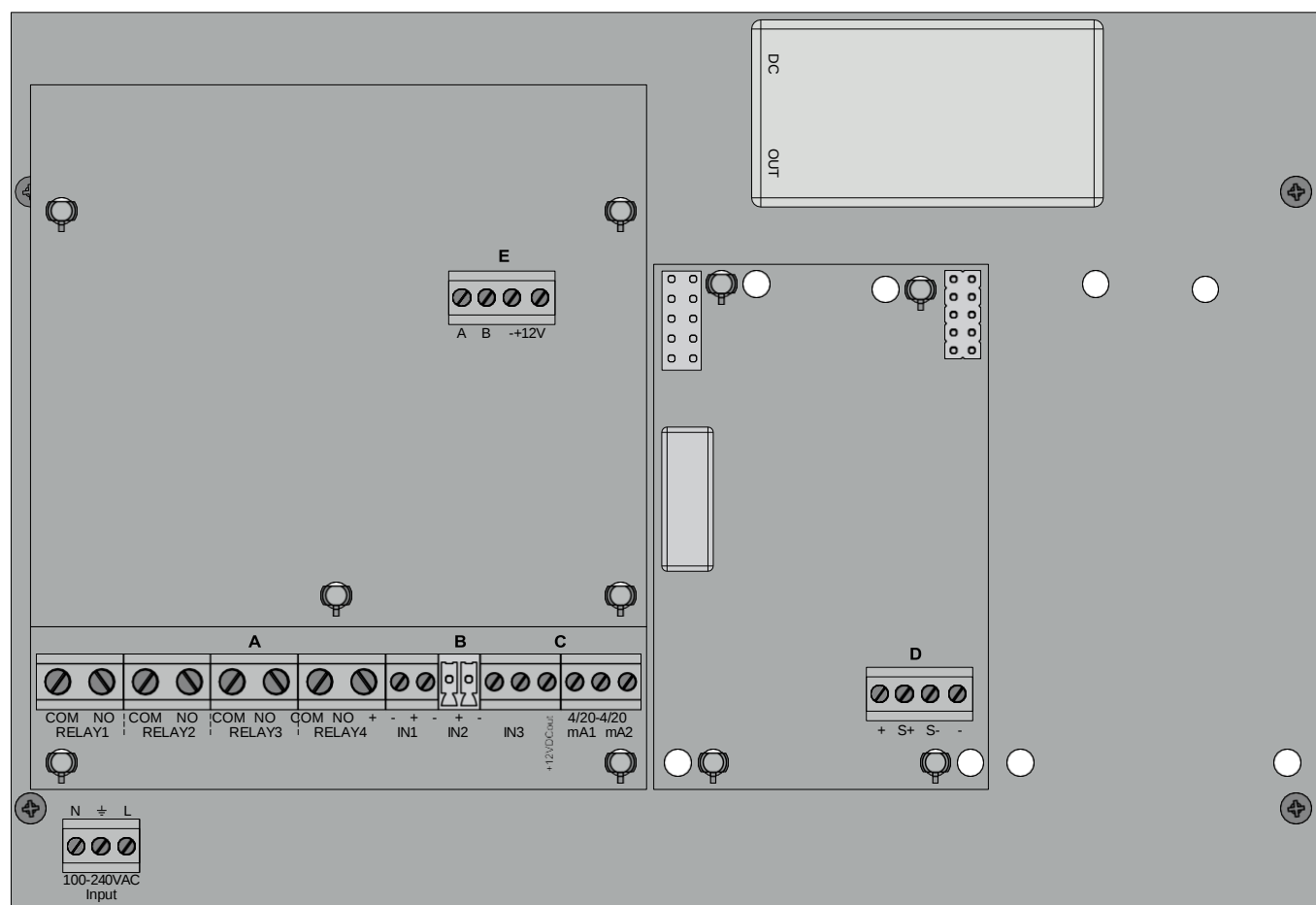


Fig. 4.6 - Connection diagram

TERMINAL BOARD “A”		
Relay 1	COM	Setpoint 1 pH (o RX) ON-OFF / PWM output relay timed pulses
	NO	
Relay 2	COM	Setpoint 2 pH (o RX) ON-OFF / PWM output relay timed pulses
	NO	
Relay 3	COM	Auxiliary ON-OFF AUX output for remote equipment with Timer programming
	NO	
Relay 4	COM	ALARM ON-OFF relay output for external signalling device
	NO	
TERMINAL BOARD “B”		
IN 1	Digital input of the level probe for the chemical tank	
IN 2	NOT Connected	
IN 3	Proximity Sensor input BLACK + / BLUE – wires	
TERMINAL BOARD “C”		
+12VDC out	12 VDC output of the Proximity Sensor BROWN wire	
4/20 mA1	(+) Proportional output pH (or RX) 4-20 mA1 for metering pump mA, PLC or data collection	
-	(-) Proportional output pH (or RX) 4-20 mA2 for metering pump mA, PLC or data collection	
4/20 mA2	(+) Proportional output pH (or RX) 4-20 mA2 for metering pump mA, PLC or data collection	

TERMINAL BOARD “D”		
+	PT100 temperature probe (RED wire)	
S +	PT100 temperature probe (BLUE wire)	
S -	PT100 temperature probe (GREEN wire)	
-	PT100 temperature probe (YELLOW wire)	
TERMINAL BOARD “E”		
A	ORANGE wire	Connection for RS485 / ETHERNET external module. For connection to the ETACLOUD , the external KIT CONNECT module must be connected (NOT included with the instrument) code KST0000101 - KIT CONNECT FOR SERIES M INSTRUMENTS
B	YELLOW wire	
-	BLACK wire	
+	Not Connected	

4.2.4 ELIGERE 01 CD connection diagram

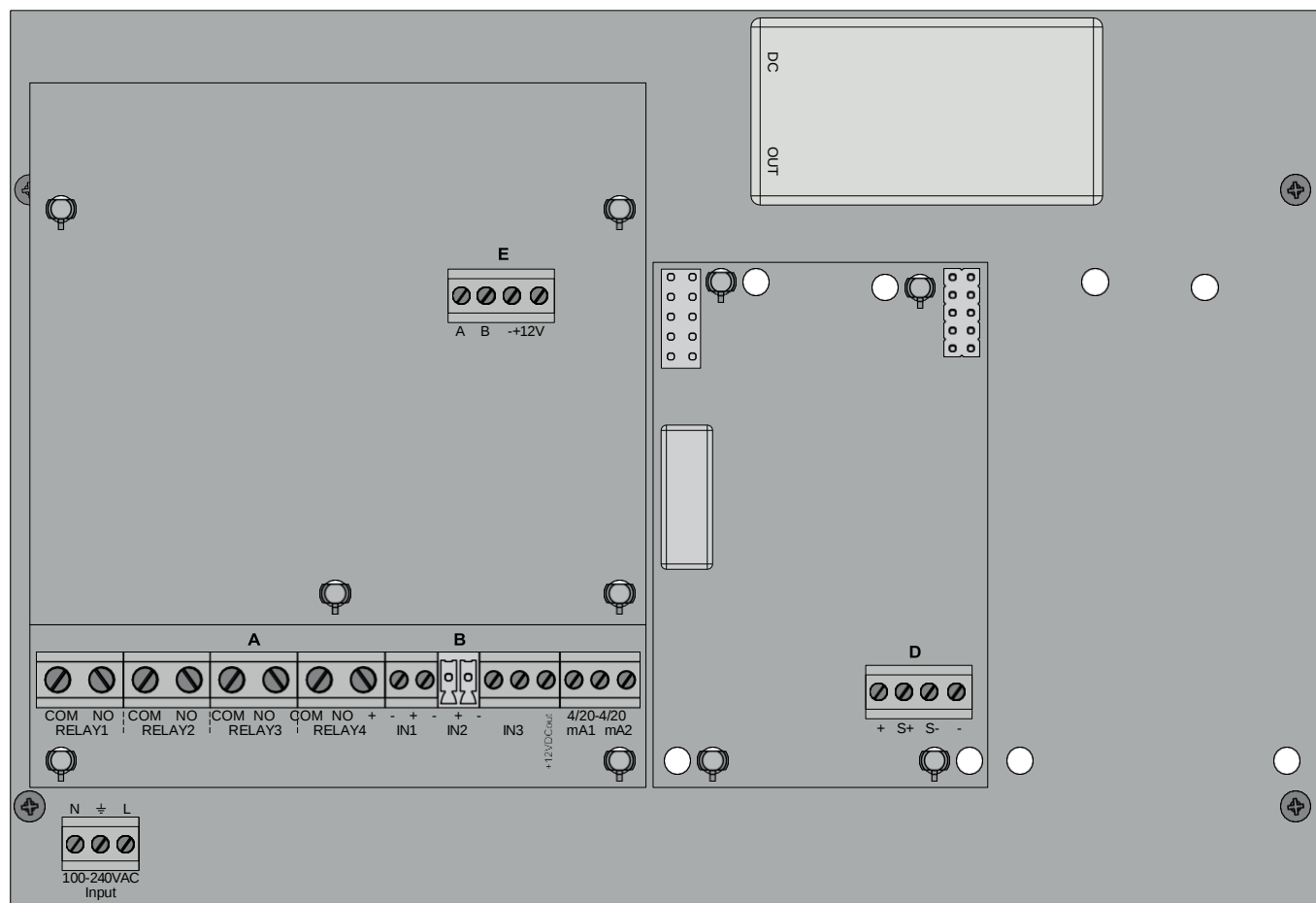


Fig. 4.7 - Connection diagram

TERMINAL BOARD “A”		
Relay 1	COM	Setpoint 1 ON-OFF / PWM output relay timed pulses
	NO	
Relay 2	COM	Setpoint 2 ON-OFF / PWM output relay timed pulses
	NO	
Relay 3	COM	Not Connected
	NO	
Relay 4	COM	Not Connected
	NO	
TERMINAL BOARD “B”		
IN 1	+	Digital input level switch for chemical tank
	-	
IN 2	+	NOT Connected
	-	
IN 3	+	Proximity Sensor input BLACK wires
	-	Proximity Sensor input BLUE wires
+12VDC	+	12 VDC output of the Proximity Sensor BROWN wire
4/20 mA1	+	(+) Proportional output Conductivity 4-20mA1 for metering pump mA, PLC, data collection

-	-	(-) Proportional output Conductivity 4-20mA1 for metering pump mA, PLC, data collection
TERMINAL BOARD "C"		
S +	Conductivity Probe (WHITE wire)	RED/WHITE wire
+	Conductivity probe (WHITE/BROWN wire)	
-	Conductivity probe (BLACK/ BROWN wire)	
S -	Conductivity probe (BLACK wire)	WHITE/RED wire
TERMINAL BOARD "D"		
+	PT100 temperature probe (RED wire)	
S +	PT100 temperature probe (BLUE wire)	
S -	PT100 temperature probe (GREEN wire)	
-	PT100 temperature probe (YELLOW wire)	
TERMINAL BOARD "E"		
A	ORANGE wire	Connection for RS485 / ETHERNET external module. For connection to the ETACLOUD , the external KIT CONNECT module must be connected (NOT included with the instrument) code KST0000101 - KIT CONNECT FOR SERIES M INSTRUMENTS
B	YELLOW wire	
-	BLACK wire	
+	Not Connected	



REMEMBER: unit with universal voltage 100-250 VAC ($\pm 10\%$) or 9-24VDC. If the real voltage is constantly at the limit (minimum or maximum), or when the peaks are far above the mentioned range, the unit input is electrically protected against voltage fluctuations; outside the range mentioned above, the instrument does not work and the printed circuit must be replaced. **It is recommended** to use voltage protections, check the earthing system and, when other equipment is connected in parallel, use a transducer. Furthermore, ETATRON **recommends** installing a UPS (genset) to assure continuity thus ensuring no data are lost. A system that is set up without following the proper electrical design rules, without an earthing system, with frequent ON/OFF operations, might directly undermine the printed circuit.

4.2.5 ELIGERE 01 CD COOL connection diagram

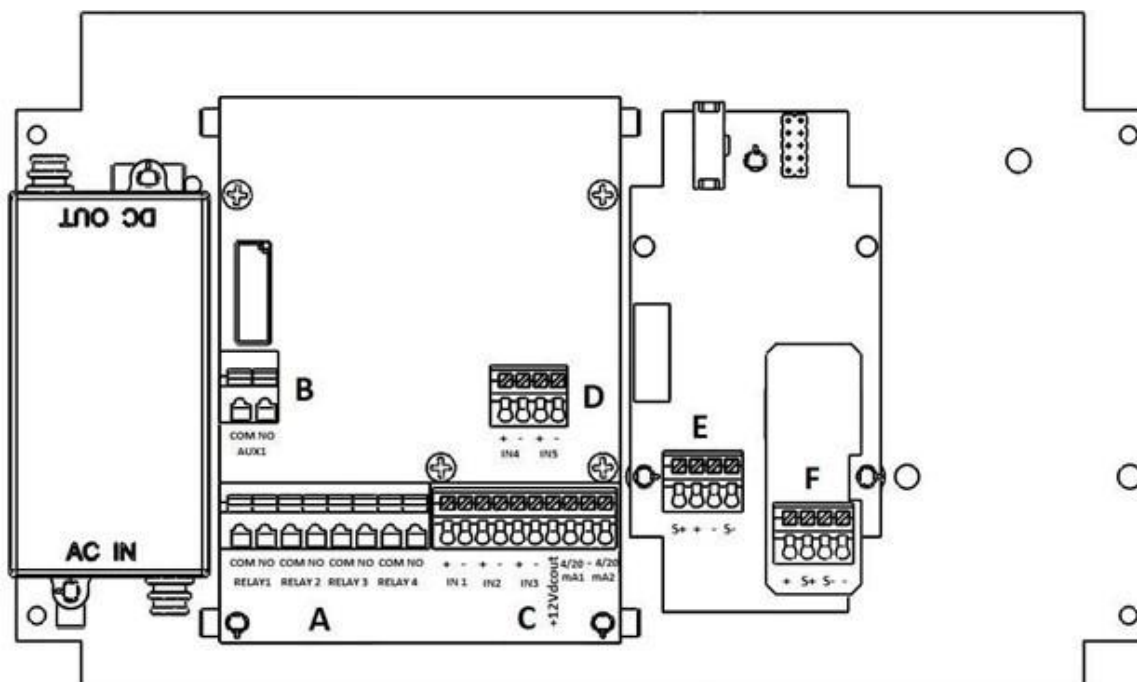


Fig. 4.8 - Connection diagram

TERMINAL BOARD “A”		
Relay 1	COM	SV BLEED Solenoid Valve
	NO	
Relay 2	COM	INHIBITOR METERING PUMP
	NO	
Relay 3	COM	BIOCIDE 1 METERING PUMP
	NO	
Relay 4	COM	BIOCIDE 2 METERING PUMP
	NO	
TERMINAL BOARD “B”		
AUX 1	COM	ON-OFF ALARM relay output for external signalling device
	NO	
TERMINAL BOARD “C”		
IN 1	+	INHIBITOR level probe digital input for chemical tank
	-	Conductivity Probe (WHITE wire)
IN 2	+	Pulse Emitting Meter
	-	
IN 3	+	Proximity Sensor input BLACK wires
	-	Proximity Sensor input BLUE wires
+12VDC	+	12 VDC output of the Proximity Sensor BROWN wire
4/20 mA1	+	(+) Proportional output Conductivity 4-20mA1 for metering pump mA, PLC, data collection
-	-	(-) Proportional output Conductivity 4-20mA1/mA2 for metering pump mA, PLC, data collection

4-20 mA2	+	(+) Proportional output Conductivity 4-20mA2 for metering pump mA, PLC, data collection
TERMINAL BOARD "D"		
IN4		BIOCIDE1 level probe digital input for the chemical tank
IN5		BIOCIDE 2 level probe digital input for the chemical tank
TERMINAL BOARD "E"		
S +		Conductivity Probe (WHITE wire)
+		Conductivity probe (WHITE/BROWN wire)
-		Conductivity probe (BLACK/ BROWN wire)
S -		Conductivity probe (BLACK wire)
TERMINAL BOARD "F"		
+		PT100 temperature probe (RED wire)
S +		PT100 temperature probe (BLUE wire)
S -		PT100 temperature probe (GREEN wire)
-		PT100 temperature probe (YELLOW wire)



REMEMBER: unit with universal voltage 100-250 VAC ($\pm 10\%$) or 9-24VDC. If the real voltage is constantly at the limit (minimum or maximum), or when the peaks are far above the mentioned range, the unit input is electrically protected against voltage fluctuations; outside the range mentioned above, the instrument does not work and the printed circuit must be replaced. **It is recommended** to use voltage protections, check the earthing system and, when other equipment is connected in parallel, use a transducer. Furthermore, ETATRON **recommends** installing a UPS (genset) to assure continuity thus ensuring no data are lost. A system that is set up without following the proper electrical design rules, without an earthing system, with frequent ON/OFF operations, might directly undermine the printed circuit.

4.2.6 ELIGERE 02 PH(RX)-CD connection diagram

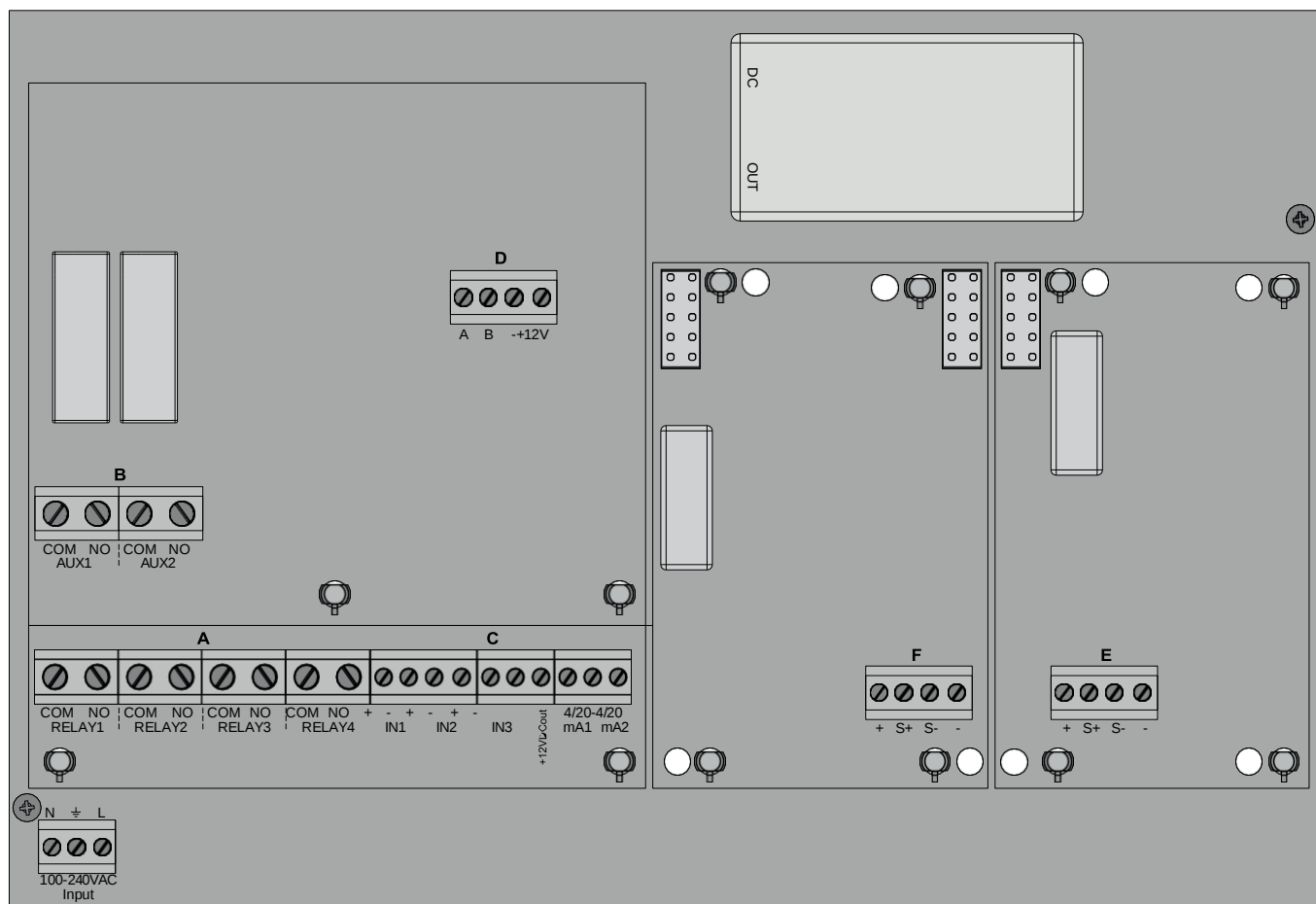


Fig. 4.9 - Connection diagram

TERMINAL BOARD “A”		
Relay 1	COM	Setpoint 1 pH (o RX) ON-OFF / PWM output relay timed pulses
	NO	
Relay 2	COM	Setpoint 2 pH (o RX) ON-OFF / PWM output relay timed pulses
	NO	
Relay 3	COM	Setpoint 3 EC Conductivity ON-OFF / PWM output relay timed pulses
	NO	
Relay 4	COM	ON-OFF ALARM relay output for external signalling device
	NO	
TERMINAL BOARD “B”		
AUX 1	COM	Auxiliary ON-OFF AUX output for remote equipment with Timer programming
	NO	
AUX 2	COM	Auxiliary ON-OFF AUX output for remote equipment with Timer programming
	NO	
TERMINAL BOARD “C”		
IN 1	+	Digital input level probe 1 for the chemical tank
	-	
IN 2	+	Digital input level probe 2 for the chemical tank
	-	

IN 3	+	Proximity Sensor input BLACK wires
	-	Proximity Sensor input BLUE wires
+12VDC	+	12 VDC output of the Proximity Sensor BROWN wire
4/20 mA1	+	(+)Proportional output pH (or RX) 4-20mA1 for metering pump mA, PLC, data collection
-	-	(-)Proportional output 4-20mA1/mA2 for metering pump mA, PLC, data collection
4-20 mA2	+	(+)Proportional output Conductivity 4-20mA2 for metering pump mA, PLC, data collection
TERMINAL BOARD “D”		
A	ORANGE wire	Connection for RS485 / ETHERNET external module. For connection to the ETACLOUD , the external KIT CONNECT module must be connected (NOT included with the instrument) code KST0000101 KIT CONNECT X INSTRUMENTS SERIES M
B	YELLOW wire	
-	BLACK wire	
+	Not Connected	
TERMINAL BOARD “E”		
S +	Conductivity Probe (WHITE wire)	
+	Conductivity probe (WHITE/BROWN wire)	
-	Conductivity probe (BLACK/ BROWN wire)	
S -	Conductivity probe (BLACK wire)	
TERMINAL BOARD “F”		
+	PT100 temperature probe (RED wire)	
S +	PT100 temperature probe (BLUE wire)	
S -	PT100 temperature probe (GREEN wire)	
-	PT100 temperature probe (YELLOW wire)	



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4.2.7 ELIGERE 02 PH(RX)-CL connection diagram

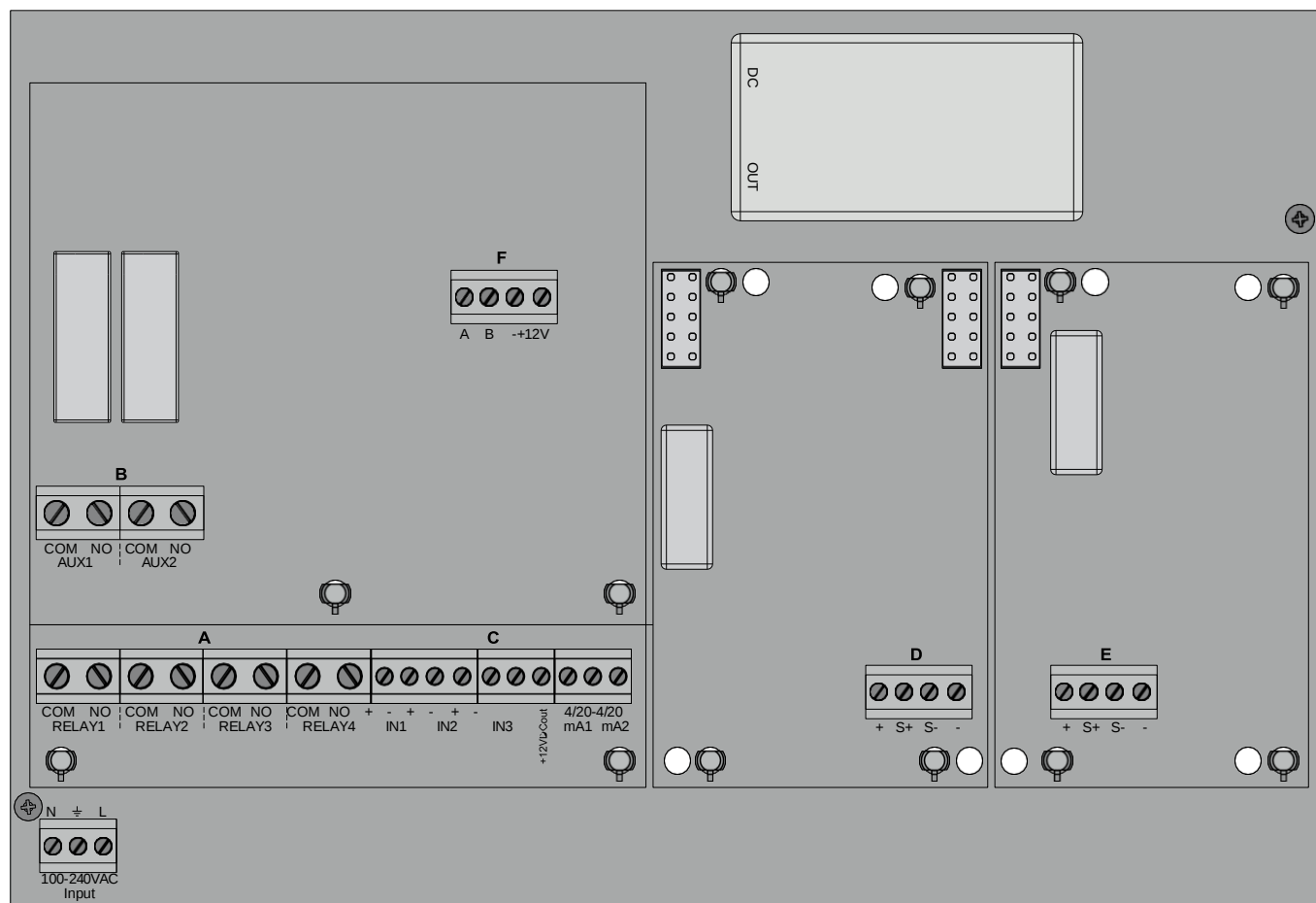


Fig. 4.10 - Connection diagram

TERMINAL BOARD “A”		
Relay 1	COM	Setpoint 1 pH (o RX) ON-OFF / PWM output relay timed pulses
	NO	
Relay 2	COM	Setpoint 2 pH (o RX) ON-OFF / PWM output relay timed pulses
	NO	
Relay 3	COM	Setpoint 3 CL Chlorine ON-OFF / PWM output relay timed pulses
	NO	
Relay 4	COM	ON-OFF ALARM relay output for external signalling device
	NO	
TERMINAL BOARD “B”		
AUX 1	COM	Auxiliary ON-OFF AUX output for remote equipment with Timer programming
	NO	
AUX 2	COM	Auxiliary ON-OFF AUX output for remote equipment with Timer programming
	NO	
TERMINAL BOARD “C”		
IN 1	+	Digital input level probe 1 for the chemical tank
	-	
IN 2	+	Digital input level probe 2 for the chemical tank
	-	

IN 3	+	Proximity Sensor input BLACK wires	
	-	Proximity Sensor input BLUE wires	
+12VDC	+	12 VDC output of the Proximity Sensor BROWN wire	
4/20 mA1	+	(+)Proportional output pH (or RX) 4-20mA1 for metering pump mA, PLC, data collection	
-	-	(-)Proportional output 4-20mA1/mA2 for metering pump mA, PLC, data collection	
4-20 mA2	+	(+)Proportional output CL Chlorine 4-20mA2 for metering pump mA, PLC, data collection	
TERMINAL BOARD “D”			
S +	PT100 temperature probe (RED wire)		
+	PT100 temperature probe (BLUE wire)		
-	PT100 temperature probe (GREEN wire)		
S -	PT100 temperature probe (YELLOW wire)		
TERMINAL BOARD “G”			
	NEW membrane Chlorine sensor	Open Chlorine cell	OLD membrane Chlorine sensor
-	White Wire	Not Connected	White Wire
+	Brown Wire	Not Connected	Brown Wire
M	Green Wire	BLUE Wire	Green Wire
0	Yellow Wire	Brown Wire	Yellow Wire
TERMINAL BOARD “F”			
A	ORANGE wire	Connection for RS485 / ETHERNET external module. For connection to the ETACLOUD , the external KIT CONNECT module must be connected (NOT included with the instrument) code KST0000101 KIT CONNECT X INSTRUMENTS SERIES M	
B	YELLOW wire		
-	BLACK wire		
+	Not Connected		



REMEMBER: unit with universal voltage 100-250 VAC ($\pm 10\%$) or 9-24VDC. If the real voltage is constantly at the limit (minimum or maximum), or when the peaks are far above the mentioned range, the unit input is electrically protected against voltage fluctuations; outside the range mentioned above, the instrument does not work and the printed circuit must be replaced. **It is recommended** to use voltage protections, check the earthing system and, when other equipment is connected in parallel, use a transducer. Furthermore, ETATRON **recommends** installing a UPS (genset) to assure continuity thus ensuring no data are lost. A system that is set up without following the proper electrical design rules, without an earthing system, with frequent ON/OFF operations, might directly undermine the printed circuit.

4.2.8 ELIGERE 02 PH-RX connection diagram

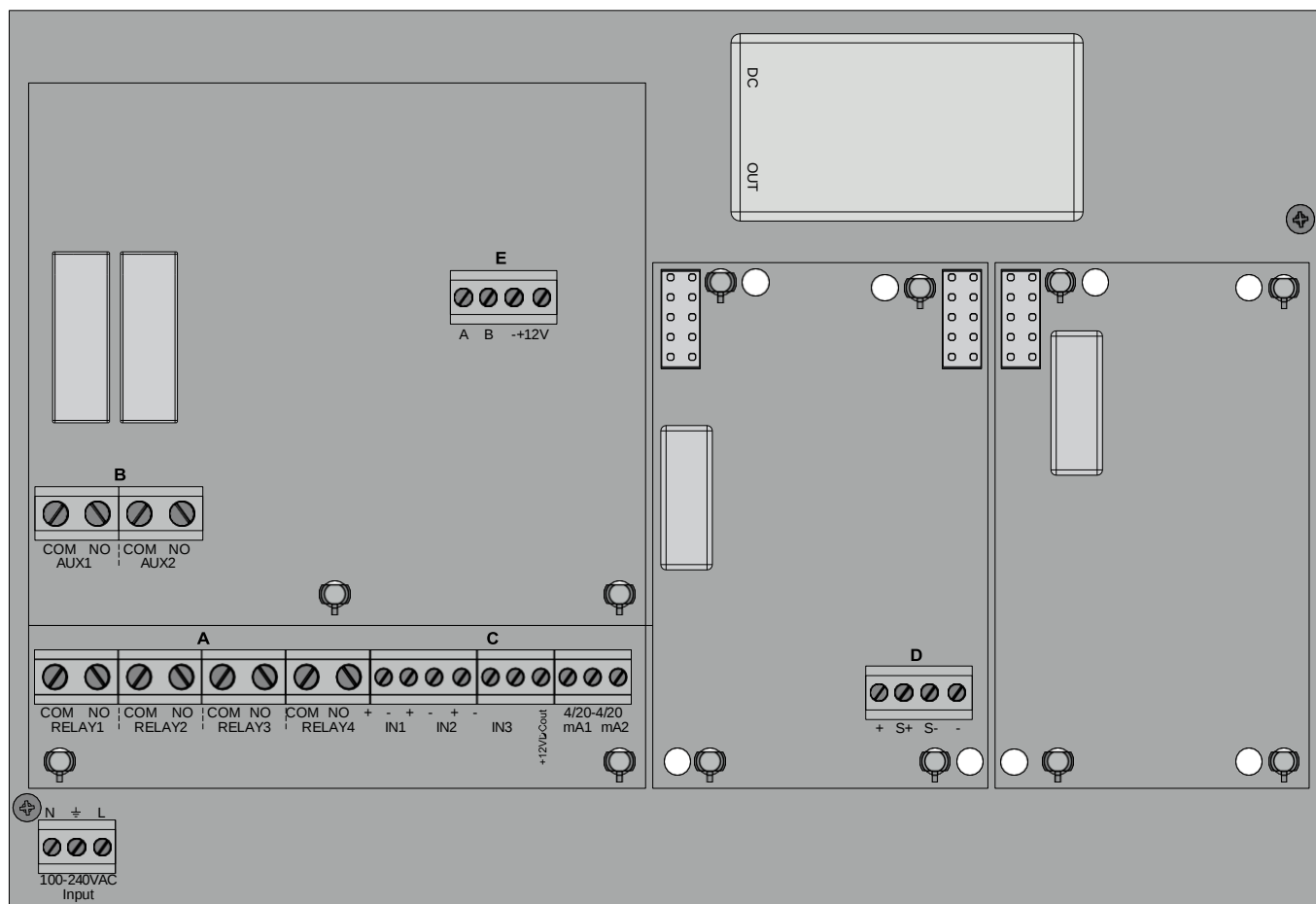


Fig. 4.11 - Connection diagram

TERMINAL BOARD “A”		
Relay 1	COM	Setpoint 1 pH (o RX) ON-OFF / PWM output relay timed pulses
	NO	
Relay 2	COM	Setpoint 2 pH (o RX) ON-OFF / PWM output relay timed pulses
	NO	
Relay 3	COM	Set-point 3 RX (or pH) ON-OFF / PWM output relay timed pulses
	NO	
Relay 4	COM	ON-OFF ALARM relay output for external signalling device
	NO	
TERMINAL BOARD “B”		
AUX 1	COM	Auxiliary ON-OFF AUX output for remote equipment with Timer programming
	NO	
AUX 2	COM	Auxiliary ON-OFF AUX output for remote equipment with Timer programming
	NO	
TERMINAL BOARD “C”		
IN 1	+	Digital input level probe 1 for the chemical tank
	-	
IN 2	+	Digital input level probe 2 for the chemical tank
	-	

IN 3	+	Proximity Sensor input BLACK wires
	-	Proximity Sensor input BLUE wires
+12VDC	+	12 VDC output of the Proximity Sensor BROWN wire
4/20 mA1	+	(+)Proportional output pH (or RX) 4-20mA1 for metering pump mA, PLC, data collection
-	-	(-)Proportional output 4-20mA1/mA2 for metering pump mA, PLC, data collection
4-20 mA2	+	(+)4-20mA2 proportional RX (or pH) output for mA metering pump, PLC, data collection
TERMINAL BOARD “D”		
+	PT100 temperature probe (RED wire)	
S +	PT100 temperature probe (BLUE wire)	
S -	PT100 temperature probe (GREEN wire)	
-	PT100 temperature probe (YELLOW wire)	
TERMINAL BOARD “E”		
A	ORANGE wire	Connection for RS485 / ETHERNET external module. For connection to the ETACLOUD , the external KIT CONNECT module must be connected (NOT included with the instrument) code KST0000101 KIT CONNECT X INSTRUMENTS SERIES M
B	YELLOW wire	
-	BLACK wire	
+	Not Connected	



REMEMBER: unit with universal voltage 100-250 VAC ($\pm 10\%$) or 9-24VDC. If the real voltage is constantly at the limit (minimum or maximum), or when the peaks are far above the mentioned range, the unit input is electrically protected against voltage fluctuations; outside the range mentioned above, the instrument does not work and the printed circuit must be replaced. **It is recommended** to use voltage protections, check the earthing system and, when other equipment is connected in parallel, use a transducer. Furthermore, ETATRON **recommends** installing a UPS (genset) to assure continuity thus ensuring no data are lost. A system that is set up without following the proper electrical design rules, without an earthing system, with frequent ON/OFF operations, might directly undermine the printed circuit.

5 CONTROL PANEL

The following figure shows the control panel with the description of the functions of the different keys.

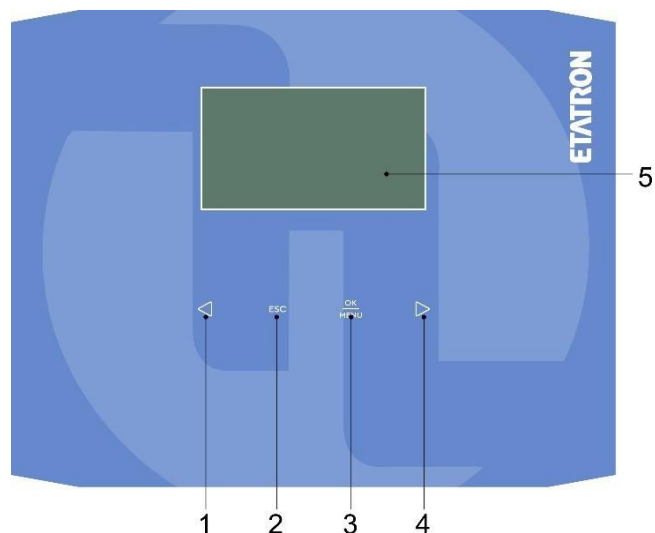


Fig. 5.1 - Keypad

1	Button to scroll the menu to the left and decrease values
2	Button to quit the menu
3	Button to enter the menu and confirm selections
4	Button to scroll the menu to the right and increase values
5	Display

5.1 DESCRIPTION OF THE DISPLAY

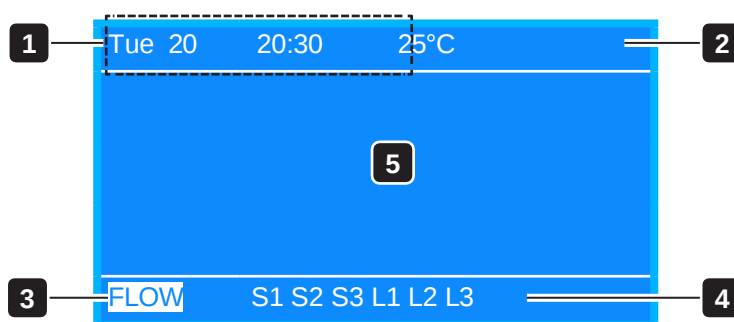


Fig. 5.1 - Display, common parts

1	Date / Time
2	Temperature value (*)
3	Status of the instrument
4	Other status icons (*)
5	Display of measurements / Backlit display (128x64) / Visible display area 70x37 mm

ELIGERE 03 PH-RX-CL

- 5.1 PH measurement
- 5.2 RX measurement (ORP)
- 5.3 Chlorine value

5.1 6.50 pH
5.2 500 mV
5.3 0.050 Cl ppm

ELIGERE 01 CL

- 5.1 Chlorine value

5.1 0.050 Cl ppm

ELIGERE 01 pH(RX)

- 5.1 PH measurement
- 5.2 RX measurement (ORP)

5.1 6.50 pH
5.2 500 mV

ELIGERE 01 CD

- 5.1 Conductivity measurement mS / range 20 mS
1050 μ S: Conductivity measurement μ S / range 2000 μ S

5.1 10.50 mS

ELIGERE 01 CD COOL

- 5.1 Conductivity measurement mS / range 20 mS
1050 μ S: Conductivity measurement μ S / range 1999 μ S

5.1 10.50 mS

ELIGERE 02 PH(RX)-CD

- 5.1 PH measurement
- 5.2 Conductivity value

5.1 6.50 pH
5.2 10.50 mS

- 5.1 RX measurement (Redox)
- 5.2 Conductivity value

5.1 500 mV
5.2 1050 μ S

ELIGERE 02 PH(RX)-CI

5.1 PH measurement

5.2 Chlorine value

5.1 6.50 pH

5.2 0.50 Cl ppm

5.1 RX measurement (Redox)

5.2 Chlorine value

5.1 500 mV

5.2 0.50 Cl ppm

ELIGERE 02 PH-RX

5.1 PH measurement

5.2 RX measurement (ORP)

5.1 6.50 pH

5.2 500 mV

5.2 INSTRUMENT STATUS MESSAGES

When the instrument is **first** switched on, a list of all key programming functions is displayed.

If more than one function is active, the messages are displayed in continuous cycle, each is displayed for 3 seconds. The ALARM or OVERDOSE message disappears once the measurements are again consistent with the programmed settings. To remove the active icons from the display, press and hold **ESC**.

When a message is displayed, the temperature status is NOT displayed.

	ELIGERE							
	03 PH-RX-CL	01 CD	01 CD COOL	02 PH(RX)-CD	02 PH(RX)-CL	02 PH-RX	01 CI	01 PH(RX)
MESSAGES								
MAX-SET POINT ALARM X	X	X	X	X	X	X	X	X
MIN-SET POINT ALARM X	X	X	X	X	X	X	X	X
FLOW	X	X	X	X	X	X	X	X
NO MEASUREMENT CONN.	X	-	X	X	X	X	X	X
OVERDOSE - 4-20mA X	X	X	-	X	X	X	X	X
AUX OUTPUTS	X	X	X	X	X	X	X	X
DATE / TIME	X	X	X	X	X	X	X	X
TEMPERATURE	X	X	X	X	X	X	X	X
BIOCIDE PROGRAM	-	-	X	-	-	-	-	-
MAX EC ALARM	-	-	X	-	-	-	-	-
MIN EC ALARM	-	-	X	-	-	-	-	-
INHIBITOR TANK	-	-	X	-	-	-	-	-
BIOCIDE X TANK	-	-	X	-	-	-	-	-

ELIGERE 03 PH-RX-CL



NOTE:

when working with the **Basic menu**, the **mA programming IS NOT AVAILABLE**.

- **NO MEASUREMENT CONNECTION LINK:** communication between instrument and display down.



When instead of the temperature the display shows **NO MEASUREMENT CONN.**, this means there is a problem between the two boards, in that case check the flat electric cable and immediately contact the ETATRON service.

(*) Other status icons

FLOW S1 S2 S3 L1 L2 L3

Other status messages are displayed here, such as: **S1, S2, S3, S4, L1, L2, L3, AUX1, AUX2, AUX3, ALARM AUX, DATE/TIME, OVERDOSE, FLOW, *BASIC MENU*, *EXPERT MENU***.

- **S1 S2 S3 S4:** indicate the corresponding active Set point. When the “Proportional” mode is selected (Pulse Width Modulation) during the setpoint step, messages S1 S2 S3 S4 blink during PWM operation, but when the setpoint is NOT active there is no message.
- **** FLOW **** shows there is no water flow in the probe socket: this is only valid when using a proximity Sensor and the “Flow Sensor” (step in Settings) is **on**, only possible by using the Expert Menu.
- **L1 L2 L3:** indicates level control of an external tank and is only shown once the level probe is connected to the pins of terminal L3 and IN1: when the level in the tank is lower than the float of the level probe, it triggers the Status message.

(*) Temperature value:

Tue 20 20:30 25°C



If the temperature was set in manual mode, the temperature value will match the one selected. If the PT100 mode has been selected and a temperature sensor has been connected, the temperature value shown matches the real value in the system and allows for automatic offsetting.

ELIGERE 01 CD



NOTE:

when working with the **Basic menu**, the **mA programming IS NOT AVAILABLE**.

The controller covers the ranges from 20uS to 100mS in accordance with the K of the probe.

- **NO LINK:** communication between regulator and display is down.



When the display shows '**NO CONNECTION**', this means that there is a problem between the two boards, so check the flat electrical cable and the wiring between them and contact ETATRON service immediately.

(*) Other status icons

FLOW S1 S2 L1

Other status messages are displayed here, such as: **S1, S2, L1, ALARM, OVERDOSE, FLOW, 'BASIC MENU', 'EXPERT MENU'**.

"**BASIC MENU**", "**EXPERT MENU**" these messages appear as reminders during programming.

By default, the regulator is set up with * **BASIC MENU** *, i.e. simple programming for non-professional users and an extremely simple menu.

- * **EXPERT MENU** * it lets you select other parameters, thus fine-tuning the unit's operation and safety functions while maintaining easy programming for the user.
- **S1 S2:** indicates the corresponding active Set point. By selecting "Timed pulse mode" (Pulse Width Modulation) during the setpoint stage, the message S1... S2 flashes during PWM operations. When the set point is NOT active no message is displayed.
- ** **FLOW** **: indicates the absence of water flow within the sensor's support: this only applies if a proximity switch is used and if the "Flow sensor" is in active mode; condition only possible if the "Expert Menu" is used.
- **L1 L2:** indicate the "Level" control of external chemical tanks and are only displayed once the float level probe is connected to the pins of terminal block IN1 and IN2: a status message is displayed when the level inside the tank is lower than the float level probe.

(*) Temperature value:

25°C



If the temperature has been set up in Manual mode, the temperature value matches the one selected. If the PT100 mode has been selected and the relevant sensor has been connected, the indicated temperature value matches the actual system value.

Connecting the conductivity sensor



The ELIGERE CD unit works with simple conductivity sensors with 2 open electrodes, with AISI 316 or graphite electrodes. It is also possible to connect CONDUCTIVITY probes with type PT100 internal temperature sensors; contact ETATRON D.S. service or your local dealer for the correct configuration. The ELIGERE-CD unit is NOT suitable for EC inductive sensors!

Install the conductivity sensor in the system and connect it to the terminal board (see page 13) before powering it from the mains.

It is recommended to use a new electrode or at least one in good working order (not worn).

NOTE: The ELIGERE CD device is automatically adjusted based on the conductivity ranges by adapting the regulator to the various characteristics of the probes' "K" constant. However, at the start of programming and in "Expert Menu Setpoint 1" the user may adjust the required K factor.

It is always RECOMMENDED and mandatory to use the correct K probe according to the regulator's operating range. The regulator also adapts the measurements and display resolution based on the type of probe in use.

ELIGERE 01 CD COOL

- **NO MEASUREMENT CONNECTION LINK:** communication between instrument and display down.



When instead of the temperature the display shows **NO MEASUREMENT CONN.**, this means there is a problem between the two boards, in that case check the flat electric cable and immediately contact the ETATRON service.

(*) Other status icons

preBLEED1 /-\ INHIB

EC - MAX ALARM	Max EC conductivity value programmed in the "BLEED" menu mode = conductivity
EC - MIN ALARM	Min EC conductivity value programmed in the "BLEED" menu mode = conductivity
INHIBITOR TANK	When the Inhibitor tank reaches a low level (closed contact)
BIOCIDE1 TANK	When the Biocide1 tank reaches a low level (closed contact)
BIOCIDE2 TANK	When the Biocide2 tank reaches a low level (closed contact)

- The **day** and **time** are set automatically by the instrument based on the real time selected in "SETTINGS".
- The Icon **w** .. is the week selected based on one of the two menus of the BIOCID programs, also based on the real time and date selected in the "SETTINGS" menu
- (*) **Temperature value:**

Tue 20 20:30 25°C



If the temperature was set in manual mode, its value will match the one selected. If the PT100 mode has been selected and a temperature sensor has been connected, the temperature value shown matches the real value in the system and allows for automatic offsetting.

Other status messages are as follows:

- **WAIT please ...** : for 5 seconds after the instrument has started up
- **pre Bleed 1 / pre Bleed 2:** blocks the Biocide 1 or 2 metering operation because the conductivity level is higher than the value selected in the "Pre Bleed" programming step of the "BIOCIDE" menu.
- **BIO1 or BIO2 block:** removes all operations for Bleed and Inhibitor dosing immediately after dosing Biocide 1 or Biocide 2 when the dosing process is completed.
- **Bleed in standby:** all the conditions for activating the solenoid valve for the Bleed are in place but the SV is not open due to other active operations, e.g. BIO block.
- **BIO1 or BIO2 in standby:** the BIO dosing process is in standby due to other active operations, for example pre-Bleed or active Inhibitor dosing or bleeding operations in progress.
- **"| / - \":** This is an animated sequenced icon that moves each time the pulses are received by the unit via the pulse emitting meter.
- **NO FLOW:** shows the absence of water flow in the probe socket of the sensor: this is only valid when using a proximity sensor and the "Flow sensor" function is enabled.

Other status icons:

- **BLEED:** the SV solenoid valve is activated for bleeding operations
- **BIO1:** BIOCID1 dosing operations
- **BIO2:** BIOCID2 dosing operations

ELIGERE 02 PH(RX)-CD



NOTE:

when working with the **Basic menu**, the **mA programming IS NOT AVAILABLE**.

- **NO MEASUREMENT CONNECTION LINK:** communication between instrument and display down.



When instead of the temperature the display shows **NO MEASUREMENT CONN.**, this means there is a problem between the two boards, in that case check the flat electric cable and immediately contact the ETATRON service.

(*) Other status icons

FLOW S1 S2 S3 L1 L2

Other status messages are displayed here, such as: **S1, S2, S3, L1, L2, ALARM, AUX, DATE/TIME, OVERDOSE, FLOW, *BASIC MENU*, *EXPERT MENU***.

- ***BASIC MENU* *EXPERT MENU*:** these messages are displayed during the programming steps as reminders.
- **S1 S2 S3** indicate the corresponding active Setpoint. When selecting the “Proportional” mode (Pulse Width Modulation) during the setpoint step, messages S1...S2 blink.
- **** FLOW **** shows the absence of water flow in the probe socket: this is only valid when the FLOW SENSOR has been activated (in EXPERT mode).
- **L1 L2** indicates level control of an external tank and is only shown once the level probe is connected to the pins of terminal IN1 and IN2: when the level in the tank is lower than the float of the level probe, it triggers the Status message.

(*) Temperature value:

Tue 20 20:30 25°C



If the temperature was set in manual mode, the temperature value will match the one selected. If the automatic mode has been selected and a PT100 temperature sensor has been connected, the temperature value shown matches the real value in the system and allows for automatic offsetting.

ELIGERE 02 PH(RX)-CL / 02 PH-RX



*NOTE: when working with the **Basic menu**, the mA programming **IS NOT AVAILABLE**:*

- **NO MEASUREMENT CONNECTION LINK:** communication between instrument and display down.



*The software of the power and control boards of the ELIGERE 02 series are connected via the 485 protocol: when instead of the temperature the display shows **NO MEASUREMENT CONN.**, this means there is a problem between the two boards, in that case check the flat electric cable and immediately contact the ETATRON service.*

(*) Other status icons

FLOW S1 S2 S3 L1 L2

Other status messages are displayed here, such as: **S1, S2, S3, L1, L2, ALARM, AUX, DATE/TIME, OVERDOSE, FLOW, *BASIC MENU*, *EXPERT MENU***.

- ***BASIC MENU* *EXPERT MENU*:** these messages are displayed during the programming steps as reminders.
- **S1 S2 S3:** indicate the corresponding active Setpoint. When the “Proportional” mode is selected (Pulse Width Modulation) during the setpoint step, messages S1...S2 blink during PWM operation, but when the setpoint is NOT active there is no message.
- **** FLOW **:** shows there is no water flow in the probe socket: this is only valid when using a proximity Sensor and the “Flow Sensor” (step in Settings) is **on**, only possible by using the Expert Menu.
- **L1 L2:** indicates level control of an external tank and is only shown once the level probe is connected to the pins of terminal IN1 and IN3: when the level in the tank is lower than the float of the level probe, it triggers the Status message.
- **(*) Temperature value:**

Tue 20 20:30 25°C



If the temperature was set in manual mode, the temperature value will match the one selected. If the automatic mode has been selected and a PT100 temperature sensor has been connected, the temperature value shown matches the real value in the system and allows for automatic offsetting.

5.3 INITIAL DISPLAY



NOTE FOR THE PROGRAMMER

Read the manual before starting programming or always have it at hand to be sure you are making the correct selections.



IMPORTANT NOTE

If no keys are pressed for 60 seconds, the instrument will show the current measurement.

To go forward quickly, press and hold one of the ◀▶ keys.

03 PH-RX-CL
01 CI
01 PH(RX)
01 CD
01 CD COOL
02 PH(RX)-CD
02 PH(RX)-CL
02 PH-RX

ETATRON
ELIGERE 0x model
Rev. X.X

The software version is shown when the instrument is on the lower part of the display.

The software is subject to revisions without notice.

The instrument is prepared for measuring and is then ready to operate.



At this stage, certain status messages might be displayed, which might be active because of current measurements, just go on programming.

- **ELIGERE 03 PH-RX-CL / ELIGERE 02 PH-RX:**
S1, S2, S3, L1, L2, ALARM, AUX, DATE/TIME, OVERDOSE, FLOW, *BASIC MENU*, *EXPERT MENU*
- **ELIGERE 01 CI / ELIGERE 01 PH(RX):**
S1, S2, L1, DATE/TIME, AUX, ALARM, OVERDOSE, MAX DOSE, FLOW, BASIC MENU, EXPERT MENU.
- **ELIGERE 01 CD:**
S1, S2, L1, ALARM, OVERDOSE, FLOW, BASIC MENU, EXPERT MENU.

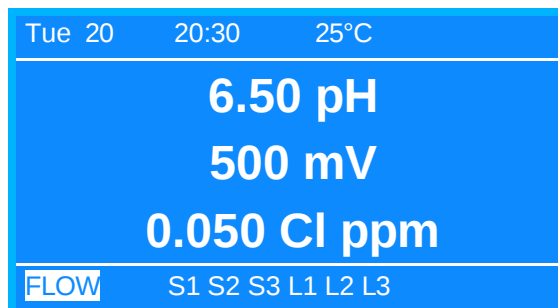
5.3.1 Initial display - Mod. ELIGERE 03 PH-RX-CL

The display shows the pH, Redox mV and Chlorine Cl ppm measurements

The **INITIAL DISPLAY** shows the measurements according to the selected **Measurement Type** (*SELECT MEASUREMENT TYPE PH OR RX*).

If the instrument has already been programmed, the display shows the programs selected previously.

NOTE: Selecting the **Measurement Type** RX will automatically change all values to **mV**.



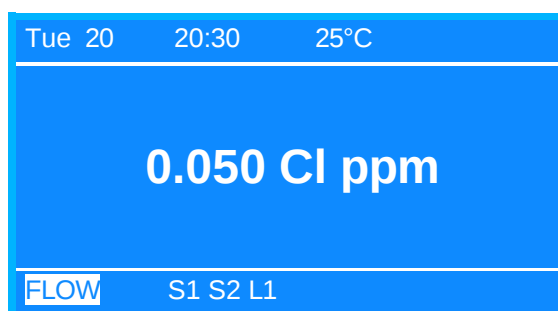
The **CONTINUOUS MEASUREMENT DISPLAY** shows the measurements of the parameter, the status of the functions and the alarm indications.

When the instrument is **switched on for the first time**, a list of functions of all keys is displayed. This screen is no longer displayed during subsequent start-up operations.

5.3.2 Initial display - Mod. ELIGERE 01 Cl

The **INITIAL DISPLAY** shows the chlorine Cl ppm measurements according to the range selected in the paragraph. *SELECT THE CHLORINE RANGE*". If the instrument has already been programmed, the display shows the programs selected previously.

The **CONTINUOUS MEASUREMENT DISPLAY** shows the measurements of the parameter, the status of the functions and the alarm indications.



The **MAIN DISPLAY** shows the measurements of the parameter, the status of the functions and the alarm indications.

When the instrument is **switched on for the first time**, a list of functions of all keys is displayed. This screen is no longer displayed during subsequent start-up operations.

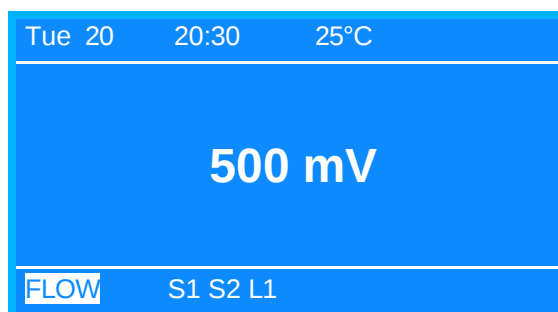
5.3.3 Initial display - Mod. ELIGERE 01 pH(RX)

The **INITIAL DISPLAY** shows the measurements according to the Measurement Type selected in the paragraph. *SELECT MEASUREMENT TYPE PH OR RX*. If the instrument has already been programmed, the display shows the programs selected previously.

NOTE: if the **RX Measurement Type** is selected, all values are automatically in mV.

The **MAIN DISPLAY** shows the measurements of the parameter, the status of the functions and the alarm indications.

When the instrument is **switched on for the first time**, a list of functions of all keys is displayed. This screen is no longer displayed during subsequent start-up operations.

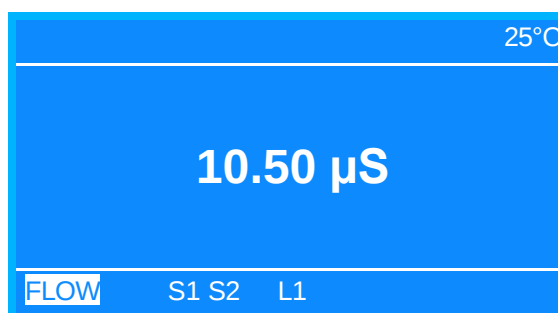
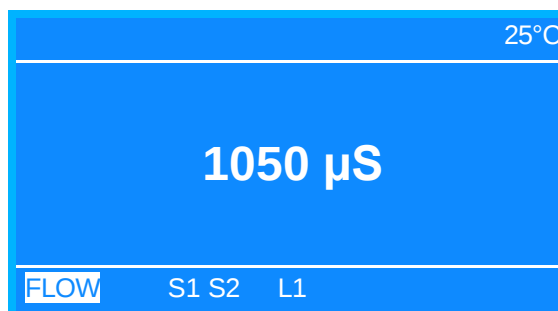


5.3.4 Initial display - Mod. ELIGERE 01 CD

The **INITIAL DISPLAY** shows the measurements according to the selected K range. If the instrument has already been programmed, the display shows the programs selected previously.

The **CONTINUOUS MEASUREMENT DISPLAY** shows the measurements of the parameter, the status of the functions and the alarm indications.

When the instrument is **switched on for the first time**, a list of functions of all keys is displayed (in English). This screen is no longer displayed during subsequent start-up operations.

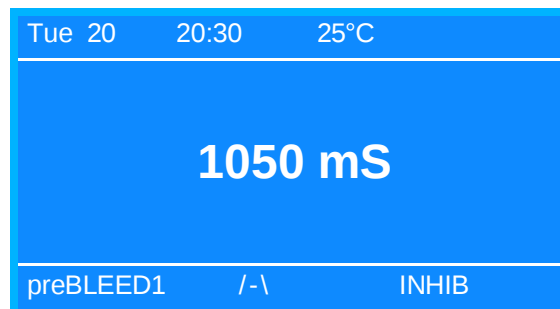


5.3.5 Initial display - Mod. ELIGERE 01 CD COOL

The **INITIAL DISPLAY** shows the measurements according to the selected K range. If the instrument has already been programmed, the display shows the programs selected previously.

The **CONTINUOUS MEASUREMENT DISPLAY** shows the measurements of the parameter, the status of the functions and the alarm indications.

When the instrument is **switched on for the first time**, a list of functions of all keys is displayed (in English). This screen is no longer displayed during subsequent start-up operations.



5.3.6 Initial display - Mod. ELIGERE 02 PH(RX)-CD

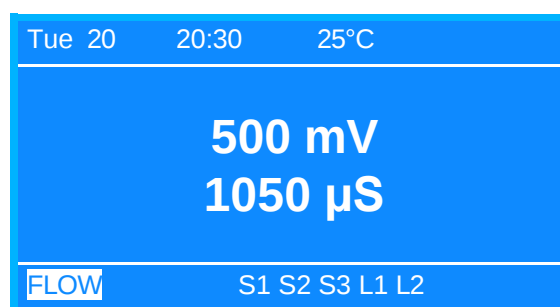
The **INITIAL DISPLAY** shows the measurements according to the selected **Measurement Type** (*SELECT MEASUREMENT TYPE PH OR RX and SELECT THE "K" FACTOR OF THE CONDUCTIVITY PROBE*).

If the instrument has already been programmed, the display shows the programs selected previously.

NOTE: if the RX **Measurement Type** is selected, all values are automatically changed to **mV**.

For conductivity measurements, the display will show values in μS up to 1999 (microSiemens) then will change automatically to mS (milliSiemens) above this value.

The **CONTINUOUS MEASUREMENT DISPLAY** shows the measurements of the parameter, the status of the functions and the alarm indications.



When the instrument is **switched on for the first time**, a list of functions of all keys is displayed. This screen is no longer displayed during subsequent start-up operations.

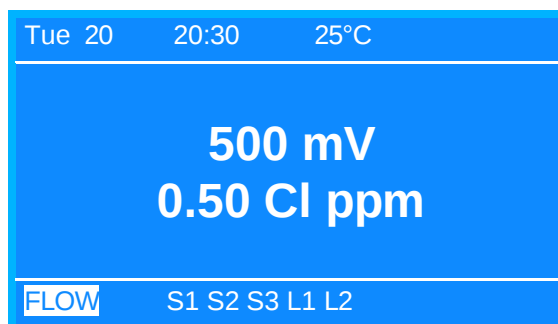
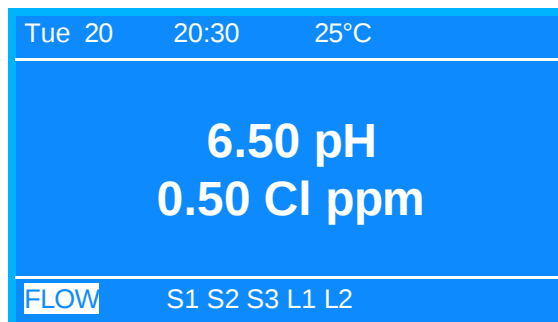
5.3.7 Initial display - Mod. ELIGERE 02 PH(RX)-CL

The **INITIAL DISPLAY** shows the measurements according to the selected Measurement Type (*SELECT MEASUREMENT TYPE PH OR RX and SELECT THE CHLORINE RANGE*). If the instrument has already been programmed, the display shows the programs selected previously.

NOTE: if the RX **Measurement Type** is selected, all values are automatically changed to mV.

The **CONTINUOUS MEASUREMENT DISPLAY** shows the measurements of the parameter, the status of the functions and the alarm indications.

When the instrument is **switched on for the first time**, a list of functions of all keys is displayed. This screen is no longer displayed during subsequent start-up operations.

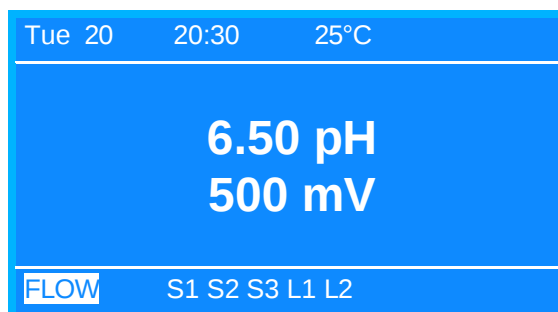


5.3.8 Initial display - Mod. ELIGERE 02 PH-RX

The **INITIAL DISPLAY** shows the measurements according to the selected **Measurement Type** (*SELECT MEASUREMENT TYPE PH OR RX*).

If the instrument has already been programmed, the display shows the programs selected previously.

NOTE: Selecting the **Measurement Type** RX will automatically change all values to mV.



The **CONTINUOUS MEASUREMENT DISPLAY** shows the measurements of the parameter, the status of the functions and the alarm indications.

When the instrument is **switched on for the first time**, a list of functions of all keys is displayed. This screen is no longer displayed during subsequent start-up operations.

5.3.9 Initial display - Message display

All models.



READ THE MESSAGE CAREFULLY, THEN PRESS OK TO START.

USE OF THE KEYS:

- **OK**: access to the menu, start/stop, selection and editing
- **±**: selects the step of the menu or increases / decreases the value
- **ESC**: goes back to the previous menu or does not save the change

*** Press OK to start***

To go forward quickly, **press and hold** one of the ◀▶ keys.

Key	usage
OK	: access menu or start / stop edit
+	select menu item
-	or inc / dec value
ESC	: to previous menu or discard edit
* Press OK to start *	

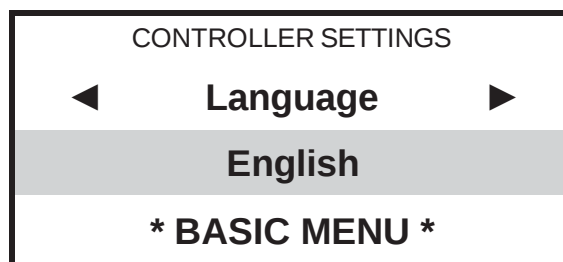
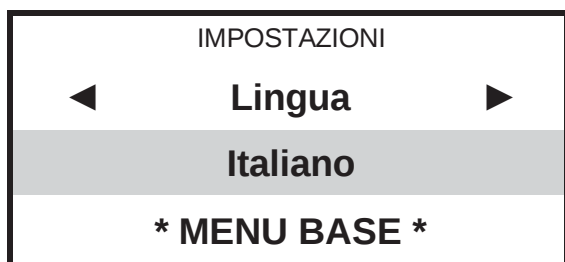
IN ENGLISH

5.4 SELECT THE LANGUAGE OF THE PROGRAMMING MENU

All models.

To select the language of the programming menu.

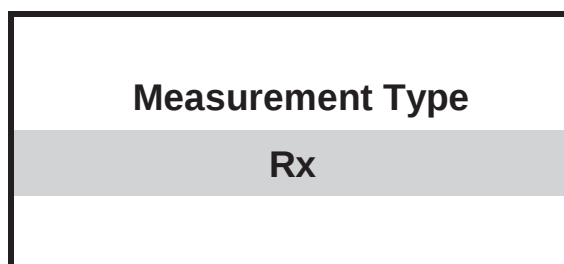
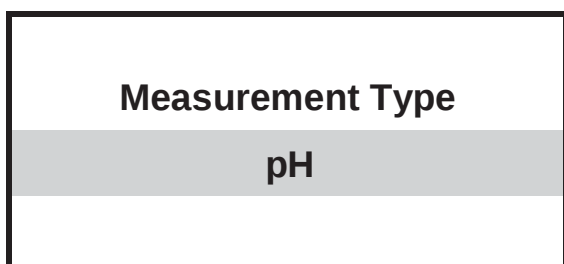
After selecting the Language (ITALIAN, ENGLISH), the programming menu adapts accordingly.



5.5 SELECT MEASUREMENT TYPE

5.5.1 PH or RX MEASUREMENT - Mod. ELIGERE 03 PH-RX-CL / ELIGERE 01 pH(RX) / ELIGERE 02 PH(RX)-CD / ELIGERE 02 PH(RX)-CL / ELIGERE 02-PH-RX

The instrument of the ELIGERE 02 series makes it possible to select the type of measurement to be used, i.e. PH or RX (Redox) in the same unit. The measurement parameter may be changed from PH to RX and the display and resolutions of the measurement change accordingly.



By selecting one of the two types of measurement, programming of the main Menu changes accordingly.



IMPORTANT.

After selecting **Measurement Type** PH or RX, **ENSURE** you connect the appropriate electrode.

In case the operator wants the **Measurement Type** also during operations, proceed as follows:

► **BASIC** menu: > **SETTINGS** > **EXPERT MENU** > **MENU SELECTION** > **SET POINT 1**
 > **Measurement Type**

► **EXPERT** menu: > **MENU SELECTION** > **SET POINT 1** > **Measurement Type**

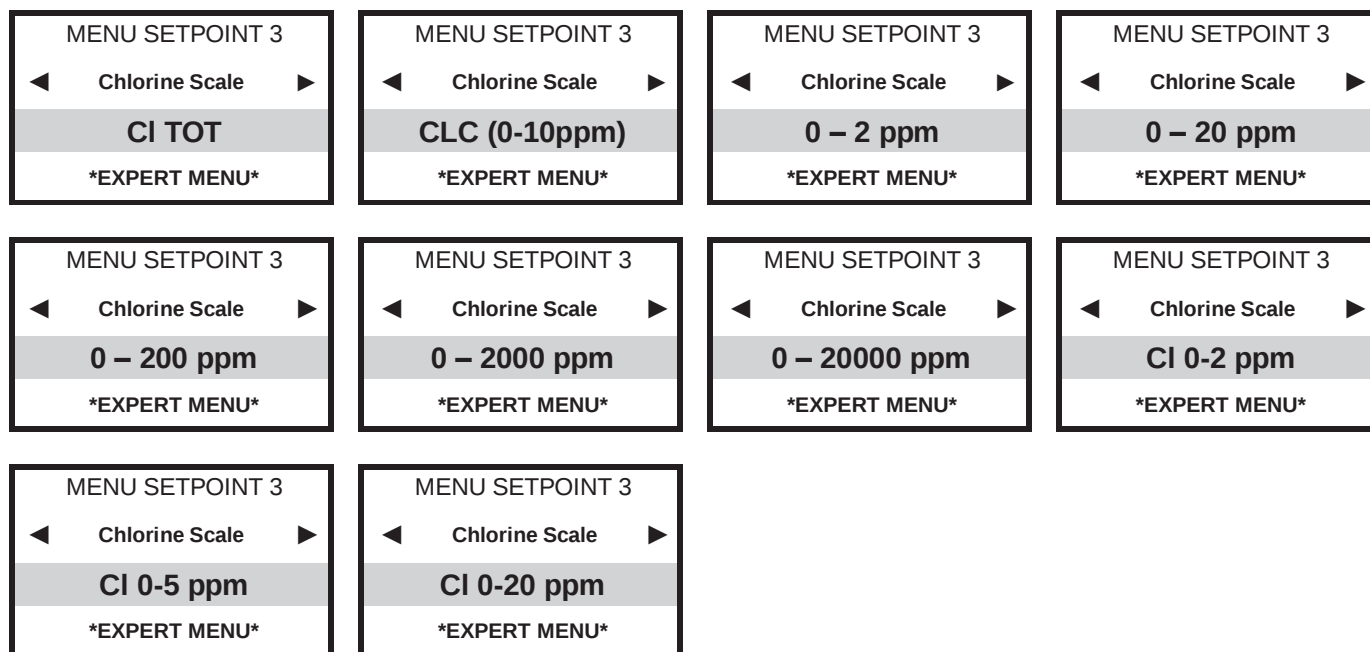
- Press **ESC** to go back to **MENU SELECTION** or press **ESC ESC** to go back to **MEASUREMENT DISPLAY**.

5.5.2 CHLORINE MEASUREMENT RANGE - Mod. ELIGERE 03 PH-RX-CL / ELIGERE 01 CL / ELIGERE 02 PH(RX)-CL

The instrument of the **ELIGERE 0x CL** series offers the option of selecting 4 chlorine measurement ranges and related sensors:

- Ion-selective membrane sensors with measurement ranges 0-2 Cl ppm (preset); 0-20 Cl ppm; 0-20 Cl ppm (Total chlorine);
- Open type amperometric cell (model CLC) range 0-10 Cl ppm

After making the selection, the measurement parameters displayed will change accordingly.



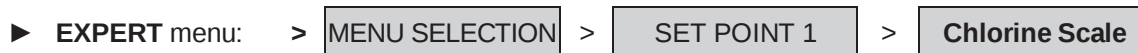
IMPORTANT.

After selecting the **CHLORINE SCALE**, **ENSURE** the appropriate **CHLORINE** sensor is connected.

In case the operator should want to change the **CHLORINE SCALE** range also during operations, proceed as follows:



⁽¹⁾ SET POINT 3 for 02 PH (RX)-CL model.



- Press **ESC** to go back to **MENU SELECTION** or press **ESC ESC** to go back to **MEASUREMENT DISPLAY**.

5.5.3 Constant K factor of the conductivity probe

5.5.3.1 Model: ELIGERE 01 CD

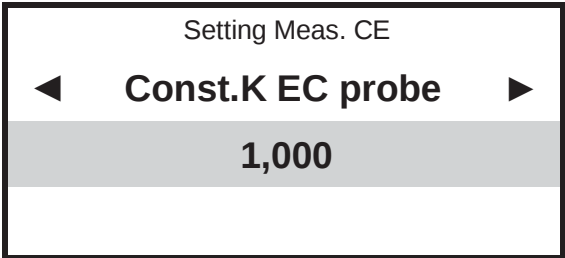
The conductivity value (EC) is automatically adjusted based on the conductivity ranges by adapting the regulator to the characteristics of the probe cells' "**K**" constant.

The regulator covers the ranges from **cell constant K 1 up to 20.00 mS** and up to 100.00 mS (the latter with graphite sensor electrodes) and the **K 5 constant up to 2,000 µS**. The display shows the µS values but if the setpoint value exceeds 1999 µS, it shows 2.00 mS (when the value decrease the reading goes back to µS). By selecting the K5 range (5,000) the setpoint will be 100 µS



IMPORTANT.

The µS ranges above are purely indicative; for example, a K1 probe can measure correctly below 1000 µS, the resolution will simply be less precise. However, the same concept does not apply for high ranges.

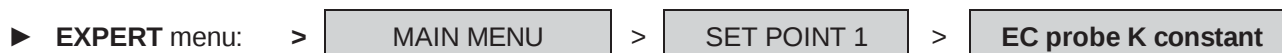
	The cell constant K default set at 1,000, press ◀▶ to edit the K value. K1 select 1,000 K5 select 5,000. The display shows the value in µS but if the selected value exceeds 1999 µS, it will show 2.00 mS
---	--



IMPORTANT.

Once the EC probe's K factor has been selected, **ENSURE** the **correct** conductivity sensor is connected.

If the user wishes to modify the EC K RANGE even during operation:



- Press **ESC** to go back to the **MAIN MENU** or press **ESC ESC** to display **CONTINUOUS MEASUREMENT**.

5.5.3.2 Model: ELIGERE 01 CD COOL / ELIGERE 02 PH(RX)-CD

The instrument is adjusted based on cell constant “K” of the probe in use.



IMPORTANT.

It is essential for the user to know the cell constant of the probe, provided by its manufacturer.

STANDARD OPERATIONAL CONDUCTIVITY RANGES

- **K1** up to 20.00 mS (20,000 μ S)
- **K5** up to 2,000 μ S

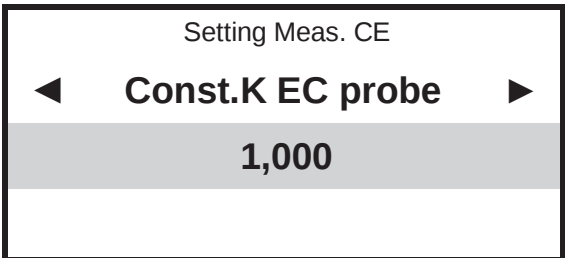
ON REQUEST other measurement ranges are possible only after approval by ETATRON D.S.

- **K0.8** up to 100 mS (100,000 μ S): the latter by means of probe with graphite electrode.
- **K10** up to 200 μ S with probe suitable to measure this range.

IMPORTANT.



The K1 probe with range 20,000 μ S, also makes it possible to measure low conductivity levels, example up to 200 μ S, but in these cases the values are indicative because resolution will be less accurate. However, the same concept does not apply to the other range, example: K5 probe may never measure values above its maximum range, i.e. 2.000 μ S.

	The cell constant K default set at 1,000, press ◀▶ to edit the K value. K1 select 1,000 K5 select 5,000. The display shows the value in μS but if the selected value exceeds 1999 μS, it will show 2.00 mS
---	--



IMPORTANT.

Ensure the selected K value matches that of the conductivity sensor in use.

The instrument adapts the measurements and display resolution based on the type of selected probe.

In case the user should wish to change the cell Constant Factor K, even during operations, act as follows:

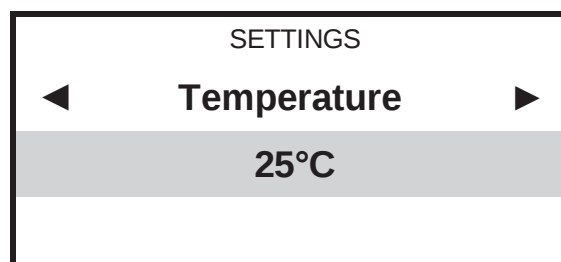
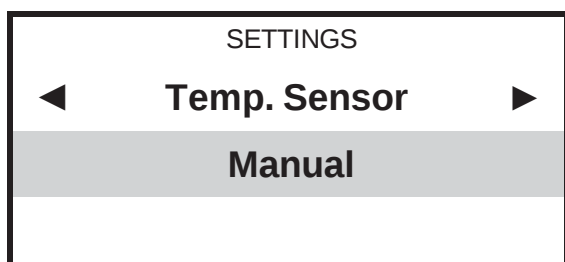


- Press **ESC** to go back to **MENU SELECTION** or press **ESC ESC** to go back to **MEASUREMENT DISPLAY**.

5.6 TEMPERATURE SETTINGS

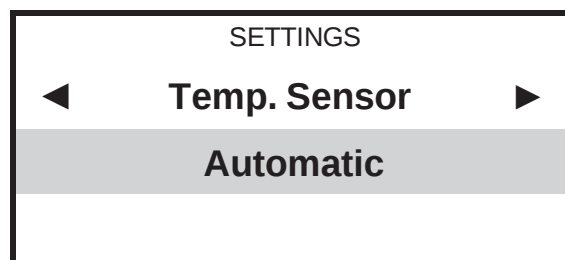
One of the following functional modes can be selected:

- **Manual:** the value is set by the user (0-100°C) in the configuration menu, it is the reference parameter for offsetting the pH value.
- **Automatic:** the value measured by the PT100 probe represents the parameter of reference for compensation of the chlorine value



Manual temperature offset 0-100°C.

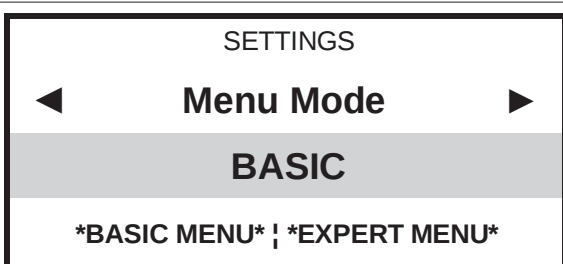
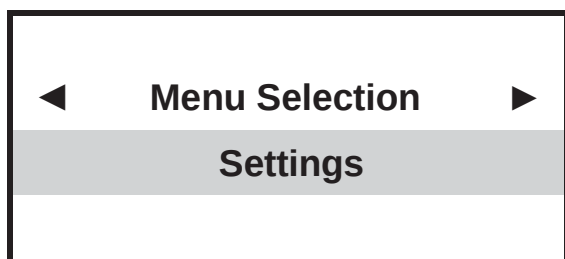
- Press ◀▶ to change the ambient temperature.



ALL MODELS: select AUTOMATIC offsetting for measurements and temperature offsetting with PT100 sensor. The value measured by the PT100 probe is the reference parameter for offsetting the chlorine value.

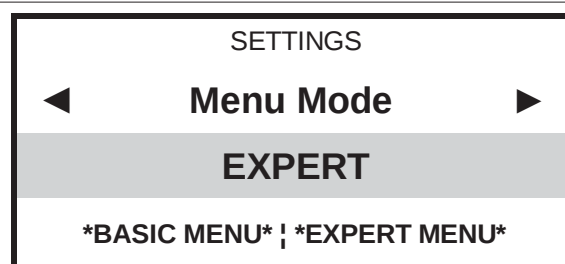
5.7 PROGRAMMING MENU

5.7.1 SETTINGS > BASIC MENU | EXPERT MENU



BASIC programming: simplified mode for non-professional operators.

Setpoint 1-2 < Setpoint value - Dosing - ON/OFF or Proportional mode – MIN/MAX Alarm (only on Setpoint1) > **Calibration** > **Settings** >

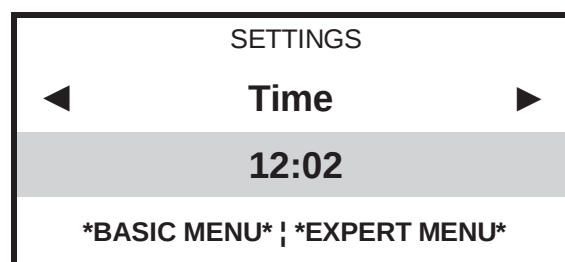
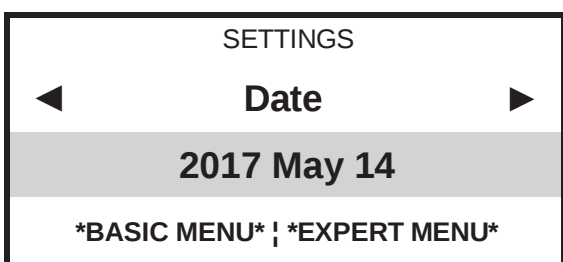


EXPERT programming: complete programming that includes functions for more refined control and results.

Setpoint 1-2 < Setpoint value - Dosing - ON/OFF or Proportional mode - Hysteresis - Setpoint delay - Temp. correction - MIN/MAX Alarm (only on Setpoint1) - Overdose - Max Dosage – Start-up delay > **4-20mA1** > **4-20mA2** > **Calibration** > **Start/Stop** > **Aux Output** > **Settings** >

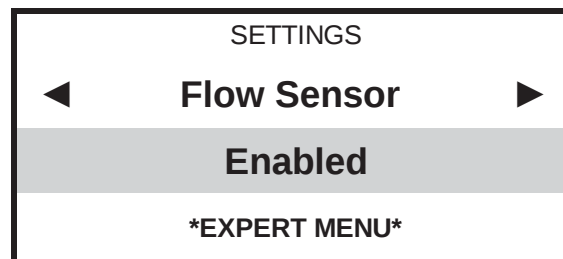
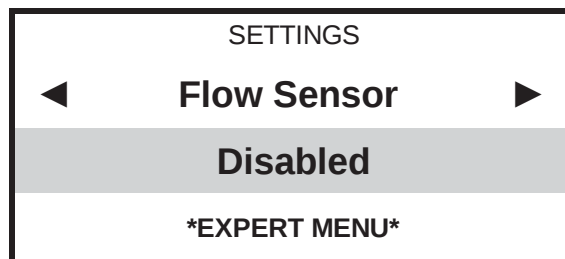


After selecting, for example, the **EXPERT** mode, the initial screen still shows **BASIC** but **EXPERT** is displayed as soon as you move to the next step or vice versa.



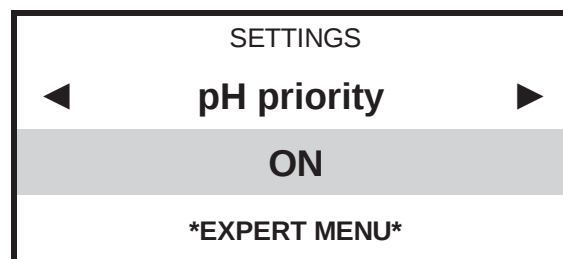
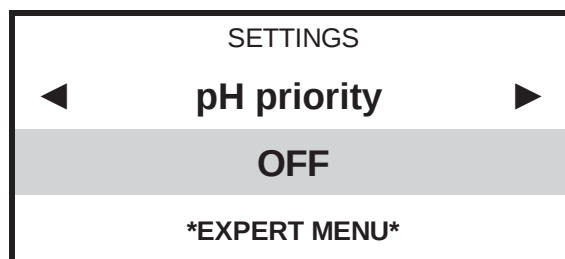
Program the date and time by selecting the backlit steps.

03 PH-RX-CL, 01 CL, 01 pH(RX), 01 CD, 02 PH(RX)-CD, 02 PH(RX)-CL, 02 PH-RX

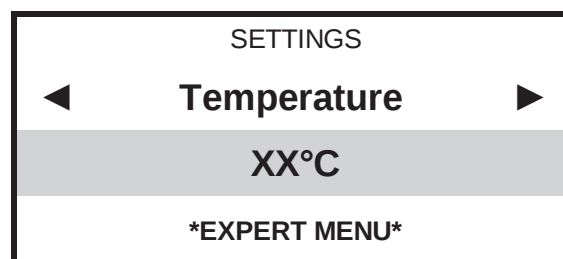
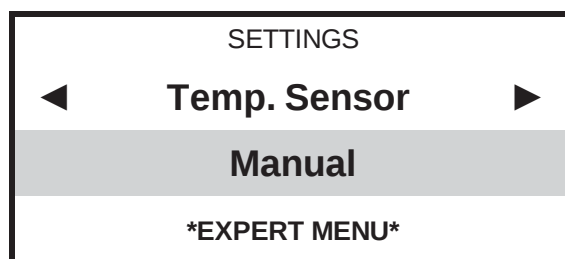


Flow Sensor: if there is no water flow in the probe socket (and possibly in the system), the flow sensor (proximity sensor), ENABLED, disables all outputs ensuring no chemical substance is added (DISABLED by default).

All models with pH measurement



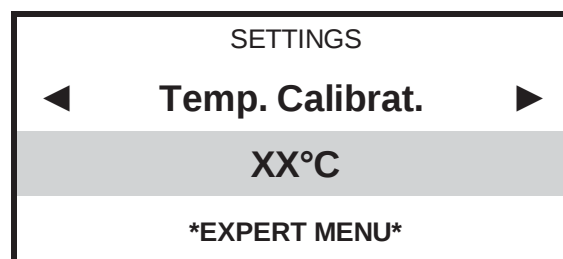
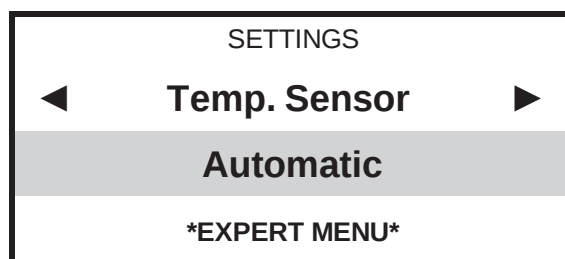
By enabling the pH priority function, the instrument is able to first reach the pH setpoint, then switch to product dosing operations (oxidising or reducing agent), thus assuring measurement stability



Manual temperature offset 0-100°C.

- Press ◀▶ to show the desired temperature.

01 CD



Press ◀▶ to show the ambient temperature and calibrate the sensor.

All models

SETTINGS

◀ **Temp. scale** ▶

°C

EXPERT MENU

SETTINGS

◀ **Temp. scale** ▶

°F

EXPERT MENU

You can choose to read the TEMPERATURE in degrees C° or degrees F°.

All models

SETTINGS

◀ **MIN ALARM** ▶

-20 °C

EXPERT MENU

SETTINGS

◀ **MAX ALARM** ▶

99 °C

EXPERT MENU

CAUTION: calibration is only in °C.

01 CD, 01 CD COOL

SETTINGS

◀ **Temp. Correction** ▶

0.0 %/°C

The **Alpha EC factor** is the correction factor for conductivity measurements according to temperature: **each conductivity sensor depends on the temperature**. Conductivity changes linearly with the temperature of the solution. This coefficient normalises the conductivity measurements at the reference temperature of 25°C.

For aqueous solutions, this coefficient varies 1.9%-2% per °C.

Select 0 if you do not wish to normalise reading. The Alpha factor assures the best measurement results and the best accuracy.

SETTINGS

◀ **Modbus Address** ▶

0

EXPERT MENU

SETTINGS

◀ **Modbus Baudrate** ▶

38400

EXPERT MENU

SETTINGS

◀ **TCP Address** ▶

192.168.1.100

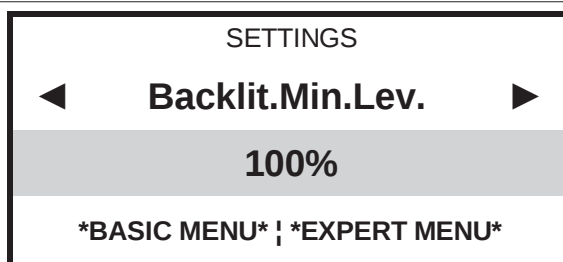
EXPERT MENU

Modbus address: 0 to 254

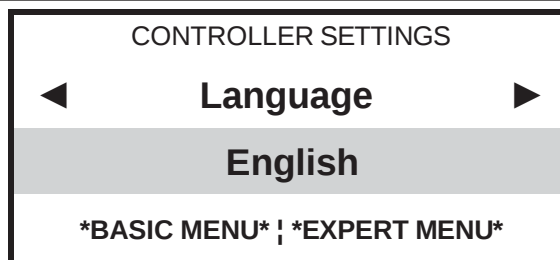
Baudrate Modbus: transmission speed

TCP address: IP address

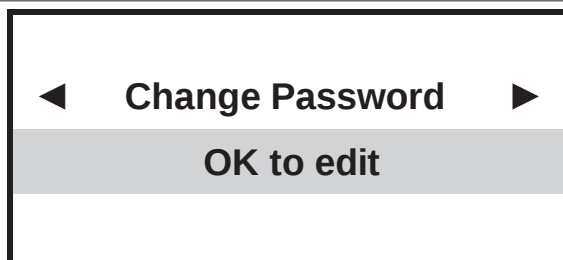
The above menus are **ONLY** displayed if the instrument of the ELIGERE series is connected to the external RS485 / ETHERNET module (for the settings, refer to the CONNECTION manual).



Adjusts the display backlighting to save energy; touching any button restores full brightness.



To select the language of the programming menu (ITALIAN/ENGLISH).
After selecting the Language, the programming menu adapts accordingly.



Entering the password prevents access to the menus (configuration and programming) by persons not authorised to do so .
The password must be numeric and consist of 4 digits.

When the password is activated, you are prompted to enter it when the pump is switched on and whenever an attempt is made to enter the programming and configuration menus. When, on the other hand, the password is not activated, you will not be prompted to enter anything and you can make any kind of setting.

Change Password

0000

Enter the 4 digits that make up the password.

Enter Pwd

0***

Each time a user tries to edit or enter a menu, he will be asked for his password.

To reset (or delete) the password:

- from the password setting menu set all 0000; the password is reset.

SETTINGS

Reset

NO

BASIC MENU | *EXPERT MENU*

DATA RESET: resets default factory settings. ONLY to be used when the parameters do not match or there are programming issues or when the operator wishes to restart from scratch.

NOT to be overused as many resets may undermine the instrument's efficiency.

SETTINGS

Reset

RESET

BASIC MENU | *EXPERT MENU*

SETTINGS

CONFIRM?

NO

BASIC MENU | *EXPERT MENU*

SETTINGS

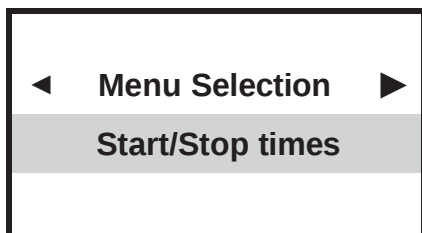
CONFIRM?

YES

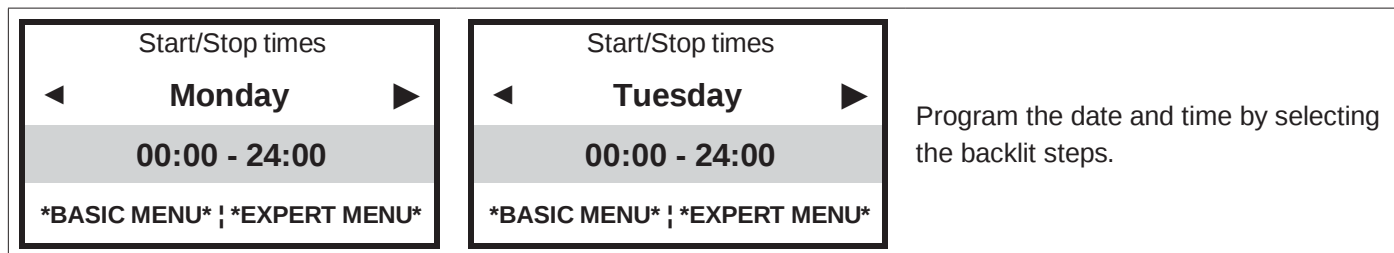
BASIC MENU | *EXPERT MENU*

- By confirming **YES**, the display goes out for about 1 second, then goes back to the **MEASUREMENT DISPLAY**.

5.7.2 START/STOP TIMES > BASIC MENU | EXPERT MENU



Timer in real time programs the days and exact time of instrument operations.



Program the date and time by selecting the backlit steps.

- Press **ESC** to go back to **MENU SELECTION** or press **ESC** to go back to the **MEASUREMENT DISPLAY**.

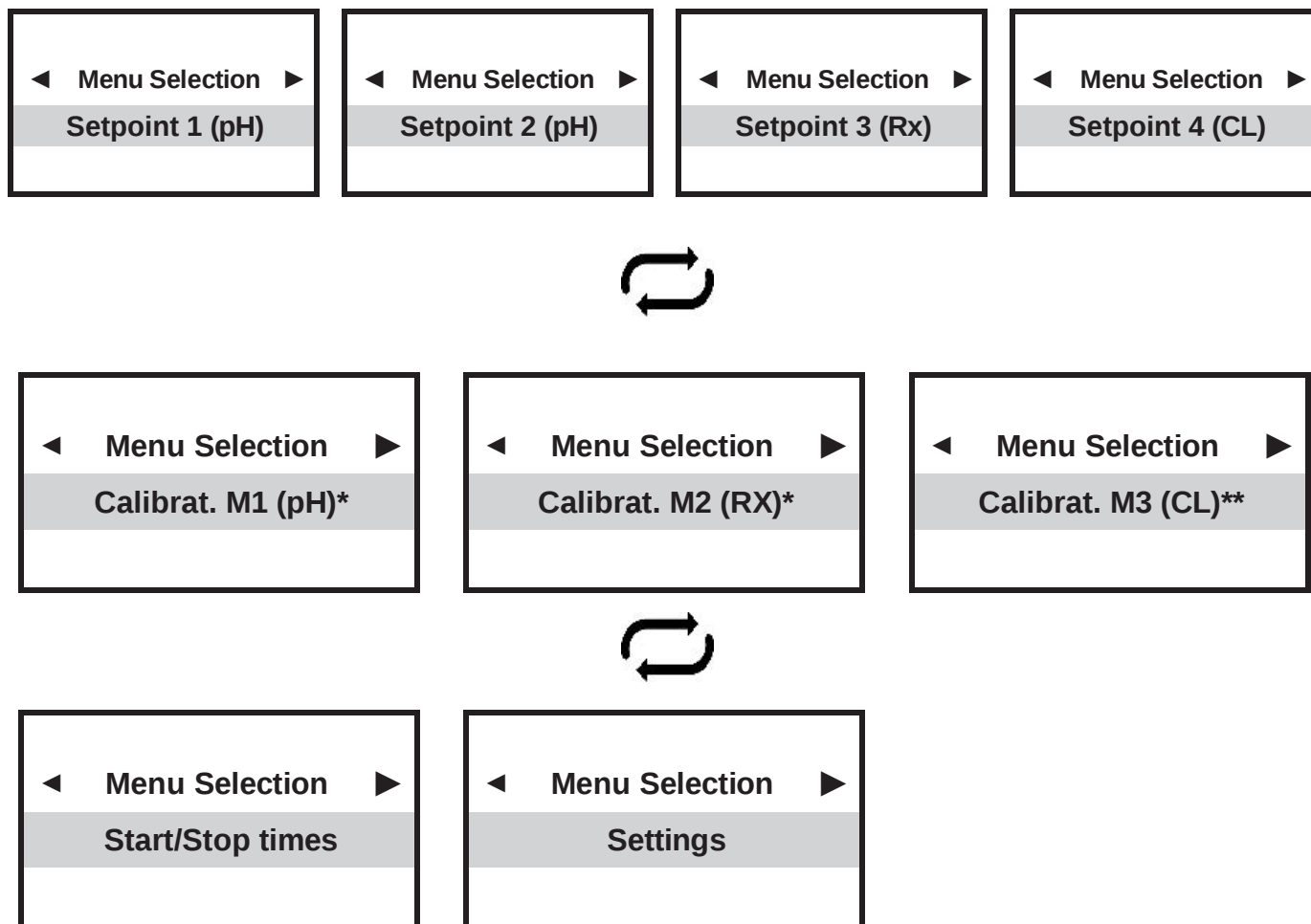
5.7.3 MAIN MENU > EXPERT PROGRAMMING MENU

Please refer to the programming of the relevant model.

5.8 PROGRAMMING: ELIGERE 03 PH-RX-CL

5.8.1 MAIN MENU > BASIC PROGRAMMING MENU

These are all the steps included in the **Main menu** configuration with the **BASIC** programming menu:



- Press **OK/MENU** to confirm the selection and to go on to the next sub-menu.
- Press **ESC** to go back to the **MEASUREMENT DISPLAY**.

5.8.2 SETPOINT 1 AND SETPOINT 2 PH > BASIC MENU



The two programming stages are set out below: when **Measurement Type pH** is selected, refer to the left column; when selecting **RX** refer to the right column.

SETPOINT1 PH

◀	Menu Selection	▶
Setpoint 1 (pH)		

MENU SETPOINT 1 (pH)		
◀	Setpoint Value	▶
7.00 pH		
BASIC MENU		

MENU SETPOINT 1 (pH)		
◀	Metering	▶
Acid		
BASIC MENU		

Setpoint 1 is set for operations in **ACID** mode, the output is active when the measured value is higher than the selected setpoint, the connected pump meters out an acid product.

MENU SETPOINT 1 (pH)		
◀	Metering	▶
Alkaline		
BASIC MENU		

MENU SETPOINT 1 (pH)		
◀	Mode	▶
ON/OFF		
BASIC MENU		

The unit has an **ON-OFF** mode which switches on or off (if the reverse mode is ON) the output relays of Constant / ON-OFF metering pumps or other ON-OFF equipment.

SETPOINT2 PH

◀	Menu Selection	▶
Setpoint 2 (pH)		

MENU SETPOINT 1 (pH)		
◀	Setpoint Value	▶
7.00 pH		
BASIC MENU		

MENU SETPOINT 1 (pH)		
◀	Metering	▶
Alkaline		
BASIC MENU		

Setpoint 2 is set for operations in **ALKALINE** mode, the output is active when the measured value is lower than the selected setpoint, the connected pump meters out an alkaline product.

MENU SETPOINT 1 (pH)		
◀	Metering	▶
Acid		
BASIC MENU		

MENU SETPOINT 1 (pH)		
◀	Mode	▶
ON/OFF		
BASIC MENU		



SELECTING 'ON-OFF' THE NEXT STEP WILL BE: "**MIN ALARM**" (SET POINT1 ONLY)

SETPOINT1 PH	SETPOINT2 PH
MENU SETPOINT 1 (pH) ◀ Mode ▶ Proportional *BASIC MENU*	MENU SETPOINT 2 (pH) ◀ Mode ▶ Proportional *BASIC MENU*

*Modular pulses, also known as PWM “pulse width modulation”, support a proportional mode on each setpoint, activating the corresponding pulses on the relays based on the measured value.
Default activation point 1.50 pH

For more accurate settings of the “**Modular pulses**” PWM, select the “**Expert**” menu in the initial settings.

 * GOING BACK TO THE SETPOINT PROGRAMMING STEPS FROM “**ON-OFF**” MODE OR FROM “**PROPORTIONAL**” MODE.

MENU SETPOINT 1 (pH) ◀ MIN Alarm ▶ - 1500 mV *BASIC MENU*	MENU SETPOINT 2 (pH) ◀ MAX Alarm ▶ - 1500 mV *BASIC MENU*
---	---

The **MIN** Alarm function selects a MINIMUM alarm level, after which the alarm relay is triggered.

The **MAX** Alarm function selects a MAXIMUM alarm level, after which the alarm relay is triggered.

MENU SETPOINT 1 pH / RX ◀ Priming ▶ OFF *BASIC MENU*	MENU SETPOINT 1 pH / RX ◀ Priming ▶ ON *BASIC MENU*
--	---

The priming function blocks the setpoint value to allow the metering pump to remain primed.

- Press **ESC** to go back to **MENU SELECTION** or press **ESC ESC** to go back to **MEASUREMENT DISPLAY**.

5.8.3 SETPOINT 3 RX (REDOX-ORP) > BASIC MENU



The two programming stages are set out below: when **Measurement Type pH** is selected, refer to the left column; when selecting **RX** refer to the right column.

SETPOINT3

◀ **Menu Selection** ▶

Setpoint 3 (RX)

MENU SETPOINT 3 (RX)

◀ **Setpoint Value** ▶

BASIC MENU



The setpoints activate the output relays for the metering pumps or other devices until the setpoint is reached.

MENU SETPOINT 3 (RX)

◀ **Metering** ▶

BASIC MENU

REDOX setpoint 3 is set for operations in **DIRECT** mode: the output is active when the measured value is lower than the selected setpoint, the connected pump meters out an oxidising product.

MENU SETPOINT 3 (RX)

◀ **Metering** ▶

BASIC MENU

In **REVERSE** mode, the output is active when the measured value is higher than the selected setpoint, the connected pump meters out a reducing product.

MENU SETPOINT 3 (RX)

◀ **Mode** ▶

BASIC MENU

The unit has an **ON-OFF** mode which switches on or off (if the reverse mode is ON) the output relays of Constant / ON-OFF metering pumps or other ON-OFF equipment.



SELECTING '**ON-OFF**' THE NEXT STEP WILL BE: "**MIN ALARM**" (SET POINT1 ONLY)

SETPOINT3

MENU SETPOINT 3 (RX)	
◀	Mode ▶
Proportional	
BASIC MENU	

*Modular pulses, also known as PWM “pulse width modulation”, support a proportional mode on each ON-OFF setpoint, activating the corresponding pulses on the relays based on the measured value.

Default activation point 150 mV

For more accurate settings of the “**Modular pulses**” PWM, select the “**Expert**” menu in the initial settings.

 * GOING BACK TO THE SETPOINT PROGRAMMING STEPS FROM “**ON-OFF**” MODE OR FROM “**PROPORTIONAL**” MODE.

MENU SETPOINT 3 (RX)	
◀	MIN Alarm ▶
- 1500 mV	
BASIC MENU	

The **MIN** Alarm function selects a MINIMUM alarm level, after which the alarm relay is triggered.

MENU SETPOINT 3 (RX)	
◀	MAX Alarm ▶
- 1500 mV	
BASIC MENU	

The **MAX** Alarm function selects a MAXIMUM alarm level, after which the alarm relay is triggered.

MENU SETPOINT 3 (RX)	
◀	Priming ▶
OFF	
BASIC MENU	

The priming function blocks the setpoint value to allow the metering pump to remain primed.

MENU SETPOINT 3 (RX)	
◀	Priming ▶
ON	
BASIC MENU	

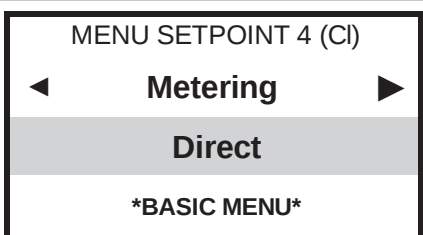
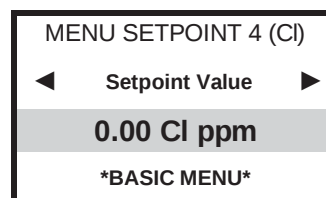
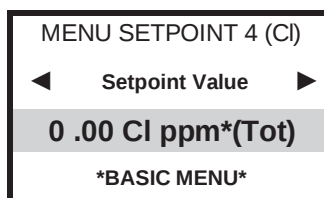
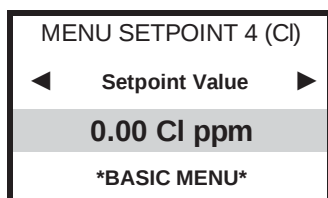
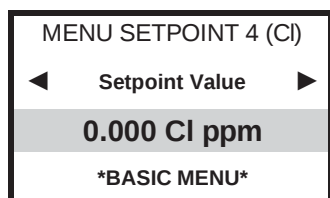
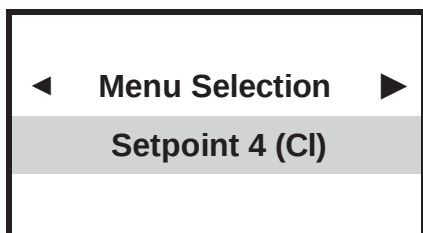
- Press **ESC** to go back to **MENU SELECTION** or press **ESC ESC** to go back to **MEASUREMENT DISPLAY**.

5.8.4 SETPOINT 4 CL CHLORINE > BASIC MENU

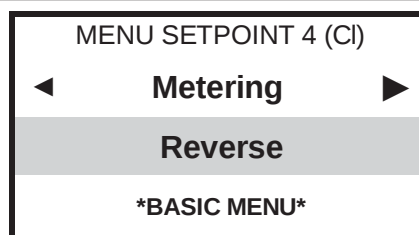
The instrument is preset by default for a 0-2 ppm range. By selecting the required chlorine range, the values displayed change accordingly. The setpoints will activate the output relays for the metering pumps or other devices once the setpoint level is selected.

The display shows the values according to the selected Chlorine Scale.

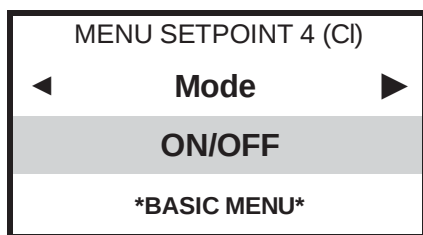
SETPOINT 4



Direct mode: the output is active when the measured value is lower than the one selected in the setpoint, the metering pump injects Chlorine.



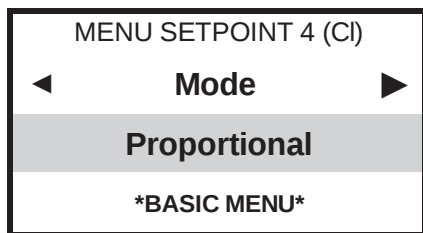
Reverse mode: the output is active also the measured value is higher than the one selected in the setpoint, the metering pump injects a Chlorine reducing agent.



The unit has an **ON-OFF** mode which switches on or off (if the reverse mode is ON) the output relays of Constant / ON-OFF metering pumps or other ON-OFF equipment.



SELECTING 'ON-OFF' THE NEXT STEP WILL BE: "MIN ALARM" (SET POINT1 ONLY)



Modular pulses, also known as PWM “pulse width modulation”, support a proportional mode on each ON-OFF setpoint, activating the corresponding pulses on the output relays based on the measured value and always relating to the previous selected settings.

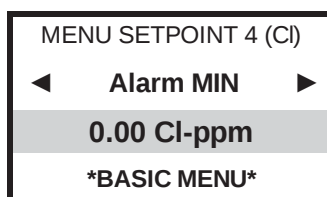
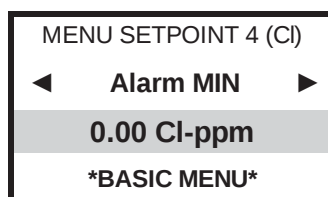
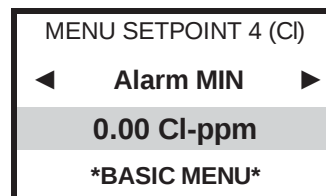
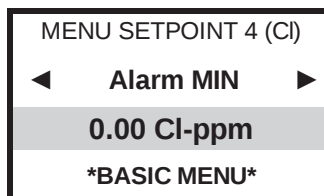
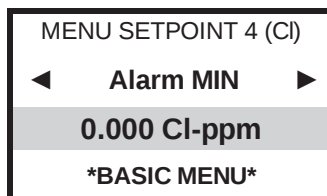
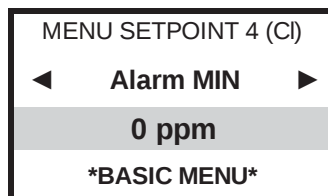
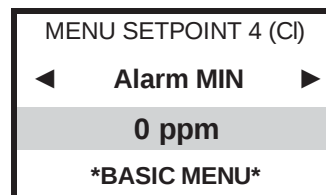
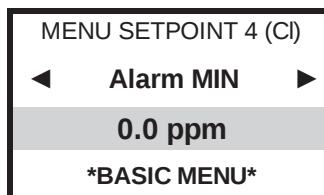
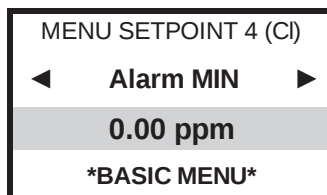
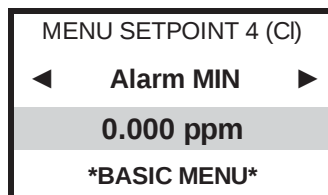
The default activation point is **0.050 ppm** (2 CI ppm); **0.50 ppm** (range 20 CI ppm, 20 CI ppm (Total), 0-10ppm CLC Cell)

For more accurate settings of the “**Modular pulses**” PWM, select the “**Expert**” menu in the initial settings.



* GOING BACK TO THE SETPOINT PROGRAMMING STEPS FROM “**ON-OFF**” MODE OR FROM “**PROPORTIONAL**” MODE

The MIN and MAX Alarm function selects the alarm levels beyond which the alarm relay is triggered on.



MENU SETPOINT 4 (CI)
◀ Alarm MAX ▶
2 ppm
BASIC MENU

MENU SETPOINT 4 (CI)
◀ Alarm MAX ▶
20 ppm
BASIC MENU

MENU SETPOINT 4 (CI)
◀ Alarm MAX ▶
200 ppm
BASIC MENU

MENU SETPOINT 4 (CI)
◀ Alarm MAX ▶
2000 ppm
BASIC MENU

MENU SETPOINT 4 (CI)
◀ Alarm MAX ▶
20000 ppm
BASIC MENU

MENU SETPOINT 4 (CI)
◀ Alarm MAX ▶
2.0 CI-ppm
BASIC MENU

MENU SETPOINT 4 (CI)
◀ Alarm MAX ▶
5.00 CI-ppm
BASIC MENU

MENU SETPOINT 4 (CI)
◀ Alarm MAX ▶
20.00 CI-ppm
BASIC MENU

MENU SETPOINT 4 (CI)
◀ Alarm MAX ▶
20.00 CI-ppm
BASIC MENU

MENU SETPOINT 4 (CI)
◀ Alarm MAX ▶
10.00 CI-ppm
BASIC MENU

ONLY WHEN USING METERING PUMPS

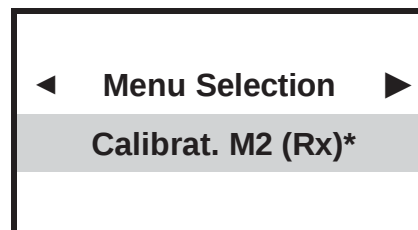
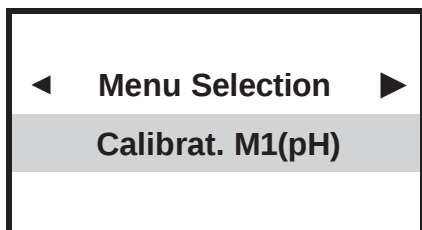
MENU SETPOINT 4 (CI)
◀ Priming ▶
OFF
EXPERT MENU

MENU SETPOINT 4 (CI)
◀ Priming ▶
ON
EXPERT MENU

The priming function blocks the setpoint value to allow the metering pump to remain primed, the outputs are not active.

- Press **ESC** to go back to **MENU SELECTION** or press **ESC ESC** to go back to **MEASUREMENT DISPLAY**.

5.8.5 Sensor calibration



- Press **OK/MENU** to confirm the selection and go to the next sub-menu.

5.8.5.1 PH electrode calibration > BASIC MENU

Calibration operations follow the type of parameter previously selected in the **Measurement Type** menu

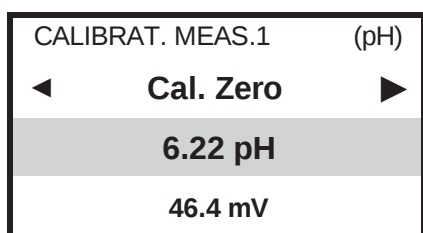
- Press **OK/MENU** to confirm the selection and go to the next sub-menu.

According to the selected **Measurement Type**, the Calibration menu shows the electrode to be calibrated.

We suggest using new or however uncontaminated buffer solutions.

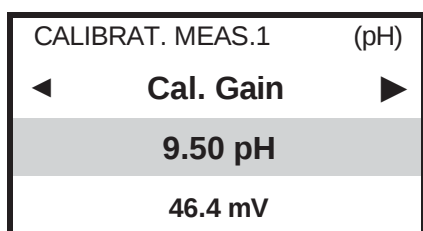
As for the length of the pH electrode we advise max 9 m: contact ETATRON for longer distances.

The mV value at the bottom of the screen shows the electrode's efficiency (according to the manufacturer's specifications)



* When the Calibration starts, the display shows random values.

- Dip the pH electrode in the buffer solution at pH 7.00 for ZERO calibration, wait 2/3 minutes.
- Press ◀▶ and ensure the display shows 7.00 pH.
- Rinse the electrode with water (possibly demineralised) and dry with a clean cloth or paper tissues.

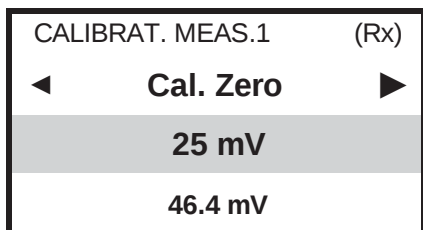


- Dip the pH electrode in the buffer solution at pH 4 or pH 9 for "Gain" calibration, wait 2/3 min.
- Press ◀▶ until the display shows **4.00 pH** or **9.00 pH**.
- Press **OK/MENU** to confirm the selection
- Press **ESC** to go back to the **MENU SELECTION**
- Press **ESC ESC** to go back to the **MEASUREMENT DISPLAY**.



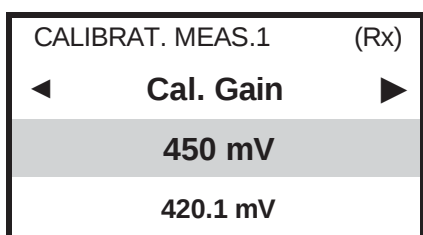
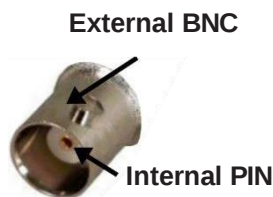
As the pH measurement is essential for the entire chemical-physical balance, it is recommended to periodically calibrate the pH electrode.

5.8.5.2 RX (REDOX) electrode calibration > BASIC MENU



* When the Calibration starts, the display shows random values.

Short-circuit the BNC by using a copper wire (for calibration only) to put in contact the internal PIN with the external part of the connector.



- Press ◀▶ and ensure the display shows **0 mV**.
- Connect the BNC of the electrode to the instrument.
- Dip the RX electrode in the REDOX buffer solution for "Gain" calibration, wait 2/3 minutes.
- Press ◀▶ and ensure the display shows the mV value corresponding to the buffer solution used.
- Press **OK/MENU** to confirm the selection
- Press **ESC** to go back to the **MENU SELECTION**
- Press **ESC ESC** to go back to the **MEASUREMENT DISPLAY**.



The mV value at the bottom shows the electrode signal and consequently its efficiency (according to the manufacturer's specifications). Refer to the electrode's instructions and ensure the mV value displayed matches that of the buffer solution with a tolerance of $\pm 20\text{mV}$.

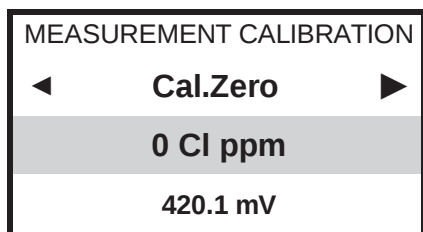
5.8.5.3 Chlorine sensor calibration

The chlorine parameter has 3 ranges suitable for ion-selective membrane sensors (one of which for the Total chlorine) and 1 range for open type amperometric cells.

During calibration, the - (minus) sign might be displayed, which disappears or is removed by correct settings! The mV value in the lower part of the display shows the sensor signal in mV thus indicating the sensor's efficiency. It is recommended to perform constant checks and recalibration of the sensor via DPD1 and DPD3 or, when using Open chlorine cells, to clean the cell's electrodes.



- **FOR OPEN CELLS:** add a flow of system water without Chlorine into the Cell, about 40-50 l/h.
- **FOR ION-SELECTIVE MEMBRANE SENSORS:** place the sensor in a container with system water with no chlorine readings and gently stir the sensor (preventing the tip from touching any surface and without any air bubbles) and wait for the measurement to stabilise.



- Wait 5/10 minutes, press ◀▶ until 0.00 is displayed, press OK/MENU.

If the chemical ZERO (chlorine-free water) cannot be carried out, the ZERO calibration must not be changed, DO NOT SHORTEN the measurement.

The operator must STRICTLY be an expert:

NOTE: this method assures calibration of the instrument's **electronic ZERO**, this might not be equivalent to the real value of the water without chlorine, i.e. the chemical physical Zero of chlorine-free water.

For this operation **DISCONNECT THE SENSOR !!!!**

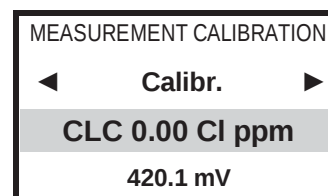
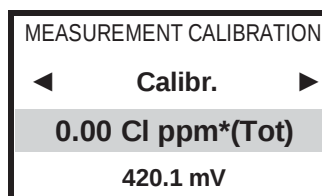
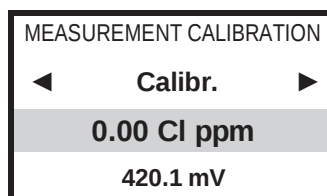
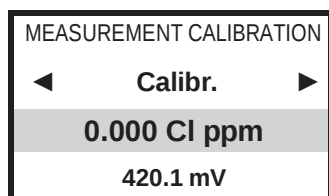
- Press and hold ▲▼ until 0.00 is displayed then confirm ▶ **OK/MENU**

Another way to calibrate Zero, in the case of Open cells, is to use activated carbon filters.

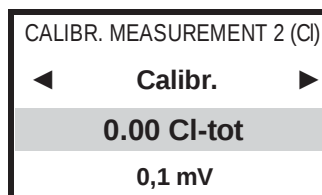
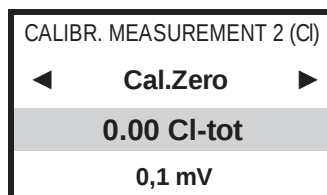
- Install a by-pass system in front of the sensor holder and pass water at a constant flow rate of 40/50 l/h through an activated carbon cartridge.
- Press ▲▼ until 0.00 is shown, then confirm ▶ **OK / MENU**.

NOTE: Activated Carbon tends to reduce the pH reading thus making calibration redundant, it may only be used for one operation and does not guarantee the actual Zero. This is the least recommended method due to its complexity.

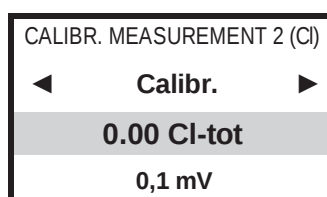
GO TO THE SECOND CALIBRATION POINT



EXPERT MENU



BASIC MENU



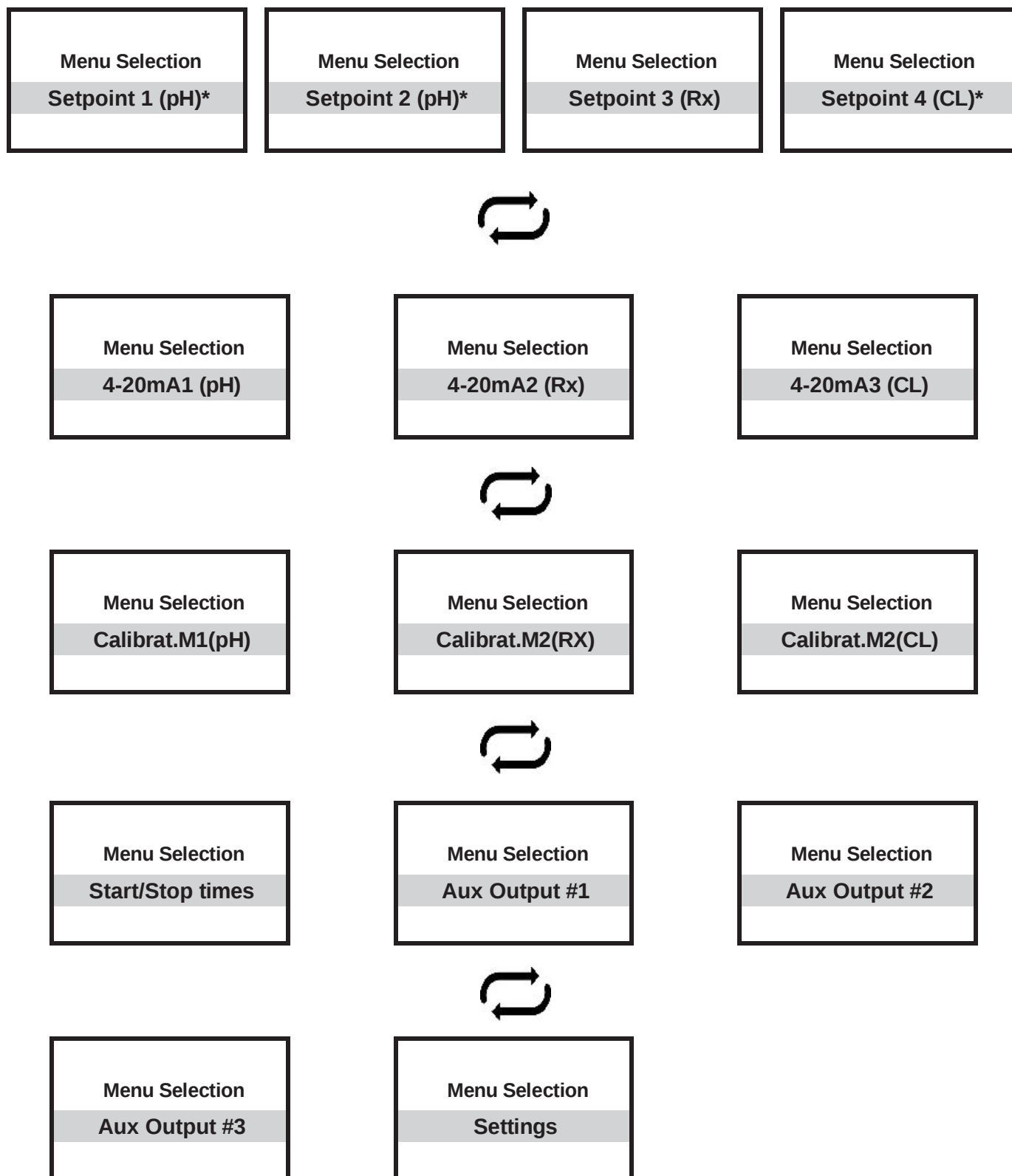
Select the value of the required sample solution and check with the test kit **DPD1** for free chlorine or **DPD3** for total chlorine, or with portable instrument, measure the chlorine concentration in ppm (residual or total) in water, wait for the measurement to stabilise and match the DPD value obtained.

- Press **OK/MENU** to confirm the selection.
- Press **ESC** to go back to the **MENU SELECTION**
- Press **ESC ESC** to go back to the **MEASUREMENT DISPLAY**.



For **CALIBRATION** and **MAINTENANCE**, ALWAYS refer to the manual of the relevant probe

5.8.6 MAIN MENU > EXPERT PROGRAMMING MENU



- Press **OK/MENU** to confirm the selection and to go on to the next sub-menu.
- Press **ESC** to return to the **MEASUREMENT DISPLAY**.

5.8.7 SETPOINT 1 PH AND SETPOINT 1 RX > EXPERT MENU



The setpoint activates the output relays for the metering pumps or other devices until the setpoint value is reached.

SETPOINT1 PH

Menu Selection
Setpoint 1 (pH)

MENU SETPOINT 1 (pH)
◀ Setpoint Value ▶
7.00 pH
EXPERT MENU

MENU SETPOINT 1 (pH)
◀ Metering ▶
Acid
EXPERT MENU

Setpoint 1 is set for operations in **ACID** mode, the output is active when the measured value is higher than the selected setpoint, the connected pump meters out an acid product.

MENU SETPOINT 1 (pH)
◀ Metering ▶
Alkaline
EXPERT MENU

SETPOINT1 (RX)

Menu Selection
Setpoint 1 (RX)

MENU SETPOINT 1 (RX)
◀ Setpoint Value ▶
200 mV
EXPERT MENU

MENU SETPOINT 1 (RX)
◀ Metering ▶
Alkaline
EXPERT MENU

Setpoint 2 is set for operations in **ALKALINE** mode, the output is active when the measured value is lower than the selected setpoint, the connected pump meters out an alkaline product.

MENU SETPOINT 1 (RX)
◀ Metering ▶
Acid
EXPERT MENU

MENU SETPOINT 1 (pH)	
◀	Mode ▶
ON/OFF	
EXPERT MENU	

MENU SETPOINT 1 (RX)	
◀	Mode ▶
ON/OFF	
EXPERT MENU	

The unit has an **ON-OFF** mode which switches on or off (if the reverse mode is ON) the output relays of Constant / ON-OFF metering pumps or other ON-OFF equipment.

MENU SETPOINT 1 (pH)	
◀	Mode ▶
Proportional	
EXPERT MENU	

MENU SETPOINT 1 (RX)	
◀	Mode ▶
Proportional	
EXPERT MENU	

Modular pulses, also known as PWM “pulse width modulation”, support a proportional mode on each ON-OFF setpoint, activating the corresponding pulses on the output relays based on the measured value. When the Expert Menu is used, other parameters need to be programmed.



SELECTING '**ON-OFF**' THE NEXT PROGRAMMING STEP: '**HYSTERESIS**'.



SELECTING "**PROPORTIONAL**" REQUIRES PROGRAMMING THE NEXT STEPS

PWM PROPORTIONALMODE FOR PH WITH TIMED PULSES

MENU SETPOINT 1/2 (pH)	
◀	Window width ▶
1.50 pH	
EXPERT MENU	

Window width: pulses are timed ON and OFF based on the distance from the selected setpoint, programmable, example: if the selected setpoint is 7.00 pH and the measured value is 9.00 pH, the **PWM** mode starts after reaching 8.50 pH with Time/Pause pulses and decreasing the active time while reaching the setpoint.

MENU SETPOINT 1/2 (pH)	
◀	Cycle Duration ▶
EXPERT MENU	

Cycle Duration: the PWM mode has a 60 second cycle (programmable), example: setpoint is 700 mV, measured value 850 pH = active time 60 sec - pause time = 0 sec; at 7.75 pH active time = 30 sec - pause time = 30 sec... as a consequence the active time decreases while reaching the setpoint. The cycle time depends on many variables, such as: distance from the injection point of the system to be treated, how fast or slowly the setpoint must react, chemical concentration, etc.

MENU SETPOINT 1/2 (pH)	
◀	Min.Active Time ▶
EXPERT MENU	

MIN Active Time: programmable. Defines the minimum time for which PWM is active; prevails over the selected settings. The pulse modulation function is adjusted with 3 functions according to the following formula: Active Time in accordance with the selected formula = (measured value - setpoint) / (period width * cycle time). If the result of the formula is < of that selected with MIN Active Time, the latter prevails on the former.



SELECTING 'ON-OFF' THE NEXT PROGRAMMING STEP: 'HYSTERESIS'.

FUNCTION NOT AVAILABLE WITH PROPORTIONAL MODE

MENU SETPOINT 1 (pH)	
◀	Hysteresis ▶
0.05 pH	
EXPERT MENU	

MENU SETPOINT 1 (RX)	
◀	Hysteresis ▶
0.05 pH	
EXPERT MENU	

Hysteresis is useful during operations to adjust the setpoints in ON-OFF mode and is used to enable and disable the output relay when the selected hysteresis has been achieved.

Hysteresis is useful when there are too many quick swings around the setpoint, that might damage the connected device.

FUNCTION NOT AVAILABLE WITH PROPORTIONAL MODE

MENU SETPOINT 1 pH / RX	
◀	Set point del. ▶
5 sec	
EXPERT MENU	

The **Delay time** blocks the output relays (max 999 sec. programmable) to ensure the outputs are active only when the measurements are stable, thus assuring the best results in terms of chemical balance.



* GOING BACK TO THE SETPOINT PROGRAMMING STEPS FROM THE "ON-OFF" MODE OR "PROPORTIONAL" MODE.

MENU SETPOINT 1 (pH)	
◀	Measurement Type ▶
pH	
EXPERT MENU	

The PH measurement parameter can be changed into RX by simple programming and by using the RX electrode.

MENU SETPOINT 1 (pH)	
◀	MIN Alarm ▶
0.00 pH	
EXPERT MENU	

The MIN Alarm function selects a **MINIMUM** alarm level after which the alarm relay is triggered.

MENU SETPOINT 1 (pH)	
◀	MAX Alarm ▶
14.00 pH	
EXPERT MENU	

The MAX Alarm function selects a **MAXIMUM** alarm level after which the alarm relay is triggered.

MENU SETPOINT 1 (pH)	
◀	Overdose ▶
00.00 h:m	
EXPERT MENU	

With the **overdose time alarm** one can select a period during which the setpoint must be reached. If the setpoint is not reached during this period of time, the instrument blocks output operations, including those in mA (metering pumps), the alarm is displayed as ON and triggers a signalling instrument if it is connected to the alarm relay.

MENU SETPOINT 1 pH / RX	
◀	Max. Dosing ▶
000 (no limit)	
EXPERT MENU	

MENU SETPOINT 1 pH / RX	
◀	Max. Dosing ▶
000 m / 00 h	
EXPERT MENU	

Maximum Dosing is an extra safety function that ensures metering is completed in the selected time.

This function makes it possible to eliminate time limits (continuous metering according to the selected setpoints) or to select the minutes (up to 999) and the hours, for instance metering for 999 minutes in 24 hours.

MENU SETPOINT 1 pH / RX	
◀	Start-up Delay ▶
00.00 h:m	
EXPERT MENU	

The **start-up delay** stops the output relays when the unit is switched on, thus allowing the sensor to polarise assuring reliable measurements (programmable).

MENU SETPOINT 1 pH / RX	
◀	No Flux Delay ▶
00.00 h:m	
EXPERT MENU	

It is possible to set a **no flux delay time**; if the lack of flow is longer than the set time, the controller waits for the time set in the 'Start Delay' parameter, before eventually enabling the various outputs to control the pumps.

MENU SETPOINT 1 pH	
◀	Level Delay ▶
00.00 h:m	
EXPERT MENU	

It is possible to set a **delay time on the level alarm**, the controller goes into alarm as soon as it receives contact from the relevant level probe, but only switches off the pumps connected to it after the previously set time.

ONLY WHEN USING METERING PUMPS

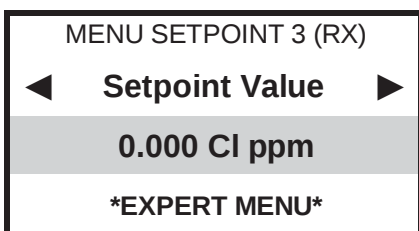
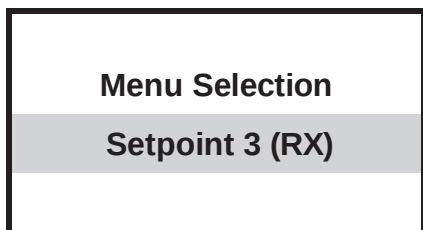
MENU SETPOINT 1 pH / RX	
◀	Priming ▶
OFF	
EXPERT MENU	

MENU SETPOINT 1 pH / RX	
◀	Priming ▶
ON	
EXPERT MENU	

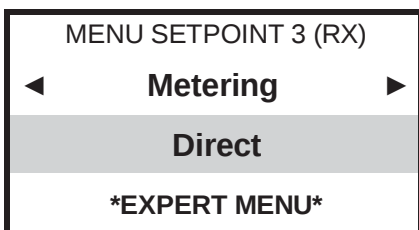
The priming function blocks the setpoint value to allow the metering pump to remain primed.

- Press **ESC** to go back to **MENU SELECTION** or press **ESC ESC** to go back to **MEASUREMENT DISPLAY**.

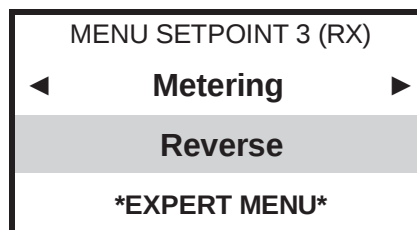
5.8.8 SETPOINT 3 RX (REDOX-ORP) > EXPERT MENU



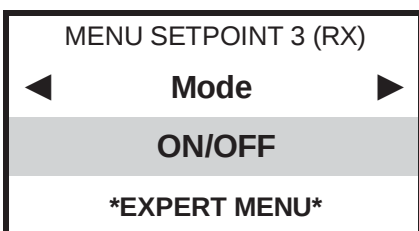
The setpoints activate the output relays for the metering pumps or other devices until the setpoint is reached.



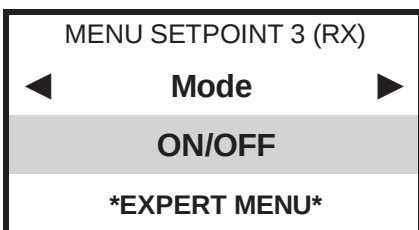
Direct mode: the output is active when the measured value is lower than the one selected in the setpoint, the connected pump meters out an oxidising product.



Reverse mode: the output is active, also the measured value is higher than the one selected in the setpoint, the connected pump meters out a reducing agent



The unit has an **ON-OFF** mode which switches on or off (if the reverse mode is ON) the output relays of Constant / ON-OFF metering pumps or other ON-OFF equipment.



The unit has an **ON-OFF** mode which switches on or off (if the reverse mode is ON) the output relays of Constant / ON-OFF metering pumps or other ON-OFF equipment.



SELECTING 'ON-OFF' THE NEXT PROGRAMMING STEP: 'MIN ALARM' (SET POINT1 ONLY).

MENU SETPOINT 3 (RX)

◀ **Mode** ▶

Proportional

EXPERT MENU

*Modular pulses, also known as PWM “pulse width modulation”, support a proportional mode on each ON-OFF setpoint, activating the corresponding pulses on the relays based on the measured value.

Default activation point 150 mV



SELECTING 'ON-OFF' THE NEXT PROGRAMMING STEP: 'HYSTERESIS'.



SELECTING “PROPORTIONAL” REQUIRES PROGRAMMING THE NEXT STEPS

PWM PROPORTIONAL MODE WITH TIMED PULSES

MENU SETPOINT 3 (RX) ◀ Window width ▶ 150 mV *EXPERT MENU*	Window width: pulses are timed ON and OFF based on the distance from the selected setpoint, programmable, example: if the selected setpoint is 750 mV and the measured value is 500 mV, the PWM mode starts after reaching 550 mV with Time/Pause pulses and decreasing the active time while reaching the setpoint
MENU SETPOINT 3 (RX) ◀ Cycle Duration ▶ 60 sec *EXPERT MENU*	Cycle Duration: the PWM mode has a 60 second cycle (programmable), example: setpoint is 700 mV, at measured value 550 mV = active time 60 sec - pause time = 0 sec; at 625 mV active time = 30 sec - pause time = 30 sec... as a consequence the active time decreases while reaching the setpoint. The cycle time depends on many variables, such as: distance from the injection point of the system to be treated, how fast or slowly the setpoint must react, chemical concentration, etc.
MENU SETPOINT 3 (RX) ◀ Min.Active Time ▶ 5 sec *EXPERT MENU*	MIN Active Time: programmable. Defines the minimum time for which PWM is active; prevails over the selected settings. The pulse modulation function is adjusted with 3 functions according to the following formula: Active Time in accordance with the selected formula = (measured value - setpoint) / (period width * cycle time). If the result of the formula is < of that selected with Active Time



SELECTING 'ON-OFF' THE NEXT PROGRAMMING STEP: 'HYSTERESIS'.

FUNCTION NOT AVAILABLE WITH PROPORTIONAL MODE

MENU SETPOINT 3 (RX)	
◀	Hysteresis ▶
10 mV	
EXPERT MENU	

Hysteresis is useful during operations to adjust the setpoints in ON-OFF mode and is used to enable and disable the output relay when the selected hysteresis has been achieved.

Hysteresis is useful when there are too many quick swings around the setpoint, that might damage the connected device.

By increasing hysteresis it is possible to move away from the setpoint in accordance with the required value.

FUNCTION NOT AVAILABLE WITH PROPORTIONAL MODE

MENU SETPOINT 1 (pH)	
◀	Set point del. ▶
5 sec	
EXPERT MENU	

The Delay time blocks the output relays (max 999 sec. programmable) to ensure the outputs are active only when the measurements are stable, thus assuring the best results in terms of chemical balance.



* GOING BACK TO THE SETPOINT PROGRAMMING STEPS FROM THE "ON-OFF" MODE OR "PROPORTIONAL" MODE.

FUNCTION ONLY AVAILABLE WITH SETPOINT 1

MENU SETPOINT 3 (RX)	
◀	MIN Alarm ▶
-1500 mV	
EXPERT MENU	

MENU SETPOINT 3 (RX)	
◀	MAX Alarm ▶
1500 mV	
EXPERT MENU	

The MIN Alarm function selects a MINIMUM alarm level, after which the alarm relay is triggered.

The MAX Alarm function selects a MAXIMUM alarm level, after which the alarm relay is triggered.

MENU SETPOINT 3 (RX)	
◀	Overdose ▶
00.00 h:m	
EXPERT MENU	

With the **overdose time** alarm one can select a period during which the setpoint must be reached. If the setpoint is not reached during this period of time, the instrument blocks output operations, including those in mA (metering pumps), the alarm is displayed as ON and triggers a signalling instrument if it is connected to the alarm relay.

MENU SETPOINT 3 (RX)	
◀	Max. Dosing ▶
000 (no limit)	
EXPERT MENU	

MENU SETPOINT 3 (RX)	
◀	Max. Dosing ▶
000 m / 00 h	
EXPERT MENU	

Maximum Dosing is an extra safety function that ensures metering is completed in the selected time.

This function makes it possible to eliminate time limits (continuous metering according to the selected setpoints) or to select the minutes (up to 999) and the hours, for instance metering for 999 minutes in 24 hours.

MENU SETPOINT 3 (RX)	
◀	Start-up Delay ▶
00.00 h:m	
EXPERT MENU	

The **start-up delay** stops the output relays when the unit is switched on, thus allowing the sensor to polarise assuring reliable measurements (programmable).

MENU SETPOINT 3 RX	
◀	No Flux Delay ▶
00.00 h:m	
EXPERT MENU	

It is possible to set a **no flux delay time**; if the lack of flow is longer than the set time, the controller waits for the time set in the 'Start Delay' parameter, before eventually enabling the various outputs to control the pumps.

MENU SETPOINT 3 RX	
◀	Level Delay ▶
00.00 h:m	
EXPERT MENU	

It is possible to set a **delay time on the level alarm**, the controller goes into alarm as soon as it receives contact from the relevant level probe, but only switches off the pumps connected to it after the previously set time.

ONLY WHEN USING METERING PUMPS

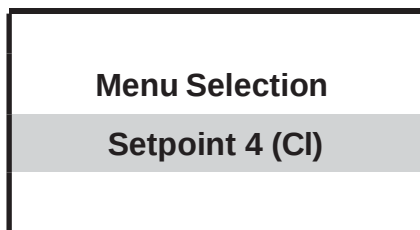
MENU SETPOINT 3 (RX)	
◀	Priming ▶
OFF	
EXPERT MENU	

MENU SETPOINT 3 (RX)	
◀	Priming ▶
ON	
EXPERT MENU	

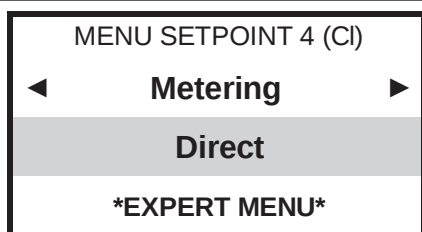
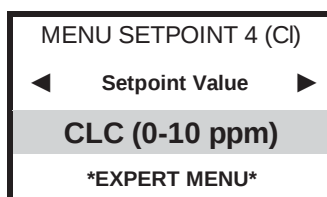
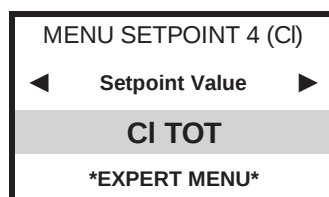
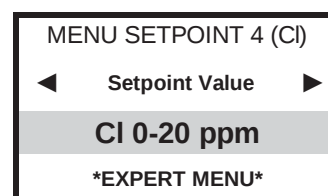
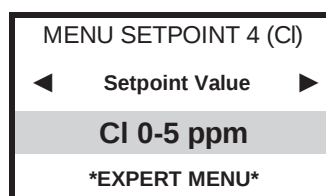
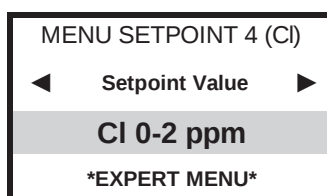
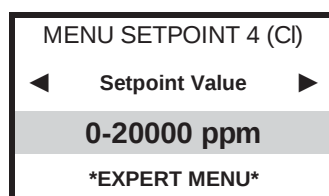
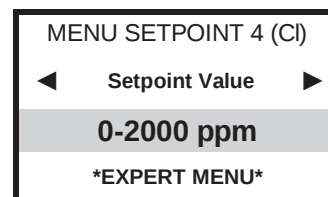
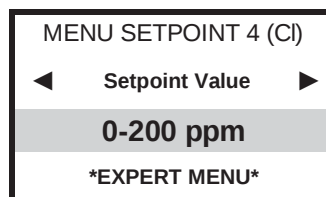
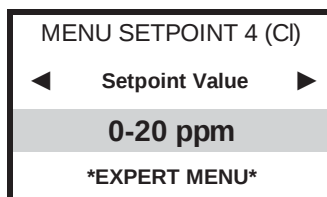
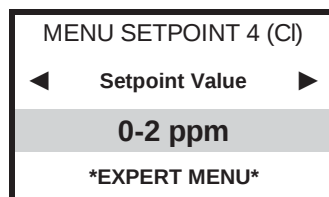
The priming function blocks the setpoint value to allow the metering pump to remain primed.

- Press **ESC** to go back to **MENU SELECTION** or press **ESC ESC** to go back to **MEASUREMENT DISPLAY**.

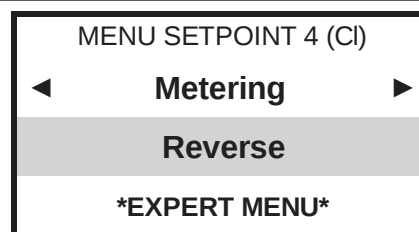
5.8.9 SETPOINT 4 CL CHLORINE > EXPERT MENU



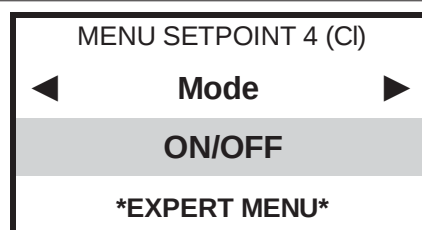
The chlorine instrument is preset by default for a 0-2 ppm range. By selecting the required chlorine range, the values displayed change accordingly. The setpoints will activate the output relays for the metering pumps or other devices once the setpoint level is selected. The display shows the values according to the selected Chlorine Scale.



Direct mode: the output is active when the measured value is lower than the one selected in the setpoint.



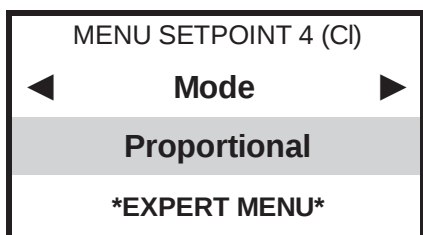
Reverse mode: the output is active even if the measured value is higher than the one selected in the setpoint.



The unit has an **ON-OFF** mode which switches on or off (if the reverse mode is ON) the output relays of Constant / ON-OFF metering pumps or other ON-OFF equipment.



SELECTING 'ON-OFF' THE NEXT STEP WILL BE: "MIN ALARM" (SET POINT1 ONLY)



*Modular pulses, also known as PWM “pulse width modulation”, support a proportional mode on each ON-OFF setpoint, activating the corresponding pulses on the output relays based on the measured value and always relating to the previous selected settings. The default activation point is 0.050 ppm (2 CI ppm); 0.50 ppm (range 20 CI ppm, 20 CI ppm (Total), 0-10ppm CLC Cell)

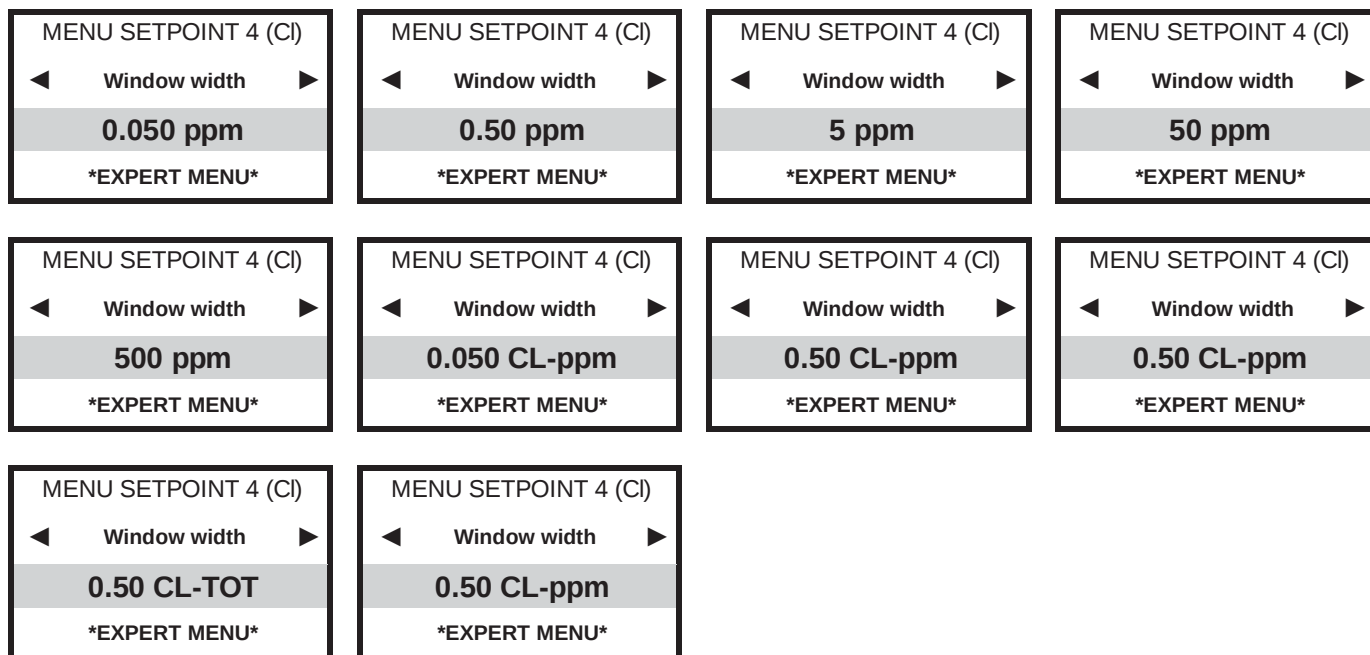


SELECTING 'ON-OFF' THE NEXT PROGRAMMING STEP: 'HYSTERESIS'

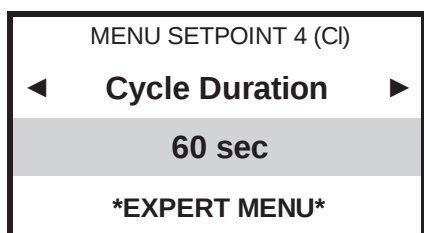


SELECTING “PROPORTIONAL” REQUIRES PROGRAMMING THE NEXT STEPS

PWM PROPORTIONALMODE WITH TIMED PULSES



Pulse width: pulses are timed ON and OFF based on the distance from the selected setpoint, programmable. Example: with a selected chlorine range at 2 CI ppm, if the selected setpoint is 0.500 CI ppm and the measured value is 0.400 CI ppm, the PWM mode starts after reaching 0.450 CI ppm with Time/Pause pulses and decreasing the active time while reaching the setpoint.



Cycle Duration:

the PWM mode has a 60 second cycle (programmable), example: setpoint is 0.500 CI ppm = active time 60 sec - pause time = 0 sec; 0.475 CI ppm active time = 30 sec - pause time = 30 sec... as a consequence the active time decreases while reaching the setpoint. The cycle time depends on many variables, such as: distance from the injection point of the system to be treated, how fast or slowly the setpoint must react, chemical concentration, etc.

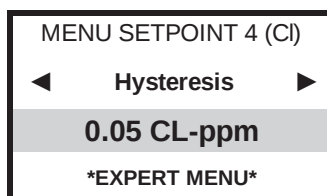
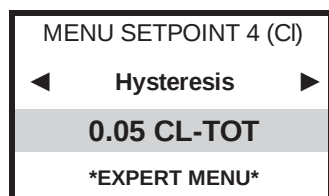
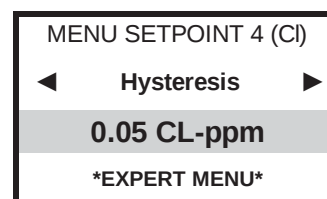
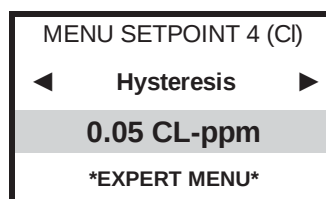
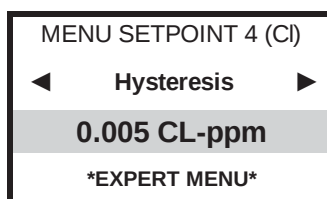
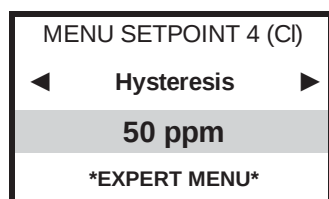
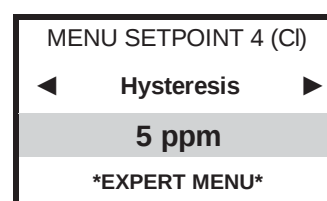
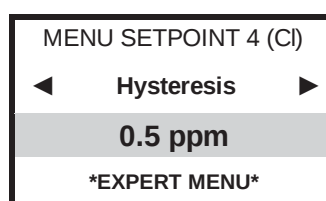
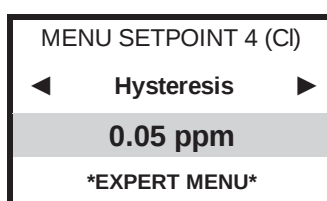
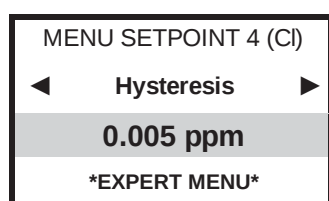


MIN Active Time: programmable. Defines the minimum time for which PWM is active; prevails over the selected settings. The pulse modulation function is adjusted with 3 functions according to the following formula: Active Time in accordance with the selected formula = (measured value - setpoint) / (period width * cycle time).
If the result of the formula is < of that selected with MIN Active Time, the latter prevails on the former.



SELECTING 'ON-OFF' THE NEXT PROGRAMMING STEP: 'HYSTERESIS'.

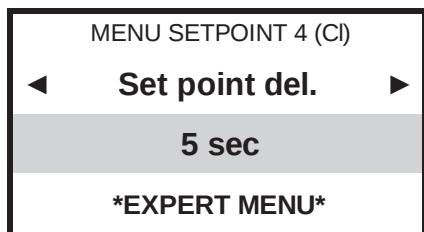
FUNCTION NOT AVAILABLE WITH PROPORTIONAL MODE



Hysteresis is useful during operations to adjust the setpoints in ON-OFF mode and is used to enable and disable the output relay when the selected hysteresis has been achieved.

Hysteresis is useful when there are too many quick swings around the setpoint, that might damage the connected device. By increasing hysteresis it is possible to move away from the setpoint in accordance with the required value.

FUNCTION NOT AVAILABLE WITH PROPORTIONAL MODE



The Delay time blocks the output relays (max 999 sec. programmable) to ensure the outputs are active only when the measurements are stable, thus assuring the best results in terms of chemical balance.

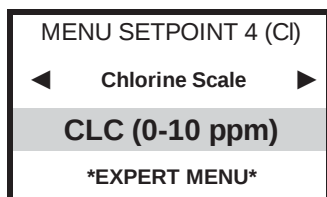
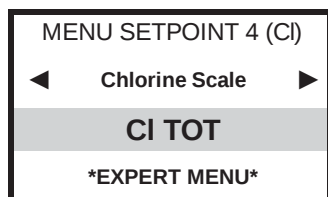
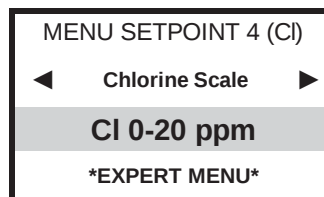
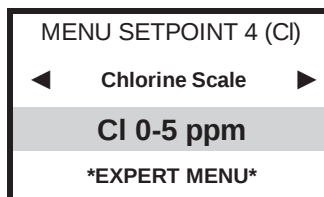
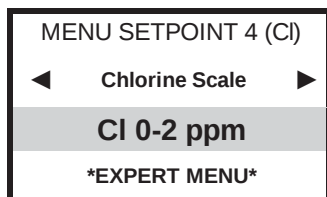
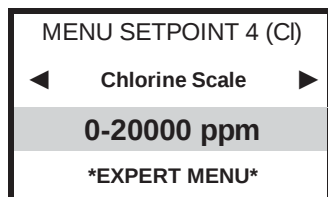
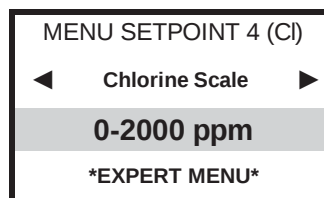
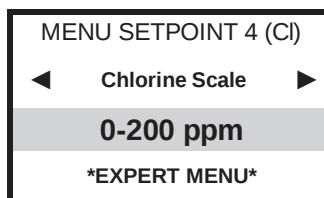
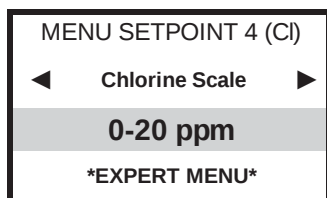
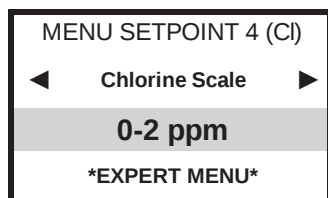


* GOING BACK TO THE SETPOINT PROGRAMMING STEPS FROM THE "ON-OFF" MODE OR "PROPORTIONAL" MODE.

FUNCTION ONLY VALID FOR SET POINT1 TO CHANGE THE PREVIOUSLY SELECTED CHLORINE RANGE

- Ion-selective membrane sensor range 0-2 Cl ppm (**default**); range 0-20 Cl ppm; range 0-20 Cl ppm (Total);
- Open type amperometric cell (CLC model) range 0-10 Cl ppm.

Once the selection is made, the display and measurement resolutions change accordingly.



In the event of changing the range, ensure the appropriate sensor is used!

The MIN and MAX Alarm function selects the alarm levels beyond which the alarm relay is triggered on.

MENU SETPOINT 4 (CI) ◀ Alarm MIN ▶ 0.000 ppm *EXPERT MENU*	MENU SETPOINT 4 (CI) ◀ Alarm MIN ▶ 0.00 ppm *EXPERT MENU*	MENU SETPOINT 4 (CI) ◀ Alarm MIN ▶ 0.0 ppm *EXPERT MENU*	MENU SETPOINT 4 (CI) ◀ Alarm MIN ▶ 0 ppm *EXPERT MENU*
MENU SETPOINT 4 (CI) ◀ Alarm MIN ▶ 0 ppm *EXPERT MENU*	MENU SETPOINT 4 (CI) ◀ Alarm MIN ▶ 0.000 CI-ppm *EXPERT MENU*	MENU SETPOINT 4 (CI) ◀ Alarm MIN ▶ 0.00 CI-ppm *EXPERT MENU*	MENU SETPOINT 4 (CI) ◀ Alarm MIN ▶ 0.00 CI-ppm *EXPERT MENU*
MENU SETPOINT 4 (CI) ◀ Alarm MIN ▶ 0.00 CI-ppm *EXPERT MENU*	MENU SETPOINT 4 (CI) ◀ Alarm MIN ▶ 0.00 CI-ppm *EXPERT MENU*		
MENU SETPOINT 4 (CI) ◀ Alarm MAX ▶ 2 ppm *EXPERT MENU*	MENU SETPOINT 4 (CI) ◀ Alarm MAX ▶ 20 ppm *EXPERT MENU*	MENU SETPOINT 4 (CI) ◀ Alarm MAX ▶ 200 ppm *EXPERT MENU*	MENU SETPOINT 4 (CI) ◀ Alarm MAX ▶ 2000 ppm *EXPERT MENU*
MENU SETPOINT 4 (CI) ◀ Alarm MAX ▶ 20000 ppm *EXPERT MENU*	MENU SETPOINT 4 (CI) ◀ Alarm MAX ▶ 2.0 CI-ppm *EXPERT MENU*	MENU SETPOINT 4 (CI) ◀ Alarm MAX ▶ 5.00 CI-ppm *EXPERT MENU*	MENU SETPOINT 4 (CI) ◀ Alarm MAX ▶ 20.00 CI-ppm *EXPERT MENU*
MENU SETPOINT 4 (CI) ◀ Alarm MAX ▶ 20.00 CI-ppm *EXPERT MENU*	MENU SETPOINT 4 (CI) ◀ Alarm MAX ▶ 10.00 CI-ppm *EXPERT MENU*		

MENU SETPOINT 4 (Cl)	
◀	Overdose ▶
00.00 h:m	
EXPERT MENU	

With the **overdose time** alarm one can select a period during which the setpoint must be reached. If the setpoint is not reached during this period of time, the instrument blocks output operations, including those in mA (metering pumps), the alarm is displayed as ON and triggers a signalling instrument if it is connected to the alarm relay.

MENU SETPOINT 4 (Cl)	
◀	Max. Dosing ▶
000 (no limit)	
EXPERT MENU	

MENU SETPOINT 4 (Cl)	
◀	Max. Dosing ▶
000 m / 00 h	
EXPERT MENU	

Maximum Dosing is an extra safety function that ensures metering is completed in the selected time.

This function makes it possible to eliminate time limits (continuous metering according to the selected setpoints) or to select the minutes (up to 999) and the hours, for instance metering for 999 minutes in 24 hours.

MENU SETPOINT 4 (Cl)	
◀	Start-up Delay ▶
00.00 h:m	
EXPERT MENU	

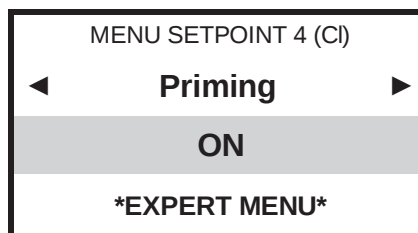
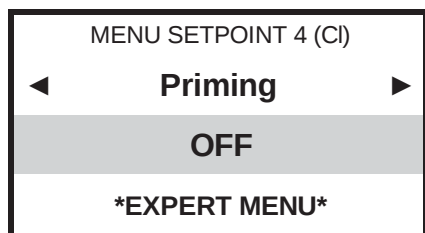
The **start-up delay** stops the output relays when the unit is switched on, thus allowing the sensor to polarise assuring reliable measurements (programmable).

MENU SETPOINT 1 pH / RX	
◀	No Flux Delay ▶
00.00 h:m	
EXPERT MENU	

It is possible to set a **no flux delay time**; if the lack of flow is longer than the set time, the controller waits for the time set in the 'Start Delay' parameter, before eventually enabling the various outputs to control the pumps.

MENU SETPOINT 1 pH	
◀	Level Delay ▶
00.00 h:m	
EXPERT MENU	

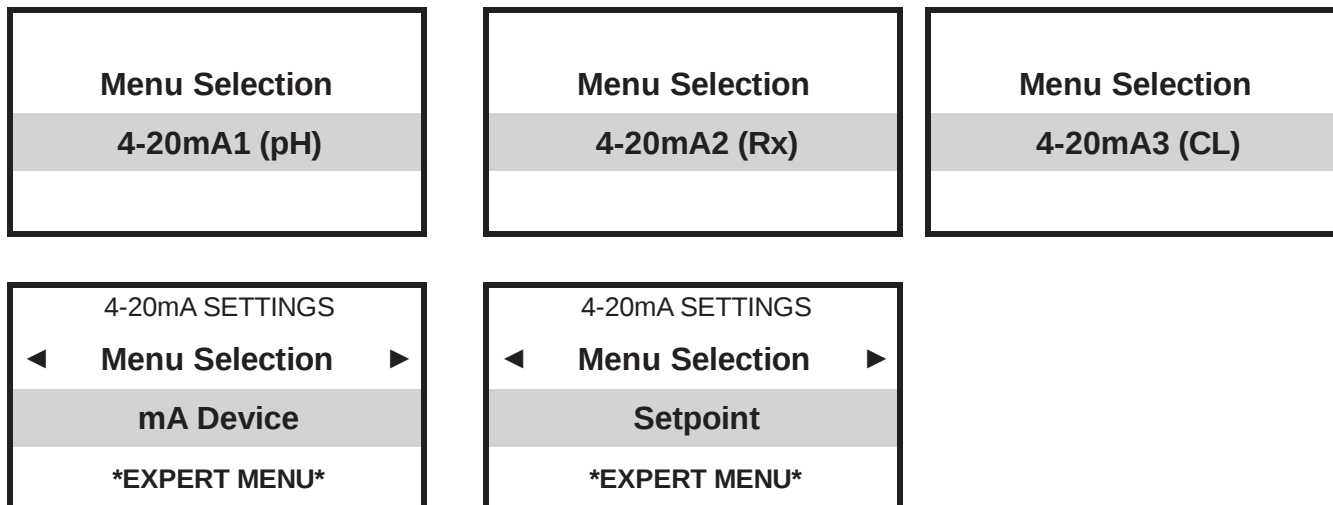
It is possible to set a **delay time on the level alarm**, the controller goes into alarm as soon as it receives contact from the relevant level probe, but only switches off the pumps connected to it after the previously set time.

ONLY WHEN USING METERING PUMPS


The priming function blocks the setpoint value to allow the metering pump to remain primed.

- Press **ESC** to go back to **MENU SELECTION** or press **ESC ESC** to go back to **MEASUREMENT DISPLAY**.

5.8.10 ANALOGUE 4-20mA OUTPUTS FUNCTION SELECTION > EXPERT MENU

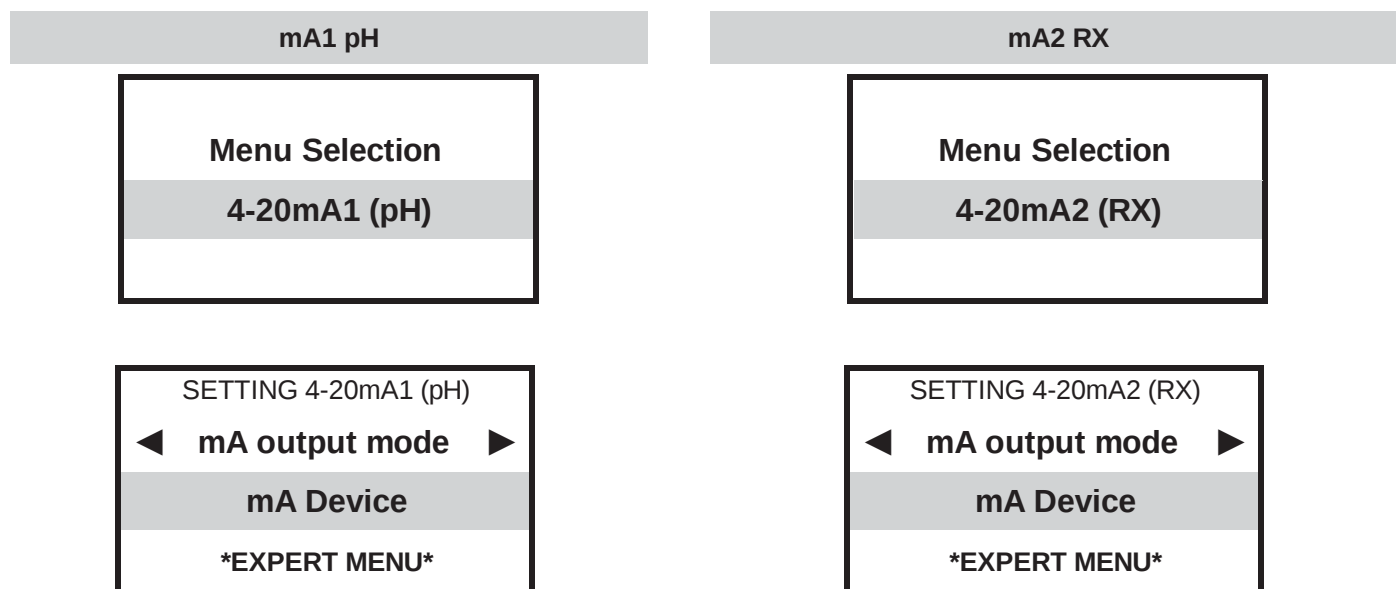


- **EXTERNAL DEVICES** suited to operating with mA signal such as data loggers or data recorders or other mA equipment.
- **SETPOINT** through the control of metering pumps suited to controlling an mA external digital signal.

5.8.10.1 4-20mA1 PH / 4-20mA2 RX Output > REMOTE DEVICES Function



The 4-20mA proportional analogue outputs are according to the measurements in real time in order to drive remote equipment such as data loggers, PLCs or graphic recorders or other equipment suited to processing a remote mA signal



SETTING 4-20mA1 (pH)

◀ Measurement ▶

@4mA

0.00 pH

BASIC MENU

SETTING 4-20mA2 (RX)

◀ Measurement ▶

@4mA

0 mV

BASIC MENU

SETTING 4-20mA1 (pH)

◀ Measurement ▶

@20mA

14.00 pH

BASIC MENU

SETTING 4-20mA2 (RX)

◀ Measurement ▶

@20mA

1000 mV

BASIC MENU

Select the value corresponding to 4 and 20 mA based on Setpoint 1 and Setpoint 3

- Press **ESC** to go back to **MAIN MENU** or press **ESC ESC** to go back to **CONTINUOUS MEASUREMENT**.

5.8.10.2 4-20mA1 PH / 4-20mA2 RX Output > Dosing on Setpoint



Please note that the value displayed is automatically adjusted according to the Measurement Type selected previously.

mA1 pH

Menu Selection

4-20mA1 (pH)

SETTING 4-20mA1 (pH)

◀ mA output mode ▶

Setpoint

EXPERT MENU

SETTING 4-20mA1 (pH)

◀ Setpoint Value ▶

7.00 pH

EXPERT MENU

mA2 RX

Menu Selection

4-20mA2 (RX)

SETTING 4-20mA2 (RX)

◀ mA output mode ▶

Setpoint

EXPERT MENU

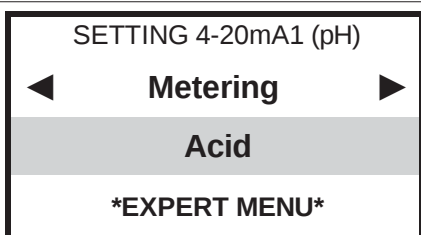
SETTING 4-20mA2 (RX)

◀ Setpoint Value ▶

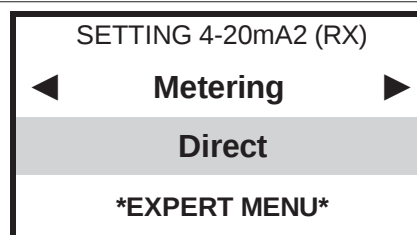
200 mV

EXPERT MENU

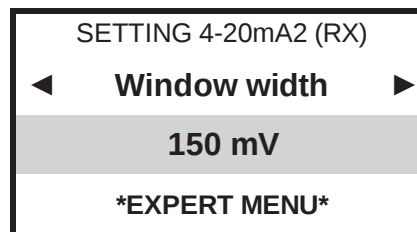
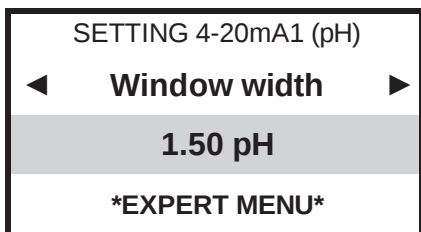
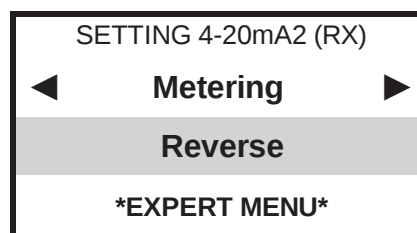
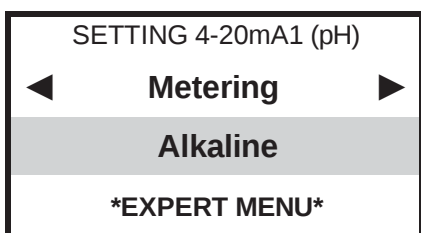
Select the Set point value to control the metering pump or other equipment suited to processing the mA signal.



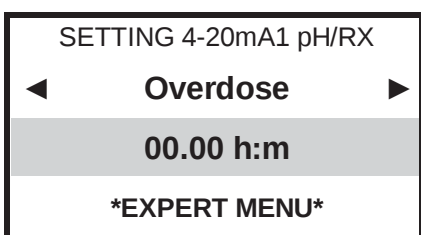
Setpoint mA is set for operations in ACID mode, the output is active when the measured value is higher than the selected setpoint, the connected pump meters out an acid product.



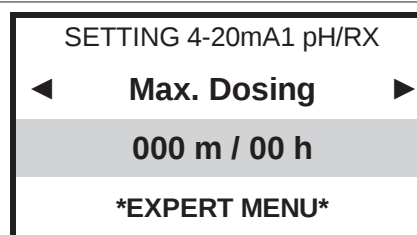
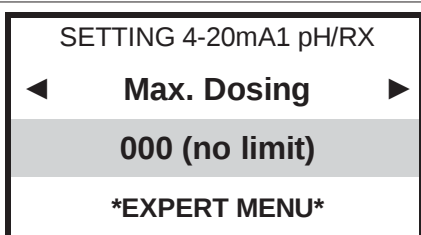
The mA setpoint is set for operations in DIRECT mode: if the measured value is lower than the selected setpoint, the connected pump meters out chlorine (Oxidising product).



The window width sets the distance from the setting point where the 4-20mA mode starts: 4mA = 0 metering pump pulse, 20mA = max impulsive frequency of the metering pump. The window width depends on many variables: distance injection point, reaction time, chemical %



With the **overdose time** alarm one can select a period during which the setpoint must be reached. If the setpoint is not reached during this period of time, the instrument blocks output operations, including those in mA (metering pumps), the alarm is displayed as ON and triggers a signalling instrument connected to the alarm relay.



Maximum Metering is a safety function that ensures metering is completed in the selected time. The relays of the metering pumps open accordingly. This function makes it possible to eliminate time limits (continuous metering according to the selected setpoints) or to select the minutes (up to 999) and the hours, for instance metering for 999 minutes in 24 hours.

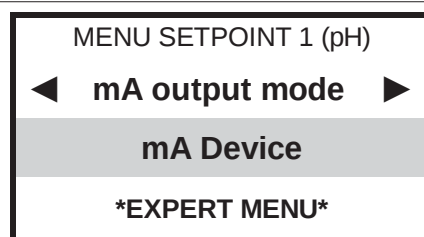
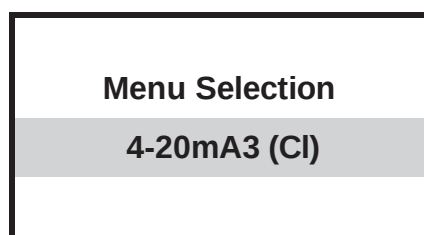
- Press **ESC** to go back to **MAIN MENU** or press **ESC ESC** to go back to **CONTINUOUS MEASUREMENT**.

5.8.10.3 4-20mA3 CHLORINE Output > REMOTE DEVICES Function

The analogue 4-20mA2 output of the instrument follows the options previously selected of the **CHLORINE SCALE**.

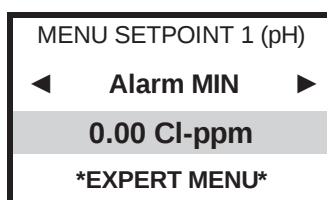
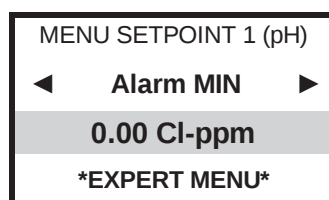
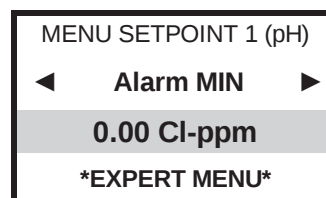
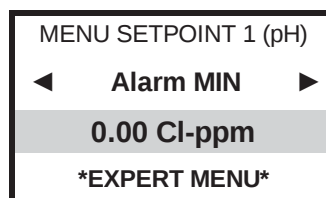
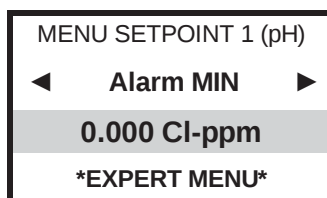
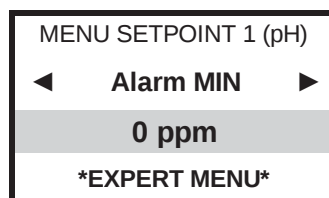
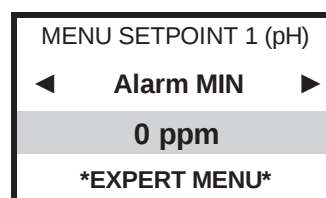
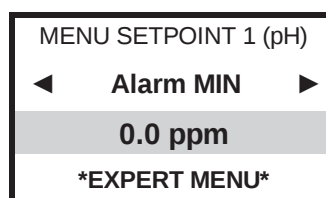
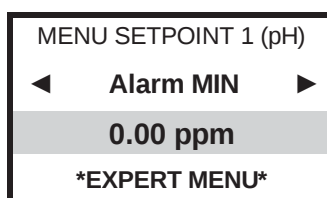
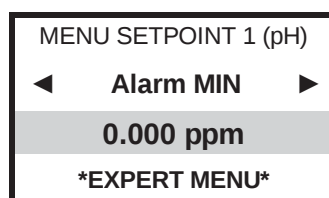


Please note that the displayed value is automatically adjusted according to the Chlorine Scale range entered in the previous paragraph.



The 4-20mA proportional analogue outputs are according to the measurements in real time in order to drive remote equipment such as data loggers, PLCs or graphic recorders or other equipment suited to processing a remote mA signal

Select the value corresponding to 4 and 20 mA based on Setpoint 4.



MENU SETPOINT 1 (pH) ◀ Alarm MAX ▶ 2 ppm *EXPERT MENU*	MENU SETPOINT 1 (pH) ◀ Alarm MAX ▶ 20 ppm *EXPERT MENU*	MENU SETPOINT 1 (pH) ◀ Alarm MAX ▶ 200 ppm *EXPERT MENU*	MENU SETPOINT 1 (pH) ◀ Alarm MAX ▶ 2000 ppm *EXPERT MENU*
MENU SETPOINT 1 (pH) ◀ Alarm MAX ▶ 20000 ppm *EXPERT MENU*	MENU SETPOINT 1 (pH) ◀ Alarm MAX ▶ 2.0 Cl-ppm *EXPERT MENU*	MENU SETPOINT 1 (pH) ◀ Alarm MAX ▶ 5.00 Cl-ppm *EXPERT MENU*	MENU SETPOINT 1 (pH) ◀ Alarm MAX ▶ 20.00 Cl-ppm *EXPERT MENU*
MENU SETPOINT 1 (pH) ◀ Alarm MAX ▶ 20.00 Cl-ppm *EXPERT MENU*	MENU SETPOINT 1 (pH) ◀ Alarm MAX ▶ 10.00 Cl-ppm *EXPERT MENU*		

- Press **ESC** to go back to **MENU SELECTION** or press **ESC ESC** to go back to **MEASUREMENT DISPLAY**.

5.8.10.4 4-20mA3 CHLORINE Output > DOSING ON SETPOINT function

The analogue 4-20mA3 output of the instrument follow the options previously selected of the **CHLORINE SCALE**.



Please note that the displayed value is automatically adjusted according to the Chlorine Scale range entered in the previous paragraph.

Menu Selection

4-20mA3 (Cl)

SETTING 4-20mA3 (Cl)

◀ mA output mode ▶

Dosing Setpoint

EXPERT MENU

The 4-20mA proportional analogue outputs are according to the measurements in real time in order to drive remote equipment such as data loggers, PLCs or graphic recorders or other equipment suited to processing a remote mA signal

SETTING 4-20mA3 (Cl)

◀ Setpoint Value ▶

0.000 ppm

EXPERT MENU

SETTING 4-20mA3 (Cl)

◀ Setpoint Value ▶

0.00 ppm

EXPERT MENU

SETTING 4-20mA3 (Cl)

◀ Setpoint Value ▶

0.0 ppm

EXPERT MENU

SETTING 4-20mA3 (Cl)

◀ Setpoint Value ▶

0 ppm

EXPERT MENU

SETTING 4-20mA3 (Cl)

◀ Setpoint Value ▶

0 ppm

EXPERT MENU

SETTING 4-20mA3 (Cl)

◀ Setpoint Value ▶

0.000 Cl-ppm

EXPERT MENU

SETTING 4-20mA3 (Cl)

◀ Setpoint Value ▶

0.00 Cl-ppm

EXPERT MENU

SETTING 4-20mA3 (Cl)

◀ Setpoint Value ▶

0.00 Cl-ppm

EXPERT MENU

SETTING 4-20mA3 (Cl)

◀ Setpoint Value ▶

0.00 Cl-tot

EXPERT MENU

SETTING 4-20mA3 (Cl)

◀ Setpoint Value ▶

0.00 Cl-ppm

EXPERT MENU

SETTING 4-20mA3 (Cl)

◀ Metering ▶

Direct

EXPERT MENU

SETTING 4-20mA3 (Cl)

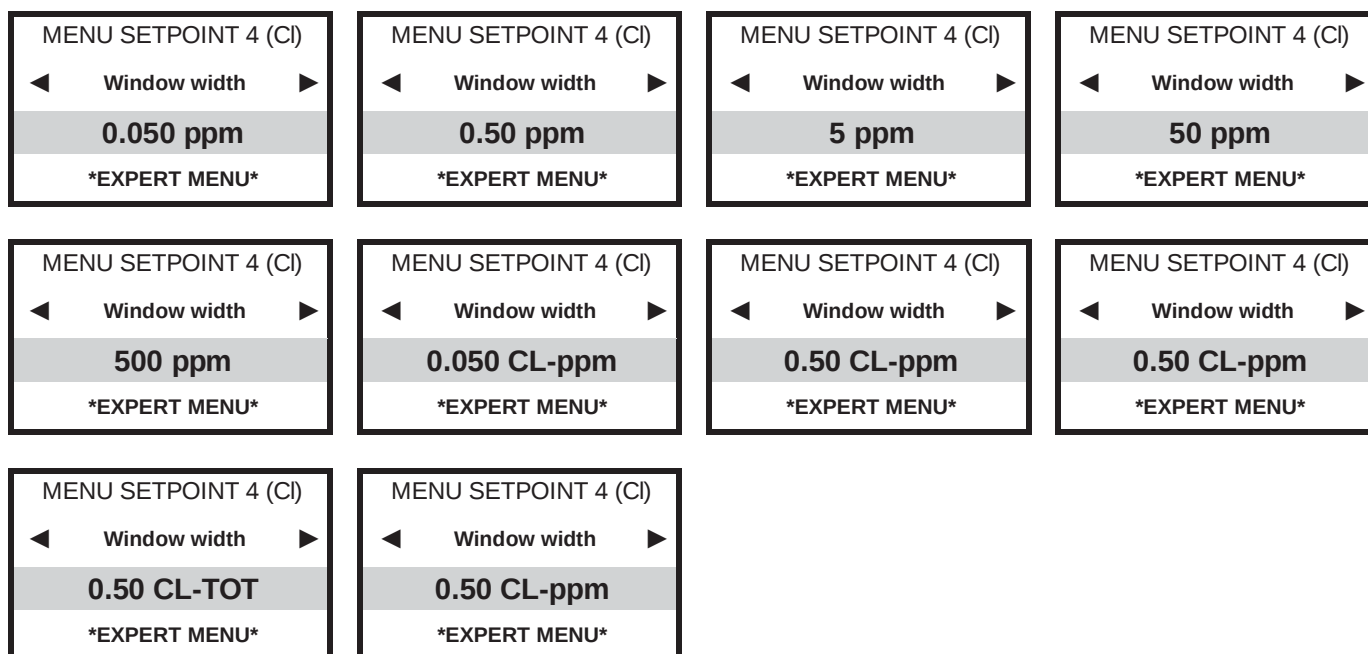
◀ Metering ▶

Reverse

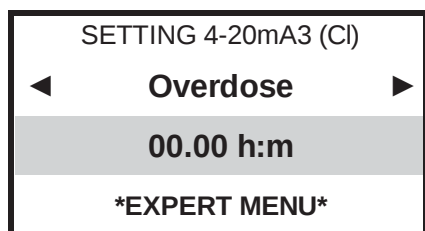
EXPERT MENU

Direct mode: the output is active when the measured value is lower than the one selected in the setpoint.

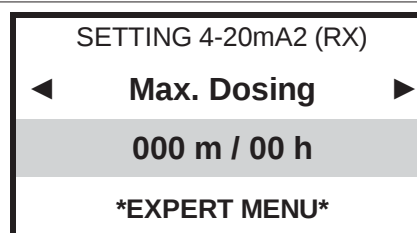
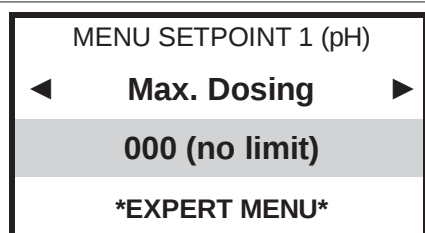
Reverse mode: the output is active even if the measured value is higher than the one selected in the setpoint.



Pulse width: pulses are timed ON and OFF based on the distance from the selected setpoint, programmable. Example: with a selected chlorine range at 2 CI ppm, if the selected setpoint is 0.500 CI ppm and the measured value is 0.400 CI ppm, the PWM mode starts after reaching 0.450 CI ppm with Time/Pause pulses and decreasing the active time while reaching the setpoint.



With the **overdose time** alarm one can select a period during which the setpoint must be reached. If the setpoint is not reached during this period of time, the instrument blocks output operations, including those in mA (metering pumps), the alarm is displayed as ON and triggers a signalling instrument connected to the alarm relay.



Maximum Metering is a safety function that ensures metering is completed in the selected time. The relays of the metering pumps open accordingly. This function makes it possible to eliminate time limits (continuous metering according to the selected setpoints) or to select the minutes (up to 999) and the hours, for instance metering for 999 minutes in 24 hours.

- Press **ESC** to go back to **MENU SELECTION** or press **ESC ESC** to go back to **MEASUREMENT DISPLAY**.

5.8.11 AUX OUTPUTS > EXPERT MENU

The **three auxiliary outputs** control various functions connected to any type of remote On-Off device controlled by a timer in real time. The AUX output may control a device or appliance thanks to very accurate programming of minutes/hours/days/weeks. ADVANTAGES: this function makes this instrument a very versatile control unit not only to measure chemical physical parameters but also for other functions connected to the system where it is installed.

Menu Selection Aux Output #1	Menu Selection Aux Output #2	Menu Selection Aux Output #3
---	---	---

- Press **OK/MENU** to confirm the selection and to go on to the next sub-menu.
- Press **ESC** to go back to **MAIN MENU** or press **ESC ESC** to go back to **CONTINUOUS MEASUREMENT**.
- Type the desired parameters, confirm selection **OK**, go to the next step, below the programming steps to be selected:

Remote equipment: the instrument controls the external equipment that may be programmed based on the various settings selected according to system requirements.



NOTE: each AUX ONLY controls one device, therefore ensure each selected program has the required settings.

AUX #		Program 01
Active time (m:s)		01 : 00
Start time (h:s)		10 : 30
Enabl. days		Mon : N
Tue: N	Wed : N	Thu: N
Fri: N	Sat : N	Sun: N
Wk. 1 : S	2 : S	3 : S 4 : N

The settings of the program entail many steps, which may be selected to have absolute operating precision (up to 99 programs for each AUX output).

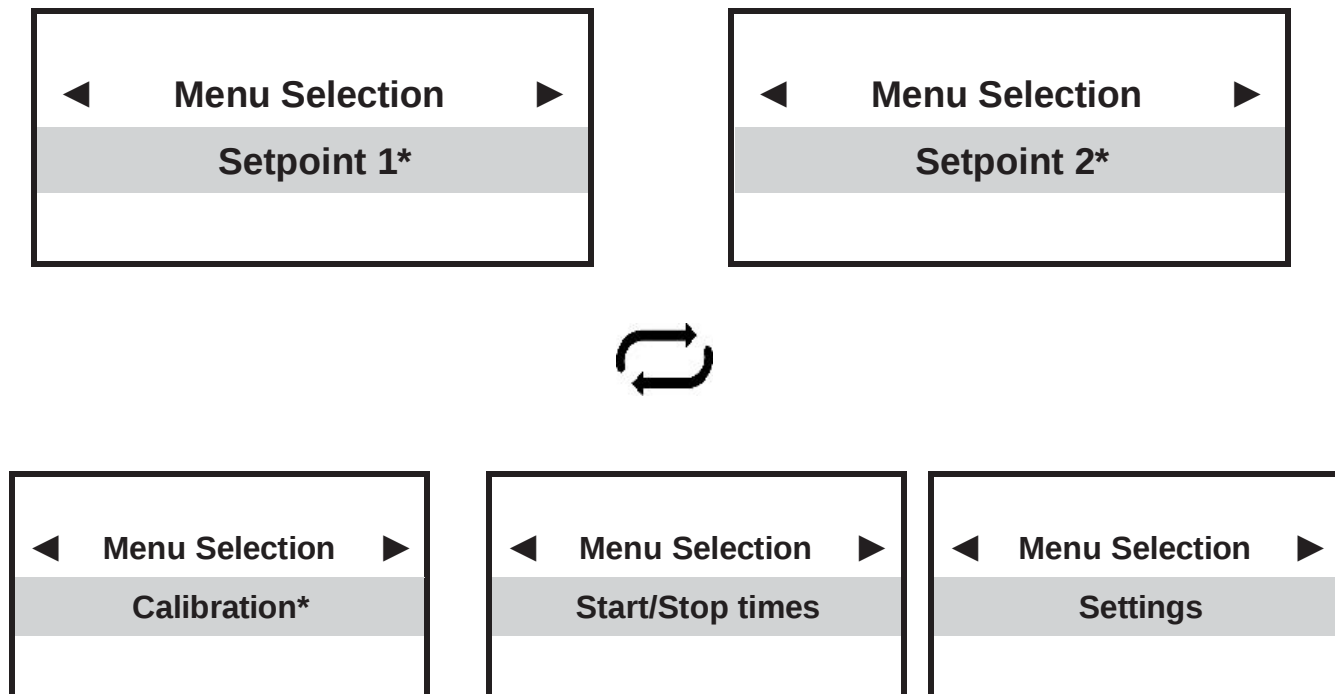
AUX1 AUX 2 AUX 3	Program 01	• Press ◀ ▶ select program number (up to 99). • Confirm by pressing OK, automatically goes to the next step.
Active time	(m:s) 01:00	• Selects the active time of the connected On/Off device • Press ◀ ▶ to select the minutes, confirm OK to move to the next digits. • Press ◀ ▶ to select the seconds, confirm OK to move to the next step.
Start time	(h:m) 10:30	• Selects the start time of the connected On/Off device. • Press ◀ ▶ to select the hours, confirm OK to move to the next digits. • Press ◀ ▶ to select the minutes, confirm OK to move to the next step.

Enabled days	Mon : N ... Y	- Selects the days during which the connected equipment is operational. - Press ◀ ▶ to select the days of activity ◀ ▶ N no or Y yes. - Confirm by pressing OK, automatically goes to the next step.
Weeks	1:Y 2:N 3:N 4:N	- Selects the weeks of the month during which the connected equipment is operational. - Press ◀ ▶ to select the weeks of activity ◀ ▶ N no or Y yes. - Confirm by pressing OK, automatically goes to the next step.

- Press **ESC** to go back to **MENU SELECTION** or press **ESC ESC** to go back to **MEASUREMENT DISPLAY**.

5.9 PROGRAMMING: ELIGERE 01 CL

These are all the steps included in the **MENU SELECTION** menu configuration with **BASIC** programming:



- Press **OK/MENU** to confirm the selection and to go on to the next sub-menu.
- Press **ESC** to go back to the **MEASUREMENT DISPLAY**.

5.9.1 SETPOINT 1 AND SETPOINT2 CL CHLORINE > BASIC MENU



The chlorine instrument ELIGERE 0 CL is preset by default for a 0 to 2 ppm range. By selecting the required chlorine range, the values and displays change accordingly.

The setpoints will activate the output relays for the metering pumps or other devices.

The display shows the values according to the selected Chlorine Scale.



MENU SETPOINT 1 -2 ◀ Chlorine Scale ▶ CI TOT *BASIC MENU*	MENU SETPOINT 1 -2 ◀ Chlorine Scale ▶ CLC (0-10ppm) *BASIC MENU*	MENU SETPOINT 1 -2 ◀ Chlorine Scale ▶ 0 – 2 ppm *BASIC MENU*	MENU SETPOINT 1 -2 ◀ Chlorine Scale ▶ 0 – 20 ppm *BASIC MENU*
MENU SETPOINT 1 -2 ◀ Chlorine Scale ▶ 0 – 200 ppm *BASIC MENU*	MENU SETPOINT 1 -2 ◀ Chlorine Scale ▶ 0 – 2000 ppm *BASIC MENU*	MENU SETPOINT 1 -2 ◀ Chlorine Scale ▶ 0 – 20000 ppm *BASIC MENU*	MENU SETPOINT 1 -2 ◀ Chlorine Scale ▶ CI 0-2 ppm *BASIC MENU*
MENU SETPOINT 1 -2 ◀ Chlorine Scale ▶ CI 0-5 ppm *BASIC MENU*	MENU SETPOINT 1 -2 ◀ Chlorine Scale ▶ CI 0-20 ppm *BASIC MENU*		

MENU SETPOINT 1

◀ **Metering** ▶

Direct

BASIC MENU

Direct mode: the output is active when the measured value is lower than the one selected in the setpoint, the metering pump injects Chlorine.

MENU SETPOINT 2

◀ **Metering** ▶

Reverse

BASIC MENU

Setpoint 2 is set for operations in Reverse mode: the output is active also the measured value is higher than the one selected in the setpoint, the metering pump injects a Chlorine reducing agent.

MENU SETPOINT 1

◀ **Metering** ▶

Reverse

BASIC MENU

MENU SETPOINT 2

◀ **Metering** ▶

Direct

BASIC MENU

MENU SETPOINT 1

◀ **Mode** ▶

ON/OFF

BASIC MENU

MENU SETPOINT 2

◀ **Mode** ▶

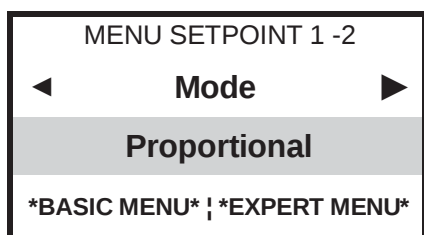
ON/OFF

BASIC MENU

The unit has an **ON-OFF** mode which switches on or off (if the reverse mode is ON) the output relays of Constant / ON-OFF metering pumps or other ON-OFF equipment.



SELECTING 'ON-OFF' THE NEXT STEP WILL BE: "**MIN ALARM**" (SET POINT1 ONLY)



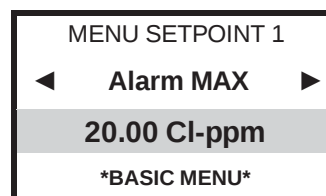
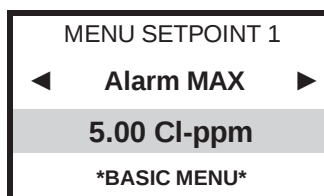
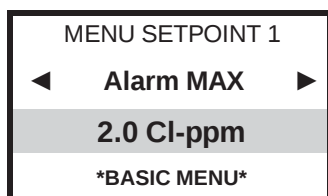
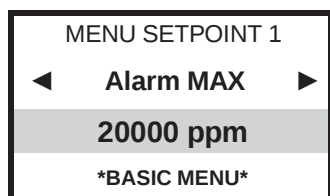
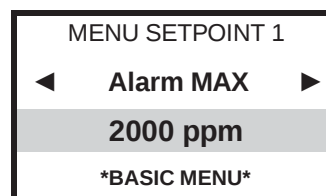
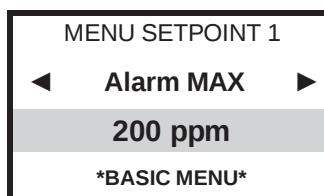
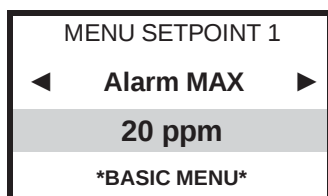
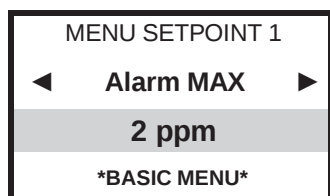
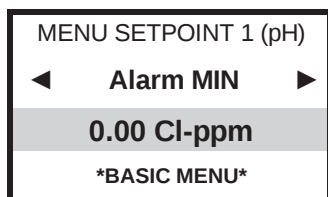
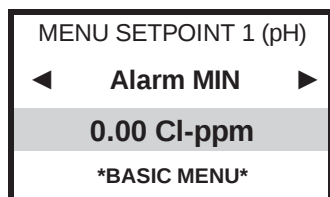
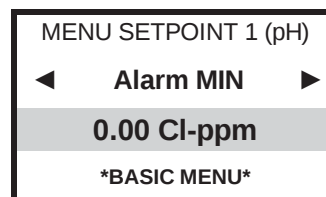
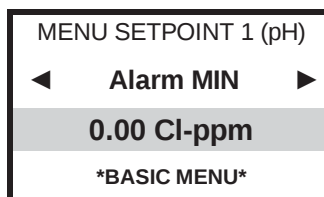
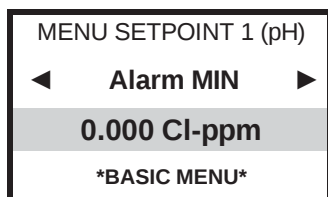
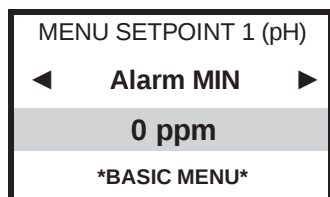
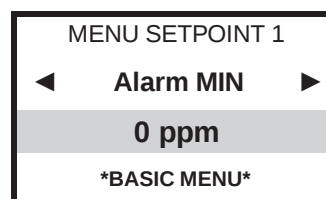
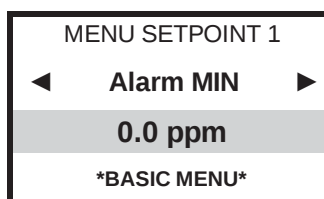
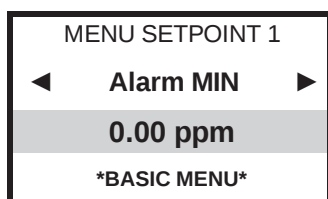
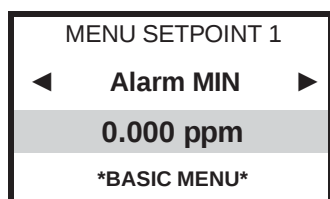
*Modular pulses, also known as PWM “pulse width modulation”, support a proportional mode on each setpoint, activating the corresponding pulses on the relays based on the measured value.

The default activation point is **0.050 ppm** (2 Cl ppm); **0.50 ppm** (range 20 Cl ppm, 20 Cl ppm (Total), 0-10ppm CLC Cell).

For more accurate settings of the “**Modular pulses**” PWM, select the “**Expert**” menu in the initial settings.

 * GOING BACK TO THE SETPOINT PROGRAMMING STEPS FROM “**ON-OFF**” MODE OR FROM “**PROPORTIONAL**” MODE.

FUNCTION ONLY AVAILABLE WITH SETPOINT 1



MENU SETPOINT 1	
◀	Alarm MAX ▶
20.00 Cl-ppm	
BASIC MENU	

MENU SETPOINT 1	
◀	Alarm MAX ▶
10.00 Cl-ppm	
BASIC MENU	

ONLY WHEN USING METERING PUMPS

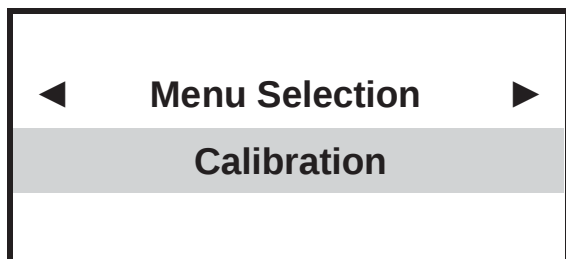
MENU SETPOINT 1-2	
◀	Priming ▶
OFF	
BASIC MENU	

MENU SETPOINT 1-2	
◀	Priming ▶
ON	
BASIC MENU	

The priming function blocks the setpoint value to allow the metering pump to remain primed, the outputs are not active.

- Press **ESC** to go back to **MENU SELECTION** or press **ESC ESC** to go back to **MEASUREMENT DISPLAY**.

5.9.2 CALIBRATION > BASIC MENU

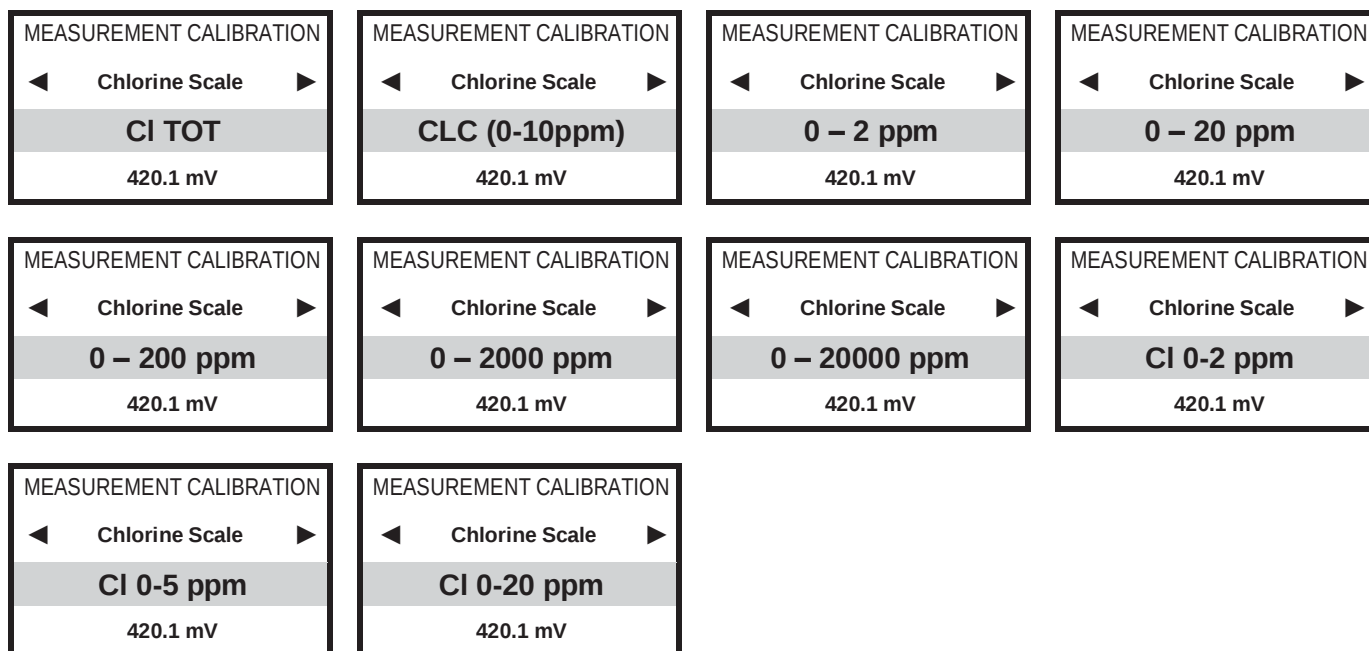


- Press **OK/MENU** to confirm the selection and go to the next sub-menu.

The chlorine parameter has 3 ranges suitable for ion-selective membrane sensors, one of which for the Total chlorine, and a range for open type amperometric cells.



*During calibration, the - (minus) sign might be displayed, which disappears or is removed by correct settings! The value in the lower part of the display shows the sensor signal in mV thus indicating the sensor's efficiency. It is advisable to perform constant checks and periodic recalibration of the sensor, via DPD1. For the calibration of **ion-selective membrane** sensors always refer to the probe's manual. In BASIC MENU mode calibration is performed with one point only, the DPD one.*

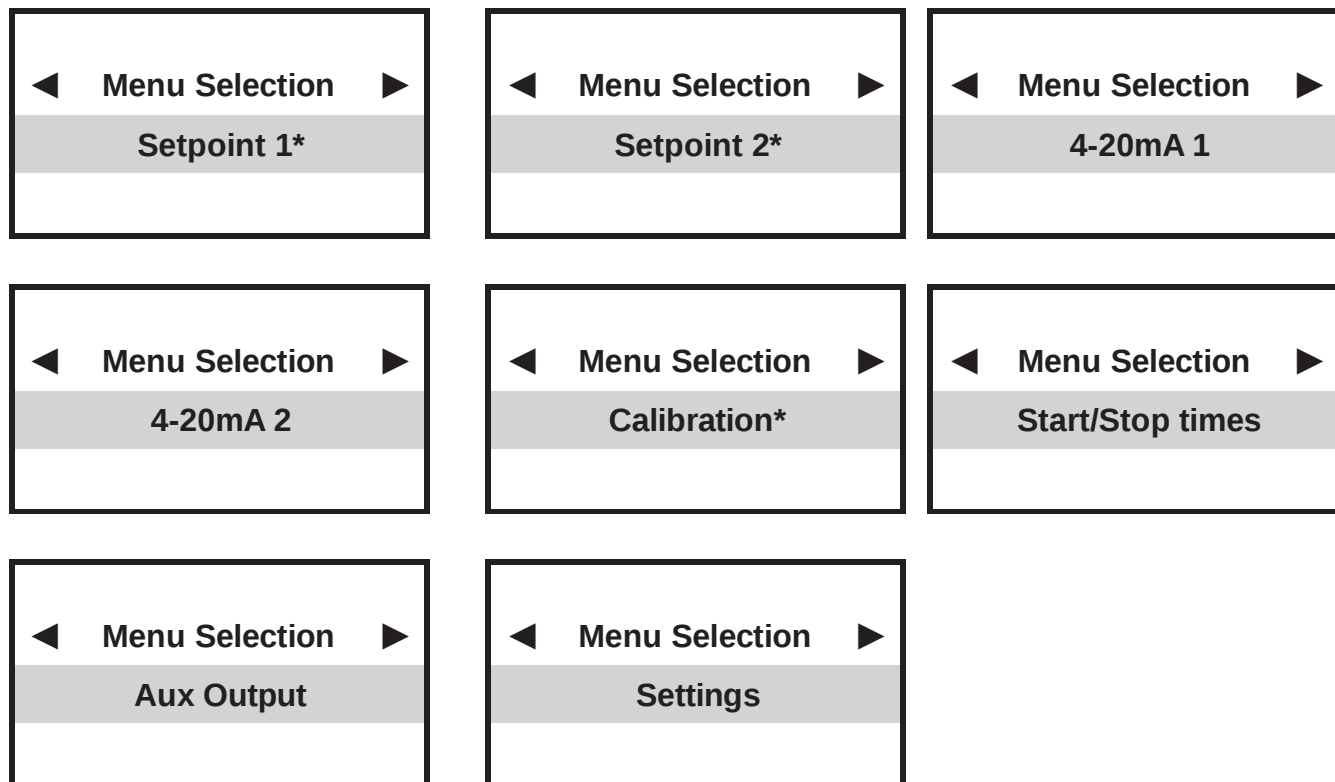


Select the value of the required sample solution and check with the DPD1 test kit for free chlorine, or with portable instrument, measure the chlorine concentration in ppm (residual or total) in water, wait for the measurement to stabilise, press and hold **▲▼** until showing the value obtained with the DPD method then confirm with **"OK /MENU"**.

- Press **ESC** to go back to **MENU SELECTION** or press **ESC ESC** to go back to **MEASUREMENT DISPLAY**.

5.9.3 MENU SELECTION > EXPERT PROGRAMMING MENU

These are all the steps included in the **MENU SELECTION** configuration with the **EXPERT MENU** programming menu:



- Selecting this setting will be followed by the values in the selected Cl ppm range:

Chlorine Scale > **SET POINT 1** > **CALIBRATION**

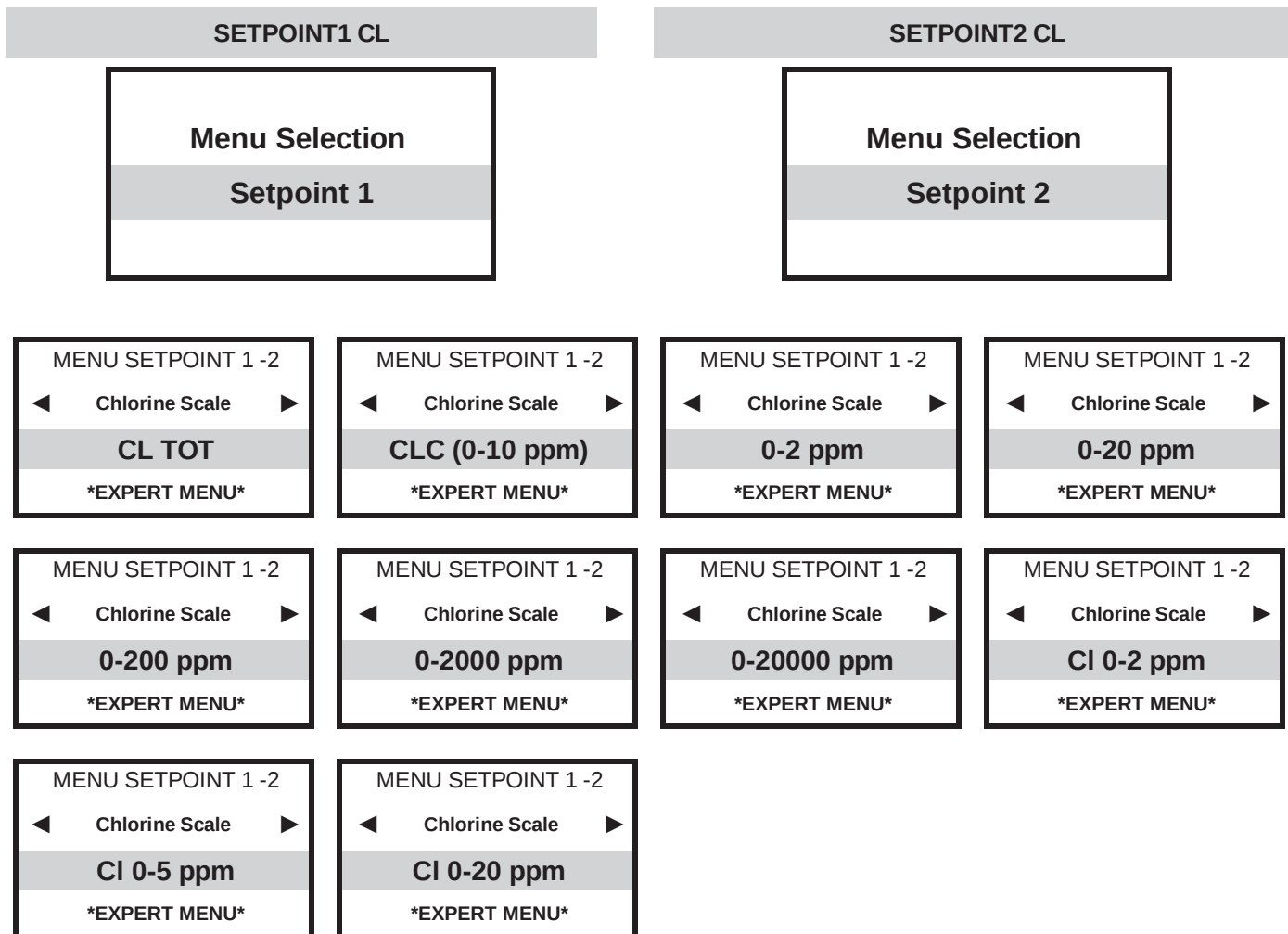
- Press **OK/MENU** to confirm the selection and to go on to the next sub-menu.
- Press **ESC** to go back to the **MEASUREMENT DISPLAY**.

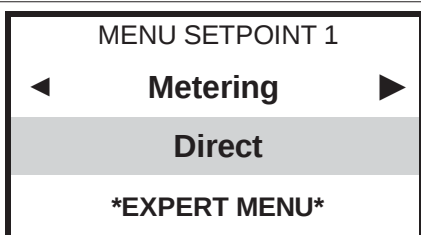
5.9.4 SETPOINT 1 CL AND SETPOINT 2 CL CHLORINE > EXPERT MENU

The instrument is preset by default for a 0 to 2 ppm range.

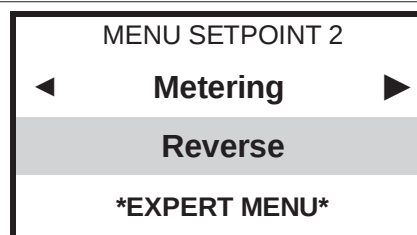
By selecting the required chlorine range, the values and displays change accordingly.

The setpoints will activate the output relays for the metering pumps or other devices once the setpoint level is selected.

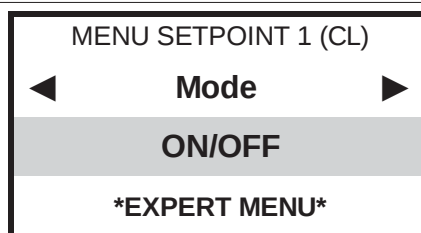
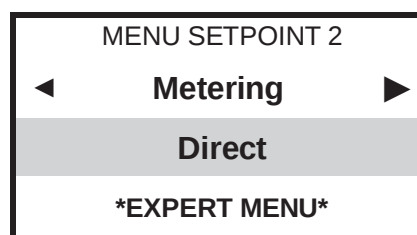
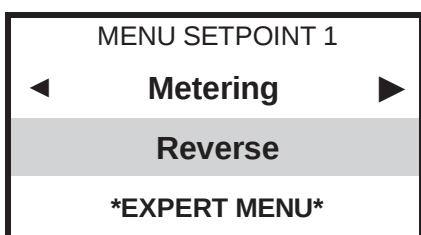




Direct mode: the output is active when the measured value is lower than the one selected in the setpoint, the metering pump injects Chlorine.



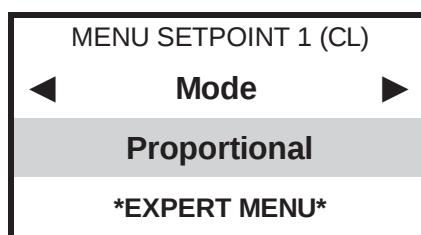
Setpoint 2 is set for operations in Reverse mode: the output is active also the measured value is higher than the one selected in the setpoint, the metering pump injects a Chlorine reducing agent.



The unit has an **ON-OFF** mode which switches on or off (if the reverse mode is ON) the output relays of Constant / ON-OFF metering pumps or other ON-OFF equipment.



SELECTING 'ON-OFF' THE NEXT STEP WILL BE: "MIN ALARM" (SET POINT1 ONLY)



*Modular pulses, also known as PWM "pulse width modulation", support a proportional mode on each ON-OFF setpoint, activating the corresponding pulses on the output relays based on the measured value and always relating to the previous selected settings.

The default activation point is **0.050 ppm** (2 Cl ppm); **0.50 ppm** (range 20 Cl ppm, **20 Cl ppm** (Total), **0-10ppm** CLC Cell).



SELECTING 'ON-OFF' THE NEXT PROGRAMMING STEP: 'HYSTERESIS'



SELECTING "PROPORTIONAL" REQUIRES PROGRAMMING THE NEXT STEPS

PWM PROPORTIONALMODE WITH TIMED PULSES

MENU SETPOINT 1 -2 ◀ Window width ▶ 0.050 ppm *EXPERT MENU*	MENU SETPOINT 1 -2 ◀ Window width ▶ 0.50 ppm *EXPERT MENU*	MENU SETPOINT 4 (CI) ◀ Window width ▶ 5 ppm *EXPERT MENU*	MENU SETPOINT 4 (CI) ◀ Window width ▶ 50 ppm *EXPERT MENU*
MENU SETPOINT 1 -2 ◀ Window width ▶ 500 ppm *EXPERT MENU*	MENU SETPOINT 1 -2 ◀ Window width ▶ 0.050 CL-ppm *EXPERT MENU*	MENU SETPOINT 4 (CI) ◀ Window width ▶ 0.50 CL-ppm *EXPERT MENU*	MENU SETPOINT 4 (CI) ◀ Window width ▶ 0.50 CL-ppm *EXPERT MENU*
MENU SETPOINT 1 -2 ◀ Window width ▶ 0.50 CL-TOT *EXPERT MENU*	MENU SETPOINT 4 (CI) ◀ Window width ▶ 0.50 CL-ppm *EXPERT MENU*		

Pulse width: pulses are timed ON and OFF based on the distance from the selected setpoint, programmable. Example: with a selected chlorine range at 2 CI ppm, if the selected setpoint is 0.500 CI ppm and the measured value is 0.400 CI ppm, the PWM mode starts after reaching 0.450 CI ppm with Time/Pause pulses and decreasing the active time while reaching the setpoint.

MENU SETPOINT 1 -2 ◀ Cycle Duration ▶ 60 sec *EXPERT MENU*	Cycle Duration: the PWM mode has a 60 second cycle (programmable), example: setpoint is 0.500 CI ppm = active time 60 sec - pause time = 0 sec; 0.475 CI ppm active time = 30 sec - pause time = 30 sec... as a consequence the active time decreases while reaching the setpoint. The cycle time depends on many variables, such as: distance from the injection point of the system to be treated, how fast or slowly the setpoint must react, chemical concentration, etc.
MENU SETPOINT 1 -2 ◀ Min.Active Time ▶ 5 sec *EXPERT MENU*	MIN Active Time: programmable. Defines the minimum time for which PWM is active; prevails over the selected settings. The pulse modulation function is adjusted with 3 functions according to the following formula: Active Time in accordance with the selected formula = (measured value - setpoint) / (period width * cycle time). If the result of the formula is < of that selected with MIN Active Time, the latter prevails on the former.



SELECTING 'ON-OFF' THE NEXT PROGRAMMING STEP: 'HYSTERESIS'.

FUNCTION NOT AVAILABLE WITH PROPORTIONAL MODE

MENU SETPOINT 4 (Cl) Hysteresis 0.005 ppm *EXPERT MENU*	MENU SETPOINT 4 (Cl) Hysteresis 0.05 ppm *EXPERT MENU*	MENU SETPOINT 4 (Cl) Hysteresis 0.5 ppm *EXPERT MENU*	MENU SETPOINT 4 (Cl) Hysteresis 5 ppm *EXPERT MENU*
MENU SETPOINT 4 (Cl) Hysteresis 50 ppm *EXPERT MENU*	MENU SETPOINT 4 (Cl) Hysteresis 0.005 CL-ppm *EXPERT MENU*	MENU SETPOINT 4 (Cl) Hysteresis 0.05 CL-ppm *EXPERT MENU*	MENU SETPOINT 4 (Cl) Hysteresis 0.05 CL-ppm *EXPERT MENU*
MENU SETPOINT 4 (Cl) Hysteresis 0.05 CL-TOT *EXPERT MENU*	MENU SETPOINT 4 (Cl) Hysteresis 0.05 CL-ppm *EXPERT MENU*		

Hysteresis is useful during operations to adjust the setpoints in ON-OFF mode and is used to enable and disable the output relay when the selected hysteresis has been achieved.

Hysteresis is useful when there are too many quick swings around the setpoint, that might damage the connected device. By increasing hysteresis it is possible to move away from the setpoint in accordance with the required value.

FUNCTION NOT AVAILABLE WITH PROPORTIONAL MODE

MENU SETPOINT 1 -2 Set point del. 5 sec *EXPERT MENU*
--

The Delay time blocks the output relays (max 999 sec. programmable) to ensure the outputs are active only when the measurements are stable, thus assuring the best results in terms of chemical balance.



* GOING BACK TO THE SETPOINT PROGRAMMING STEPS FROM THE "ON-OFF" MODE OR "PROPORTIONAL" MODE.

FUNCTION ONLY VALID FOR SET POINT1 TO CHANGE THE PREVIOUSLY SELECTED CHLORINE RANGE

- Ion-selective membrane sensor range 0-2 Cl ppm (**default**); range 0-20 Cl ppm; range 0-20 Cl ppm (Total);
- Open type amperometric cell (CLC model) range 0-10 Cl ppm.

Once the selection is made, the display and measurement resolutions change accordingly.

In the event of changing the range, ensure the appropriate sensor is used!

MENU SETPOINT 1 ◀ Chlorine Scale ▶ CI TOT *EXPERT MENU*	MENU SETPOINT 1 ◀ Chlorine Scale ▶ CLC (0-10ppm) *EXPERT MENU*	MENU SETPOINT 1 ◀ Chlorine Scale ▶ 0 – 2 ppm *EXPERT MENU*	MENU SETPOINT 1 ◀ Chlorine Scale ▶ 0 – 20 ppm *EXPERT MENU*
MENU SETPOINT 1 ◀ Chlorine Scale ▶ 0 – 200 ppm *EXPERT MENU*	MENU SETPOINT 1 ◀ Chlorine Scale ▶ 0 – 2000 ppm *EXPERT MENU*	MENU SETPOINT 1 ◀ Chlorine Scale ▶ 0 – 20000 ppm *EXPERT MENU*	MENU SETPOINT 1 ◀ Chlorine Scale ▶ CI 0-2 ppm *EXPERT MENU*
MENU SETPOINT 1 ◀ Chlorine Scale ▶ CI 0-5 ppm *EXPERT MENU*	MENU SETPOINT 1 ◀ Chlorine Scale ▶ CI 0-20 ppm *EXPERT MENU*		

FUNCTION ONLY AVAILABLE WITH SETPOINT 1

The MIN and MAX Alarm function selects the alarm levels beyond which the alarm relay is triggered on.

MENU SETPOINT 1 ◀ Alarm MIN ▶ 0.000 ppm *EXPERT MENU*	MENU SETPOINT 1 ◀ Alarm MIN ▶ 0.00 ppm *EXPERT MENU*	MENU SETPOINT 1 ◀ Alarm MIN ▶ 0.0 ppm *EXPERT MENU*	MENU SETPOINT 1 ◀ Alarm MIN ▶ 0 ppm *EXPERT MENU*
MENU SETPOINT 1 ◀ Alarm MIN ▶ 0 ppm *EXPERT MENU*	MENU SETPOINT 1 ◀ Alarm MIN ▶ 0.000 Cl-ppm *EXPERT MENU*	MENU SETPOINT 1 ◀ Alarm MIN ▶ 0.00 Cl-ppm *EXPERT MENU*	MENU SETPOINT 1 ◀ Alarm MIN ▶ 0.00 Cl-ppm *EXPERT MENU*
MENU SETPOINT 1 ◀ Alarm MIN ▶ 0.00 Cl-ppm *EXPERT MENU*	MENU SETPOINT 1 ◀ Alarm MIN ▶ 0.00 Cl-ppm *EXPERT MENU*		

MENU SETPOINT 1 ◀ Alarm MAX ▶ 2 ppm *EXPERT MENU*	MENU SETPOINT 1 ◀ Alarm MAX ▶ 20 ppm *EXPERT MENU*	MENU SETPOINT 1 ◀ Alarm MAX ▶ 200 ppm *EXPERT MENU*	MENU SETPOINT 1 ◀ Alarm MAX ▶ 2000 ppm *EXPERT MENU*
MENU SETPOINT 1 ◀ Alarm MAX ▶ 20000 ppm *EXPERT MENU*	MENU SETPOINT 1 ◀ Alarm MAX ▶ 2.0 Cl-ppm *EXPERT MENU*	MENU SETPOINT 1 ◀ Alarm MAX ▶ 5.00 Cl-ppm *EXPERT MENU*	MENU SETPOINT 1 ◀ Alarm MAX ▶ 20.00 Cl-ppm *EXPERT MENU*
MENU SETPOINT 1 ◀ Alarm MAX ▶ 20.00 Cl-ppm *EXPERT MENU*	MENU SETPOINT 1 ◀ Alarm MAX ▶ 10.00 Cl-ppm *EXPERT MENU*		

MENU SETPOINT 1-2 ◀ Overdose ▶ 00.00 h:m *EXPERT MENU*

With the **overdose time** alarm one can select a period during which the setpoint must be reached. If the setpoint is not reached during this period of time, the instrument blocks output operations, including those in mA (metering pumps), the alarm is displayed as ON and triggers a signalling instrument connected to the alarm relay.

MENU SETPOINT 1-2 ◀ Max. Dosing ▶ 000 (no limit) *EXPERT MENU*	MENU SETPOINT 1-2 ◀ Max. Dosing ▶ 000 m / 00 h *EXPERT MENU*	Maximum Dosing is an extra safety function that ensures metering is completed in the selected time.
---	---	---

This function makes it possible to eliminate time limits (continuous metering according to the selected setpoints) or to select the minutes (up to 999) and the hours, for instance metering for 999 minutes in 24 hours.

MENU SETPOINT 1 ◀ Start-up Delay ▶ 00.00 h:m *EXPERT MENU*

The **start-up delay** stops the output relays when the unit is switched on, thus allowing the sensor to polarise assuring reliable measurements (programmable). **ONLY EXPERT MENU SETPOINT1**

MENU SETPOINT 1 C	
◀	No Flux Delay ▶
00.00 h:m	
EXPERT MENU	

It is possible to set a **no flux delay time**; if the lack of flow is longer than the set time, the controller waits for the time set in the 'Start Delay' parameter, before eventually enabling the various outputs to control the pumps.

MENU SETPOINT 1 CI	
◀	Level Delay ▶
00.00 h:m	
EXPERT MENU	

It is possible to set a **delay time on the level alarm**, the controller goes into alarm as soon as it receives contact from the relevant level probe, but only switches off the pumps connected to it after the previously set time.

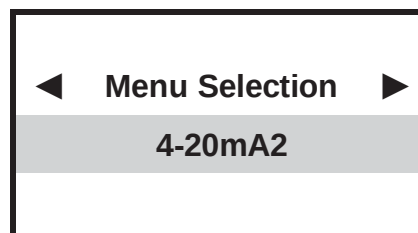
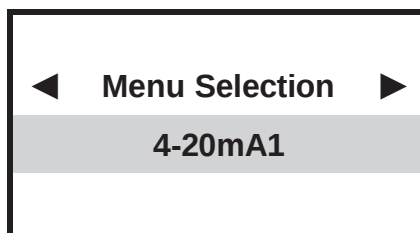
MENU SETPOINT 1-2	
◀	Priming ▶
OFF	
EXPERT MENU	

MENU SETPOINT 1-2	
◀	Priming ▶
ON	
EXPERT MENU	

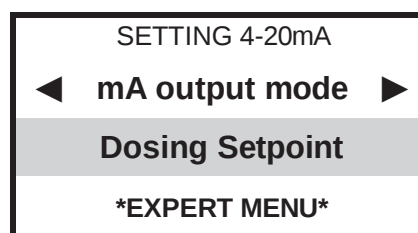
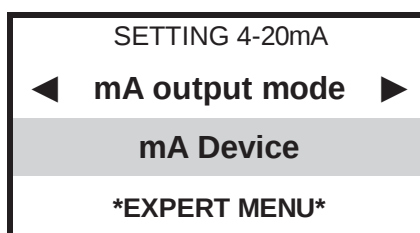
The priming function blocks the setpoint value to allow the metering pump to remain primed.

- Press **ESC** to go back to **MENU SELECTION** or press **ESC ESC** to go back to **MEASUREMENT DISPLAY**.

5.9.5 ANALOGUE 4-20mA OUTPUTS FUNCTION SELECTION > EXPERT MENU



- Press **OK/MENU** to go into mA mode following the **CHLORINE SCALE** value Cl ppm previously selected. In mA mode the instrument lets you choose two operative functions:



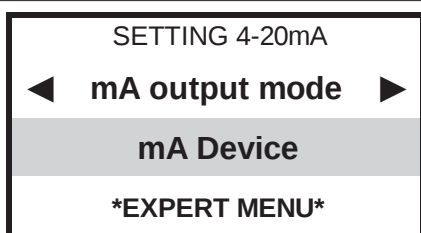
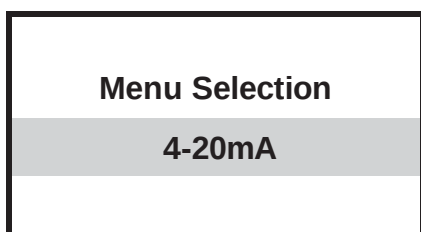
- mA DEVICE:** external devices suited to operating with mA signal such as data loggers or data recorders or other mA equipment.
- DOSING SETPOINT:** through the control of metering pumps suited to controlling an mA external digital signal.

5.9.5.1 4-20mA1 PH / 4-20mA2 RX Output > REMOTE DEVICES Function

The analogue 4-20mA1 / 4-20mA2 outputs of the instrument follow the options previously selected of the **CHLORINE SCALE**.



Please note that the displayed value is automatically adjusted according to the **Chlorine Scale** range.



The 4-20mA proportional analogue outputs are related to the measurements in real time in order to drive remote equipment such as data loggers, PLCs or graphic recorders or other equipment suited to processing a remote mA signal.

- Select the value corresponding to 4 and 20 mA based on Setpoint 1.

- Programming valid for mA1 and mA2

SETTING 4-20mA ◀ Alarm MIN ▶ 0.000 ppm *EXPERT MENU*	SETTING 4-20mA ◀ Alarm MIN ▶ 0.00 ppm *EXPERT MENU*	SETTING 4-20mA ◀ Alarm MIN ▶ 0.0 ppm *EXPERT MENU*	SETTING 4-20mA ◀ Alarm MIN ▶ 0 ppm *EXPERT MENU*
SETTING 4-20mA ◀ Alarm MIN ▶ 0 ppm *EXPERT MENU*	SETTING 4-20mA ◀ Alarm MIN ▶ 0.000 Cl-ppm *EXPERT MENU*	SETTING 4-20mA ◀ Alarm MIN ▶ 0.00 Cl-ppm *EXPERT MENU*	SETTING 4-20mA ◀ Alarm MIN ▶ 0.00 Cl-ppm *EXPERT MENU*
SETTING 4-20mA ◀ Alarm MIN ▶ 0.00 Cl-ppm *EXPERT MENU*	SETTING 4-20mA ◀ Alarm MIN ▶ 0.00 Cl-ppm *EXPERT MENU*		
SETTING 4-20mA ◀ Alarm MAX ▶ 2 ppm *EXPERT MENU*	SETTING 4-20mA ◀ Alarm MAX ▶ 20 ppm *EXPERT MENU*	SETTING 4-20mA ◀ Alarm MAX ▶ 200 ppm *EXPERT MENU*	SETTING 4-20mA ◀ Alarm MAX ▶ 2000 ppm *EXPERT MENU*
SETTING 4-20mA ◀ Alarm MAX ▶ 20000 ppm *EXPERT MENU*	SETTING 4-20mA ◀ Alarm MAX ▶ 2.0 Cl-ppm *EXPERT MENU*	SETTING 4-20mA ◀ Alarm MAX ▶ 5.00 Cl-ppm *EXPERT MENU*	SETTING 4-20mA ◀ Alarm MAX ▶ 20.00 Cl-ppm *EXPERT MENU*
MENU SETPOINT 4 (Cl) ◀ Alarm MAX ▶ 20.00 Cl-ppm *EXPERT MENU*	MENU SETPOINT 4 (Cl) ◀ Alarm MAX ▶ 10.00 Cl-ppm *EXPERT MENU*		

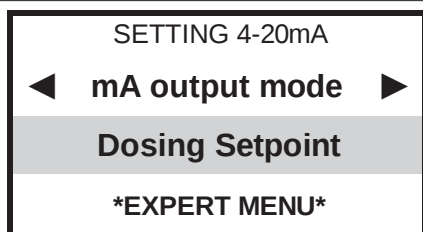
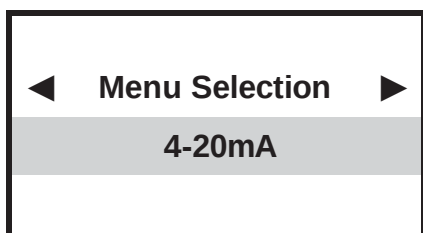
- Press **ESC** to go back to **MENU SELECTION** or press **ESC ESC** to go back to **MEASUREMENT DISPLAY**.

5.9.5.2 4-20mA1 PH / 4-20mA2 RX Output > Dosing on Setpoint

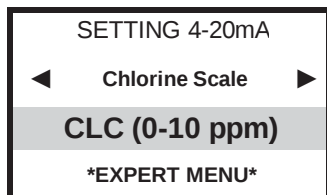
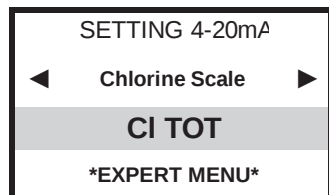
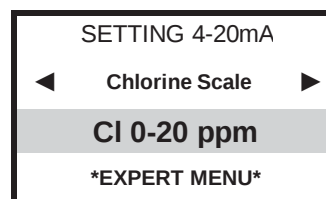
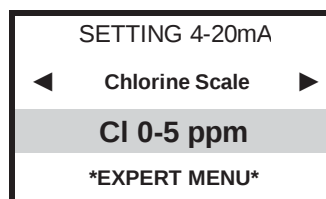
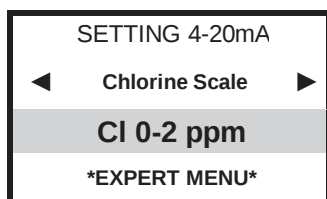
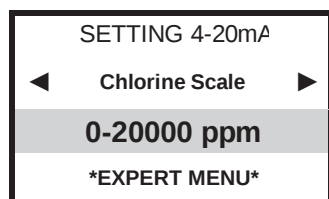
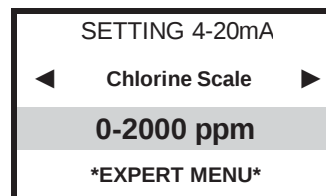
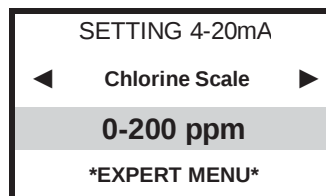
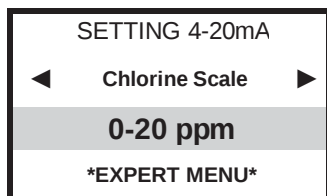
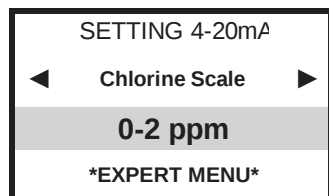
The analogue 4-20mA1 / 4-20mA2 outputs of the instrument follow the options previously selected of the **CHLORINE SCALE**.

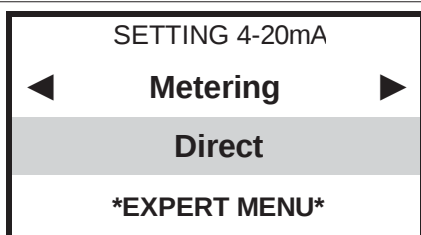


Please note that the value displayed is automatically adjusted according to the Measurement Type selected previously.

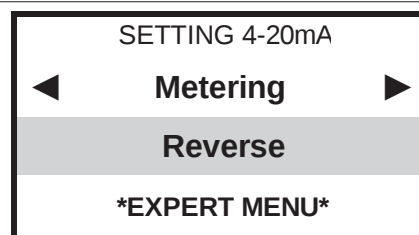


The 4-20mA proportional analogue outputs are related to the measurements in real time in order to drive remote equipment such as data loggers, PLCs or graphic recorders or other equipment suited to processing a remote mA signal.

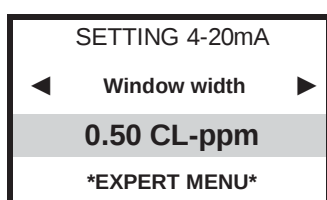
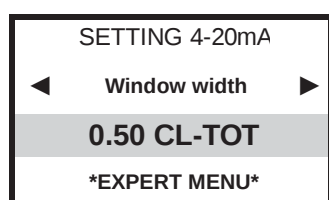
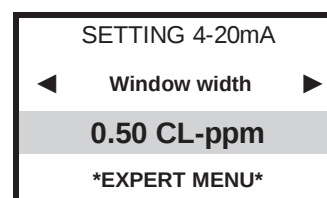
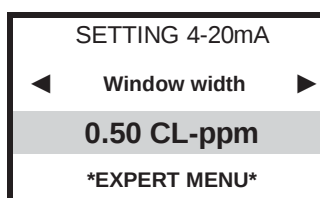
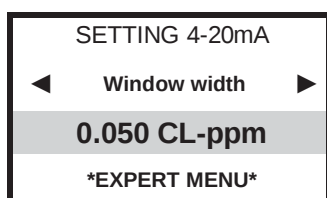
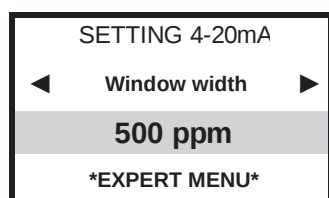
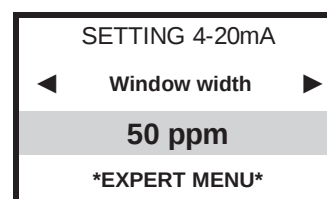
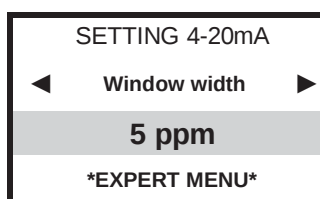
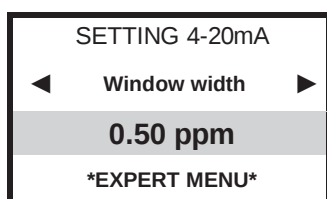
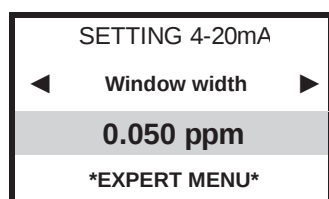




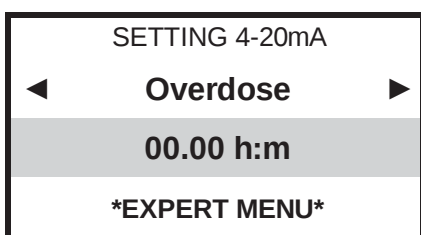
Direct mode: the output is active when the measured value is lower than the one selected in the setpoint.



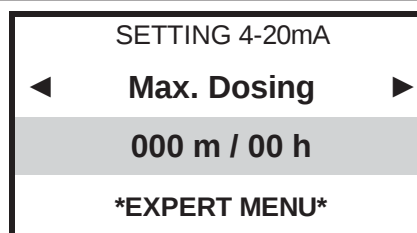
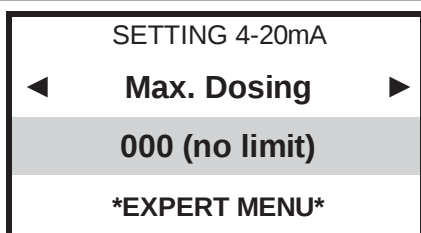
Reverse mode: the output is active even if the measured value is higher than the one selected in the setpoint.



The window width sets the distance from the setting point where the 4-20mA mode starts: 4mA = 0 metering pump pulse, 20mA = max impulsive frequency of the metering pump. The window width depends on many variables: distance injection point, reaction time, chemical % ...



With the **overdose time** alarm one can select a period during which the setpoint must be reached. If the setpoint is not reached during this period of time, the instrument blocks output operations, including those in mA (metering pumps), the alarm is displayed as ON and triggers a signalling instrument connected to the alarm relay.

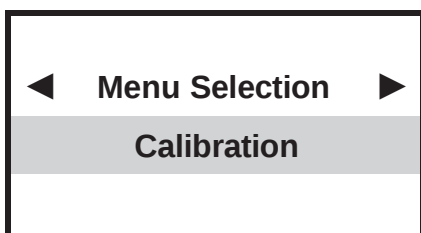


Maximum Metering is a safety function that ensures metering is completed in the selected time. The relays of the metering pumps open accordingly. This function makes it possible to eliminate time limits (continuous metering according to the selected setpoints) or to select the minutes (up to 999) and the hours, for instance metering for 999 minutes in 24 hours.

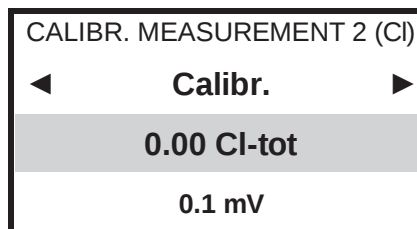
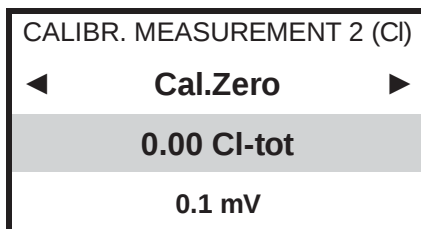
- Press **ESC** to go back to **MENU SELECTION** or press **ESC ESC** to go back to **MEASUREMENT DISPLAY**.

5.9.6 CALIBRATION > EXPERT MENU

- Press **OK/MENU** to confirm the selection and go to the next sub-menu.



The chlorine parameter has 3 ranges suitable for ion-selective membrane sensors, one of which for the Total chlorine, and a range for open type amperometric cells.

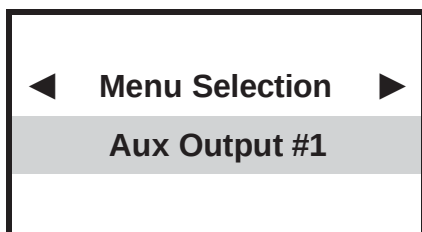


- Press **ESC** to go back to the **MENU SELECTION**.
- Press **ESC ESC** to go back to the **MEASUREMENT DISPLAY**.

5.9.7 AUX OUTPUT > EXPERT MENU

The auxiliary output controls various functions connected to any type of remote On-Off device controlled by a timer in real time. The AUX output may control a device or appliance thanks to very accurate programming of minutes/hours/days/weeks.

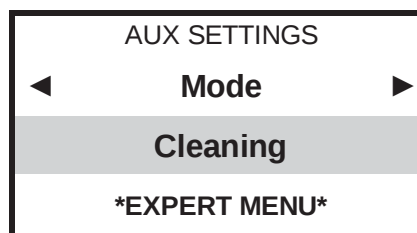
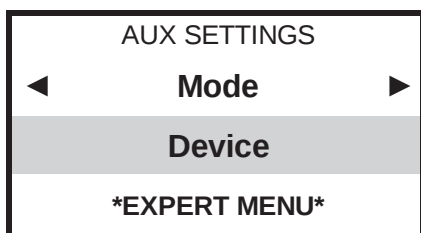
ADVANTAGES: this function makes this instrument a very versatile control unit not only to measure chemical physical parameters but also for other functions connected to the system where it is installed.



- Press **OK/MENU** to confirm the selection and to go on to the next sub-menu.

If the operator has selected **CIC 0-10 Cl ppm**, the AUX1 output is suited for two functions: controlling an external device or, by selecting Cleaning one may program a system for automatic cell cleaning, ask ETATRON or dealer for a CLC cleaning KIT.

- Program the AUX mode.



AUX1 may be used to control an external Device or for Cleaning the open Chlorine Cell for maintenance purposes.

- Press **ESC** to go back to **MAIN MENU** or press **ESC ESC** to go back to **CONTINUOUS MEASUREMENT**.
- Type the desired parameters, confirm your choice by pressing '**OK/MENU**'.

AUX 1		Programme 01
Active time (m:s)		01 : 00
Start time (h:s)		10 : 30
Enabl. days		Mon : N
Tue: N	Wed : N	Thu: N
Fri: N	Sat : N	Sun: N
Wk. 1 : S	2 : S	3 : S 4 : N

The settings of the program entail many steps, which may be selected to have absolute operating precision (up to 99 programs for each AUX output).

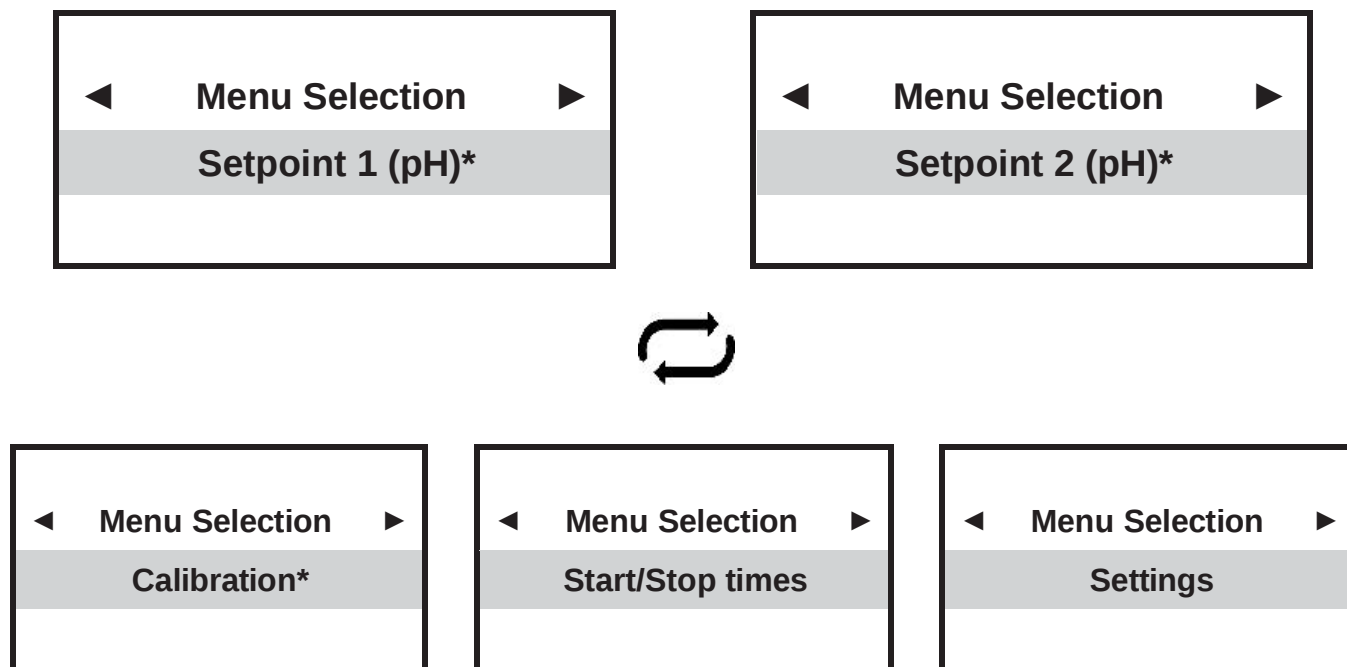
AUX 1	Program 01	- Press ◀ ▶ select program number (up to 99). - Confirm by pressing OK, automatically goes to the next step.
Active time	(m:s) 01:00	- Selects the active time of the connected On/Off device - Press ◀ ▶ to select the minutes, confirm OK to move to the next digits. - Press ◀ ▶ to select the seconds, confirm OK to move to the next step.
Start time	(h:m) 10:30	- Selects the start time of the connected On/Off device. - Press ◀ ▶ to select the hours, confirm OK to move to the next digits. - Press ◀ ▶ to select the minutes, confirm OK to move to the next step.
Enabled days	Mon : N ... Y	- Selects the days during which the connected equipment is operational. - Press ◀ ▶ to select the days of activity ◀ ▶ N no or Y yes. - Confirm by pressing OK, automatically goes to the next step.
Weeks	1:Y 2:N 3:N 4:N	- Selects the weeks of the month during which the connected equipment is operational. - Press ◀ ▶ to select the weeks of activity ◀ ▶ N no or Y yes. - Confirm by pressing OK, automatically goes to the next step.

- Press **ESC** to go back to **MENU SELECTION** or press **ESC ESC** to go back to **MEASUREMENT DISPLAY**.

5.10 PROGRAMMING: ELIGERE 01 pH(RX)

5.10.1 MAIN MENU > BASIC PROGRAMMING MENU

These are all the steps included in the **MENU SELECTION** configuration with **BASIC** programming:



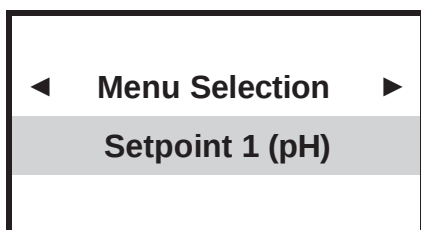
- Press **OK/MENU** to confirm the selection and to go on to the next sub-menu.
- Press **ESC** to go back to the **MEASUREMENT DISPLAY**.

5.10.2 SETPOINT 1 PH AND SETPOINT 1 RX > BASIC MENU

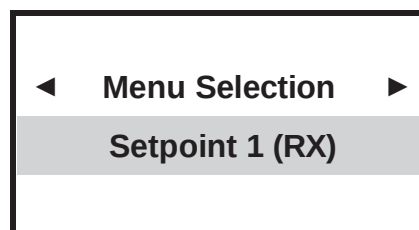


The two programming stages are set out below: when **Measurement Type** pH is selected, refer to the left column; when selecting RX refer to the right column.

SETPOINT1 PH



SETPOINT1 RX



MENU SETPOINT 1 (pH)	
◀	Setpoint Value ▶
7.00 pH	
BASIC MENU	

MENU SETPOINT 1 (RX)	
◀	Setpoint Value ▶
200 mV	
BASIC MENU	

The setpoint activates the output relays for the metering pumps or for other devices until the setpoint is reached.

MENU SETPOINT 1 (pH)	
◀	Metering ▶
Acid	
BASIC MENU	

Setpoint 1 is set for operations in **ACID** mode, the output is active when the measured value is higher than the selected setpoint, the connected pump meters out an acid product.

MENU SETPOINT 1 (RX)	
◀	Metering ▶
Direct	
BASIC MENU	

Setpoint 1 is set (default) for operations in **DIRECT** mode: if the measured value is lower than the setpoint, the connected pump meters out chlorine (Oxidising product).

MENU SETPOINT 1 (pH)	
◀	Metering ▶
Alkaline	
BASIC MENU	

MENU SETPOINT 1 (RX)	
◀	Metering ▶
Reverse	
BASIC MENU	

MENU SETPOINT 1 (pH)	
◀	Mode ▶
ON/OFF	
BASIC MENU	

MENU SETPOINT 1 (RX)	
◀	Mode ▶
ON/OFF	
BASIC MENU	

The unit has an **ON-OFF** mode which switches on or off (if the reverse mode is ON) the output relays of Constant / ON-OFF metering pumps or other ON-OFF equipment.



SELECTING '**ON-OFF**' THE NEXT STEP WILL BE: "**MIN ALARM**" (SET POINT1 ONLY)

SETPOINT1 PH

MENU SETPOINT 1 (pH)	
◀	Mode ▶
Proportional	
BASIC MENU	

Default activation point 1.50 pH

SETPOINT1 RX

MENU SETPOINT 1 (RX)	
◀	Mode ▶
Proportional	
BASIC MENU	

Default activation point 150 mV

Modular pulses, also known as PWM “pulse width modulation”, support a proportional mode on each ON-OFF setpoint, activating the corresponding pulses on the relays based on the measured value.

For more accurate settings of the “**Modular pulses**” PWM, select the “**Expert**” menu in the initial settings.



* GOING BACK TO THE SETPOINT PROGRAMMING STEPS FROM “ON-OFF” MODE OR FROM “PROPORTIONAL” MODE

MENU SETPOINT 1 (pH)	
◀	MIN Alarm ▶
0.00 pH	
BASIC MENU	

MENU SETPOINT 1 (RX)	
◀	MIN Alarm ▶
- 1500 mV	
BASIC MENU	

The **MIN** Alarm function selects a **MINIMUM** alarm level, after which the alarm relay is triggered.

MENU SETPOINT 1 (pH)	
◀	MAX Alarm ▶
14.00 pH	
BASIC MENU	

MENU SETPOINT 1 (RX)	
◀	MAX Alarm ▶
1500 mV	
BASIC MENU	

The **MAX** Alarm function selects a **MAXIMUM** alarm level, after which the alarm relay is triggered.

MENU SETPOINT 1 pH / RX	
◀	Priming ▶
OFF	
BASIC MENU	

MENU SETPOINT 1 pH / RX	
◀	Priming ▶
ON	
BASIC MENU	

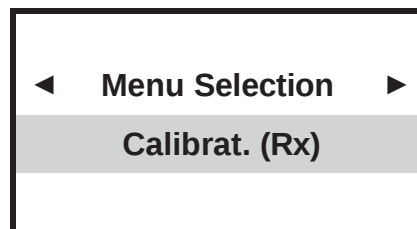
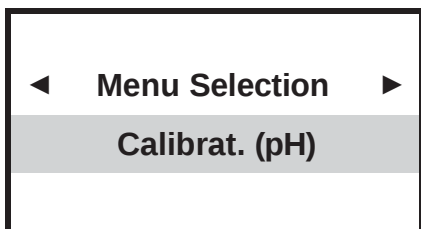
The priming function blocks the setpoint value to allow the metering pump to remain primed, the outputs are not active.

- Press **ESC** to go back to **MENU SELECTION** or press **ESC ESC** to go back to **MEASUREMENT DISPLAY**.

5.10.3 SETPOINT 2 PH AND SETPOINT 2 RX > BASIC MENU

Refer to the SETPOINT 1 menu, as the SETPOINT 2 menu has the same settings as the SETPOINT 1 menu, with the exception of the **MIN/MAX ALARM** function, indeed only found in the SETPOINT 1.

5.10.4 CALIBRATION > BASIC MENU



Calibration operations follow the type of parameter selected in the **Measurement Type** paragraph.

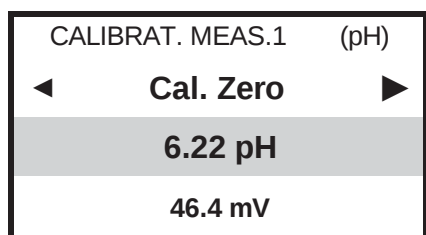
- Press **OK/MENU** to confirm the selection and go to the next sub-menu.

5.10.4.1 pH CALIBRATION > BASIC MENU

According to the selected **Measurement Type**, the Calibration menu shows the electrode to be calibrated. We suggest using new or however uncontaminated buffer solutions.

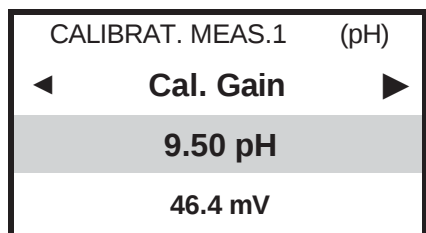
As for the length of the pH electrode we advise max 9 m: contact ETATRON for longer distances.

The mV value at the bottom of the screen shows the **electrode's** efficiency (according to the manufacturer's specifications)



* When the Calibration starts, the display shows random values.

- Dip the pH electrode in the buffer solution at pH 7.00 for ZERO calibration, wait 2/3 minutes.
- Press **◀▶** and ensure the display shows the value 7.00 pH, confirm with the **OK/MENU** button.
- Rinse the electrode with water (possibly demineralised) and dry with a clean cloth or paper tissues.



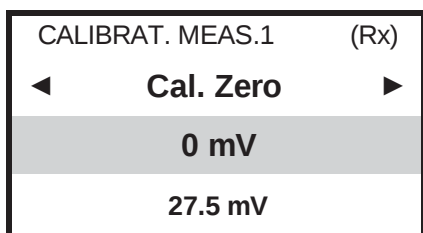
- Dip the pH electrode in the buffer solution at pH 4 or pH 9 for "Gain" calibration, wait 2/3 min.
- Press **◀▶** until the display shows **4.00 pH** or **9.00 pH**.
- Press **OK/MENU** to confirm the selection.
- Press **ESC** to go back to the **MENU SELECTION**
- Press **ESC ESC** to go back to the **MEASUREMENT DISPLAY**.



As the pH measurement is essential for the entire chemical-physical balance, it is recommended to periodically calibrate the pH electrode.

5.10.4.2 RX (REDOX) electrode calibration > BASIC MENU

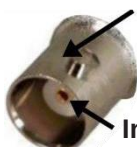
EXPERT mode



* When the Calibration starts, the display shows random values.

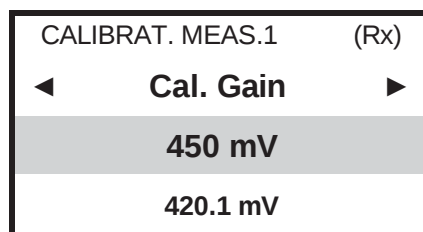
Short-circuit the BNC by using a copper wire (for calibration only) to put in contact the internal PIN with the external part of the connector.

External BNC



Internal PIN

BASIC Mode

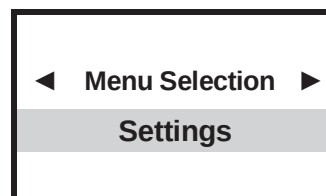
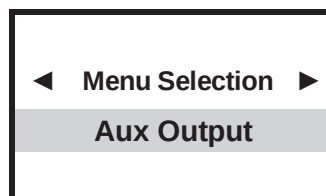
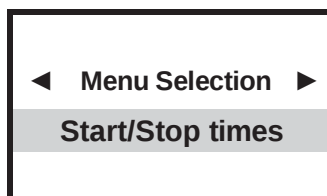
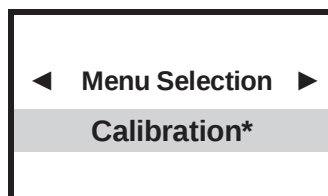
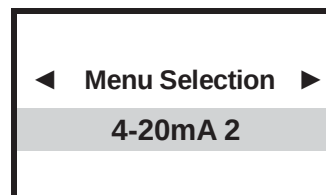
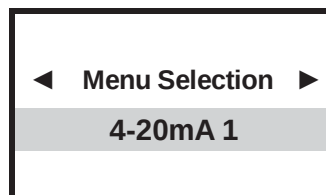
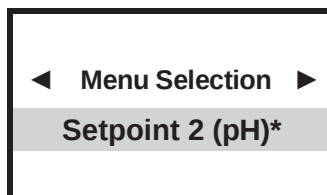
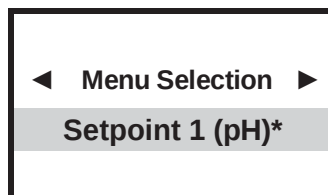


- Press ◀▶ and ensure the display shows **0 mV**.
- Press **OK/MENU** to confirm the selection.
- Connect the BNC of the electrode to the instrument.
- Dip the RX electrode in the REDOX buffer solution for "Gain" calibration, wait 2/3 minutes.
- Press ◀▶ and ensure the display shows the mV value corresponding to the buffer solution used.
- Press **OK/MENU** to confirm the selection.
- Press **ESC** to go back to the **MENU SELECTION**
- Press **ESC ESC** to go back to the **MEASUREMENT DISPLAY**.



The mV value at the bottom shows the electrode signal and consequently its efficiency (according to the manufacturer's specifications). Refer to the electrode's instructions and ensure the mV value displayed matches that of the buffer solution with a tolerance of ± 20 mV.

5.10.5 MENU SELECTION > EXPERT PROGRAMMING MENU



- Selecting this setting will display RX (mV):

Measurement Type

>

SET POINT 1

>

SET POINT 2

>

CALIBRATION

- Press **OK/MENU** to confirm the selection and to go on to the next sub-menu.
- Press **ESC** to return to the **MEASUREMENT DISPLAY**.

5.10.6 SETPOINT 1 PH AND SETPOINT 1 RX > EXPERT MENU

The two programming stages are set out below: when **Measurement Type** pH is selected, refer to the left column; when selecting RX refer to the right column.



The setpoint activates the output relays for the metering pumps or other devices until the setpoint value is reached.

SETPOINT1 PH

◀	Menu Selection	▶
Setpoint 1 (pH)		

MENU SETPOINT 1 (pH)		
◀	Setpoint Value	▶
7.00 pH		
EXPERT MENU		

MENU SETPOINT 1 (pH)		
◀	Metering	▶
Acid		
BASIC MENU		

Setpoint 1 is set (default) for operations in **ACID** mode, the output is active when the measured value is higher than the selected setpoint, the connected pump meters out an acid product.

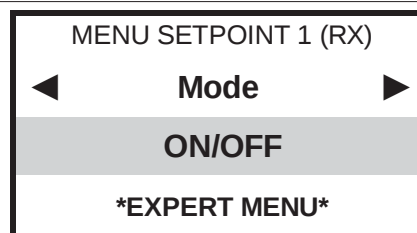
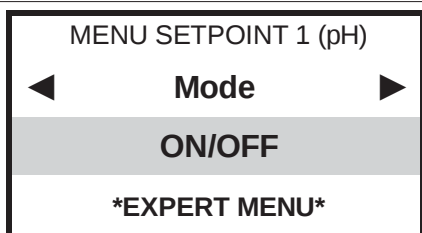
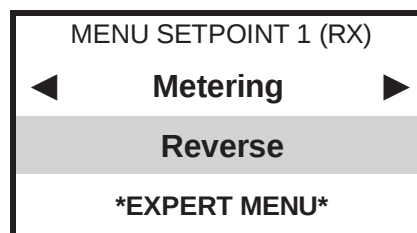
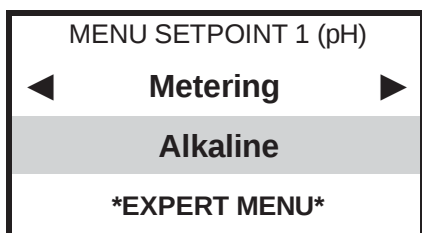
SETPOINT1 RX

◀	Menu Selection	▶
Setpoint 1 (RX)		

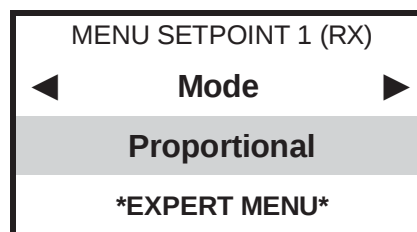
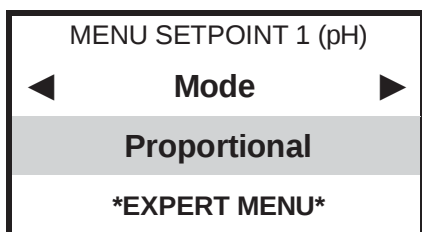
MENU SETPOINT 1 (RX)		
◀	Setpoint Value	▶
200 mV		
EXPERT MENU		

MENU SETPOINT 1 (RX)		
◀	Metering	▶
Direct		
BASIC MENU		

Setpoint 1 is set (default) for operations in **DIRECT** mode: if the measured value is lower than the selected setpoint, the connected pump meters out chlorine (Oxi-dising product).



The unit has an **ON-OFF** mode which switches on or off (if the reverse mode is ON) the output relays of Constant / ON-OFF metering pumps or other ON-OFF equipment.



Modular pulses, also known as PWM “pulse width modulation”, support a proportional mode on each ON-OFF set-point, activating the corresponding pulses on the output relays based on the measured value. When the Expert Menu is used, other parameters need to be programmed.



SELECTING '**ON-OFF**' THE NEXT PROGRAMMING STEP: '**HYSTERESIS**'.



SELECTING “**PROPORTIONAL**” REQUIRES PROGRAMMING THE NEXT STEPS

PWM PROPORTIONALMODE FOR PH WITH TIMED PULSES

MENU SETPOINT 1 (pH) ◀ Window width ▶ 1.50 pH *EXPERT MENU*	Pulse width: pulses are timed ON and OFF based on the distance from the selected setpoint, programmable, example: if the selected setpoint is 7.00 pH and the measured value is 9.00 pH, the PWM mode starts after reaching 8.50 pH with Time/Pause pulses and decreasing the active time while reaching the setpoint.
MENU SETPOINT 1 (Rx) ◀ Window width ▶ *EXPERT MENU*	Pulse width: pulses are timed ON and OFF based on the distance from the selected setpoint (programmable), example: if the selected setpoint is 750 mV and the measured value is 500 mV, the PWM mode starts after reaching 550 mV with Time/Pause pulses and decreasing the active time while reaching the setpoint.
MENU SETPOINT 1 (pH) ◀ Cycle Duration ▶ 60 sec *EXPERT MENU*	Cycle Time: the PWM mode has a 60 second cycle (programmable), example: setpoint is 700 mV, measured value 850 pH = active time 60 sec - pause time = 0 sec; at 7.75 pH active time = 30 sec - pause time = 30 sec... as a consequence the active time decreases while reaching the setpoint. The cycle time depends on many variables, such as: distance from the injection point of the system to be treated, how fast or slowly the setpoint must react, chemical concentration, etc.
MENU SETPOINT 1 (Rx) ◀ Cycle Duration ▶ 60 sec *EXPERT MENU*	Cycle Time: the PWM mode has a 60 second cycle (programmable), example: setpoint is 700 mV, measured value 550 mV = active time 60 sec - pause time = 0 sec; at 625 mV active time = 30 sec - pause time = 30 sec... as a consequence the active time decreases while reaching the setpoint. The cycle time depends on many variables, such as: distance from the injection point of the system to be treated, how fast or slowly the setpoint must react, chemical concentration, etc.
MENU SETPOINT 1 (pH) ◀ Min.Active Time ▶ 5 sec *EXPERT MENU*	MIN Active Time: programmable. Defines the minimum time for which PWM is active; prevails over the selected settings. The pulse modulation function is adjusted with 3 functions according to the following formula: Active Time in accordance with the selected formula = (measured value - setpoint) / (period width * cycle time). If the result of the formula is < of that selected with MIN Active Time, the latter prevails on the former.
MENU SETPOINT 1 (Rx) ◀ Min.Active Time ▶ *EXPERT MENU*	



SELECTING 'ON-OFF' THE NEXT PROGRAMMING STEP: 'HYSTERESIS'.

FUNCTION NOT AVAILABLE WITH PROPORTIONAL MODE

Hysteresis is useful during operations to adjust the setpoints in ON-OFF mode and is used to enable and disable the output relay when the selected hysteresis has been achieved.

Hysteresis is useful when there are too many quick swings around the setpoint, that might damage the connected device.

SETPOINT1 PH

MENU SETPOINT 1 (pH)	
◀	Hysteresis ▶
0.05 pH	
EXPERT MENU	

SETPOINT1 RX

MENU SETPOINT 1 (RX)	
◀	Hysteresis ▶
10 mV	
EXPERT MENU	

FUNCTION NOT AVAILABLE WITH PROPORTIONAL MODE

MENU SETPOINT 1 pH / RX	
◀	Set point del. ▶
5 sec	
EXPERT MENU	

The Delay time blocks the output relays (max 999 sec. programmable) to ensure the outputs are active only when the measurements are stable, thus assuring the best results in terms of chemical balance.



* GOING BACK TO THE SETPOINT PROGRAMMING STEPS FROM THE "ON-OFF" MODE OR "PROPORTIONAL" MODE.

SETPOINT1 PH

MENU SETPOINT 1 (pH)	
◀	Measurement Type ▶
pH	
EXPERT MENU	

SETPOINT1 RX

MENU SETPOINT 1 (Rx)	
◀	Measurement Type ▶
Rx	
EXPERT MENU	

The PH measurement parameter can be changed into RX by simple programming and by using the RX electrode.

MENU SETPOINT 1 (pH)	
◀	MIN Alarm ▶
0.00 pH	
EXPERT MENU	

MENU SETPOINT 1 (Rx)	
◀	MIN Alarm ▶
- 1500 mV	
EXPERT MENU	

In the MIN Alarm function a **MINIMUM** alarm level is set up, after which the alarm relay is triggered.

MENU SETPOINT 1 (pH)		
◀	MAX Alarm	▶
14.00 pH		
EXPERT MENU		

MENU SETPOINT 1 (Rx)		
◀	MAX Alarm	▶
1500 mV		
EXPERT MENU		

In the MAX Alarm function a **MAXIMUM** alarm level is selected, after which the alarm relay is triggered.

MENU SETPOINT 1 pH / RX		
◀	Overdose	▶
00.00 h:m		
EXPERT MENU		

With the **Overdose** alarm one can select a period during which the setpoint must be reached. If the setpoint is not reached during this period of time, the instrument blocks output operations, including those in mA (metering pumps), the alarm is displayed as ON and triggers a signalling instrument connected to the alarm relay.

MENU SETPOINT 1 pH / RX		
◀	Max. Dosing	▶
000 (no limit)		
EXPERT MENU		

MENU SETPOINT 1 pH / RX		
◀	Max. Dosing	▶
000 m / 00 h		
EXPERT MENU		

Maximum Dosing is an extra safety function that ensures metering is completed in the selected time.

This function makes it possible to eliminate time limits (continuous metering according to the selected setpoints) or to select the minutes (up to 999) and the hours, for instance metering for 999 minutes in 24 hours (see MAXIMUM METERING TIME menu).

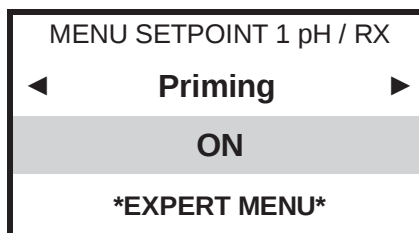
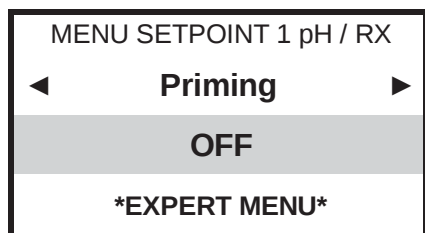
MENU SETPOINT 1 pH / RX		
◀	Start-up Delay	▶
00.00 h:m		
EXPERT MENU		

The **start-up delay** stops the output relays when the unit is switched on, thus allowing the sensor to polarise assuring reliable measurements (programmable).

MENU SETPOINT 1 pH		
◀	Level Delay	▶
00.00 h:m		
EXPERT MENU		

It is possible to set a **delay time on the level alarm**, the controller goes into alarm as soon as it receives contact from the relevant level probe, but only switches off the pumps connected to it after the previously set time.

ONLY WHEN USING METERING PUMPS

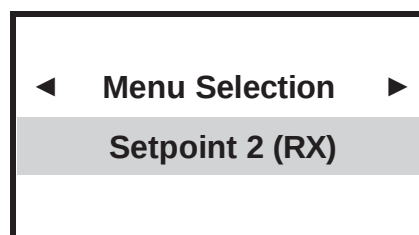
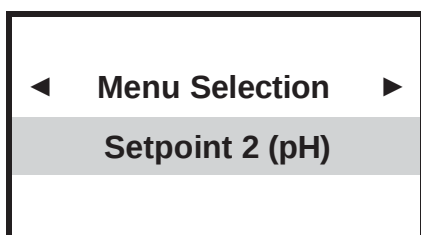


The priming function blocks the setpoint value to allow the metering pump to remain primed.

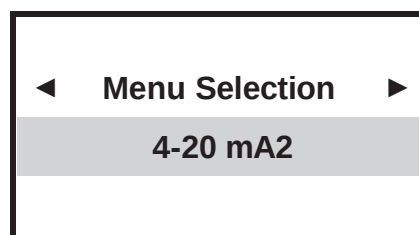
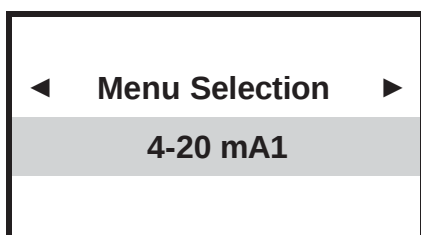
- Press **ESC** to go back to **MENU SELECTION** or press **ESC ESC** to go back to **MEASUREMENT DISPLAY**.

5.10.7 SETPOINT 2 PH AND SETPOINT 2 RX > EXPERT MENU

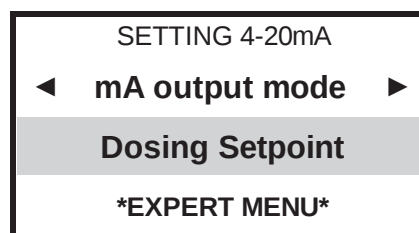
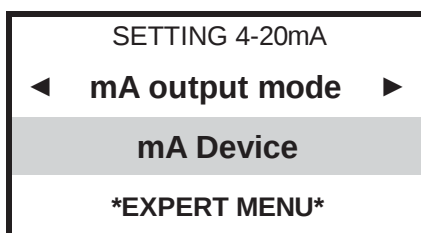
Refer to the SETPOINT 1 menu, as the SETPOINT 2 menu has the same settings as the SETPOINT 1 menu, with the exception of the MIN/MAX Alarm function, indeed only found in the SETPOINT 1.



5.10.8 ANALOGUE 4-20MA OUTPUTS FUNCTION SELECTION > EXPERT MENU



- Press **OK/MENU** to go into mA mode and choose between two operative functions.



- mA DEVICE:** external devices suited to operating with mA signal such as data loggers or data recorders or other mA equipment.
- DOSING SETPOINT:** through the control of metering pumps suited to controlling an mA external digital signal.

5.10.8.1 4-20mA1 / 4-20mA2 pH or Rx OUTPUTS > REMOTE DEVICES FUNCTION

The analogue 4-20mA1 / 4-20mA2 outputs of ELIGERE follow the options previously selected Measurement Type i.e. pH or RX



The 4-20mA proportional analogue outputs are according to the measurements in real time in order to drive remote equipment such as data loggers, PLCs or graphic recorders or other equipment suited to processing a remote mA signal



Please note that the value displayed is automatically adjusted according to the selected Measurement Type (see **SELECT MEASUREMENT TYPE PH OR RX** menu)

pH	RX
◀ Menu Selection ▶ 4-20mA1 (pH)	◀ Menu Selection ▶ 4-20mA2 (RX)
SETTING 4-20mA (pH) ◀ mA output mode ▶ mA Device *EXPERT MENU*	SETTING 4-20mA (RX) ◀ mA output mode ▶ mA Device *EXPERT MENU*
SETTING 4-20mA (pH) ◀ Measurement @4mA ▶ 0.00 pH *EXPERT MENU*	SETTING 4-20mA (RX) ◀ Measurement @4mA ▶ 0 mV *EXPERT MENU*
SETTING 4-20mA (pH) ◀ Measurement @20mA ▶ 14.00 pH *EXPERT MENU*	SETTING 4-20mA (RX) ◀ Measurement @20mA ▶ 1000 mV *EXPERT MENU*

Select the value corresponding to 4 and 20 mA based on Setpoint 1.

- Press **ESC** to go back to **MENU SELECTION** or press **ESC ESC** to go back to **MEASUREMENT DISPLAY**.

5.10.8.2 4-20mA1 / 4-20mA2 OUTPUT pH or Rx > DOSING FUNCTION ON SETPOINT

The analogue 4-20mA1 / 4-20mA2 outputs follow the options previously selected **Measurement Type** i.e. pH or RX.



Please note that the value displayed is automatically adjusted according to the **Measurement Type** (see **SELECT MEASUREMENT TYPE PH OR RX** menu).

pH	RX
Menu Selection 4-20mA (pH)	Menu Selection 4-20mA (RX)
SETTING 4-20mA (pH) mA output mode Dosing Setpoint *EXPERT MENU*	SETTING 4-20mA (RX) mA output mode Dosing Setpoint *EXPERT MENU*
SETTING 4-20mA (pH) Setpoint Value 7.00 pH *EXPERT MENU*	SETTING 4-20mA (RX) Setpoint Value 200 mV *EXPERT MENU*
Select the Set point value to control the metering pump or other equipment suited to processing the mA signal.	
SETTING 4-20mA (pH) Metering Acid *EXPERT MENU*	SETTING 4-20mA (RX) Metering Direct *EXPERT MENU*
Setpoint mA is set for operations in ACID mode, the output is active when the measured value is higher than the selected setpoint, the connected pump meters out an acid product.	The mA setpoint is set for operations in DIRECT mode: if the measured value is lower than the selected setpoint, the connected pump meters out chlorine (Oxidising product).

pH

SETTING 4-20mA (pH)	
◀	Metering ▶
Alkaline	
EXPERT MENU	

Setpoint 2 is set for operations in **ALKALINE** mode: the output is active when the measured value is higher than the selected setpoint, the connected pump meters out an alkaline product.

RX

SETTING 4-20mA (RX)	
◀	Metering ▶
Reverse	
EXPERT MENU	

Setpoint 1 is set for operations in **REVERSE** mode: if the measured value is higher than the selected setpoint, the connected pump meters out a reducing agent.

SETTING 4-20mA (pH)	
◀	Window width ▶
1.50 pH	
EXPERT MENU	

The window width sets the distance from the setting up point where the 4-20mA mode starts: 4mA = 0 metering pump pulse, 20mA = max frequency of the metering pump. The window width depends on many variables: distance of the injection point, reaction time, chemical product concentration, etc.

SETTING 4-20mA (RX)	
◀	Window width ▶
150 mV	
EXPERT MENU	

SETTING 4-20mA (pH)	
◀	Overdose ▶
00.00 h:m	
EXPERT MENU	

With the **overdose time** alarm one can select a period during which the setpoint must be reached. If the setpoint is not reached during this period of time, the instrument blocks output operations, including those in mA (metering pumps), the alarm is displayed as ON and triggers a signalling instrument connected to the alarm relay.

MENU SETPOINT 1 (pH)	
◀	Max. Dosing ▶
000 (no limit)	
EXPERT MENU	

Maximum Metering is a safety function that ensures metering is completed in the selected time. The relays of the metering pumps open accordingly. This function makes it possible to eliminate time limits (continuous metering according to the selected setpoints) or to select the minutes (up to 999) and the hours, for instance metering for 999 minutes in 24 hours.

SETTING 4-20mA (RX)	
◀	Max. Dosing ▶
000 m / 00 h	
EXPERT MENU	

- Press **ESC** to go back to **MENU SELECTION** or press **ESC ESC** to go back to **MEASUREMENT DISPLAY**.

5.10.9 CALIBRATION > EXPERT MENU

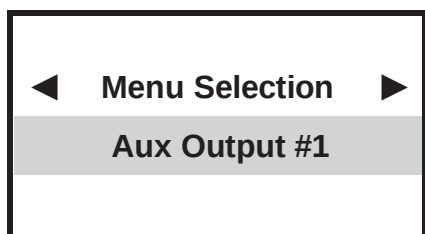
In the EXPERT MENU mode, calibration does not change.

Therefore, refer to the CALIBRATION menu – BASIC MENU, illustrated above.

5.10.10 AUX OUTPUT > EXPERT MENU

The **auxiliary output** controls various functions connected to any type of remote On-Off device controlled by a timer in real time. The AUX output may control a device or appliance thanks to very accurate programming of minutes/hours/days/weeks.

ADVANTAGES: this function makes this instrument a very versatile control unit not only to measure chemical physical parameters but also for other functions connected to the system where it is installed.



- Press **OK/MENU** to confirm the selection and to go on to the next sub-menu.

In the highlighted steps, select the desired parameters; confirm the selection with "**OK**"; move on to the next steps. Below are the programming steps to be selected:

AUX 1		Programme 01
Active time (m:s)		01 : 00
Start time (h:s)		10 : 30
Enabl. days		Mon : N
Tue: N	Wed : N	Thu: N
Fri: N	Sat : N	Sun: N
Wk. 1 : S	2 : S	3 : S 4 : N

The settings of the program entail many steps, which may be selected to have absolute operating precision (up to 99 programs for each AUX output).

AUX 1	Program 01	• Press ◀ ▶ select program number (up to 99). • Confirm by pressing OK, automatically goes to the next step.
Active time	(m:s) 01:00	Selects the active time of the connected On/Off device • Press ◀ ▶ to select the minutes, confirm OK to move to the next digits. • Press ◀ ▶ to select the seconds, confirm OK to move to the next step.

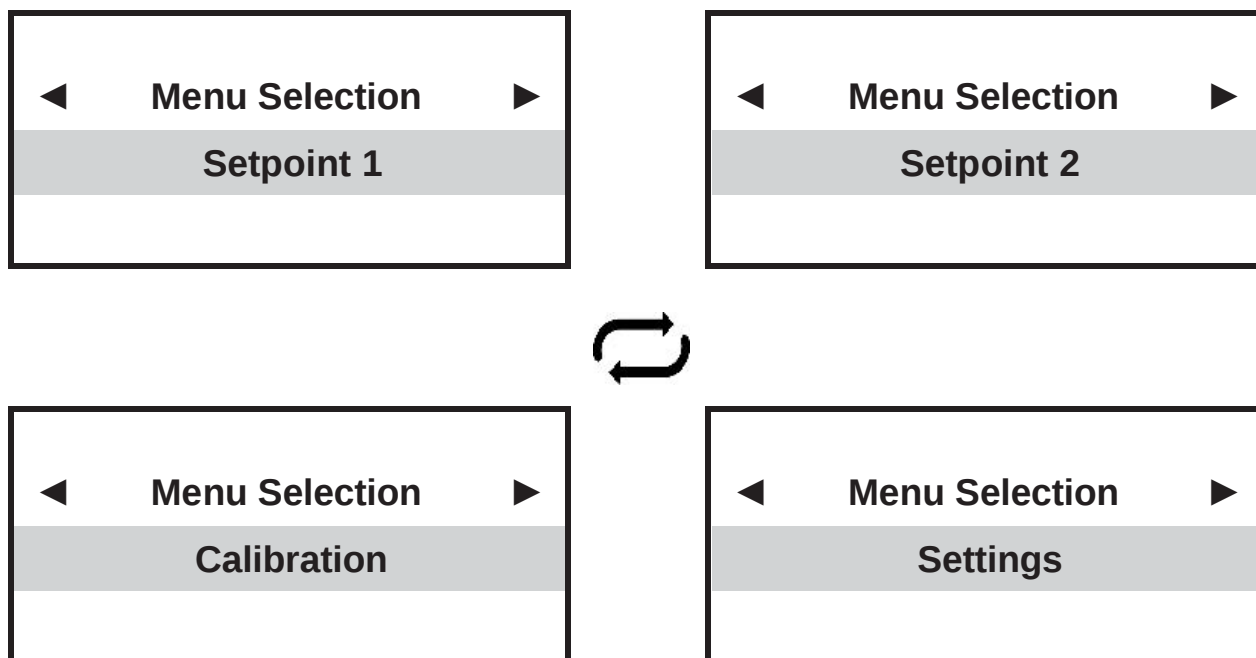
Start time	(h:m) 10:30	Selects the start time of the connected On/Off device. - Press ◀ ▶ to select the hours, confirm OK to move to the next digits. - Press ◀ ▶ to select the minutes, confirm OK to move to the next step.
Enabled days	Mon : N ... Y	Selects the days during which the connected equipment is operational. - Press ◀ ▶ to select the days of activity ◀ ▶ N no or Y yes. - Confirm by pressing OK, automatically goes to the next step.
Weeks	1:Y 2:N 3:N 4:N	Selects the weeks of the month during which the connected equipment is operational. - Press ◀ ▶ to select the weeks of activity ◀ ▶ N no or Y yes. - Confirm by pressing OK, automatically goes to the next step.

- Press **ESC** to go back to **MENU SELECTION** or press **ESC ESC** to go back to **MEASUREMENT DISPLAY**.

5.11 PROGRAMMING: ELIGERE 01 CD

5.11.1 MAIN MENU > BASIC PROGRAMMING MENU

These are all the steps included in the **MAIN MENU** configuration with the **BASIC** programming:



- By selecting this setting, programming will follow the range values:

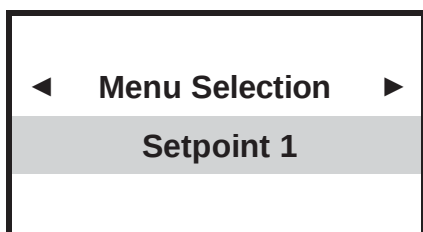


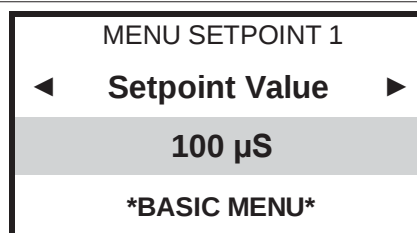
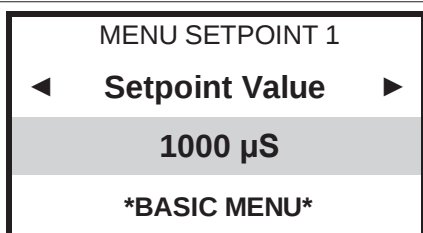
- Press **OK/MENU** to confirm the selection and to go on to the next sub-menu.
- Press **"ESC"** to go back to **"CONTINUOUS MEASUREMENT"**.

5.11.2 SETPOINT 1 EC CONDUCTIVITY > BASIC MENU

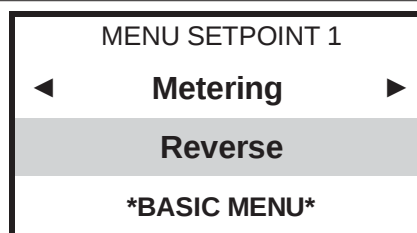
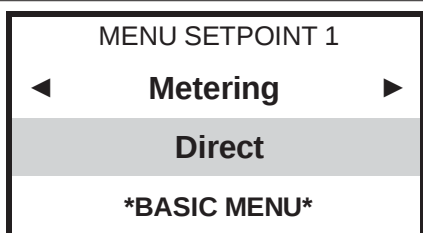


Please note that the displayed value is automatically adjusted based on the features of the **"K"** cell constant of the conductivity range selected in the previous paragraph **SELECTION OF "K" CONDUCTIVITY FACTOR**.

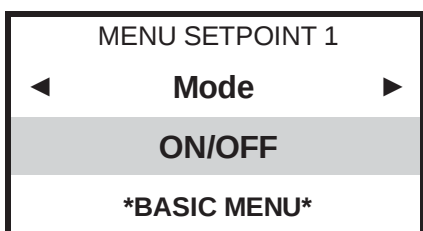




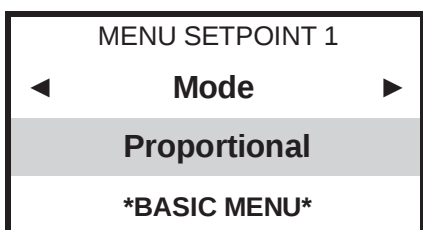
The set point activates the output relays for the metering pumps and other equipment once the selected setpoint level is reached. The display shows the µS values but if the setpoint value exceeds 1999 µS, it shows 2.00 mS (when the value decrease the reading goes back to µS).



Direct Dosing mode: the output is active if the measured value is lower than the selected setpoint, thus activating the connected equipment. The Reverse mode operates exactly in the opposite manner.

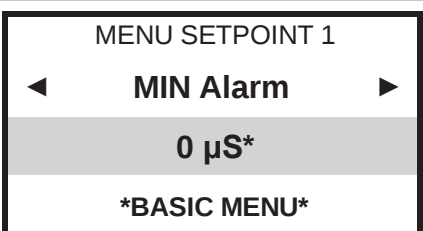


The unit has an **ON-OFF** mode which switches on or off (if the reverse mode is ON) the output relays of Constant / ON-OFF metering pumps or other ON-OFF equipment.

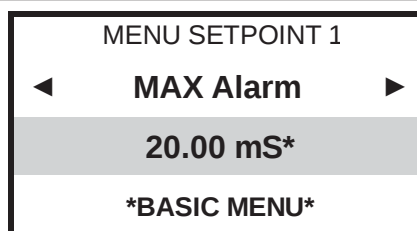


*The Proportional mode, also referred to as PWM “Pulse modulation”, activates the proportional mode on each setpoint, activating the corresponding pulses on the output relay according to the measured value and always referring to the previously selected hysteresis settings. **Default activation point at 1000 µS** (range 0-20,000 µS DEFAULT); **100 µS** (range 0-2000 µS); **0.10 µS** (range 0-200 µS); **10000 µS** (range 0-200,000 µS)

For more accurate settings of the “**Modular pulses**” PWM, select the “**Expert**” menu in the initial settings.

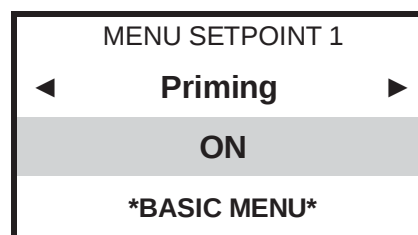
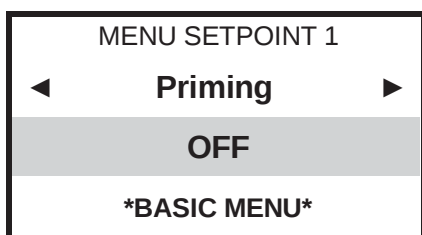


The **MIN** Alarm function selects the MINIMUM level after which the alarm relay is on.



The **MAX** Alarm function selects the MAXIMUM level after which the alarm relay is on.

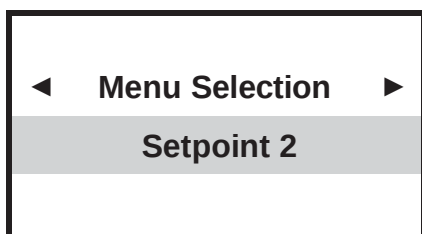
ONLY IF THE METERING PUMP IS USED



The Priming ON function “freezes” the set point value to allow metering pumps to be primed; the outputs are not active.

- Press **ESC** to go back to **MAIN MENU** or press **ESC ESC** to go back to **CONTINUOUS MEASUREMENT**.

5.11.3 SETPOINT 2 EC CONDUCTIVITY > BASIC MENU



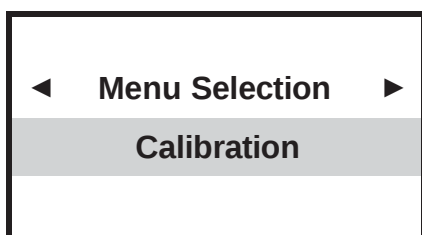
The SETPOINT 2 settings are the same as the SETPOINT 1, except the MIN ALARM and MAX ALARM menus which are not included.

Therefore, for SETPOINT 2 programming and navigation refer to that for SETPOINT 1.

5.11.4 SENSOR CALIBRATION > BASIC MENU

IMPORTANT NOTES:

- If there is NO temperature sensor for Temperature adjustment, to change the desired temperature value go to: **Expert Menu > "Settings > Temperature > Manual"**
- When calibrating the sensor, ensure the probe electrodes do not touch any surface except the solution;
- Ensure the sensor is securely positioned in the solution's container without any movement;
- Wait for the time required for the calibration measurements to stabilise.



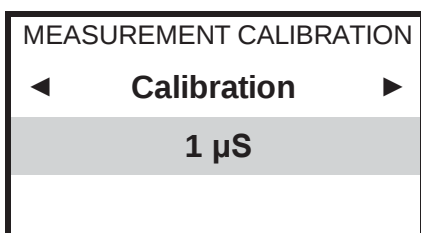
- Press **OK/MENU** to confirm the selection and go to the next sub-menu.

A reminder message is displayed before calibration:



It is recommended to create a sample solution that matches the EC value required by the system (normally the setpoint value); use a suitable portable EC meter to ensure the conductivity levels meet the requirements. Use a conductivity Sensor with cell constant according to the selected K factor range, with max. cable length 4 m.

After calibration, wait 5/10 minutes for the measurement to stabilise.

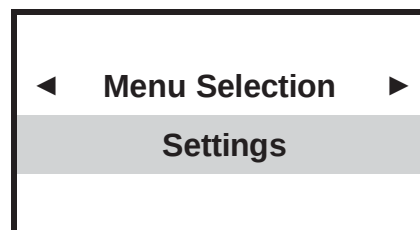
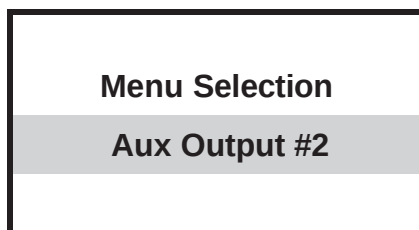
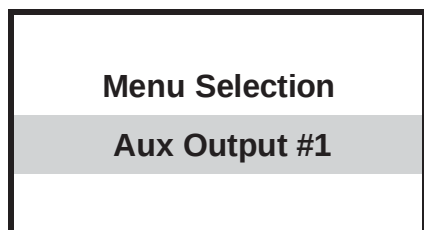
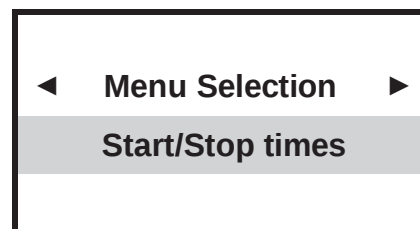
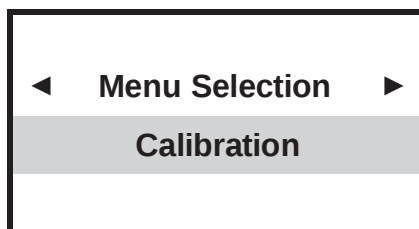
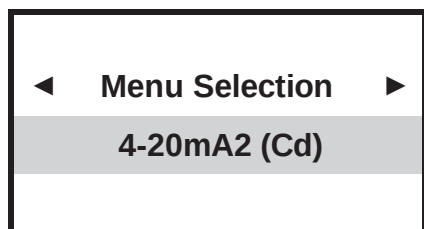
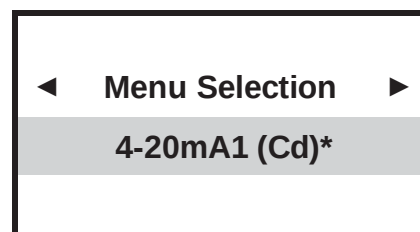
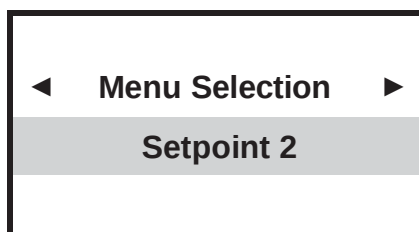
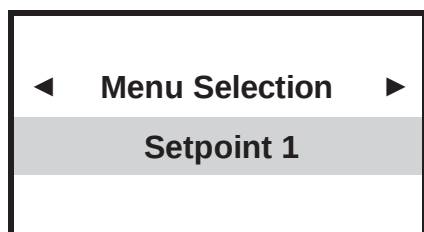


Immerse the EC probe in the sample solution previously prepared and wait for the measurement to stabilise.

To edit the value press **OK/Menu**, then press and hold ◀▶ until the value of the sample solution is displayed, then press **OK/MENU** to confirm.

- Press **OK/MENU** to confirm the selection.
- Press **ESC** to go back to the **MAIN MENU**.
- Press **ESC ESC** to display the **CONTINUOUS MEASUREMENT** screen.

5.11.5 MAIN MENU > EXPERT PROGRAMMING MENU



- By selecting this setting, programming will follow the range values:

Range K probe C E > Setpoint 1 - 2 > CALIBRATION

- By selecting this setting, programming will follow the selected range values:

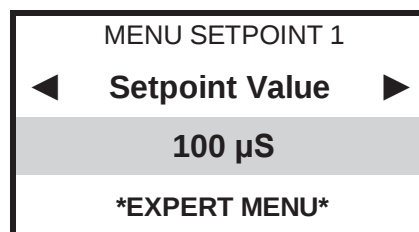
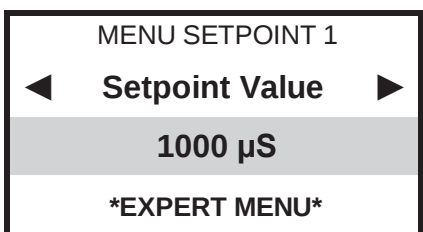
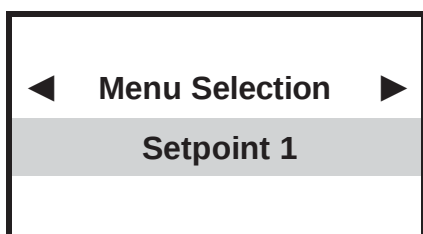
Factor range > Setpoint 1 - 2 > CALIBRATION

- Press **OK/MENU** to confirm the selection and to go on to the next sub-menu.
- Press **ESC** to go back to **CONTINUOUS MEASUREMENT**.

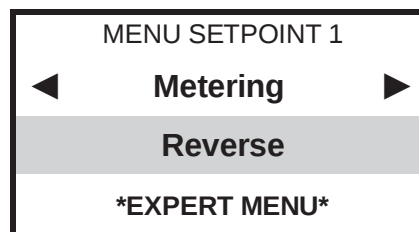
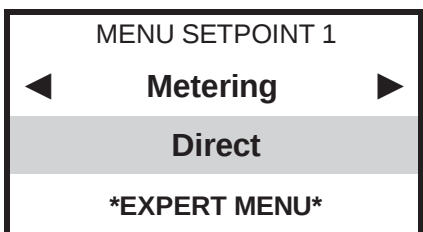
5.11.6 SETPOINT 1 EC CONDUCTIVITY > EXPERT MENU



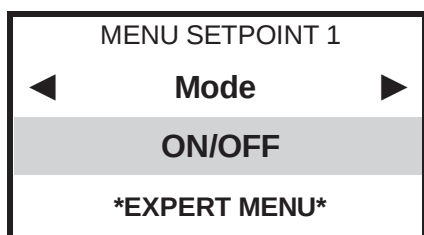
Please note that the displayed value is automatically adjusted based on the features of the “K” cell constant of the conductivity range selected in the previous paragraph SELECTION OF “K” CONDUCTIVITY FACTOR.



The setpoint activates the output relays for the metering pumps and other equipment once the selected setpoint level is reached. The display shows the µS values but if the setpoint value exceeds 1999 µS, it shows 2.00 mS (when the value decrease the reading goes back to µS). By selecting the K5 range (5,000) the setpoint will be 100 µS



Direct Dosing mode: the output is active if the measured value is lower than the selected setpoint, thus activating the connected equipment. The Reverse mode operates exactly in the opposite manner.

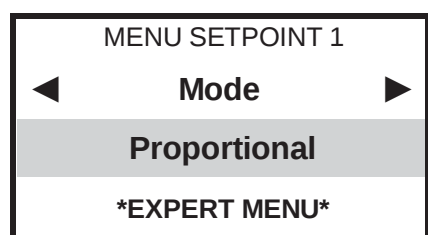


The unit has an **ON-OFF** mode which switches on or off (if the reverse mode is ON) the output relays of Constant / ON-OFF metering pumps or other ON-OFF equipment.



* SELECTION OF **ON-OFF** MODE NEXT PROGRAMMING STEP: '**HYSTERESIS**'

SELECTION OF THE "**PROPORTIONAL**" MODE REQUIRES SETTING UP THE FOLLOWING PARAMETERS.



*The Proportional mode, also referred to as PWM "Pulse modulation", activates the proportional mode on each ON-OFF set-point, activating the corresponding pulses on the output relay according to the measured value and always referring to the previously selected hysteresis settings.

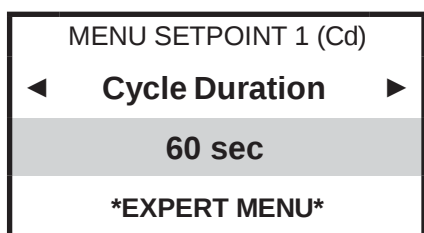
Default activation point at 1000 μ S (range 0-20,000 μ S DEFAULT); **100 μ S** (range 0-2000 μ S); **0.10 μ S** (range 0-200 μ S); **10000 μ S** (range 0-200,000 μ S).

EC CONDUCTIVITY TIMED PULSES PROGRAMMING



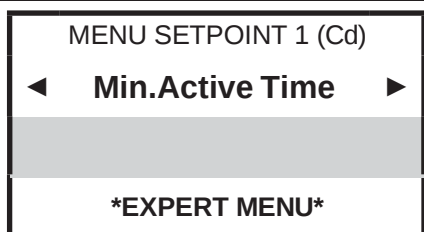
Window width (example with 2000 μ S range): pulses are timed ON and OFF according to the distance from the selected programmable set-point, e.g.: if the selected set-point is 700 μ S CE and the measured value is 600 μ S, the PMW mode will start after reaching 650 μ with the Time/Pause pulses and after decreasing the active time while reaching the set-point value.

* Value shown according to the selected K range'.



Cycle Duration: Cycle in PWM mode 60 seconds (programmable): e.g. setpoint 700 μ S, window width 850 μ S CE = active time 60 sec - pause time = 0 sec.; at measured value 775 μ S EC active time= 30 sec / pause time 30 sec.....and decrease of the activity time based on reaching the setpoint.

The cycle time depends on a number of variables such as: the distance between the injection time and the treatment system, required reaction speed, chemical substance concentration, etc.



MIN Active time: (minimum, programmable): sets the minimum PWM activity time, cancels the programmed minimum settings. If the user has selected **Active time min 5 sec.**, this will be the minimum PWM time (see 'Timed Pulses Function').



BY SELECTING THE “ON-OFF” MODE THE NEXT PROGRAMMING STEP IS AS FOLLOWS: ‘HYSTERESIS’.

FUNCTION NOT AVAILABLE WITH TIMED PULSE MODE

MENU SETPOINT 1	
◀	Hysteresis ▶
200 μ S*	
EXPERT MENU	

Hysteresis is used to activate or deactivate the output relays when the selected value is reached. It is useful when too many changes are made or made too quickly, operation that may damage the connected equipment.

Increasing the hysteresis allows to deviate from the setpoint value.

* Value shown according to the selected K range.

FUNCTION NOT AVAILABLE WITH TIMED PULSE MODE

MENU SETPOINT 1	
◀	Setpoint Delay ▶
5 sec	
EXPERT MENU	

The Delay time function blocks the relay outputs to ensure the outputs are active only when the sensor measurements are stable, thus providing the best result in terms of chemical balance.



*PROCEDURE TO GO BACK TO PROGRAMMING THE SETPOINT FROM THE “ON-OFF” OR “TIMED PULSES” MODES.

MENU SETPOINT 1	
◀	Const.K CE probe ▶
1,000	
EXPERT MENU	

The cell constant **K** is set by default at 1,000, press ◀▶ to edit the **K** value.

K1 select 1,000

K5 select 5,000

MENU SETPOINT 1	
◀	Temp. Correction ▶
0.0 %/°C	
EXPERT MENU	

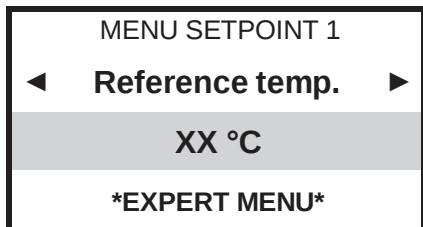
The **EC Alpha factor** is the correction factor of the conductivity measurement according to temperature: EVERY CONDUCTIVITY SENSOR DEPENDS ON THE TEMPERATURE. Conductivity changes linearly according to the temperature of the solution. This coefficient normalises the conductivity measurement at the reference temperature of 25°C. For aqueous solutions, this coefficient is normally 1.9%-2% per °C. Select 0 if you do not wish to normalise the reading. The alpha factor guarantees the best result in terms of precision.

EACH CONDUCTIVITY SENSOR DEPENDS ON THE TEMPERATURE.

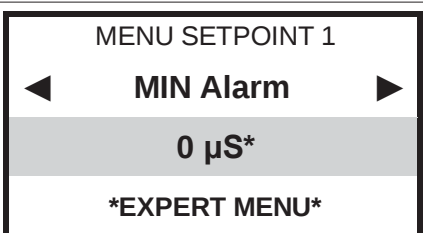
Conductivity changes linearly according to the temperature of the solution. Normally, the best measurement is obtained by automatic temperature offsetting by using the PT100 temperature sensor. If the operator does NOT have the temperature sensor, it is highly recommended to proceed with the MANUAL temperature programming step.

The ELIGERE-series makes it possible to choose between:

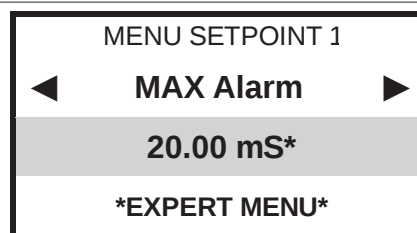
- **MANUAL** selection of the buffer solution and/or current ambient temperature (preset at 25°C)
- **PT100 or NTC** system which provides for automatic temperature offsetting by connecting a temperature probe.



- Press ◀▶ to adjust the current temperature of the liquid to calibrate the sensor.



The **MIN** Alarm function selects the MINIMUM level after which the alarm relay is on.



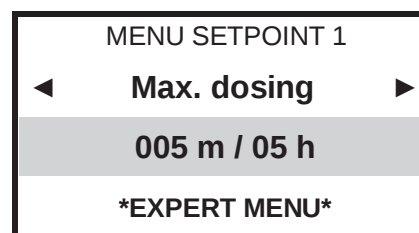
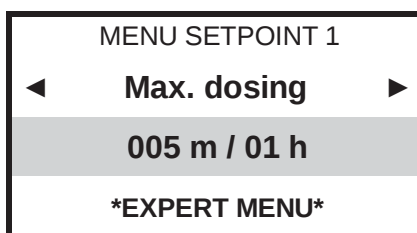
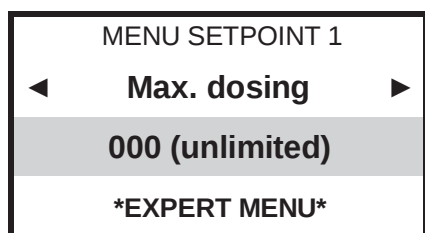
The **MAX** Alarm function selects the MAXIMUM level after which the alarm relay is on.



ONLY IF THE METERING PUMP IS USED

The overdose time-out alarm selects a period of time for reaching the setpoint.

If the setpoint is not reached within the set time, the regulator blocks output operation, including the mA outputs.



Maximum Dosing is an extra safety function that ensures metering is completed in the selected time. This function makes it possible to eliminate time limits (continuous metering according to the selected setpoints) or to select the minutes (up to 999) and the hours, for instance metering for 999 minutes in 24 hours.

MENU SETPOINT 1 Cd	
◀	No Flux Delay ▶
00.00 h:m	
EXPERT MENU	

It is possible to set a **no flux delay time**; if the lack of flow is longer than the set time, the controller waits for the time set in the 'Start Delay' parameter, before eventually enabling the various outputs to control the pumps.

MENU SETPOINT 1 Cd	
◀	Level Delay ▶
00.00 h:m	
EXPERT MENU	

It is possible to set a **delay time on the level alarm**, the controller goes into alarm as soon as it receives contact from the relevant level probe, but only switches off the pumps connected to it after the previously set time.

MENU SETPOINT 1 Cd	
◀	Start-up Delay ▶
00.00 h:m	
EXPERT MENU	

The Start-up delay time “freezes” relay outputs allowing sensors to polarise hence correct measurement.

MENU SETPOINT 1 Cd	
◀	Priming ▶
OFF	
EXPERT MENU	

MENU SETPOINT 1 Cd	
◀	Priming ▶
ON	
EXPERT MENU	

ONLY IF THE METERING PUMP IS USED

The priming function blocks the setpoint value to allow the metering pump to remain primed.

- Press **ESC** to go back to **MAIN MENU** or press **ESC ESC** to go back to **CONTINUOUS MEASUREMENT**.

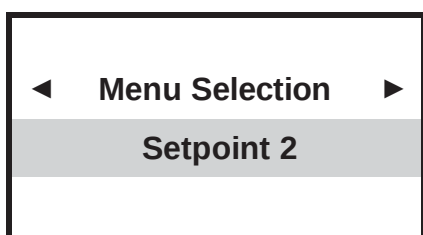
5.11.7 SETPOINT 2 EC CONDUCTIVITY > EXPERT MENU

The **SETPOINT 2** settings, in **EXPERT** mode, are the same as those for **SETPOINT 1**, with the exception of the following menus, not included:

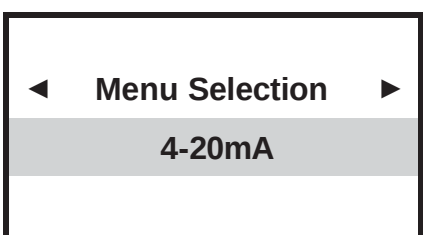


- **EC PROBE K CONSTANT**;
- **TEMPERATURE CORRECTION**;
- **MIN ALARM** and **MAX ALARM**;
- **START-UP DELAY**

Therefore, for **SETPOINT 2** programming and navigation refer to that for **SETPOINT 1**.



5.11.8 ANALOGUE CURRENT OUTPUT FUNCTION 4-20mA > EXPERT MENU

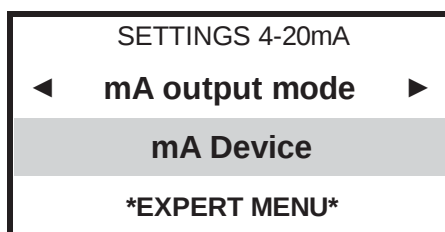


The analogue proportional output 4-20mA of the ELIGERE CD follows the option previously selected in the conductivity measurement range.

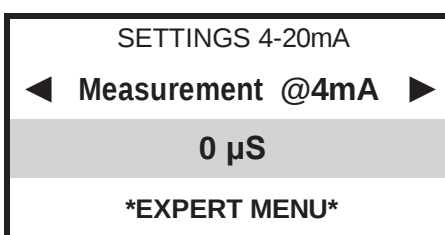
The mA output of the ELIGERE CD series lets you select one of two functions:

- **mA device:** for activating the data logger or data recorder or other devices suited to operating with the mA signal.
- **SETPOINT:** for activating the metering pumps suited to operating with the mA signal.

5.11.8.1 OUTPUTS 4 -20 mA > DEVICE function mA

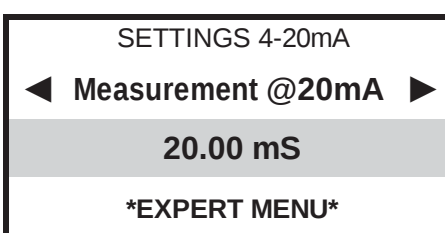


The dosing Setpoint of the proportional 4-20mA analogue outputs follows the set point selected below and therefore activates a metering pump suitable to processing the remote mA current signal.



Select the value corresponding to point 4 mA based on **Setpoint 1** settings.

Please note that the displayed value is automatically adjusted based on the "K" features of the conductivity range cell constant selected in the previous paragraphs.



Select the value corresponding to point 20 mA based on **Setpoint 1** settings.

- Press **ESC** to go back to **MAIN MENU** or press **ESC ESC** to go back to **CONTINUOUS MEASUREMENT**.

5.11.8.2 4-20 mA OUTPUTS > SETPOINT

SETTINGS 4-20mA
◀ mA output mode ▶
Setpoint
EXPERT MENU

The Setpoint of the proportional 4-20mA analogue outputs follows the setpoint selected below and therefore activates a solenoid valve or metering pump suitable to processing the remote mA current signal.

SETTINGS 4-20mA
◀ Setpoint Value ▶
1000 μS
EXPERT MENU

Select the value corresponding to point 4 mA based on **Setpoint 1** settings.

Please note that the displayed value is automatically adjusted based on the “K” features of the conductivity range cell constant selected in the previous paragraphs.

SETTINGS 4-20mA
◀ Metering ▶
Direct
EXPERT MENU

SETTINGS 4-20mA
◀ Metering ▶
Reverse
EXPERT MENU

The **Direct Dosing** mode means that the output is active when the measured value is lower than the selected setpoint, the connected metering pump dispenses chlorine and vice versa with the reverse mode

SETTINGS 4-20mA
◀ Window width ▶
200 μS
EXPERT MENU

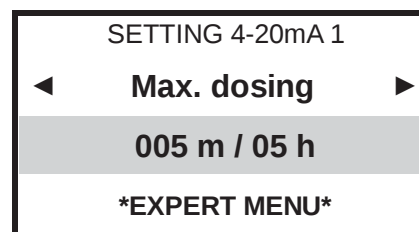
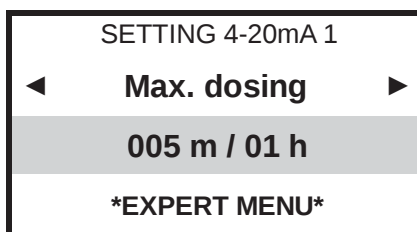
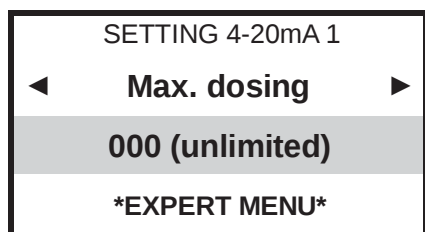
Window width: sets the distance from the set point to the point where the 4-20mA mode is activated: 4 mA = 0 metering pump pulse, 20 mA = max frequency of the metering pump pulses. The window width depends on many variables: distance of the injection point, reaction time, chemical solution %, etc.

SETTINGS 4-20mA
◀ Overdose ▶
00:00 h:m
EXPERT MENU

The overdose time-out alarm selects a period of time for reaching the setpoint.

If the set point is not reached within the set time, the regulator blocks output operation, including the mA outputs (metering pump).

The alarm is displayed ON and activates relay4 activating an alarm device.



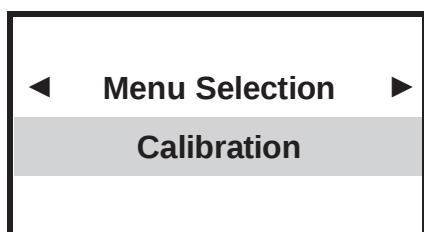
Maximum Dosing is an extra safety function that ensures metering is completed in the selected time. This function makes it possible to eliminate time limits (continuous metering according to the selected setpoints) or to select the minutes (up to 999) and the hours, for instance metering for 999 minutes in 24 hours.

- Press **ESC** to go back to **MAIN MENU** or press **ESC ESC** to go back to **CONTINUOUS MEASUREMENT**.

5.11.9 SENSOR CALIBRATION > EXPERT MENU

IMPORTANT NOTES:

- if there is NO temperature sensor for Temperature adjustment, to change the desired temperature value go to: **Expert Menu > *Settings > Temperature > Manual**;
- when calibrating the sensor, ensure the probe electrodes do not touch any surface except the solution;
- ensure the sensor is securely positioned in the solution's container without any movement;
- wait for the time required for the calibration measurements to stabilise.



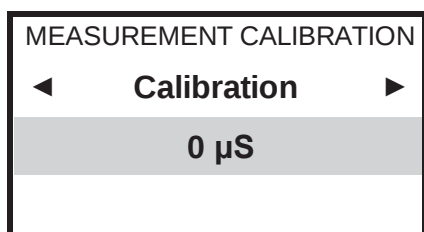
- Press **OK/MENU** to confirm the selection and go to the next sub-menu.

A reminder message is displayed before calibration:



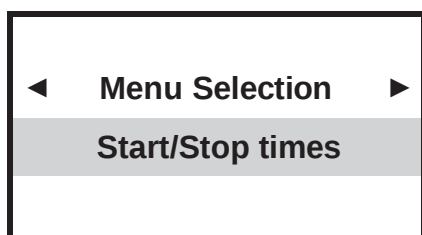
It is recommended to create a sample solution that matches the EC value required by the system (normally the setpoint value); use a suitable portable EC meter to ensure the conductivity levels meet the requirements. Use a conductivity Sensor with cell constant according to the selected K factor range, with max. cable length 4 m.

After calibration, wait 5/10 minutes for the measurement to stabilise.



Immerse the EC probe in the sample solution previously prepared and wait for the measurement to stabilise.

To edit the value press **OK/Menu**, then press and hold ◀▶ until the value of the sample solution is displayed, then press **OK/MENU** to confirm.



Programming the days and hours of instrument operations.

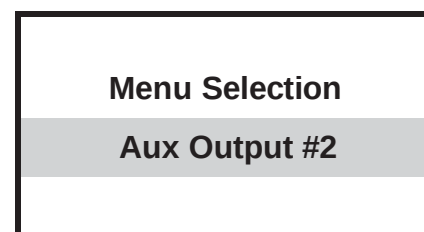
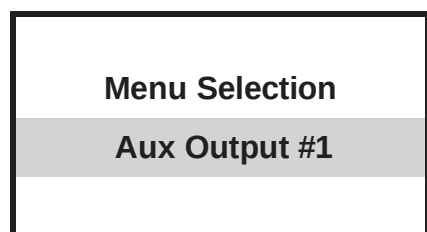
- Press **OK/MENU** to confirm the selection.
- Press **ESC** to go back to the **MAIN MENU**.
- Press **ESC ESC** to display the **CONTINUOUS MEASUREMENT** screen.

* It shows the value according to the selected range, example: by selecting K1 (1,000) range 20.00 mS, this will be the max. alarm value, by selecting K5 (5,000) 2000 μ S will be displayed at the start of programming.

5.11.10 AUX OUTPUTS > EXPERT MENU

The auxiliary outputs control various functions connected to any type of remote On-Off device controlled by a timer in real time. The AUX output may control a device or appliance thanks to very accurate programming of minutes/hours/days/weeks.

ADVANTAGES: this function makes this instrument a very versatile control unit not only to measure chemical physical parameters but also for other functions connected to the system where it is installed.



- Press **OK/MENU** to confirm the selection and to go on to the next sub-menu.
- Press **'ESC'** to go back to **'MAIN MENU'** or press **"ESC" "ESC"** to go back to **'CONTINUOUS MEASUREMENT'**.

AUX 1		Programme 01
T. active		(h:m) 00 : 00
Start time		(h:m) -- : --
Enabl. days		Mon : -
Tue : -	Wed : -	Thu : -
Fri : -	Sat : -	Sun : -
Week 1 : -	2 : -	3 : - 4 : -

AUX 2		Programme 01
T. active		(h:m) 00 : 00
Start time		(h:m) -- : --
Enabl. days		Mon : -
Tue : -	Wed : -	Thu : -
Fri : -	Sat : -	Sun : -
Week 1 : -	2 : -	3 : - 4 : -

The settings of the program **entail** many steps, which may be selected to have absolute operating precision (up to 99 programs for each AUX output).

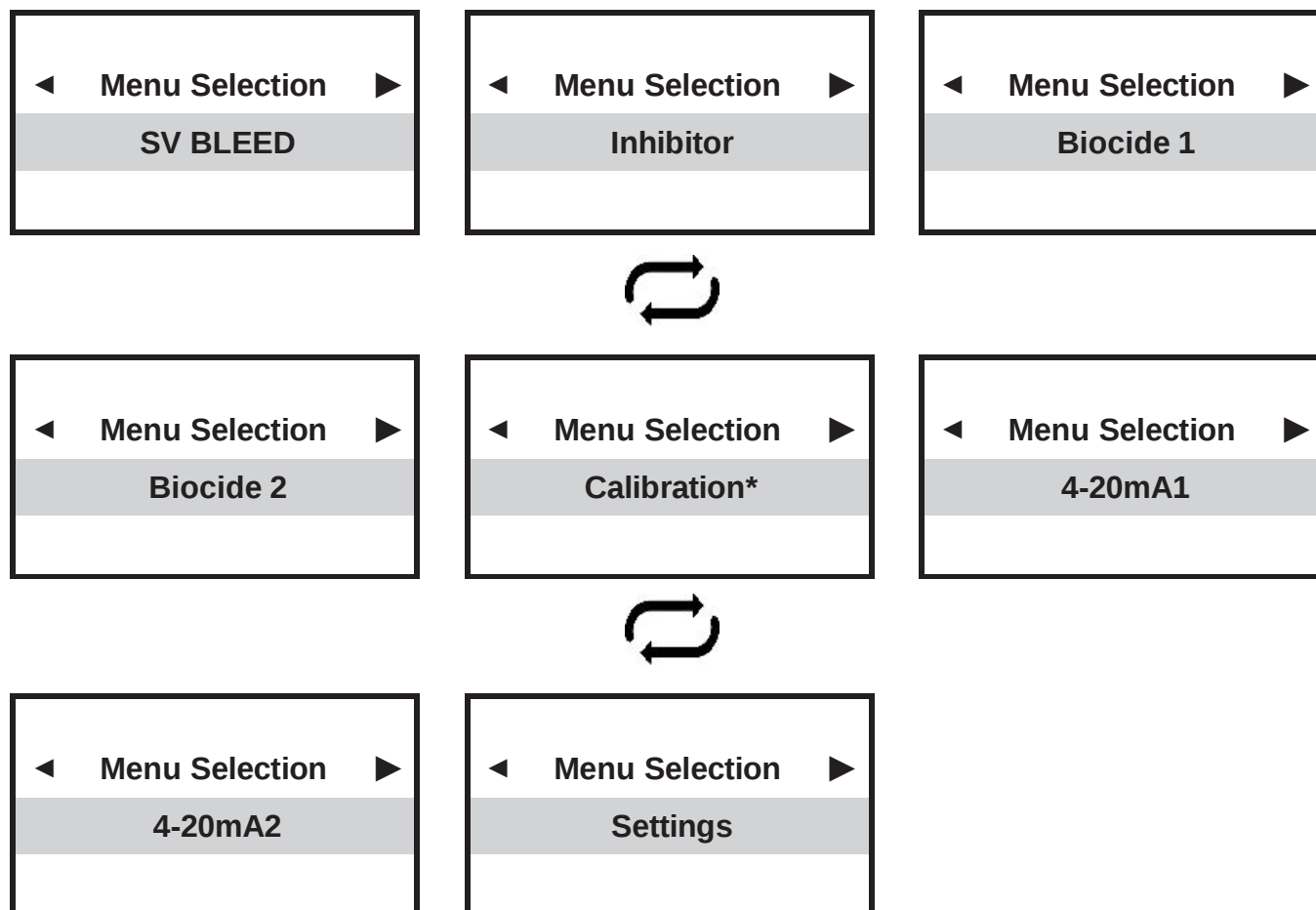
AUX 1 or AUX 2	Program 01	- Press ◀ ▶ select program number (up to 99). - Confirm by pressing OK, automatically goes to the next step.
Active time	(h:m) 01:00	Selects the active time of the connected On/Off device - Press ◀ ▶ to select the minutes, confirm OK to move to the next digits. - Press ◀ ▶ to select the seconds, confirm OK to move to the next step.
Start time	(h:m) 10:30	Selects the start time of the connected On/Off device. - Press ◀ ▶ to select the hours, confirm OK to move to the next digits. - Press ◀ ▶ to select the minutes, confirm OK to move to the next step.
Enabled days	Mon : N ... Y	Selects the days during which the connected equipment is operational. - Press ◀ ▶ to select the days of activity ◀ ▶ N no or Y yes. - Confirm by pressing OK, automatically goes to the next step.
Weeks	1:Y 2:N 3:N 4:N	Selects the weeks of the month during which the connected equipment is operational. - Press ◀ ▶ to select the weeks of activity ◀ ▶ N no or Y yes. - Confirm by pressing OK, automatically goes to the next step.

- Press **ESC** to go back to **MENU SELECTION** or press **ESC ESC** to go back to **MEASUREMENT DISPLAY**.

5.12 PROGRAMMING: ELIGEERE 01 CD COOL

5.12.1 MENU SELECTION

The **MENU SELECTION** configuration includes all the following steps:



* Selecting this setting will be followed by the values in the selected **K range**:

Const. K probe ECC > Setpoint 1 > CALIBRATION

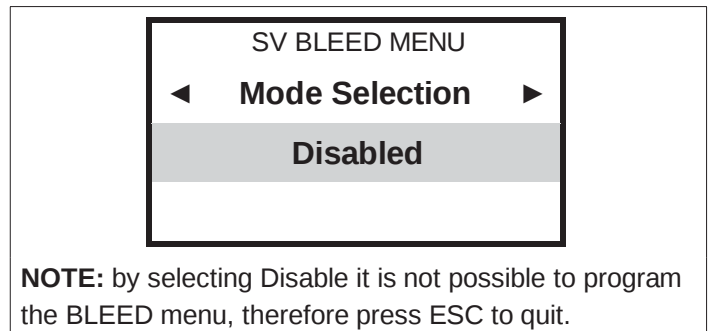
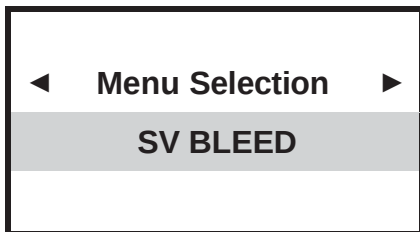
- Press **OK/MENU** to confirm the selection and to go on to the next sub-menu.
- Press **ESC** to go back to the **MEASUREMENT DISPLAY**.

5.12.2 BLEED MENU

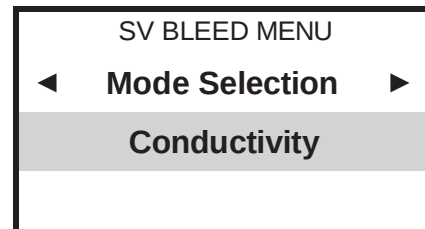
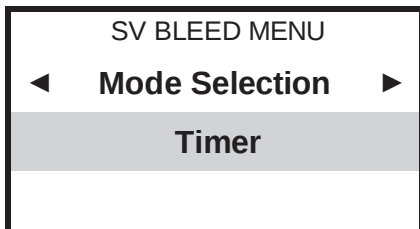
The instrument offers two modes for bleeding operations (water drain) of the SV.

- **TIMER mode:** for easy programming or in case of conductivity probe fault, the operator may enable the Timer mode; the SV is driven by the internal timer regardless of the conductivity reading in the operating Cooling tower.
- **CONDUCTIVITY mode:** processes the conductivity level to control bleeding operations; the displays show the measured EC values and drive the relay output connected to the SV solenoid valve. Electroconductivity is monitored by a setpoint: once this is reached, the instrument commands solenoid valve opening and drains the desalinated and conditioned water.

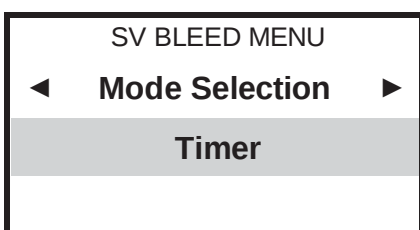
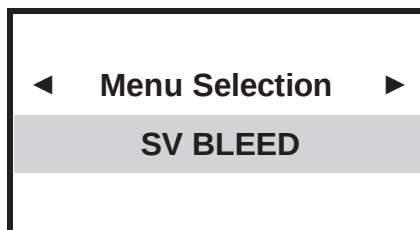
The first step requires enabling the drain SV (solenoid valve):



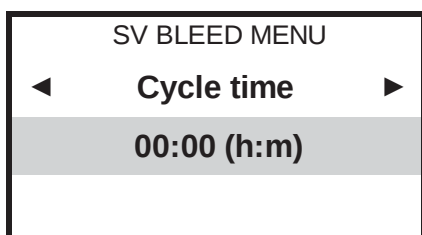
- Press **OK/MENU** to go into the **SV BLEED** menu.
- Use the arrows ◀ ▶ to select the required mode, press **OK/MENU** to confirm.



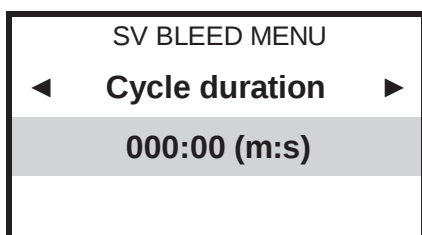
5.12.2.1 BLEEDING operations by means of internal TIMER programming



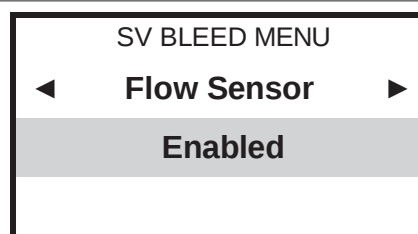
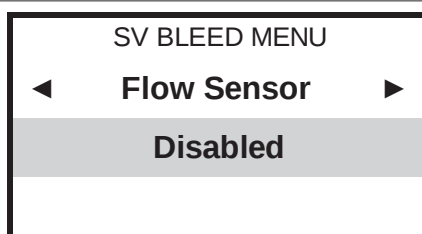
The Timer mode drives the SV via the internal timer regardless of the conductivity value in the cooling tower.



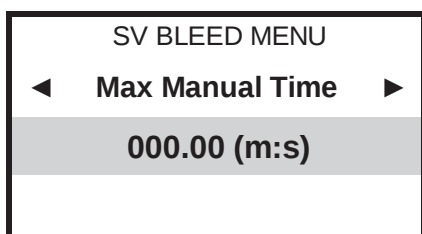
Selects the intermediate time between two bleeding operations.



Selects the opening cycle of the Bleed SV.

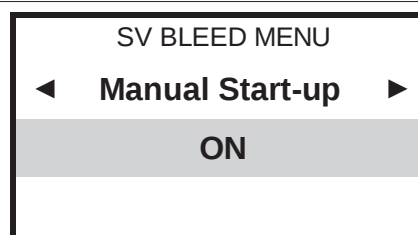
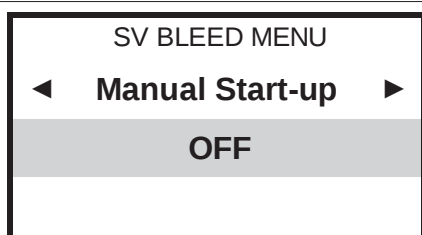


Enables or disables the Flow sensor function (proximity probe). The flow sensor is useful in the event of water lack in the probe socket; the proximity probe disables all outputs ensuring no chemical substance is added



Overwrites the previous SV programming (timer or conductivity), selecting the maximum SV opening time and manual start-up (next step).

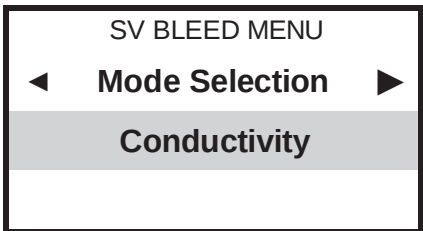
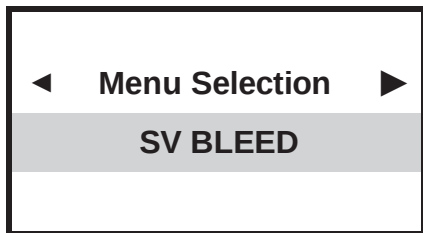
It is a safety measure in the case where the operator opens the SV via the Max manual programming and forgets to close it.



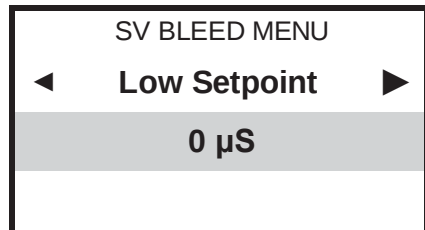
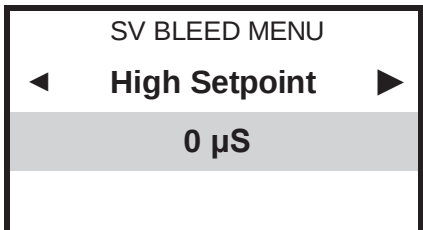
Supersedes the previous Max Manual Time programming and SV programming (timer or conductivity). The operator manually selects when the SV is ON / OFF. "Manual ON / OFF start-up" only works if the previous function "Max Manual Time" has been programmed.

- Press **ESC** to go back to **MENU SELECTION** or press **ESC ESC** to go back to **MEASUREMENT DISPLAY**.

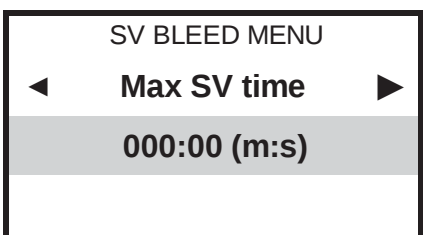
5.12.2.2 BLEEDING operations by means of CONDUCTIVITY measurement



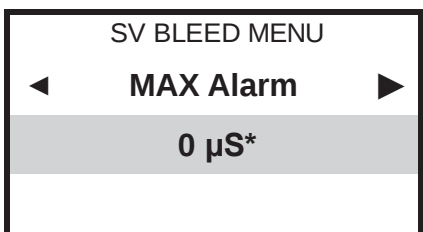
Processes the conductivity level to control bleeding operations; the displays show the measured EC values and drive the relay output connected to the SV solenoid valve.



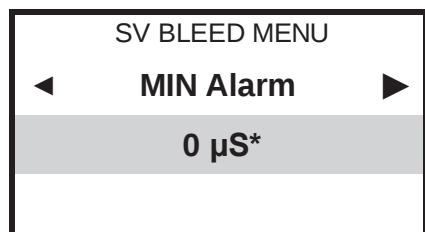
The setpoints activate the output relay for the solenoid valve or other devices once the setpoint level is selected. The display shows the value in µS but if the value exceeds 1999 µS, it shows 2.00 mS (if the value decreases the reading goes back in µS).



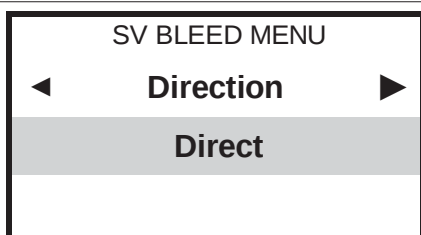
Selects the maximum opening time of the Bleed SV.



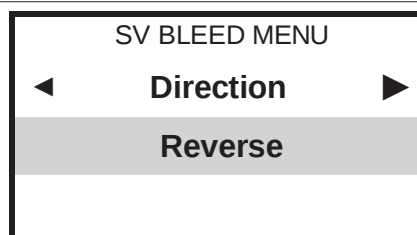
The **MIN** Alarm function selects a MINIMUM alarm level, after which the alarm relay is triggered.



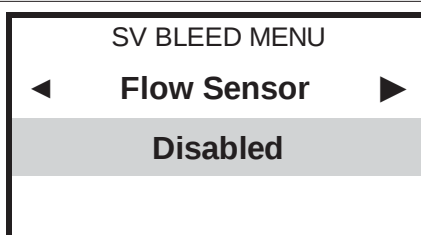
The **MAX** Alarm function selects a MAXIMUM alarm level, after which the alarm relay is triggered.



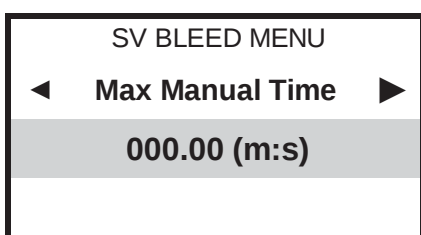
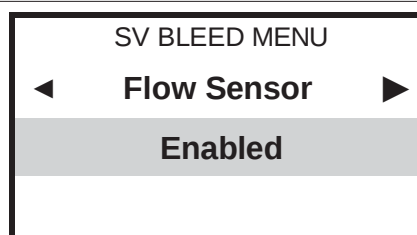
Direct mode: the output is active when the measured value is lower than the one selected in the setpoint.



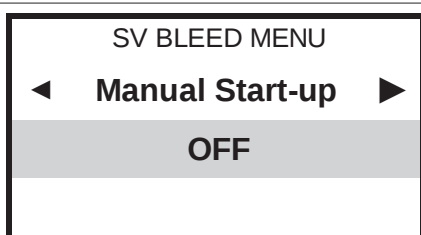
Reverse mode: the output is active even if the measured value is higher than the one selected in the setpoint.



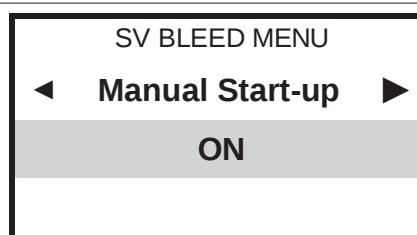
Enables or disables the Flow sensor function (proximity probe). The flow sensor is useful in the event of water lack in the probe socket; the proximity probe disables all outputs ensuring no chemical substance is added.



Overwrites the previous SV programming (timer or conductivity), selecting the maximum SV opening time and manual start-up (next step). It is a safety measure in the case where the operator opens the SV via the Max manual programming and forgets to close it.



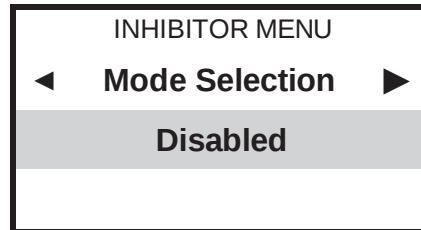
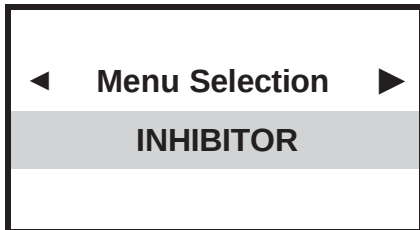
Supersedes the previous Max Manual Time programming and SV programming (timer or conductivity). The operator manually selects when the SV is ON and OFF. "Manual ON / OFF start-up" only works if the previous function "Max Manual Time" has been programmed.



- Press **ESC** to go back to **MENU SELECTION** or press **ESC ESC** to go back to **MEASUREMENT DISPLAY**.

5.12.3 INHIBITOR MENU

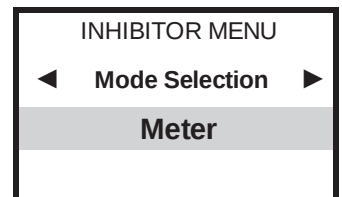
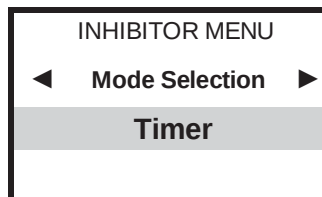
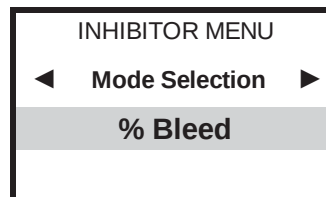
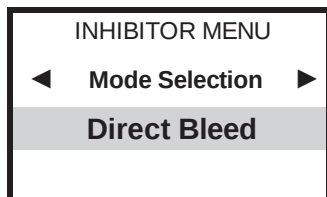
The first step requires enabling the INHIBITOR function connected to a metering pump:



NOTE: by selecting Disable it is not possible to program the INHIBITOR.

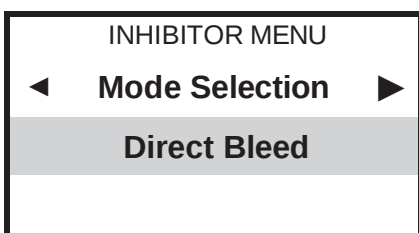
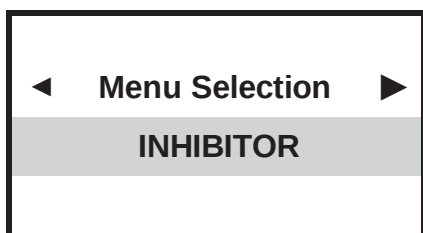
The ELIGERE 01 – CD COOL instrument offers four modes for inhibitor dosing operations.

- 1) **DIRECT BLEED:** starts dosing the inhibitor when the Bleed SV is open (works parallel to the SV)
- 2) **% BLEED:** the inhibitor operates after the SV closes for a time based on the SV opening percentage equal to the duration of the last bleeding operations.
- 3) **TIMER:** controls inhibitor dosing operations via the internal timer: at the start of each period, a dosing pump injects a selected volume of inhibitor for a preset time. During SV drain operations, inhibitor dosing stops.
- 4) **METER:** the function is active during topping up\of mains water and is driven by the instrument which controls the meter pulses in line, dosing the inhibitor in a manner proportional to the inlet water flow.

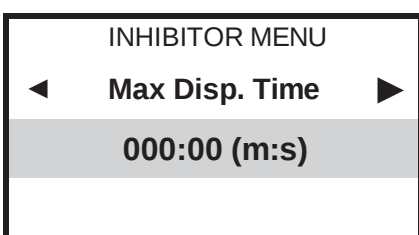


- Press **OK/MENU** to enter the 'INHIBITOR' menu.
- Use the arrows ◀ ▶ to select the required mode, press **OK/MENU** to confirm.

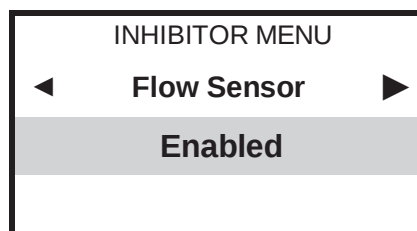
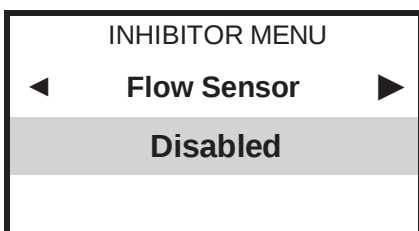
5.12.3.1 INHIBITOR DOSING operations via Direct Bleed function



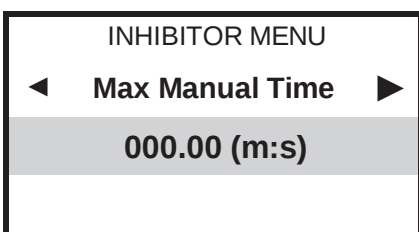
DIRECT BLEED: starts dosing the inhibitor when the Bleed SV is open (works parallel to the SV)



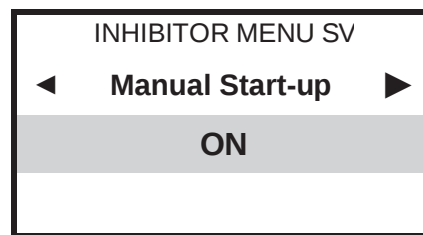
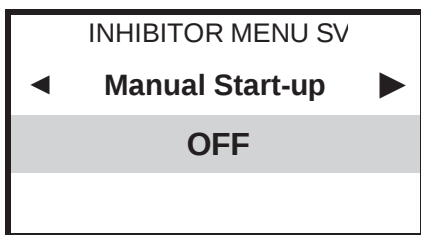
Selects the maximum inhibitor dosing time.



Enables or disables the Flow sensor function (proximity probe). The flow sensor is useful in the event of water lack in the probe socket; the proximity probe disables all outputs ensuring no chemical substance is added.



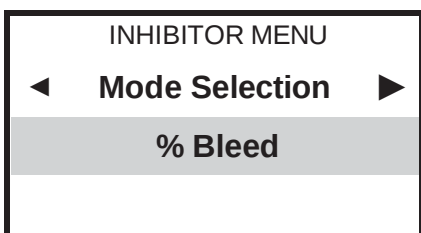
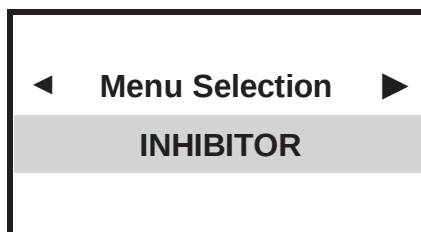
Overwrites the previous SV programming (timer or conductivity), selecting the maximum SV opening time and manual start-up (next step). It is a safety measure in the case where the operator opens the SV via the Max manual programming and forgets to close it.



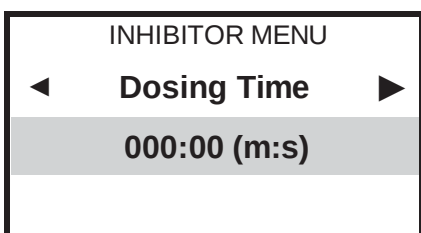
Supersedes the previous Max Manual Time programming and SV programming (timer or conductivity). The operator manually selects when the SV is ON and OFF. "Manual ON / OFF start-up" only works if the previous function "Max Manual Time" has been programmed.

- Press **ESC** to go back to **MENU SELECTION** or press **ESC ESC** to go back to **MEASUREMENT DISPLAY**.

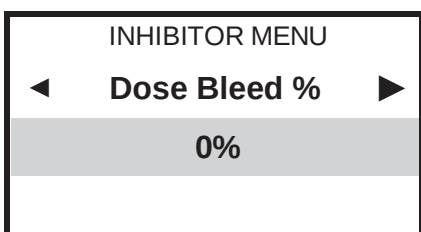
5.12.3.2 INHIBITOR DOSING operations via Bleed % function



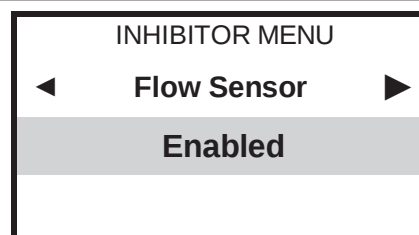
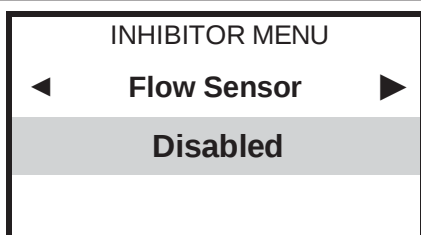
The inhibitor is dispensed after the SV closes for a time based on the SV opening percentage equal to the duration of the last bleeding operations.



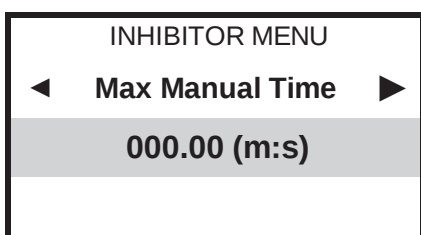
Selects the inhibitor dosing time.



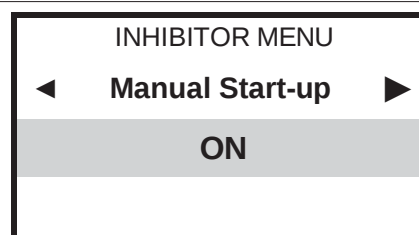
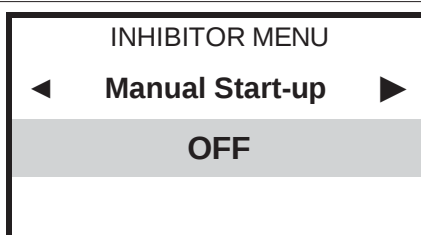
Sets the SV time percentage for draining; this is the time corresponding to the inhibitor dosing operations.



Enables or disables the Flow sensor function (proximity probe). The flow sensor is useful in the event of water lack in the probe socket; the proximity probe disables all outputs ensuring no chemical substance is added.



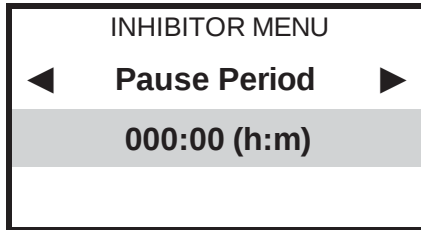
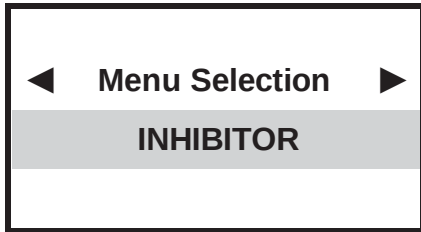
Overwrites the previous SV programming (timer or conductivity), selecting the maximum SV opening time and manual start-up (next step). It is a safety measure in the case where the operator opens the SV via the Max manual programming and forgets to close it.



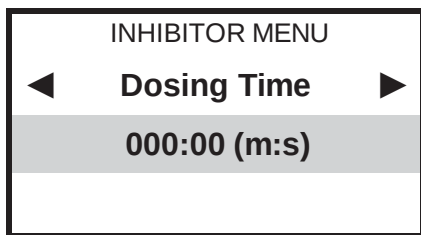
Supersedes the previous Max Manual Time programming and SV programming (timer or conductivity). The operator manually selects when the SV is ON and OFF. "Manual ON / OFF start-up" only works if the previous function "Max Manual Time" has been programmed.

- Press **ESC** to go back to **MENU SELECTION** or press **ESC ESC** to go back to **MEASUREMENT DISPLAY**.

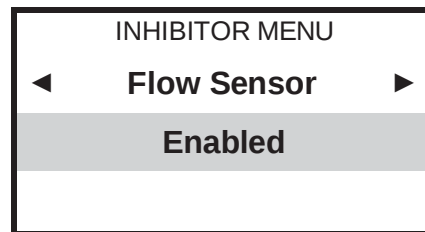
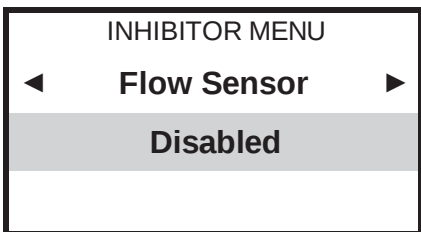
5.12.3.3 INHIBITOR METERING operations via TIMER programming function



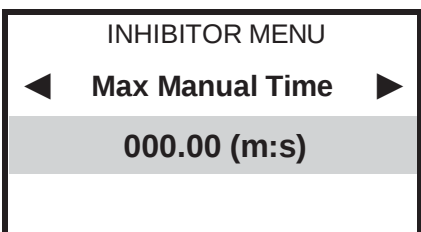
The Timer controls inhibitor dosing operations via the internal timer: at the start of each period, a metering pump injects a selected volume of inhibitor for a preset time. During SV drain operations, inhibitor dosing stops.



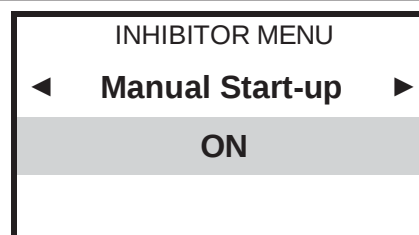
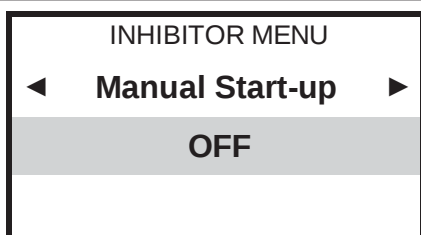
Selects the inhibitor dosing time.



Enables or disables the Flow sensor function (proximity probe). The flow sensor is useful in the event of water lack in the probe socket; the proximity probe disables all outputs ensuring no chemical substance is added.



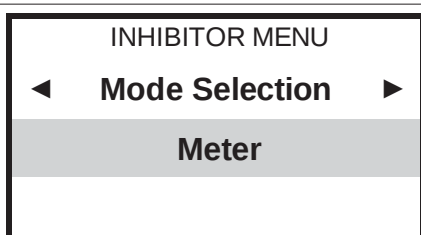
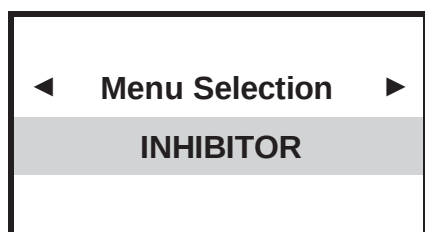
Overwrites the previous SV programming (timer or conductivity), selecting the maximum SV opening time and manual start-up (next step). It is a safety measure in the case where the operator opens the SV via the Max manual programming and forgets to close it.



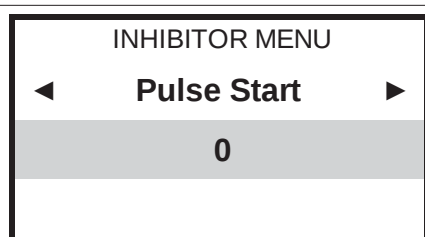
Supersedes the previous Max Manual Time programming and SV programming (timer or conductivity). The operator manually selects when the SV is ON and OFF. "Manual ON / OFF start-up" only works if the previous function "Max Manual Time" has been programmed.

- Press **ESC** to go back to **MENU SELECTION** or press **ESC ESC** to go back to **MEASUREMENT DISPLAY**.

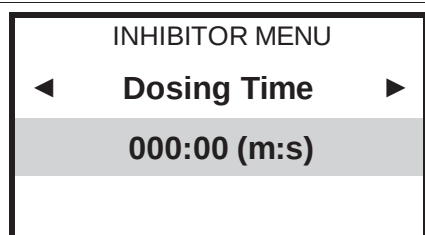
5.12.3.4 INHIBITOR METERING operations via PULSE EMITTING METER



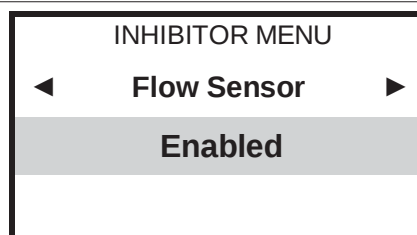
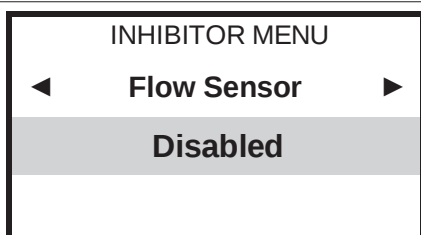
The function is active during topping up of mains water and is driven by the instrument which controls the meter pulses in line, dosing the inhibitor in a manner proportional to the inlet water flow.



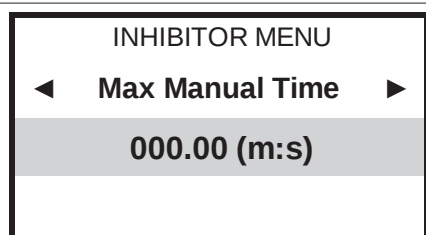
Selects the pulse (digital reed contact) from the pulse emitter water meter to start injections of the inhibitor metering pump, for example: by selecting 10, after 10 pulses received by the water dispenser, the metering pump performs 1 injection.
NOTE: this function requires using a proportional metering pump able to process the input digital contact.



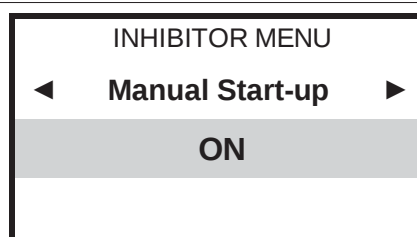
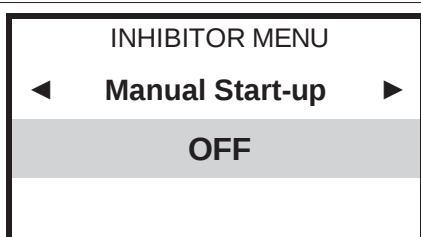
Selects the inhibitor dosing time.



Enables or disables the Flow sensor function (proximity probe). The flow sensor is useful in the event of water lack in the probe socket; the proximity probe disables all outputs ensuring no chemical substance is added.



Overwrites the previous SV programming (timer or conductivity), selecting the maximum SV opening time and manual start-up (next step). It is a safety measure in the case where the operator opens the SV via the Max manual programming and forgets to close it.



Supersedes the previous Max Manual Time programming and SV programming (timer or conductivity). The operator manually selects when the SV is ON and OFF. "Manual ON / OFF start-up" only works if the previous function "Max Manual Time" has been programmed.

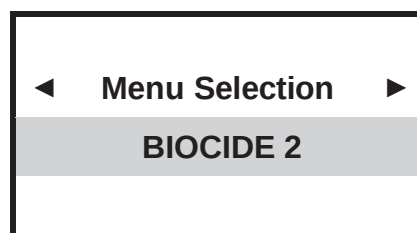
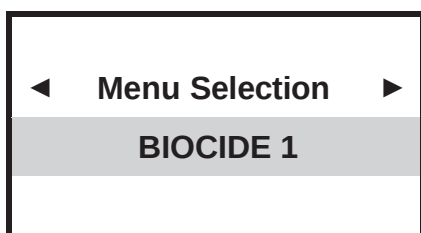
- Press **ESC** to go back to **MENU SELECTION** or press **ESC ESC** to go back to **MEASUREMENT DISPLAY**.

5.12.4 BIOCIDES MENU

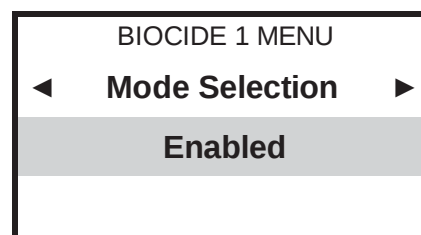
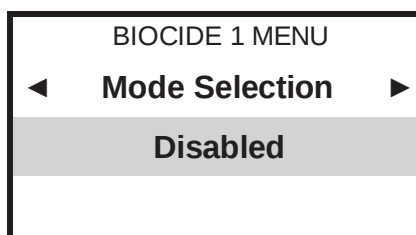
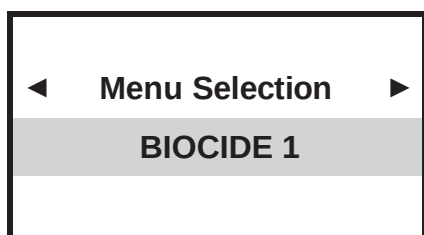
The instrument ELIGEERE 01 – CD COOL offers **TWO modes** for Biocide dosing operations. Most cooling tower systems include two biocide programs to assure efficient disinfection quality.



NOTE: the Biocide function requires using an On-Off metering pump suited to processing the input contacts generated by the internal timer.



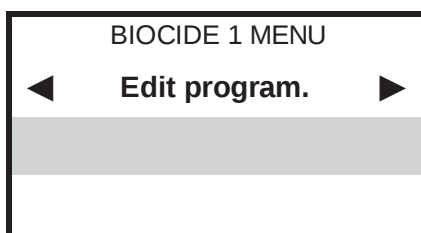
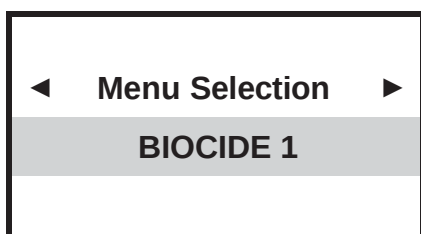
The first step requires enabling the BIOCIDES function connected to a metering pump:



- Press '**OK / MENU**' to enter the **BIOCIDE** menu
- Use the arrows ◀ ▶ to select the required mode, press **OK/MENU** to confirm.

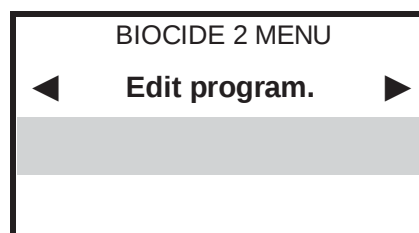
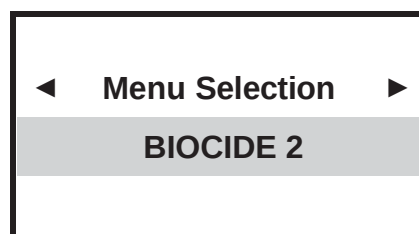
5.12.4.1 BIOCIDE 1 / BIOCIDE 2 via TIMER for programming DOSING CYCLES

BIOCIDE 1



Biocide 1		Program 01
Dosing Time (m:s)		01 : 00
Start time (h:s)		10 : 30
Enabl. days		Mon : N
Tue: N	Wed : N	Thu: N
Fri: N	Sat : N	Sun: N
Wk. 1 : S	2 : S	3 : S 4 : N

BIOCIDE 2



Biocide 2		Program 01
Dosing Time (m:s)		01 : 00
Start time (h:s)		10 : 30
Enabl. days		Mon : N
Tue: N	Wed : N	Thu: N
Fri: N	Sat : N	Sun: N
Wk. 1 : S	2 : S	3 : S 4 : N

The program in biocide mode entails many steps that may be programmed to assure more accurate metering operation with absolute precision (up to 99 programs for each biocide).

- Select the desired parameters, confirm selection **OK**, go to the next step, below the programming steps to be selected:

BIOCIDE 1	Program 01	• Press ◀ ▶ select program number (up to 99). • Confirm by pressing OK, automatically goes to the next step.
Active time	(m:s) 01:00	Selects the active time of the connected On/Off device • Press ◀ ▶ to select the minutes, confirm OK to move to the next digits. • Press ◀ ▶ to select the seconds, confirm OK to move to the next step.
Start time	(h:m) 10:30	Selects the start time of the connected On/Off device. • Press ◀ ▶ to select the hours, confirm OK to move to the next digits. • Press ◀ ▶ to select the minutes, confirm OK to move to the next step.
Enabled days	Mon : N ... Y	Selects the days during which the connected equipment is operational. • Press ◀ ▶ to select the days of activity ◀ ▶ N no or Y yes. • Confirm by pressing OK, automatically goes to the next step.
Weeks	1:Y 2:N 3:N 4:N	Selects the weeks of the month during which the connected equipment is operational. • Press ◀ ▶ to select the weeks of activity ◀ ▶ N no or Y yes. • Confirm by pressing OK, automatically goes to the next step.

- Press **ESC** to go back to **MENU SELECTION** or press **ESC ESC** to go back to **MEASUREMENT DISPLAY**.

5.12.4.2 BIOCIDES 1 / BIOCIDES 2 via TIMER for programming DOSING CYCLES

BIOCIDES 1

◀ Menu Selection ▶

BIOCIDES 1

BIOCIDES 2

◀ Menu Selection ▶

BIOCIDES 2

BIOCIDES 1 MENU

◀ Pre Bleed. ▶

0 µS

BIOCIDES 2 MENU

◀ Edit program. ▶

0 µS



Pre-Bleed is a safety function: if the conductivity level is lower than the selected EC setpoint it allows the drain operation before dosing the biocide and after disabling the Bleed SV. It prevents wasting chemical biocides uselessly in the event the SV should open at the same time, during or just before the start of the biocide activation time.

BIOCIDES 1 MENU

◀ Time lock ▶

000:00 (m:s)

BIOCIDES 2 MENU

◀ Time lock ▶

0 µS

Output time lock mode: SV Bleed, inhibitor dosing and Biocide2 dosing operations are blocked for the duration of Biocide1 dosing operations, thus preventing a waste of the chemical product while allowing its disinfection cycle to be completed at the same time.

BIOCIDES MENU

◀ Flow Sensor ▶

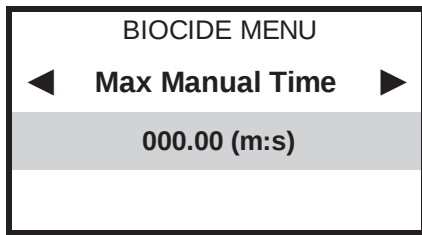
Disabled

BIOCIDES MENU

◀ Flow Sensor ▶

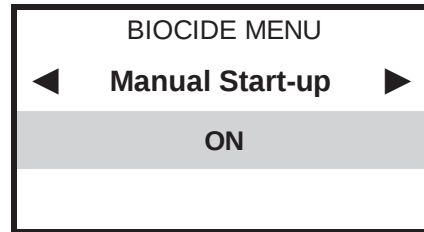
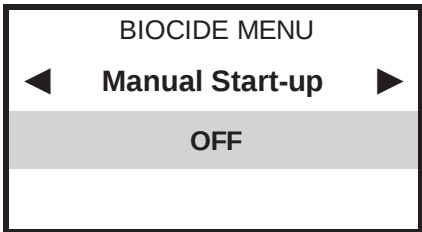
Enabled

Enables or disables the Flow sensor function (proximity probe). The flow sensor is useful in the event of water lack in the probe socket; the proximity probe disables all outputs ensuring no chemical substance is added.



Overwrites the previous SV programming (timer or conductivity), selecting the maximum SV opening time and manual start-up (next step).

It is a safety measure in the case where the operator opens the SV via the Max manual programming and forgets to close it.



Supersedes the previous Max Manual Time programming and SV programming (timer or conductivity). The operator manually selects when the SV is ON / OFF. "Manual ON / OFF start-up" only works if the previous function "Max Manual Time" has been programmed.

- Press **ESC** to go back to **MENU SELECTION** or press **ESC ESC** to go back to **MEASUREMENT DISPLAY**.

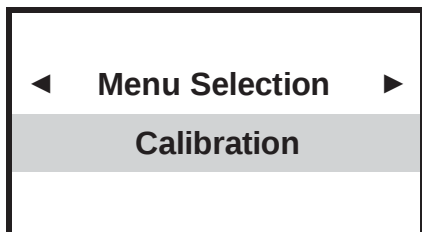
5.12.5 CONDUCTIVITY SENSOR CALIBRATION > EXPERT MENU



READ THE MESSAGE CAREFULLY,
THEN PRESS **OK** TO START.

To go forward quickly, **press and hold**
one of the ◀▶ keys.

The known calibration
solution must be
equal to or close
to the desired value
(i.e. the set point).
Wait 5/10 minutes for
stabilisation.
▪ Press **OK** to start.



Press **OK/MENU** to confirm the selection and go to the next sub-menu.

STANDARD OPERATIONAL CONDUCTIVITY RANGES

- K1** 2000 μS ÷20.00 mS (20.000 μS): it can measure up to 1000 μS but the display will be less accurate.
- K5** up to 2,000 μS

ON REQUEST other measurement ranges are possible only after approval by ETATRON D.S.

- K0.8** up to 100 mS (100,000 μS): via ETATRON probe with graphite electrodes or other brands with equivalent models.
- K10** up to 200 μS with probe suitable to measure this range.

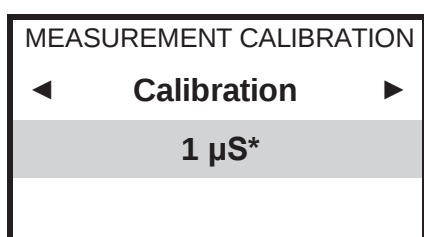
IMPORTANT NOTES:

- if NOT using a temperature sensor, go to **Expert menu settings > Temperature > Manual** and change the required temperature value;
- when calibrating the sensor ensure the probe electrodes do not touch any surface except the solution.
- ensure the sensor is securely positioned in the solution's container;
- wait the time required for the calibration measurement to be stable. During calibration, the measurement values always tend to have a small fluctuation but this does not affect calibration.

A message is displayed before calibration:



It is recommended to make a simple solution that is consistent with the CE value required in the system (normally the setpoint); use a portable EC instrument or sample solutions having known values to ensure the conductivity level matches the requirements. Use a conductivity sensor with maximum cable length 3/4 m.



* When the Calibration starts, the display shows random values.

- Immerse the EC probe in the sample solution previously prepared and wait for the measurement to stabilise.

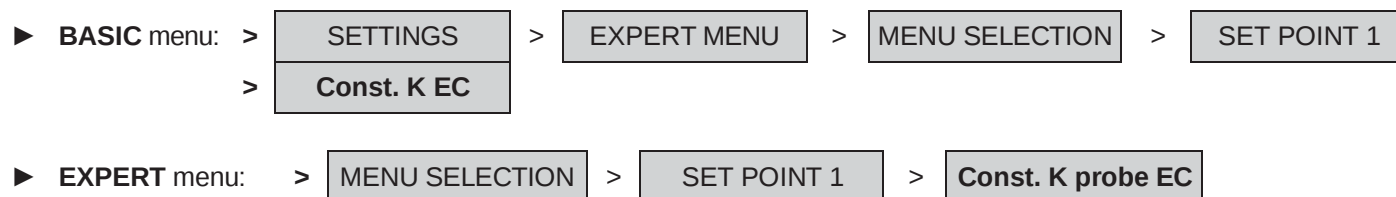
To edit the value press **OK/MENU**, then press and hold **◀▶** until the value of the sample solution is displayed, then press **OK/MENU** to confirm.

- Press **ESC** to go back to **MENU SELECTION**.
- Press **ESC ESC** to display the **MEASUREMENT DISPLAY** screen.

After calibration wait 10 minutes for the measurement to stabilise.

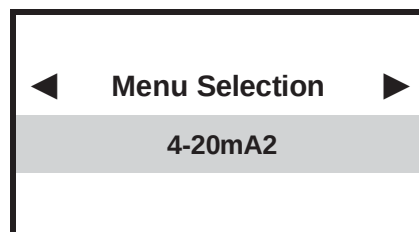
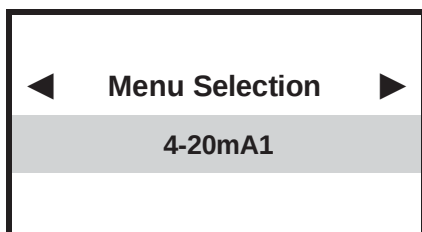
The instrument adapts the measurements and display resolution based on the type of probe in use.

In case the user should wish to change the cell Constant Factor EC K, even during operations:



5.12.6 ANALOGUE 4-20mA OUTPUTS

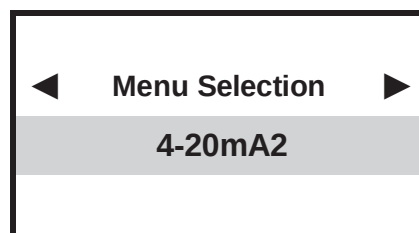
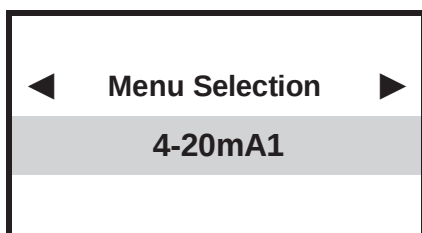
The instrument features two outputs with signal in current in mA. The 4-20mA signal follows the settings of the K Factor cell constant selected previously. The mA output provides two operating modes to be selected according to the system's operational requirements:



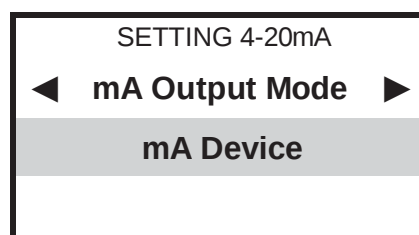
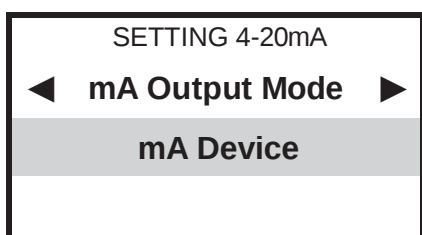
The 4-20mA1 / 4-20mA2 outputs follow the settings selected in the menu **K Constant of EC probe and Setpoint**. Press **OK/MENU** to go into mA mode.

mA1

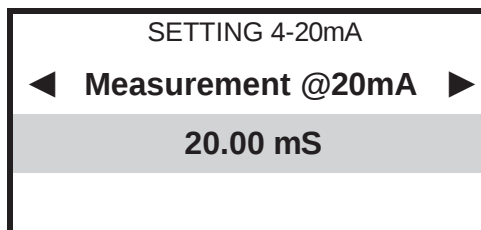
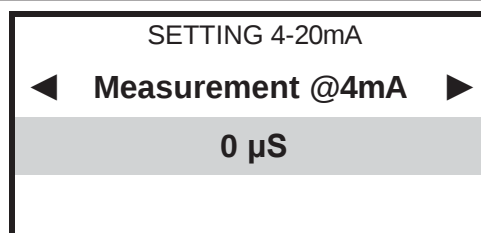
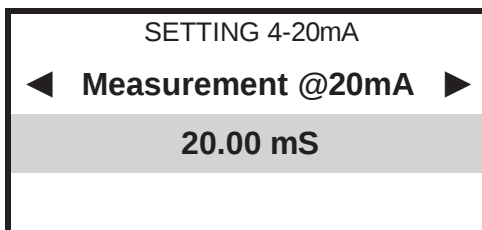
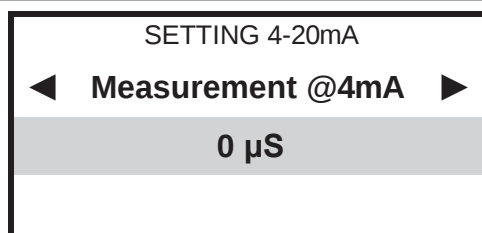
mA2



**Programming according to the K factor of the selected EC probe Valid for: 4-20mA1 / 4-20mA2*



The 4-20mA proportional analogue outputs are related to the measurements in real time in order to drive remote equipment such as data loggers, PLCs or graphic recorders or other equipment suited to processing a remote mA signal.



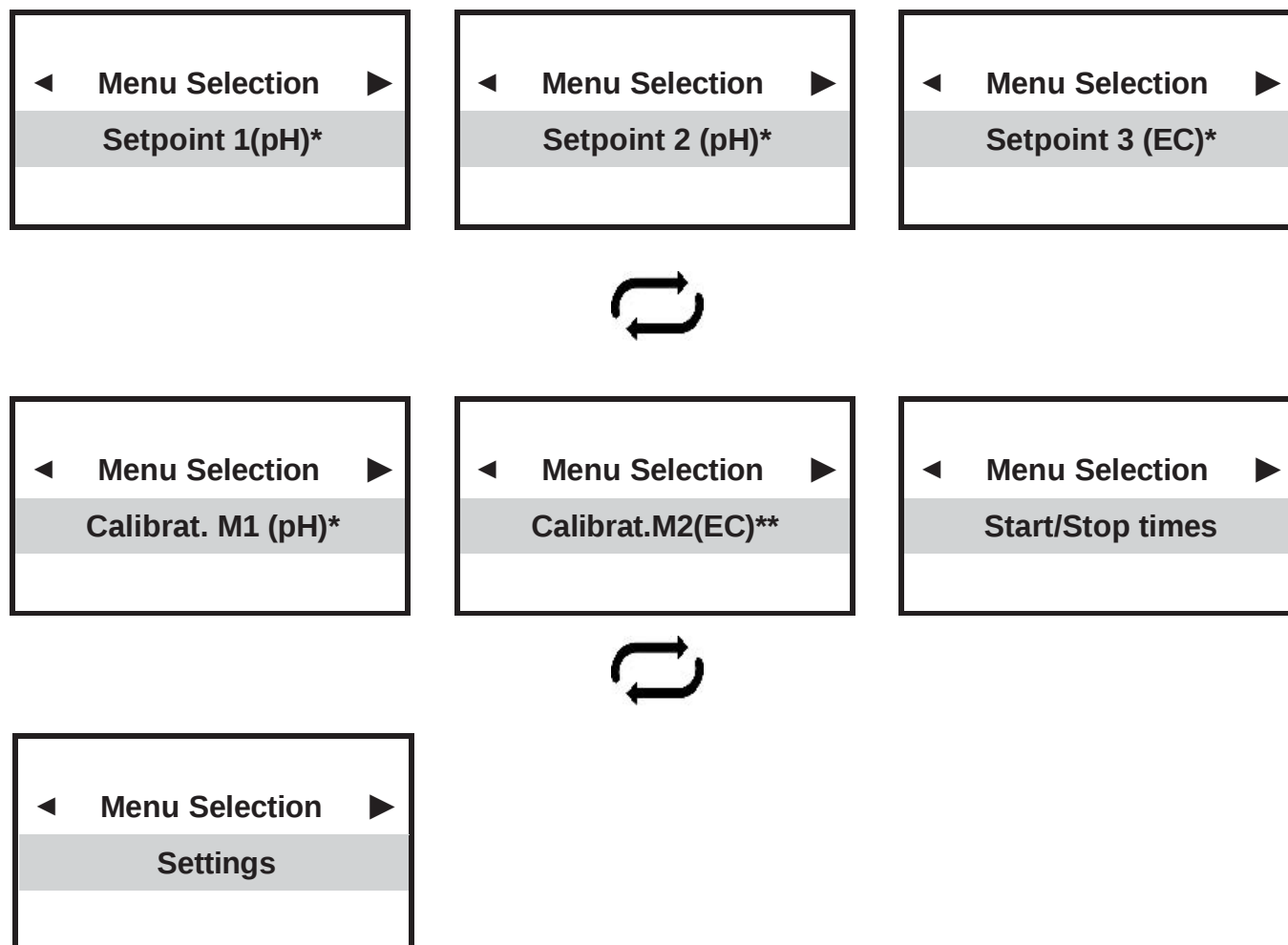
Select the value corresponding to 4 and 20 mA based on conductivity **EC Setpoint** settings in the Bleed menu.

- Press **ESC** to go back to **MENU SELECTION** or press **ESC ESC** to go back to **MEASUREMENT DISPLAY**.

5.13 PROGRAMMING: ELIGERE 02 PH(RX)-CD

5.13.1 MAIN MENU > BASIC PROGRAMMING MENU

These are all the steps included in the **Main menu** configuration with the **BASIC** programming menu:



- Press **OK/MENU** to confirm the selection and to go on to the next sub-menu.
- Press **ESC** to go back to the **MEASUREMENT DISPLAY**.

5.13.2 SETPOINT 1 PH AND SETPOINT 1 RX > BASIC MENU



The two programming stages are set out below: when **Measurement Type pH** is selected, refer to the left column; when selecting **RX** refer to the right column.

SETPOINT1 PH

◀	Menu Selection	▶
Setpoint 1 (pH)		

SETPOINT1 RX

◀	Menu Selection	▶
Setpoint 1 (RX)		

MENU SETPOINT 1 (pH)		
◀	Setpoint Value	▶
7.00 pH		
BASIC MENU		

MENU SETPOINT 1 (RX)		
◀	Setpoint Value	▶
200 mV		
BASIC MENU		

The setpoints activate the output relays for the metering pumps or other devices until the setpoint is reached.

MENU SETPOINT 1 (pH)		
◀	Metering	▶
Acid		
BASIC MENU		

Setpoint 1 is set for operations in **ACID** mode, the output is active when the measured value is higher than the selected setpoint, the connected pump meters out an acid product.

MENU SETPOINT 1 (RX)		
◀	Metering	▶
Direct		
BASIC MENU		

Setpoint 1 is set for operations in **DIRECT** mode: if the measured value is lower than the selected setpoint, the connected pump meters out an oxidising product.

MENU SETPOINT 1 (pH)		
◀	Metering	▶
Alkaline		
BASIC MENU		

MENU SETPOINT 1 (RX)		
◀	Metering	▶
Reverse		
BASIC MENU		

MENU SETPOINT 1 (pH)	
◀	Mode ▶
ON/OFF	
BASIC MENU	

MENU SETPOINT 1 (RX)	
◀	Mode ▶
ON/OFF	
BASIC MENU	

The unit has an **ON-OFF** mode which switches on or off (if the reverse mode is ON) the output relays of Constant / ON-OFF metering pumps or other ON-OFF equipment.



SELECTING 'ON-OFF' THE NEXT STEP WILL BE: "MIN ALARM" (SET POINT1 ONLY)

MENU SETPOINT 1 (pH)	
◀	Mode ▶
Proportional	
BASIC MENU	

MENU SETPOINT 1 (RX)	
◀	Mode ▶
Proportional	
BASIC MENU	

Default activation point 1.50 pH

Default activation point 150 mV

*Modular pulses, also known as PWM "pulse width modulation", support a proportional mode on each setpoint, activating the corresponding pulses on the relays based on the measured value.

For more accurate settings of the "Modular pulses" PWM, select the "Expert" menu in the initial settings.



* GOING BACK TO THE SETPOINT PROGRAMMING STEPS FROM "ON-OFF" MODE OR FROM "PROPORTIONAL" MODE

MENU SETPOINT 1 (pH)	
◀	MIN Alarm ▶
0.00 pH	
BASIC MENU	

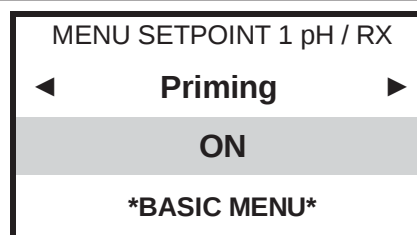
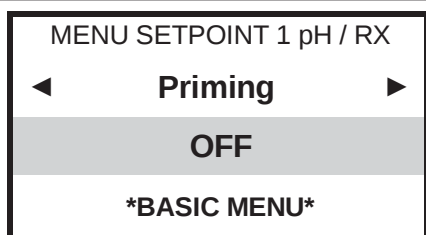
MENU SETPOINT 1 (RX)	
◀	MIN Alarm ▶
- 1500 mV	
BASIC MENU	

The **MIN** Alarm function selects a **MINIMUM** alarm level, after which the alarm relay is triggered.

MENU SETPOINT 1 (pH)	
◀	MAX Alarm ▶
14.00 pH	
BASIC MENU	

MENU SETPOINT 1 (RX)	
◀	MAX Alarm ▶
1500 mV	
BASIC MENU	

The **MAX** Alarm function selects a **MAXIMUM** alarm level, after which the alarm relay is triggered.



The priming function blocks the setpoint value to allow the metering pump to remain primed.

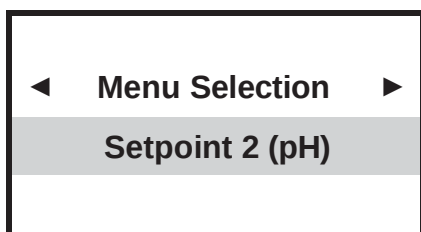
- Press **ESC** to go back to **MENU SELECTION** or press **ESC ESC** to go back to **MEASUREMENT DISPLAY**.

5.13.3 SETPOINT 2 PH AND SETPOINT 2 RX > BASIC MENU

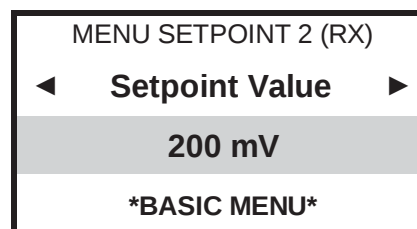
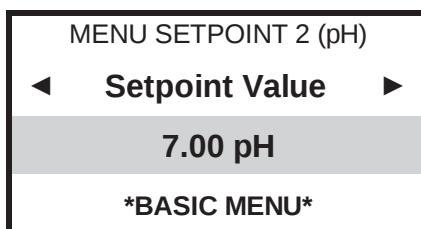
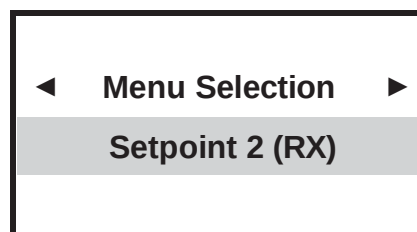


The two programming stages are set out below: when **Measurement Type pH** is selected, refer to the left column; when selecting **RX** refer to the right column.

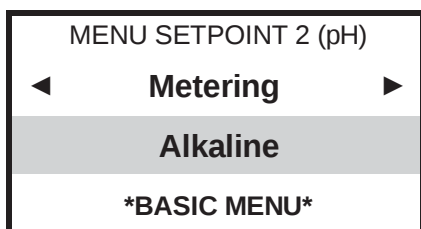
SETPOINT2 PH



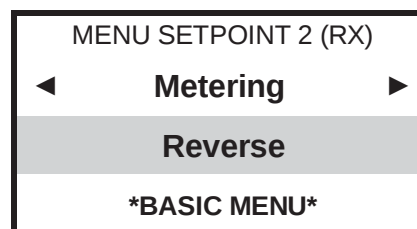
SETPOINT2 RX



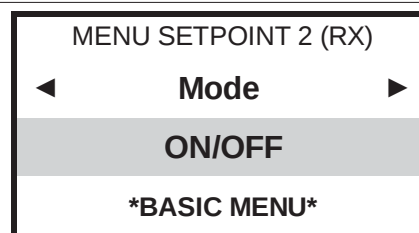
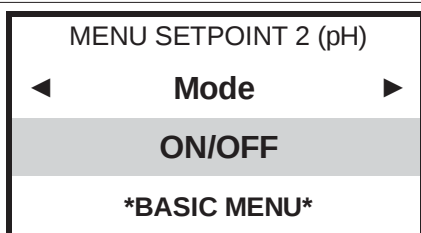
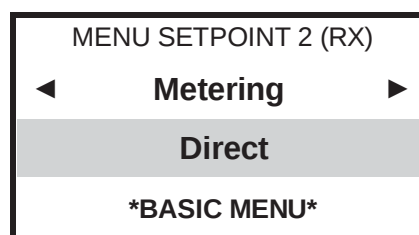
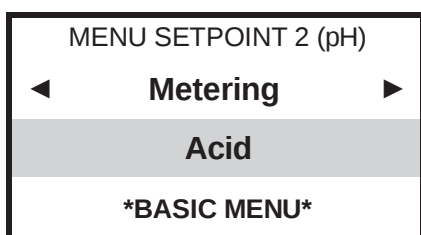
The setpoints activate the output relays for the metering pumps or other devices until the setpoint is reached.



Setpoint 2 is set for operations in **ALKALINE** mode: the output is active when the measured value is higher than the selected setpoint, the connected pump meters out an alkaline product.



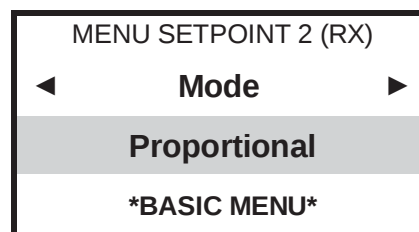
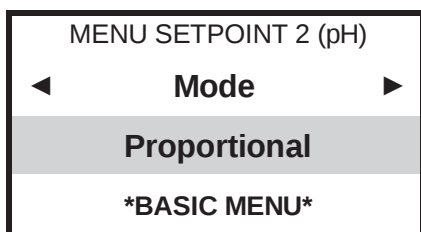
Setpoint 1 is set for operations in **REVERSE** mode: if the measured value is higher than the selected setpoint, the connected pump meters out a reducing agent.



The unit has an **ON-OFF** mode which switches on or off (if the reverse mode is ON) the output relays of Constant / ON-OFF metering pumps or other ON-OFF equipment.



SELECTING 'ON-OFF' THE NEXT STEP WILL BE: "MIN ALARM" (SET POINT1 ONLY)



Default activation point 1.50 pH

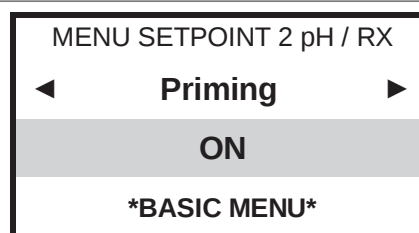
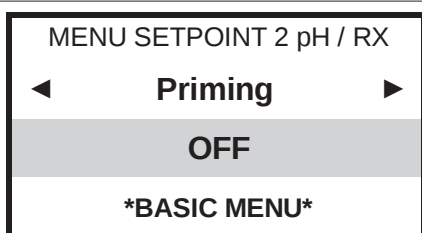
Default activation point 150 mV

*Modular pulses, also known as PWM "pulse width modulation", support a proportional mode on each setpoint, activating the corresponding pulses on the relays based on the measured value.

For more accurate settings of the "**Modular pulses**" PWM, select the "**Expert**" menu in the initial settings.



* GOING BACK TO THE SETPOINT PROGRAMMING STEPS FROM "ON-OFF" MODE OR FROM "PROPORTIONAL" MODE

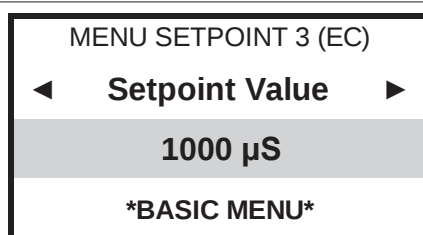
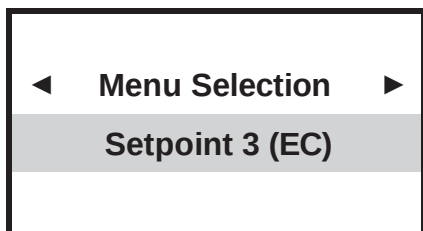


The priming function blocks the setpoint value to allow the metering pump to remain primed.

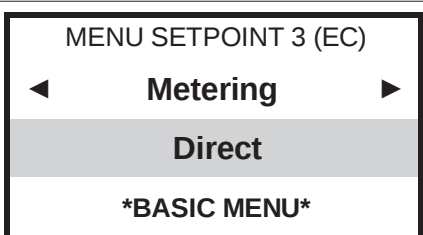
- Press **ESC** to go back to **MENU SELECTION** or press **ESC ESC** to go back to **MEASUREMENT DISPLAY**.

5.13.4 SETPOINT 3 EC CONDUCTIVITY > BASIC MENU

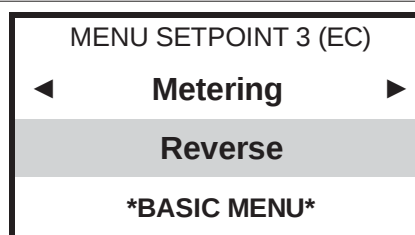
Please note that the displayed value is automatically adjusted according to the conductivity range of cell constant “K” previously selected.



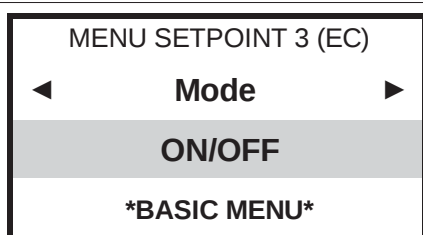
The setpoints activate the output relays for the solenoid valves or metering pumps or other devices once the setpoint level is reached. The display shows the value in µS but if the value exceeds 1999 µS, it shows 2.00 mS (if the value decreases the reading goes back in µS).



Direct mode: the output is active when the measured value is lower than the one selected in the setpoint.



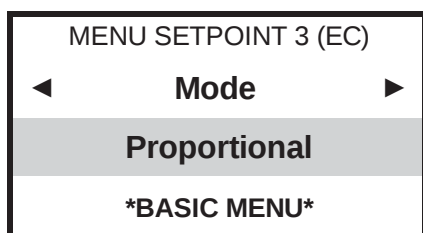
Reverse mode: the output is active even if the measured value is higher than the one selected in the setpoint.



The unit has an **ON-OFF** mode which switches on or off (if the reverse mode is ON) the output relays of Constant / ON-OFF metering pumps or other ON-OFF equipment.



SELECTING 'ON-OFF' THE NEXT STEP WILL BE: "MIN ALARM" (SET POINT1 ONLY)



*Modular pulses of the PROPORTIONAL MODE, also known as PWM “pulse width modulation”, support a proportional mode on each setpoint, activating the corresponding pulses on the output relays based on the measured value and always relating to the previously selected K value. The default activation point is **1000 µS** (range 0-20.000 µS DEFAULT); **100 µS** (range 0-2000 µS); **0,10 µS** (range 0-200 µS); **10000 µS** (range 0-200.000 µS).

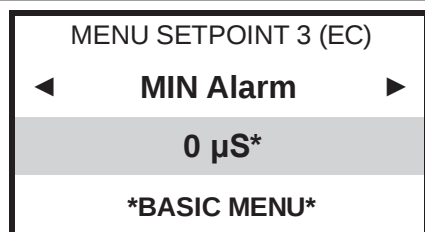
For more accurate settings of the “**Modular pulses**” PWM, select the “**Expert**” menu in the initial settings.



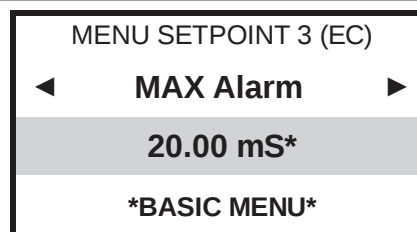
* GOING BACK TO THE SETPOINT PROGRAMMING STEPS FROM “**ON-OFF**” MODE OR FROM “**PROPORTIONAL**” MODE

FUNCTION ONLY AVAILABLE WITH SETPOINT 1

The MIN and MAX Alarm function selects the alarm levels beyond which the alarm relay is triggered on.



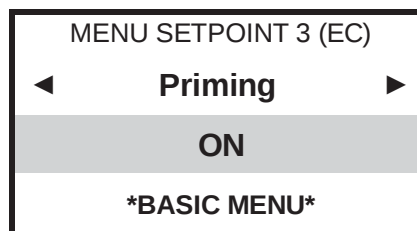
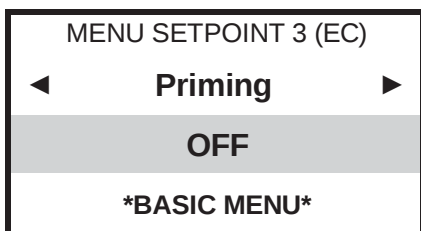
The MIN Alarm function selects a **MINIMUM** alarm level, after which the alarm relay is triggered.



The MAX Alarm function selects a **MAXIMUM** alarm level, after which the alarm relay is triggered.

* The Max Alarm shows the Maximum value of the selected range according to the selected **EC probe K Range**.
Example: by selecting range K1 the value 20.00 mS is the Max alarm value, by selecting K5 however it shows 2000 μS

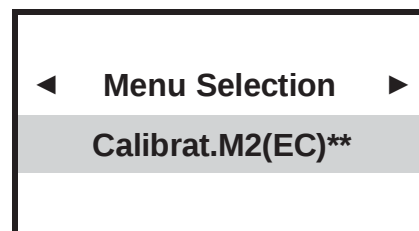
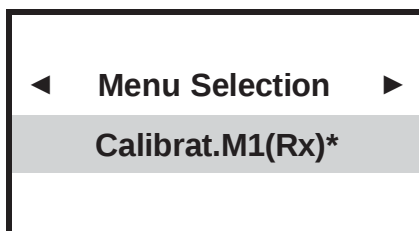
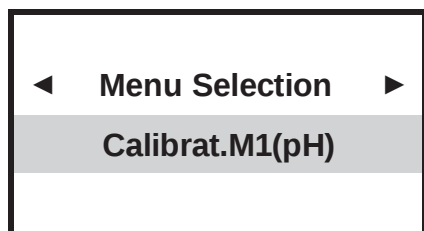
ONLY WHEN USING METERING PUMPS



The priming function blocks the setpoint value to allow the metering pump to remain primed.

- Press **ESC** to go back to **MENU SELECTION** or press **ESC ESC** to go back to **MEASUREMENT DISPLAY**.

5.13.5 Sensor calibration



- Press **OK/MENU** to confirm the selection and go to the next sub-menu.

5.13.5.1 PH electrode calibration > BASIC MENU

Please refer to par. 5.8.5.1 on page 5-35.

5.13.5.2 RX (REDOX) electrode calibration > BASIC MENU

Please refer to par. 5.8.5.2 on page 5-36.

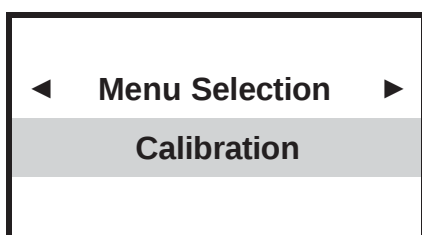
5.13.5.3 CONDUCTIVITY SENSOR CALIBRATION > BASIC MENU



READ THE MESSAGE CAREFULLY,
THEN PRESS **OK** TO START.

To go forward quickly, **press and hold**
one of the ◀▶ keys.

The known calibration
solution must be
equal to or close
to the desired value
(i.e. the set point).
Wait 5/10 minutes for
stabilisation.
▪ Press **OK** to start.



Press **OK/MENU** to confirm the selection and go to the
next sub-menu.

STANDARD OPERATIONAL CONDUCTIVITY RANGES

- **K1** 2000 μS ÷20.00 mS (20.000 μS): it can measure up to 1000 μS but the display will be less accurate.
- **K5** up to 2,000 μS

ON REQUEST other measurement ranges are possible only after approval by ETATRON D.S.

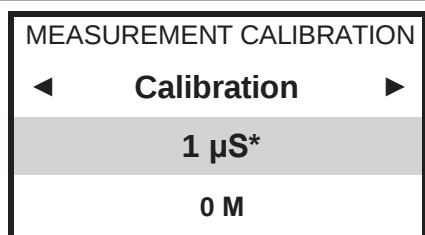
- **K0.8** up to 100 mS (100,000 μS): via ETATRON probe with graphite electrodes or other brands with equivalent models.
- **K10** up to 200 μS with probe suitable to measure this range.

IMPORTANT NOTES:

- If NOT using a temperature sensor, to change the required temperature value, move to:
Expert Menu Settings > Temperature > Manual;
- when calibrating the sensor ensure the probe electrodes do not touch any surface except the solution.
- ensure the sensor is securely positioned in the solution's container;
- wait the time required for the calibration measurement to be stable. During calibration, the measurement values always tend to have a small fluctuation but this does not affect calibration.



It is recommended to make a simple solution that is consistent with the CE value required in the system (normally the setpoint); use a portable EC instrument or sample solutions having known values to ensure the conductivity level matches the requirements. Use a conductivity sensor with maximum cable length 3/4 m.



* When the Calibration starts, the display shows random values.

- Immerse the EC probe in the known buffer solution, wait for the value to stabilise.

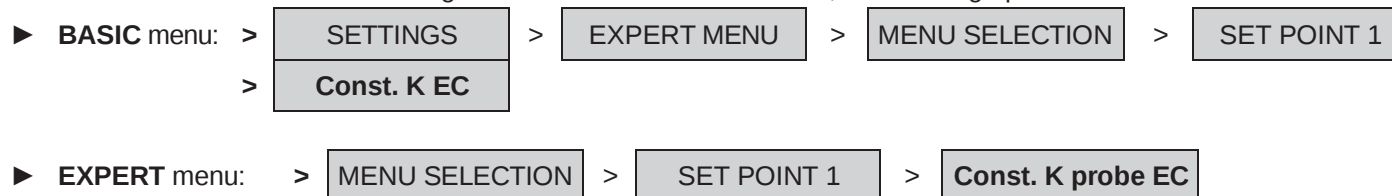
To change the value, press 'OK', then press ◀▶ until the known solution value is reached, then press 'OK' to confirm.

- Press **OK/MENU** to confirm the selection.
- Press **ESC** to go back to the **MENU SELECTION**.
- Press "ESC" "ESC" to display the "MEASUREMENT DISPLAY" screen.

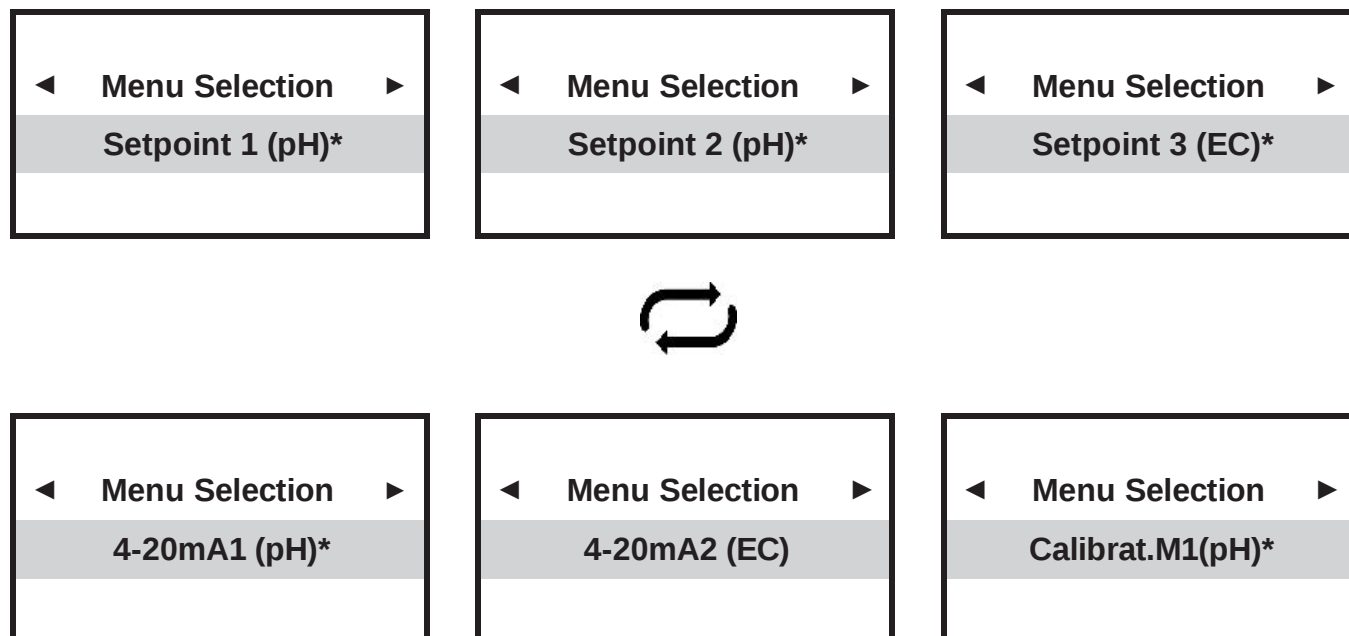
After calibration wait 10 minutes for the measurement to stabilise.

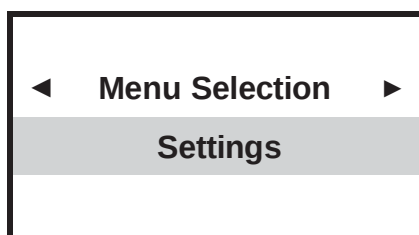
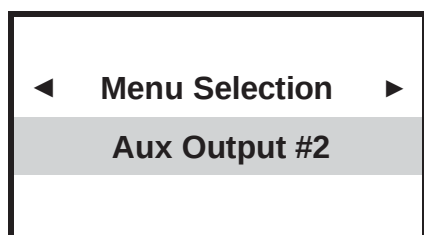
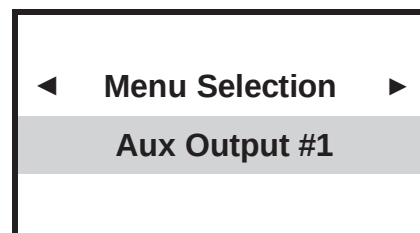
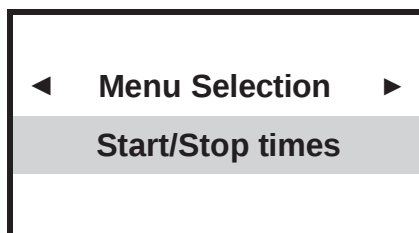
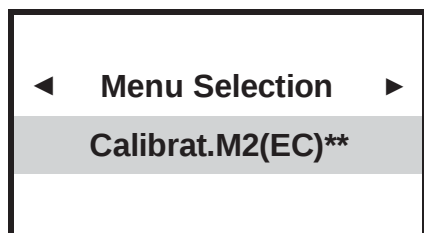
The instrument adapts the measurements and display resolution based on the type of probe in use.

In case the user should wish to change the cell Constant Factor EC K, even during operations:



5.13.6 MAIN MENU > EXPERT PROGRAMMING MENU





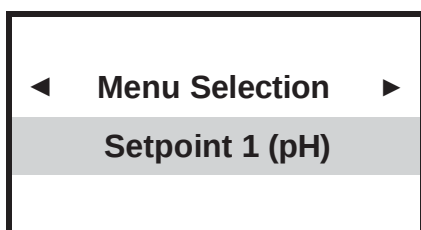
- Press **OK/MENU** to confirm the selection and to go on to the next sub-menu.
- Press **ESC** to return to the **MEASUREMENT DISPLAY**.

5.13.7 SETPOINT 1 PH AND SETPOINT 1 RX > EXPERT MENU

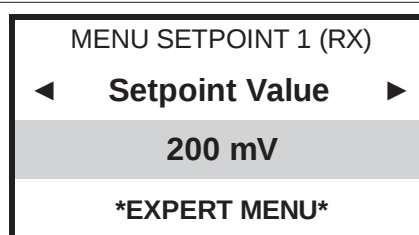
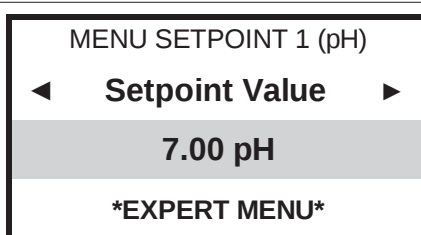
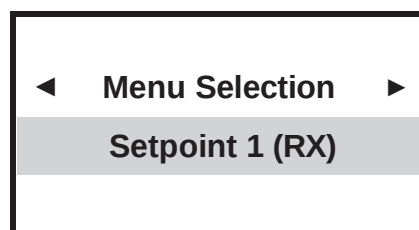


The two programming stages are set out below: when **Measurement Type pH** is selected, refer to the left column; when selecting **RX** refer to the right column.

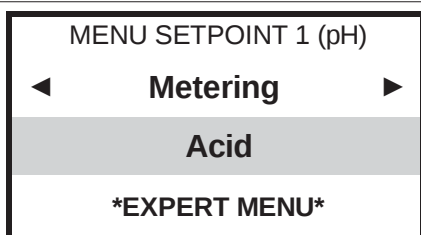
SETPOINT1 PH



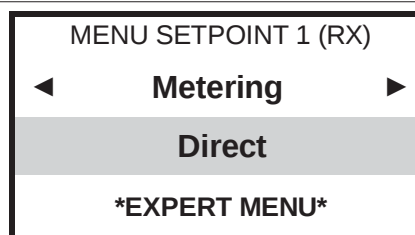
SETPOINT1 RX



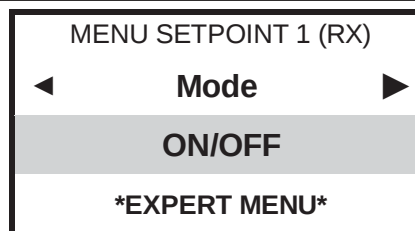
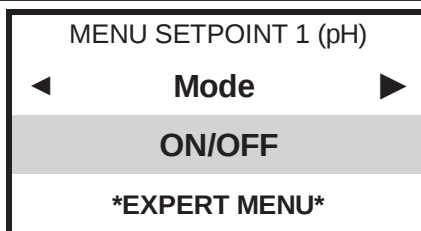
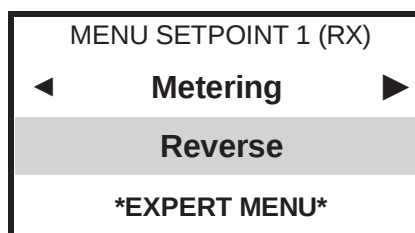
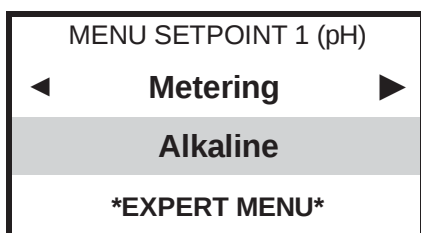
The setpoints activate the output relays for the metering pumps or other devices until the setpoint is reached.



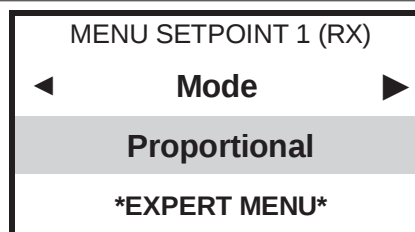
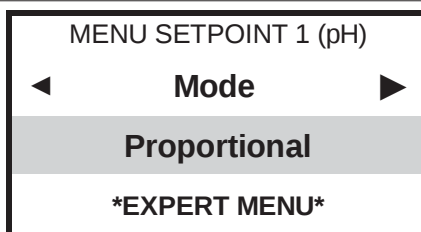
Setpoint 1 is set for operations in **ACID** mode, the output is active when the measured value is higher than the selected setpoint, the connected pump meters out an acid product.



Setpoint 1 is set for operations in **DIRECT** mode: if the measured value is lower than the selected setpoint, the connected pump meters out an oxidising product.



The unit has an **ON-OFF** mode which switches on or off (if the reverse mode is ON) the output relays of Constant / ON-OFF metering pumps or other ON-OFF equipment.



Modular pulses, also known as PWM “pulse width modulation”, support a proportional mode on each ON-OFF setpoint, activating the corresponding pulses on the output relays based on the measured value. When the Expert Menu is used, other parameters need to be programmed.



SELECTING '**ON-OFF**' THE NEXT PROGRAMMING STEP: '**HYSTERESIS**'.



SELECTING “**PROPORTIONAL**” REQUIRES PROGRAMMING THE NEXT STEPS

PWM PROPORTIONAL MODE WITH TIMED PULSES

MENU SETPOINT 1 (pH) ◀ Window width ▶ 1.50 pH *EXPERT MENU*	Window width: pulses are timed ON and OFF based on the distance from the selected setpoint, programmable, example: if the selected setpoint is 7.00 pH and the measured value is 9.00 pH, the PWM mode starts after reaching 8.50 pH with Time/Pause pulses and decreasing the active time while reaching the setpoint.
MENU SETPOINT 1 (pH) ◀ Cycle Duration ▶ 60 sec *EXPERT MENU*	Cycle Duration: the PWM mode has a 60 second cycle (programmable), example: setpoint is 700 mV, measured value 850 pH = active time 60 sec - pause time = 0 sec; at 7.75 pH active time = 30 sec - pause time = 30 sec... as a consequence the active time decreases while reaching the setpoint. The cycle time depends on many variables, such as: distance from the injection point of the system to be treated, how fast or slowly the setpoint must react, chemical concentration, etc.
MENU SETPOINT 1 (pH) ◀ Min.Active Time ▶ 5 sec *EXPERT MENU*	MIN Active Time: programmable. Defines the minimum time for which PWM is active; prevails over the selected settings. The pulse modulation function is adjusted with 3 functions according to the following formula: Active Time in accordance with the selected formula = (measured value - setpoint) / (period width * cycle time). If the result of the formula is < of that selected with Active Time

PWM PROPORTIONAL MODE FOR RX WITH TIMED PULSES

MENU SETPOINT 1 (Rx) ◀ Window width ▶ 150 mV *EXPERT MENU*	Window width: pulses are timed ON and OFF based on the distance from the selected setpoint (programmable). Example: if the selected setpoint is 750 mV and the measured value is 500 mV, the PWM mode starts after reaching 550 mV with Time/Pause pulses and decreasing the active time while reaching the setpoint.
MENU SETPOINT 1 (Rx) ◀ Cycle Duration ▶ 60 sec *EXPERT MENU*	Cycle Duration: the PWM mode has a 60 second cycle (programmable), example: setpoint is 700 mV, at measured value 550 mV = active time 60 sec - pause time = 0 sec; at 625 mV active time = 30 sec - pause time = 30 sec... as a consequence the active time decreases while reaching the setpoint. The cycle time depends on many variables, such as: distance from the injection point of the system to be treated, how fast or slowly the setpoint must react, chemical concentration, etc.
MENU SETPOINT 1 (Rx) ◀ Min.Active Time ▶ 5 sec *EXPERT MENU*	MIN Active Time: programmable. Defines the minimum time for which PWM is active; prevails over the selected settings. The pulse modulation function is adjusted with 3 functions according to the following formula: Active Time in accordance with the selected formula = (measured value - setpoint) / (period width * cycle time). If the result of the formula is < of that selected with Active Time



SELECTING 'ON-OFF' THE NEXT PROGRAMMING STEP: 'HYSTERESIS'.

FUNCTION NOT AVAILABLE WITH PROPORTIONAL MODE

MENU SETPOINT 1 (pH)	
◀	Hysteresis ▶
0.05 pH	
EXPERT MENU	

MENU SETPOINT 1 (Rx)	
◀	Hysteresis ▶
10 mV	
EXPERT MENU	

Hysteresis is useful during operations to adjust the setpoints in ON-OFF mode and is used to enable and disable the output relay when the selected hysteresis has been achieved.

Hysteresis is useful when there are too many quick swings around the setpoint, that might damage the connected device.

By increasing hysteresis it is possible to move away from the setpoint in accordance with the required value.

FUNCTION NOT AVAILABLE WITH PROPORTIONAL MODE

MENU SETPOINT 1 pH / RX	
◀	Set point del. ▶
5 sec	
EXPERT MENU	

The Delay time blocks the output relays (max 999 sec. programmable) to ensure the outputs are active only when the measurements are stable, thus assuring the best results in terms of chemical balance.



* GOING BACK TO THE SETPOINT PROGRAMMING STEPS FROM THE "ON-OFF" MODE OR "PROPORTIONAL" MODE.

MENU SETPOINT 1 (pH)
◀ Measurement Type ▶
pH
EXPERT MENU

MENU SETPOINT 1 (Rx)
◀ Measurement Type ▶
Rx
EXPERT MENU

The PH measurement parameter can be changed into RX by simple programming and by using the RX electrode.

MENU SETPOINT 1 (pH)
◀ MIN Alarm ▶
0.00 pH
EXPERT MENU

MENU SETPOINT 1 (Rx)
◀ MIN Alarm ▶
– 1500 mV
EXPERT MENU

In the MIN Alarm function a **MINIMUM** alarm level is set up, after which the alarm relay is triggered.

MENU SETPOINT 1 (pH)
◀ MAX Alarm ▶
14.00 pH
EXPERT MENU

MENU SETPOINT 1 (Rx)
◀ MAX Alarm ▶
1500 mV
EXPERT MENU

In the MAX Alarm function a **MAXIMUM** alarm level is selected, after which the alarm relay is triggered.

MENU SETPOINT 1 pH / RX
◀ Overdose ▶
00.00 h:m
EXPERT MENU

With the **Overdose** alarm one can select a period during which the setpoint must be reached. If the setpoint is not reached during this period of time, the instrument blocks output operations, including those in mA (metering pumps), the alarm is displayed as ON and triggers a signalling instrument connected to the alarm relay.

MENU SETPOINT 1 pH / RX
◀ Max. Dosing ▶
000 (no limit)
EXPERT MENU

MENU SETPOINT 1 pH / RX
◀ Max. Dosing ▶
000 m / 00 h
EXPERT MENU

Maximum Dosing is an extra safety function that ensures metering is completed in the selected time.

This function makes it possible to eliminate time limits (continuous metering according to the selected setpoints) or to select the minutes (up to 999) and the hours, for instance metering for 999 minutes in 24 hours.

MENU SETPOINT 1 pH / RX

◀ **Start-up Delay** ▶

00.00 h:m

EXPERT MENU

The **start-up delay** stops the output relays when the unit is switched on, thus allowing the sensor to polarise assuring reliable measurements (programmable).

MENU SETPOINT 1 pH / RX

◀ **No Flux Delay** ▶

00.00 h:m

EXPERT MENU

It is possible to set a **no flux delay time**; if the lack of flow is longer than the set time, the controller waits for the time set in the 'Start Delay' parameter, before eventually enabling the various outputs to control the pumps.

MENU SETPOINT 1 pH/RX

◀ **Level Delay** ▶

00.00 h:m

EXPERT MENU

It is possible to set a **delay time on the level alarm**, the controller goes into alarm as soon as it receives contact from the relevant level probe, but only switches off the pumps connected to it after the previously set time.

ONLY WHEN USING METERING PUMPS

MENU SETPOINT 1 pH / RX

◀ **Priming** ▶

OFF

EXPERT MENU

MENU SETPOINT 1 pH / RX

◀ **Priming** ▶

ON

EXPERT MENU

The priming function blocks the setpoint value to allow the metering pump to remain primed.

- Press **ESC** to go back to **MENU SELECTION** or press **ESC ESC** to go back to **MEASUREMENT DISPLAY**.

5.13.8 SETPOINT 2 PH AND SETPOINT 2 RX > EXPERT MENU



The two programming stages are set out below: when **Measurement Type pH** is selected, refer to the left column; when selecting **RX** refer to the right column.

SETPOINT2 PH

◀	Menu Selection	▶
Setpoint 2 (pH)		

SETPOINT2 RX

◀	Menu Selection	▶
Setpoint 2 (RX)		

MENU SETPOINT 2 (pH)		
◀	Setpoint Value	▶
7.00 pH		
EXPERT MENU		

MENU SETPOINT 2 (RX)		
◀	Setpoint Value	▶
200 mV		
EXPERT MENU		

The setpoints activate the output relays for the metering pumps or other devices until the setpoint is reached.

MENU SETPOINT 2 (pH)		
◀	Metering	▶
Alkaline		
EXPERT MENU		

Setpoint 2 is set for operations in **ALKALINE** mode, the output is active when the measured value is lower than the selected setpoint, the connected pump meters out an alkaline product.

MENU SETPOINT 2 (RX)		
◀	Metering	▶
Reverse		
EXPERT MENU		

Setpoint 2 is set for operations in **REVERSE** mode, the output is active when the measured value is higher than the selected setpoint, the connected pump meters out a chlorine reducing agent.

MENU SETPOINT 2 (pH)		
◀	Metering	▶
Acid		
EXPERT MENU		

MENU SETPOINT 2 (RX)		
◀	Metering	▶
Direct		
EXPERT MENU		

MENU SETPOINT 2 (pH)

◀ Mode ▶

ON/OFF

EXPERT MENU

MENU SETPOINT 2 (RX)

◀ Mode ▶

ON/OFF

EXPERT MENU

The unit has an **ON-OFF** mode which switches on or off (if the reverse mode is ON) the output relays of Constant / ON-OFF metering pumps or other ON-OFF equipment.

MENU SETPOINT 2 (pH)

◀ Mode ▶

Proportional

EXPERT MENU

MENU SETPOINT 2 (RX)

◀ Mode ▶

Proportional

EXPERT MENU

*Modular pulses, also known as PWM “pulse width modulation”, support a proportional mode on each setpoint, activating the corresponding pulses on the output relays based on the measured value and always relating to the previous settings of the selected hysteresis. When the Expert Menu is used, other parameters need to be programmed.



SELECTING '**ON-OFF**' THE NEXT PROGRAMMING STEP: '**HYSTERESIS**'.



SELECTING “**PROPORTIONAL**” REQUIRES PROGRAMMING THE NEXT STEPS

PWM PROPORTIONAL MODE FOR PH WITH TIMED PULSES

MENU SETPOINT 2 (pH)

◀ Window width ▶

1.50 pH

EXPERT MENU

Window width: pulses are timed ON and OFF based on the distance from the selected setpoint, programmable, example: if the selected setpoint is 7.00 pH and the measured value is 9.00 pH, the **PWM** mode starts after reaching 8.50 pH with Time/Pause pulses and decreasing the active time while reaching the setpoint.

MENU SETPOINT 2 (pH)

◀ Cycle Duration ▶

EXPERT MENU

Cycle Duration: the PWM mode has a 60 second cycle (programmable), example: setpoint is 7.00 pH, measured value 8.50 pH = active time 60 sec - pause time = 0 sec; at 7.75 pH active time = 30 sec - pause time = 30 sec... as a consequence the active time decreases while reaching the setpoint. The cycle time depends on many variables, such as: distance from the injection point of the system to be treated, how fast or slowly the setpoint needs to react, chemical concentration, etc.

MENU SETPOINT 2 (pH) ◀ Min.Active Time ▶ 5 sec *EXPERT MENU*	MIN Active Time: programmable. Defines the minimum time for which PWM is active; prevails over the selected settings. The pulse modulation function is adjusted with 3 functions according to the following formula: Active Time in accordance with the selected formula = (measured value - setpoint) / (period width * cycle time). If the result of the formula is < of that selected with Active Time
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PWM PROPORTIONAL MODE FOR RX WITH TIMED PULSES

MENU SETPOINT 2 (Rx) ◀ Window width ▶ 150 mV *EXPERT MENU*	Window width: pulses are timed ON and OFF based on the distance from the selected setpoint (programmable). Example: if the selected setpoint is 750 mV and the measured value is 500 mV, the PWM mode starts after reaching 550 mV with Time/Pause pulses and decreasing the active time while reaching the setpoint.
MENU SETPOINT 2 (Rx) ◀ Cycle Duration ▶ 60 sec *EXPERT MENU*	Cycle Duration: the PWM mode has a 60 second cycle (programmable), example: setpoint is 700 mV, at measured value 550 mV = active time 60 sec - pause time = 0 sec; at 625 mV active time = 30 sec - pause time = 30 sec... as a consequence the active time decreases while reaching the setpoint. The cycle time depends on many variables, such as: distance from the injection point of the system to be treated, how fast or slowly the setpoint must react, chemical concentration, etc.
MENU SETPOINT 2 (Rx) ◀ Min.Active Time ▶ *EXPERT MENU*	MIN Active Time: programmable. Defines the minimum time for which PWM is active; prevails over the selected settings. The pulse modulation function is adjusted with 3 functions according to the following formula: Active Time in accordance with the selected formula = (measured value - setpoint) / (period width * cycle time). If the result of the formula is < of that selected with Active Time



SELECTING 'ON-OFF' THE NEXT PROGRAMMING STEP: 'HYSTERESIS'.

FUNCTION NOT AVAILABLE WITH PROPORTIONAL MODE

MENU SETPOINT 2 (pH)	
◀	Hysteresis ▶
0.05 pH	
EXPERT MENU	

MENU SETPOINT 2 (Rx)	
◀	Hysteresis ▶
10 mV	
EXPERT MENU	

Hysteresis is useful during operations to adjust the setpoints in ON-OFF mode and is used to enable and disable the output relay when the selected hysteresis has been achieved.

Hysteresis is useful when there are too many quick swings around the setpoint, that might damage the connected device.

By increasing hysteresis it is possible to move away from the setpoint in accordance with the required value.

FUNCTION NOT AVAILABLE WITH PROPORTIONAL MODE

MENU SETPOINT 2 pH / RX	
◀	Set point del. ▶
5 sec	
EXPERT MENU	

The Delay time blocks the output relays (max 999 sec. programmable) to ensure the outputs are active only when the measurements are stable, thus assuring the best results in terms of chemical balance.

MENU SETPOINT 2 pH / RX	
◀	Overdose ▶
00.00 h:m	
EXPERT MENU	

With the **Overdose** alarm one can select a period during which the setpoint must be reached. If the setpoint is not reached during this period of time, the instrument blocks output operations, including those in mA (metering pumps), the alarm is displayed as ON and triggers a signalling instrument connected to the alarm relay.

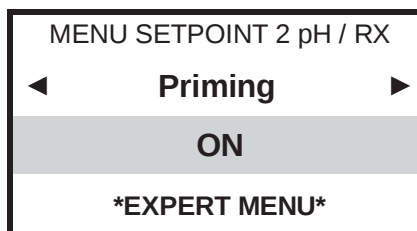
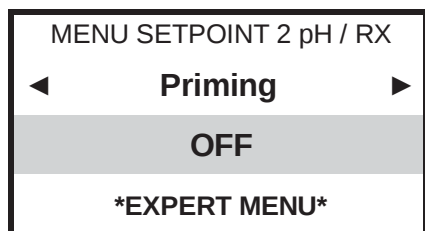
MENU SETPOINT 2 pH / RX	
◀	Max. Dosing ▶
000 (no limit)	
EXPERT MENU	

MENU SETPOINT 2 pH / RX	
◀	Max. Dosing ▶
000 m / 00 h	
EXPERT MENU	

Maximum Dosing is an extra safety function that ensures metering is completed in the selected time.

This function makes it possible to eliminate time limits (continuous metering according to the selected setpoints) or to select the minutes (up to 999) and the hours, for instance metering for 999 minutes in 24 hours.

ONLY WHEN USING METERING PUMPS

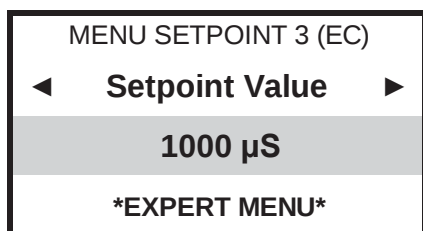
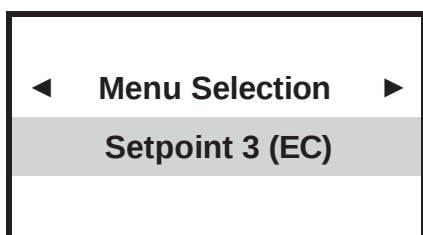


The priming function blocks the setpoint value to allow the metering pump to remain primed.

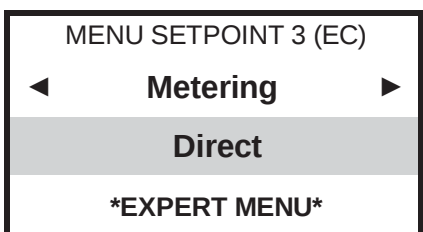
- Press **ESC** to go back to **MENU SELECTION** or press **ESC ESC** to go back to **MEASUREMENT DISPLAY**.

5.13.9 SETPOINT 3 EC CONDUCTIVITY > EXPERT MENU

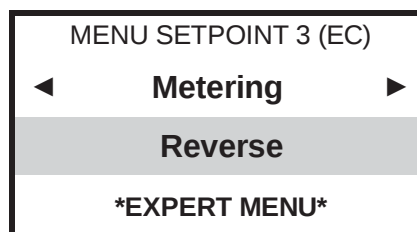
Please note that the displayed value is automatically adjusted according to the conductivity range of cell constant “K” previously selected.



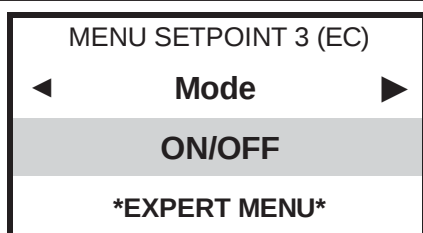
The setpoints activate the output relays for the metering pumps or other devices once the setpoint level is selected. The display shows the value in µS, but if the value exceeds 1999 µS, it shows 2.00 mS (if the value decreases the reading goes back in µS).



Direct mode: the output is active when the measured value is lower than the one selected in the setpoint.



Reverse mode: the output is active even if the measured value is higher than the one selected in the setpoint.



The unit has an **ON-OFF** mode which switches on or off (if the reverse mode is ON) the output relays of Constant / ON-OFF metering pumps or other ON-OFF equipment.



SELECTING 'ON-OFF' THE NEXT STEP WILL BE: "MIN ALARM" (SET POINT1 ONLY)

MENU SETPOINT 3 (EC)	
◀	Mode ▶
Proportional	
EXPERT MENU	

*Modular pulses, also known as PWM "pulse width modulation", support a proportional mode on each ON-OFF setpoint, activating the corresponding pulses on the output relays based on the measured value and always relating to the previously selected **K** value. The default activation point is **1000 µS** (range 0-20.000 µS DEFAULT); **100 µS** (range 0-2000 µS); **0,10 µS** (range 0-200 µS); **10000 µS** (range 0-200.000 µS).



SELECTING 'ON-OFF' THE NEXT PROGRAMMING STEP: 'HYSTERESIS'.



SELECTING "PROPORTIONAL" REQUIRES PROGRAMMING THE NEXT STEPS

PWM PROPORTIONAL MODE FOR PH WITH TIMED PULSES

MENU SETPOINT 3 (EC)	
◀	Window width ▶
1000 µS	
EXPERT MENU	

Window width: pulses are timed ON and OFF based on the distance from the selected setpoint (programmable). Example: if the selected setpoint is 700 µS EC and the measured value is 600 µS, the PWM mode starts after reaching 650 µS with Time/Pause pulses and decreasing the active time while reaching the setpoint.

MENU SETPOINT 3 (EC)	
◀	Cycle Duration ▶
60 sec	
EXPERT MENU	

Cycle Duration: the PWM mode has a 60 second cycle (programmable). Example: setpoint is 700 µS. active time 60 sec - pause time = 0 sec; 775 µS active time = 30 sec - pause time = 30 sec... as a consequence the active time decreases while reaching the setpoint. The cycle time depends on many variables, such as: distance from the injection point of the system to be treated, how fast or slowly the setpoint must react, chemical concentration, etc.

MENU SETPOINT 3 (EC)	
◀	Min.Active Time ▶
5 sec	
EXPERT MENU	

MIN Active Time: programmable. Defines the minimum time for which PWM is active; prevails over the selected settings. The pulse modulation function is adjusted with 3 functions according to the following formula: Active Time in accordance with the selected formula = (measured value - setpoint) / (period width * cycle time).
If the result of the formula is < of that selected with Active Time



SELECTING 'ON-OFF' THE NEXT PROGRAMMING STEP: 'HYSTERESIS'.

FUNCTION NOT AVAILABLE WITH PROPORTIONAL MODE

MENU SETPOINT 3 (EC)	
◀	Hysteresis ▶
200 μ S*	
EXPERT MENU	

Hysteresis is useful during operations to adjust the setpoints in ON-OFF mode and is used to enable and disable the output relay when the selected hysteresis has been achieved.

Hysteresis is useful when there are too many quick swings around the setpoint, that might damage the connected device.

By increasing hysteresis it is possible to move away from the setpoint in accordance with the required value.

* Value shown based on the selected cell constant 'K'.

FUNCTION NOT AVAILABLE WITH PROPORTIONAL MODE

MENU SETPOINT 3 (EC)	
◀	Set point del. ▶
5 sec	
EXPERT MENU	

The Delay time blocks the output relays (max 999 sec. programmable) to ensure the outputs are active only when the measurements are stable, thus assuring the best results in terms of chemical balance.

FUNCTION ONLY AVAILABLE ON SETPOINT 1 PROGRAMMING

MENU SETPOINT 3 (EC)	
◀	Const.K CE probe ▶
1,000	
EXPERT MENU	

The cell constant **K** is set by default at 1,000, press ◀▶ to edit the **K** value.

K1 select 1,000

K5 select 5,000



* GOING BACK TO THE SETPOINT PROGRAMMING STEPS FROM THE "ON-OFF" MODE OR "PROPORTIONAL" MODE.

MENU SETPOINT 3 (EC)	
◀	Temp. Correction ▶
0.0 %/°C	
EXPERT MENU	

The **Alpha EC factor** is the correction factor for conductivity measurements according to temperature: **each conductivity sensor depends on the temperature**. Conductivity changes linearly with the temperature of the solution. This coefficient normalises the conductivity measurements at the reference temperature of 25°C. For aqueous solutions, this coefficient varies 1.9%-2% per °C. Select 0 if you do not wish to normalise reading. The Alpha factor assures the best measurement results and the best accuracy.

FUNCTION ONLY AVAILABLE WITH SETPOINT 1

MENU SETPOINT 3 (EC)	
◀	MIN Alarm ▶
0 μ S*	
BASIC MENU	

The MIN Alarm function selects a **MINIMUM** alarm level, after which the alarm relay is triggered.

MENU SETPOINT 3 (EC)	
◀	MAX Alarm ▶
20.00 mS*	
BASIC MENU	

The MAX Alarm function selects a **MAXIMUM** alarm level, after which the alarm relay is triggered.

MENU SETPOINT 3 (EC)	
◀	Overdose ▶
00.00 h:m	
EXPERT MENU	

With the **overdose time alarm** one can select a period during which the setpoint must be reached. If the setpoint is not reached during this period of time, the instrument blocks output operations, including those in mA (metering pumps), the alarm is displayed as ON and triggers a signalling instrument if it is connected to the alarm relay.

MENU SETPOINT 3 (EC)	
◀	Max. Dosing ▶
000 (no limit)	
EXPERT MENU	

MENU SETPOINT 3 (EC)	
◀	Max. Dosing ▶
000 m / 00 h	
EXPERT MENU	

Maximum Dosing is an extra safety function that ensures metering is completed in the selected time.

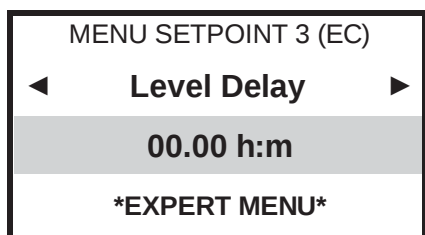
This function makes it possible to eliminate time limits (continuous metering according to the selected setpoints) or to select the minutes (up to 999) and the hours, for instance metering for 999 minutes in 24 hours.

MENU SETPOINT 3 (EC)	
◀	Start-up Delay ▶
00.00 h:m	
EXPERT MENU	

The start-up delay stops the output relays when the unit is switched on, thus allowing the sensor to polarise assuring correct measurements (programmable).

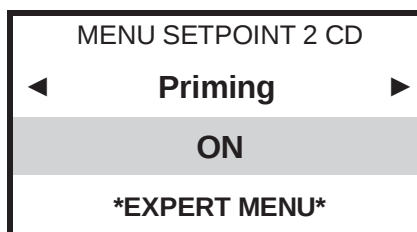
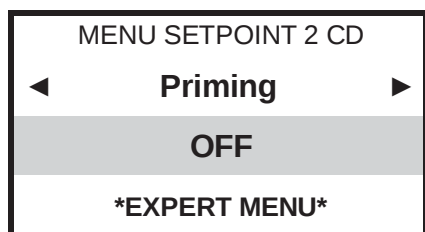
MENU SETPOINT 3 (EC)	
◀	No Flux Delay ▶
00.00 h:m	
EXPERT MENU	

It is possible to set a **no flux delay time**; if the lack of flow is longer than the set time, the controller waits for the time set in the 'Start Delay' parameter, before eventually enabling the various outputs to control the pumps.



It is possible to set a **delay time on the level alarm**, the controller goes into alarm as soon as it receives contact from the relevant level probe, but only switches off the pumps connected to it after the previously set time.

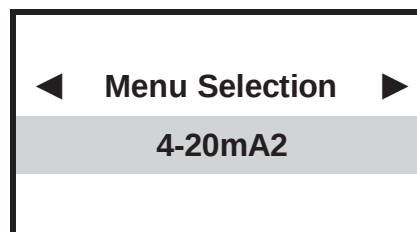
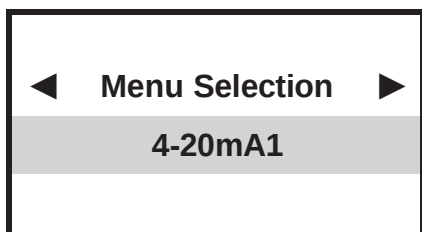
ONLY WHEN USING METERING PUMPS



The priming function blocks the setpoint value to allow the metering pump to remain primed.

- Press **ESC** to go back to **MENU SELECTION** or press **ESC ESC** to go back to **MEASUREMENT DISPLAY**.

5.13.10 ANALOGUE 4-20MA OUTPUTS FUNCTION SELECTION > EXPERT MENU



- Press **OK/MENU** to go into mA mode. In mA mode the instrument lets you choose two operative functions:
- **mA DEVICE:** external devices suited to operating with mA signal such as data loggers or data recorders or other mA equipment.
- **DOSING SETPOINT:** through the control of metering pumps suited to controlling an mA external digital signal.

5.13.10.1 4-20mA1 OUTPUT PH OR RX > Remote Devices Function

The 4-20mA1 analogue output of the instrument follows the options previously selected in **Measurement Type** i.e. **pH** or **RX**.



The 4-20mA proportional analogue outputs are according to the measurements in real time in order to drive remote equipment such as data loggers, PLCs or graphic recorders or other equipment suited to processing a remote mA signal



*Please note that the value displayed is automatically adjusted according to the **Measurement Type** selected.*

mA1 pH

◀ Menu Selection ▶

4-20mA1 (pH)

SETTING 4-20mA1 (pH)

◀ mA output mode ▶

mA Device

EXPERT MENU

SETTING 4-20mA1 (pH)

◀ Measurement ▶

@4mA

0.00 pH

EXPERT MENU

SETTING 4-20mA1 (pH)

◀ Measurement ▶

@20mA

14.00 pH

EXPERT MENU

mA1 RX

◀ Menu Selection ▶

4-20mA1 (RX)

SETTING 4-20mA1 (RX)

◀ mA output mode ▶

mA Device

EXPERT MENU

SETTING 4-20mA1 (RX)

◀ Measurement ▶

@4mA

0 mV

EXPERT MENU

SETTING 4-20mA1 (RX)

◀ Measurement ▶

@20mA

1000 mV

EXPERT MENU

Select the value corresponding to 4 and 20 mA based on Setpoint 1.

- Press **ESC** to go back to **MAIN MENU** or press **ESC ESC** to go back to **CONTINUOUS MEASUREMENT**.

5.13.10.2 4-20mA1 OUTPUT PH OR RX > DOSING FUNCTION ON SETPOINT

The 4-20mA1 analogue output of the instrument follows the options previously selected in **Measurement Type** i.e. **pH** or **RX**.



Please note that the value displayed is automatically adjusted according to the **Measurement Type** selected.

mA1 pH

◀	Menu Selection	▶
4-20mA1 (pH)		

SETTING 4-20mA1 (pH)		
◀	mA output mode	▶
Setpoint		
EXPERT MENU		

SETTING 4-20mA1 (pH)		
◀	Setpoint Value	▶
7.00 pH		
EXPERT MENU		

mA1 RX

◀	Menu Selection	▶
4-20mA1 (RX)		

SETTING 4-20mA1 (RX)		
◀	mA output mode	▶
Setpoint		
EXPERT MENU		

SETTING 4-20mA1 (RX)		
◀	Setpoint Value	▶
200 mV		
EXPERT MENU		

Select the Set point value to control the metering pump or other equipment suited to processing the mA signal.

SETTING 4-20mA (pH)		
◀	Metering	▶
Acid		
EXPERT MENU		

Setpoint mA is set for operations in **ACID** mode, the output is active when the measured value is higher than the selected setpoint, the connected pump meters out an acid product.

SETTING 4-20mA (RX)		
◀	Metering	▶
Direct		
EXPERT MENU		

Setpoint mA is set for operations in **DIRECT** mode: if the measured value is lower than the selected setpoint, the connected pump meters out an oxidising product.

SETTING 4-20mA1 (pH)		
◀	Metering	▶
Alkaline		
EXPERT MENU		

SETTING 4-20mA1 (RX)		
◀	Metering	▶
Reverse		
EXPERT MENU		

SETTING 4-20mA1 (pH)

◀ Window width ▶

1.50 pH

EXPERT MENU

SETTING 4-20mA1 (RX)

◀ Window width ▶

150 mV

EXPERT MENU

The window width sets the distance from the setting point where the 4-20mA mode starts: 4mA = 0 metering pump pulse, 20mA = max impulsive frequency of the metering pump. The window width depends on many variables: distance injection point, reaction time, chemical solution, etc.

SETTING 4-20mA1 pH/RX

◀ Overdose ▶

00.00 h:m

EXPERT MENU

With the **overdose time** alarm one can select a period during which the setpoint must be reached. If the setpoint is not reached during this period of time, the instrument blocks output operations, including those in mA (metering pumps), the alarm is displayed as ON and triggers a signalling instrument connected to the alarm relay.

SETTING 4-20mA1 pH/RX

◀ Max. Dosing ▶

000 (no limit)

EXPERT MENU

SETTING 4-20mA1 pH/RX

◀ Max. Dosing ▶

000 m / 00 h

EXPERT MENU

Maximum Dosing is a safety function that ensures metering is completed in the selected time. The relays of the metering pumps open accordingly. This function makes it possible to eliminate time limits (continuous metering according to the selected setpoints) or to select the minutes (up to 999) and the hours, for instance metering for 999 minutes in 24 hours.

- Press **ESC** to go back to **MENU SELECTION** or press **ESC ESC** to go back to **CONTINUOUS MEASUREMENT**.

5.13.10.3 4-20mA2 OUTPUT EC CONDUCTIVITY > Remote Devices Function

The analogue 4-20mA2 output of the instrument follows the options previously selected of the "**K constant of EC probe**".



Please note that the displayed value is automatically adjusted according to the conductivity range of the previously selected cell constant "K".

Menu Selection

4-20mA2 (EC)

SETTING 4-20mA2 (EC)

◀ **mA output mode** ▶

mA Device

EXPERT MENU

The 4-20mA proportional analogue outputs are according to the measurements in real time in order to drive remote equipment such as data loggers, PLCs or graphic recorders or other equipment suited to processing a remote mA signal

SETTING 4-20mA2 (EC)

◀ **Measurement** ▶

@4mA

0 μ S

EXPERT MENU

SETTING 4-20mA2 (EC)

◀ **Measurement** ▶

@20mA

20.00 mS

EXPERT MENU

Select the value corresponding to 4 and 20 mA based on Setpoint 3.

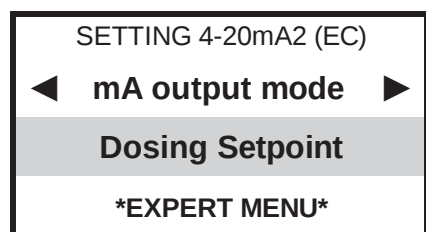
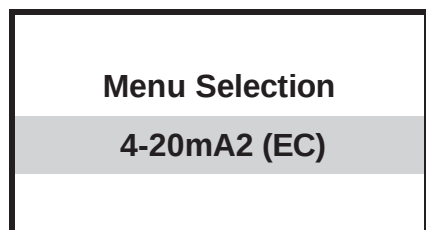
- Press **ESC** to go back to **MENU SELECTION** or press **ESC ESC** to go back to **MEASUREMENT DISPLAY**.

5.13.10.4 4-20mA2 OUTPUT EC CONDUCTIVITY > DOSING FUNCTION ON SETPOINT

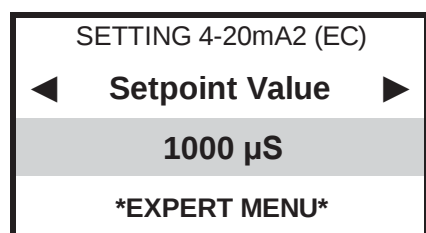
The analogue 4-20mA2 output of the instrument follows the settings selected in the **K Constant of the EC probe**.



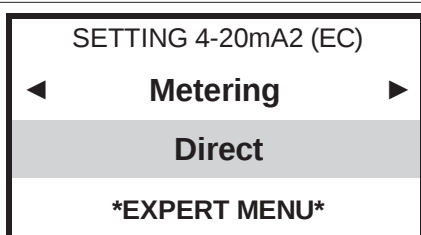
Please note that the displayed value is automatically adjusted according to the conductivity range of the previously selected cell constant "K".



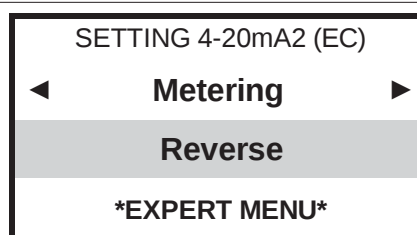
The 4-20mA proportional analogue outputs are according to the measurements in real time in order to drive remote equipment such as data loggers, PLCs or graphic recorders or other equipment suited to processing a remote mA signal



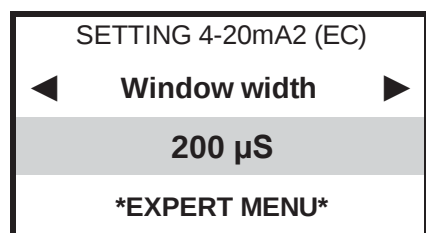
Select the Set point value to control the metering pump or other equipment suited to processing an mA signal.



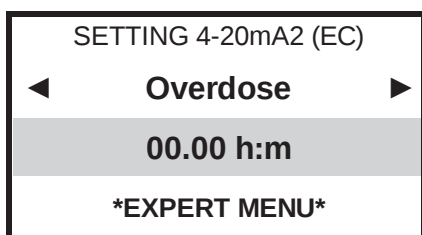
Direct mode: the output is active when the measured value is lower than the one selected in the setpoint.



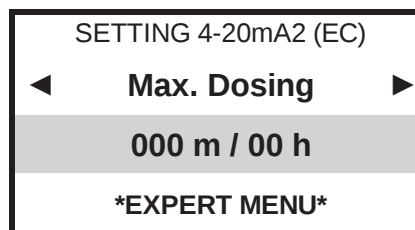
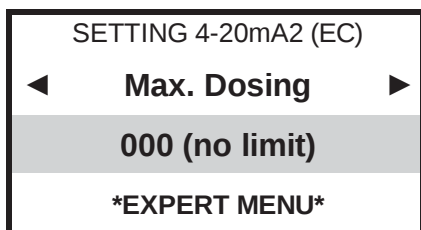
Reverse mode: the output is active even if the measured value is higher than the one selected in the setpoint.



The **window width** sets the distance from the setting point where the 4-20mA mode starts: 4mA = 0 metering pump pulse, 20mA = max impulsive frequency of the metering pump. The window width depends on many variables: distance injection point, reaction time, chemical %



With the **overdose time** alarm one can select a period during which the setpoint must be reached. If the setpoint is not reached during this period of time, the instrument blocks output operations, including those in mA (metering pumps), the alarm is displayed as ON and triggers a signalling instrument connected to the alarm relay.



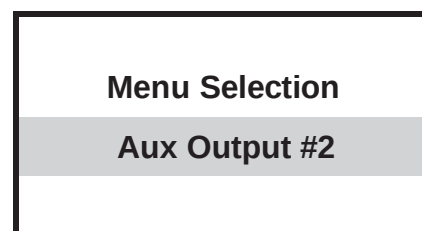
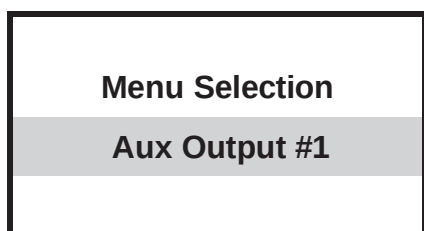
Maximum Metering is a safety function that ensures metering is completed in the selected time. The relays of the metering pumps open accordingly. This function makes it possible to eliminate time limits (continuous metering according to the selected setpoints) or to select the minutes (up to 999) and the hours, for instance metering for 999 minutes in 24 hours.

- Press **ESC** to go back to **MENU SELECTION** or press **ESC ESC** to go back to **MEASUREMENT DISPLAY**.

5.13.11 AUX OUTPUTS > EXPERT MENU

The auxiliary outputs control various functions connected to any type of remote On-Off device controlled by a timer in real time. The AUX output may control a device or appliance thanks to very accurate programming of minutes/hours/days/weeks.

ADVANTAGES: this function makes this instrument a very versatile control unit not only to measure chemical physical parameters but also for other functions connected to the system where it is installed.



- Press **OK/MENU** to confirm the selection and to go on to the next sub-menu.
- Press **ESC** to go back to **MAIN MENU** or press **ESC ESC** to go back to **CONTINUOUS MEASUREMENT**.

AUX 1		Programme 01
Active time (m:s)		01 : 00
Start time (h:s)		10 : 30
Enabl. days		Mon : N
Tue: N	Wed : N	Thu: N
Fri: N	Sat : N	Sun: N
Wk. 1 : S	2 : S	3 : S 4 : N

AUX 2		Programme 01
Active time (m:s)		01 : 00
Start time (h:s)		10 : 30
Enabl. days		Mon : N
Tue: N	Wed : N	Thu: N
Fri: N	Sat : N	Sun: N
Wk. 1 : S	2 : S	3 : S 4 : N

The settings of the program entail many steps, which may be selected to have absolute operating precision (up to 99 programs for each AUX output).

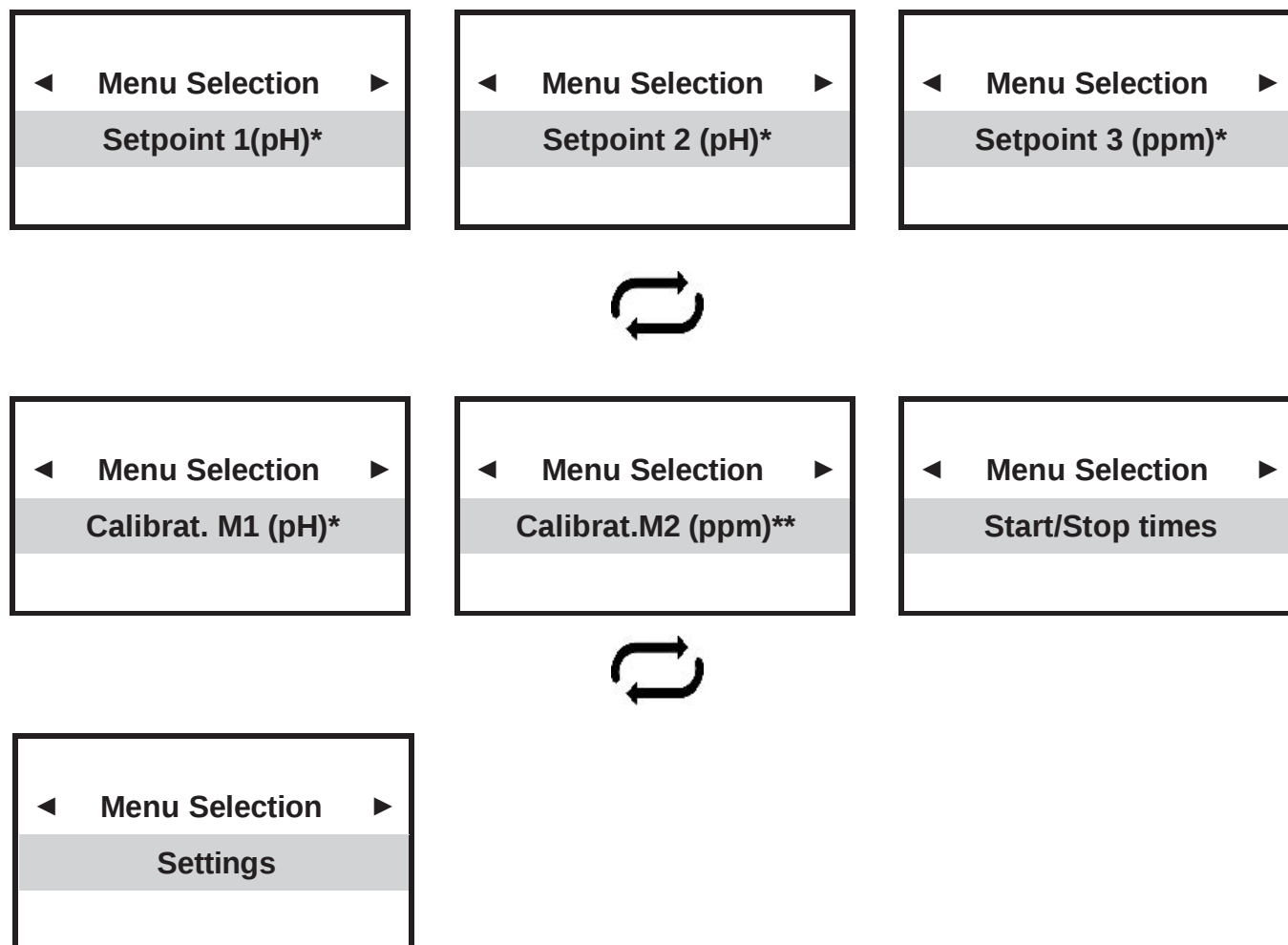
AUX 1 or AUX 2	Program 01	- Press ◀ ▶ select program number (up to 99). - Confirm by pressing OK, automatically goes to the next step.
Active time	(m:s) 01:00	Selects the active time of the connected On/Off device - Press ◀ ▶ to select the minutes, confirm OK to move to the next digits. - Press ◀ ▶ to select the seconds, confirm OK to move to the next step.
Start time	(h:m) 10:30	Selects the start time of the connected On/Off device. - Press ◀ ▶ to select the hours, confirm OK to move to the next digits. - Press ◀ ▶ to select the minutes, confirm OK to move to the next step.
Enabled days	Mon : N ... Y	Selects the days during which the connected equipment is operational. - Press ◀ ▶ to select the days of activity ◀ ▶ N no or Y yes. - Confirm by pressing OK, automatically goes to the next step.
Weeks	1:Y 2:N 3:N 4:N	Selects the weeks of the month during which the connected equipment is operational. - Press ◀ ▶ to select the weeks of activity ◀ ▶ N no or Y yes. - Confirm by pressing OK, automatically goes to the next step.

- Press **ESC** to go back to **MENU SELECTION** or press **ESC ESC** to go back to **MEASUREMENT DISPLAY**.

5.14 PROGRAMMING: ELIGERE 02 PH(RX)-CL

5.14.1 MAIN MENU > BASIC PROGRAMMING MENU

These are all the steps included in the **Main menu** configuration with the **BASIC** programming menu:



- Press **OK/MENU** to confirm the selection and to go on to the next sub-menu.
- Press **ESC** to go back to the **MEASUREMENT DISPLAY**.

5.14.2 SETPOINT 1 PH AND SETPOINT 1 RX > BASIC MENU



The two programming stages are set out below: when **Measurement Type pH** is selected, refer to the left column; when selecting **RX** refer to the right column.

SETPOINT1 PH

◀	Menu Selection	▶
Setpoint 1 (pH)		

SETPOINT1 RX

◀	Menu Selection	▶
Setpoint 1 (RX)		

MENU SETPOINT 1 (pH)		
◀	Setpoint Value	▶
7.00 pH		
BASIC MENU		

MENU SETPOINT 1 (RX)		
◀	Setpoint Value	▶
200 mV		
BASIC MENU		

The setpoints activate the output relays for the metering pumps or other devices until the setpoint is reached.

MENU SETPOINT 1 (pH)		
◀	Metering	▶
Acid		
BASIC MENU		

Setpoint 1 is set for operations in **ACID** mode, the output is active when the measured value is higher than the selected setpoint, the connected pump meters out an acid product.

MENU SETPOINT 1 (RX)		
◀	Metering	▶
Direct		
BASIC MENU		

Setpoint 1 is set for operations in **DIRECT** mode: if the measured value is lower than the selected setpoint, the connected pump meters out an oxidising product.

MENU SETPOINT 1 (pH)		
◀	Metering	▶
Alkaline		
BASIC MENU		

MENU SETPOINT 1 (RX)		
◀	Metering	▶
Reverse		
BASIC MENU		

MENU SETPOINT 1 (pH)		
◀	Mode	▶
ON/OFF		
BASIC MENU		

MENU SETPOINT 1 (RX)		
◀	Mode	▶
ON/OFF		
BASIC MENU		

The unit has an **ON-OFF** mode which switches on or off (if the reverse mode is ON) the output relays of Constant / ON-OFF metering pumps or other ON-OFF equipment.



SELECTING 'ON-OFF' THE NEXT STEP WILL BE: "MIN ALARM" (SET POINT1 ONLY)

MENU SETPOINT 1 (pH)		
◀	Mode	▶
Proportional		
BASIC MENU		

Default activation point 1.50 pH

MENU SETPOINT 1 (RX)		
◀	Mode	▶
Proportional		
BASIC MENU		

Default activation point 150 mV

*Modular pulses, also known as PWM "pulse width modulation", support a proportional mode on each setpoint, activating the corresponding pulses on the relays based on the measured value.

For more accurate settings of the "Modular pulses" PWM, select the "Expert" menu in the initial settings.



* GOING BACK TO THE SETPOINT PROGRAMMING STEPS FROM "ON-OFF" MODE OR FROM "PROPORTIONAL" MODE

MENU SETPOINT 1 (pH)		
◀	MIN Alarm	▶
0.00 pH		
BASIC MENU		

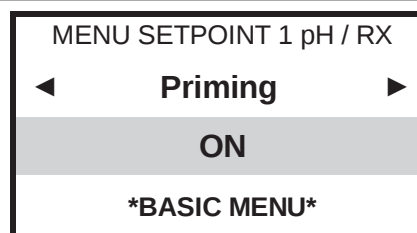
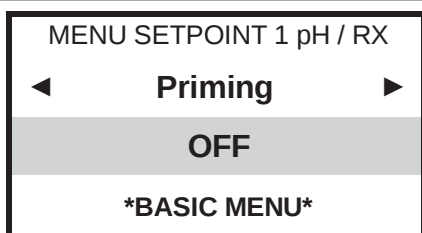
MENU SETPOINT 1 (RX)		
◀	MIN Alarm	▶
- 1500 mV		
BASIC MENU		

The **MIN** Alarm function selects a **MINIMUM** alarm level, after which the alarm relay is triggered.

MENU SETPOINT 1 (pH)		
◀	MAX Alarm	▶
14.00 pH		
BASIC MENU		

MENU SETPOINT 1 (RX)		
◀	MAX Alarm	▶
1500 mV		
BASIC MENU		

The **MAX** Alarm function selects a **MAXIMUM** alarm level, after which the alarm relay is triggered.



The priming function blocks the setpoint value to allow the metering pump to remain primed.

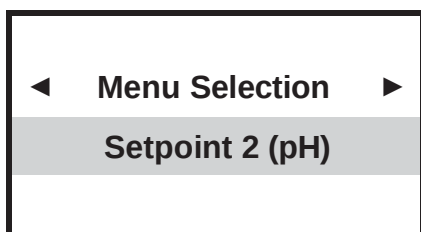
- Press **ESC** to go back to **MENU SELECTION** or press **ESC ESC** to go back to **MEASUREMENT DISPLAY**.

5.14.3 SETPOINT 2 PH AND SETPOINT 2 RX > BASIC MENU

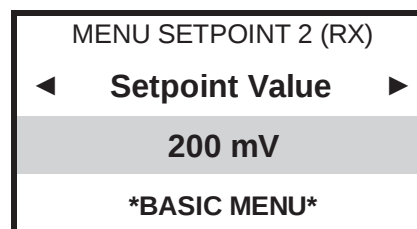
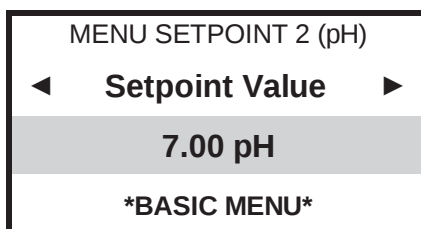
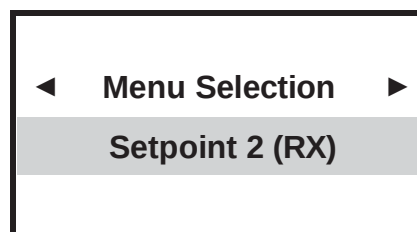


The two programming stages are set out below: when **Measurement Type pH** is selected, refer to the left column; when selecting **RX** refer to the right column.

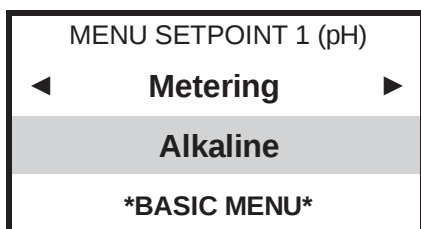
SETPOINT2 PH



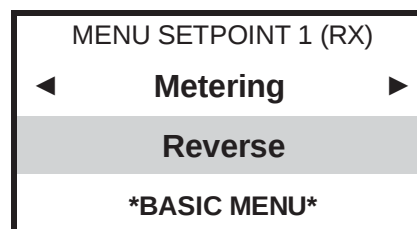
SETPOINT2 RX



The setpoints activate the output relays for the metering pumps or other devices until the setpoint is reached.



Setpoint 2 is set for operations in **ALKALINE** mode: the output is active when the measured value is higher than the selected setpoint, the connected pump meters out an alkaline product.



Setpoint 1 is set for operations in **REVERSE** mode: if the measured value is higher than the selected setpoint, the connected pump meters out a reducing agent.

MENU SETPOINT 2 (pH)	
◀	Metering ▶
Acid	
BASIC MENU	

MENU SETPOINT 2 (RX)	
◀	Metering ▶
Direct	
BASIC MENU	

MENU SETPOINT 2 (pH)	
◀	Mode ▶
ON/OFF	
BASIC MENU	

MENU SETPOINT 2 (RX)	
◀	Mode ▶
ON/OFF	
BASIC MENU	

The unit has an **ON-OFF** mode which switches on or off (if the reverse mode is ON) the output relays of Constant / ON-OFF metering pumps or other ON-OFF equipment.



SELECTING 'ON-OFF' THE NEXT STEP WILL BE: "MIN ALARM" (SET POINT1 ONLY)

MENU SETPOINT 2 (pH)	
◀	Mode ▶
Proportional	
BASIC MENU	

MENU SETPOINT 2 (RX)	
◀	Mode ▶
Proportional	
BASIC MENU	

Default activation point 1.50 pH

Default activation point 150 mV

*Modular pulses, also known as PWM "pulse width modulation", support a proportional mode on each setpoint, activating the corresponding pulses on the relays based on the measured value.

MENU SETPOINT 1 (pH)	
◀	MAX Alarm ▶
14.00 pH	
BASIC MENU	

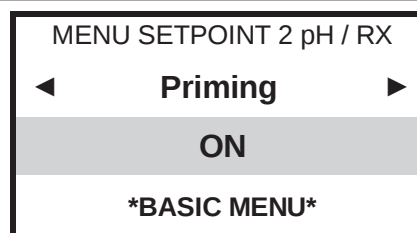
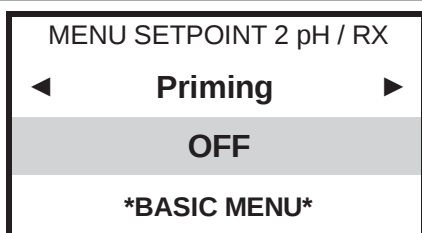
MENU SETPOINT 1 (RX)	
◀	MAX Alarm ▶
1500 mV	
BASIC MENU	

The **MAX Alarm** function selects a **MAXIMUM** alarm level, after which the alarm relay is triggered.

For more accurate settings of the "Modular pulses" PWM, select the "Expert" menu in the initial settings.



* GOING BACK TO THE SETPOINT PROGRAMMING STEPS FROM "ON-OFF" MODE OR FROM "PROPORTIONAL" MODE



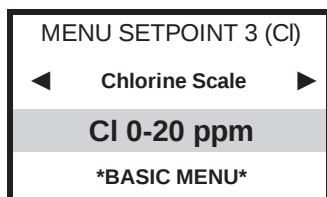
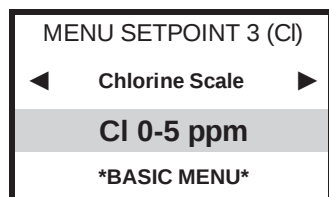
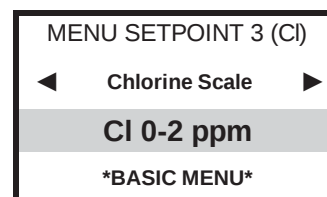
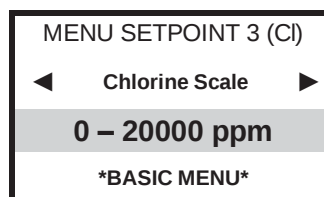
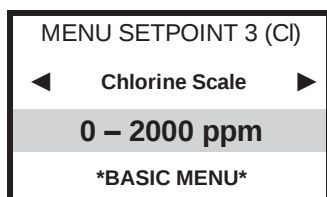
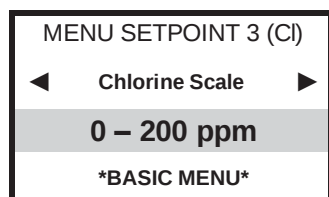
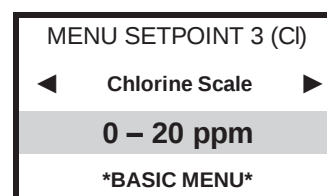
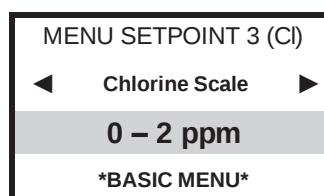
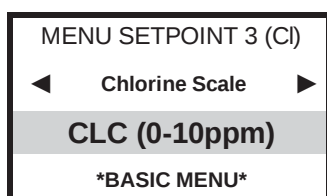
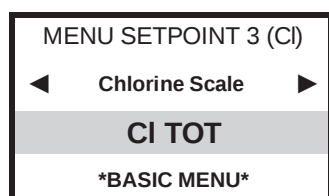
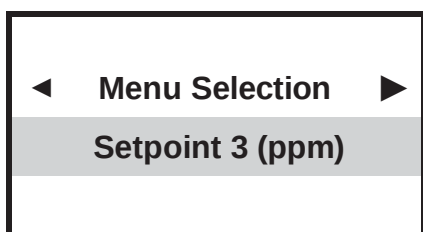
The priming function blocks the setpoint value to allow the metering pump to remain primed.

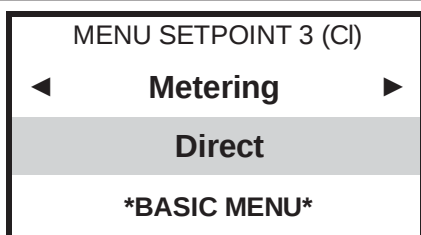
- Press **ESC** to go back to **MENU SELECTION** or press **ESC ESC** to go back to **MEASUREMENT DISPLAY**.

5.14.4 SETPOINT 3 CL CHLORINE > BASIC MENU

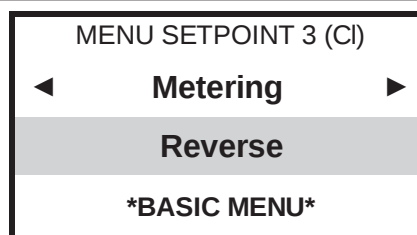
The instrument is preset by default for a 0-2 ppm range. By selecting the required chlorine range, the values displayed change accordingly. The setpoints will activate the output relays for the metering pumps or other devices once the setpoint level is selected.

The display shows the values according to the selected Chlorine Scale.

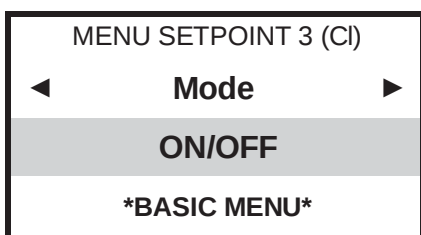




Direct mode: the output is active when the measured value is lower than the one selected in the setpoint, the metering pump injects Chlorine.



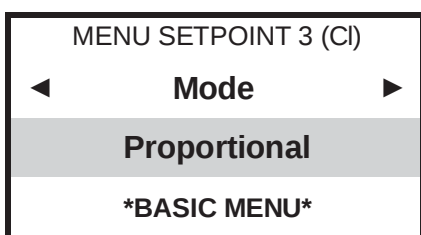
Reverse mode: the output is active also the measured value is higher than the one selected in the setpoint, the metering pump injects a Chlorine reducing agent.



The unit has an **ON-OFF** mode which switches on or off (if the reverse mode is ON) the output relays of Constant / ON-OFF metering pumps or other ON-OFF equipment.



SELECTING 'ON-OFF' THE NEXT STEP WILL BE: "MIN ALARM" (SET POINT1 ONLY)



Modular pulses, also known as PWM "pulse width modulation", support a proportional mode on each ON-OFF setpoint, activating the corresponding pulses on the output relays based on the measured value and always relating to the previous selected settings.

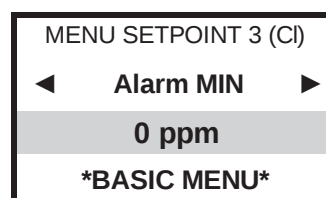
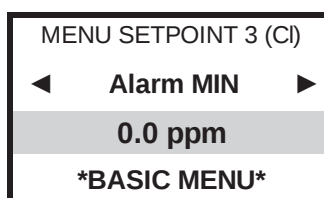
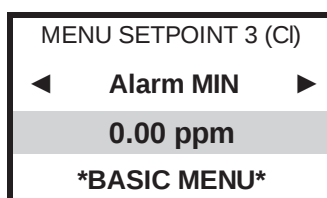
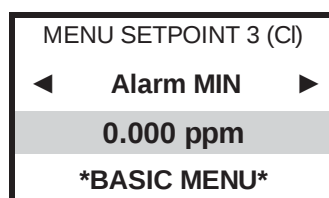
The default activation point is 0.050 ppm (2 Cl ppm); 0.50 ppm (range 20 Cl ppm, 20 Cl ppm (Total), 0-10ppm CLC Cell).

For more accurate settings of the "Modular pulses" PWM, select the "Expert" menu in the initial settings.



* GOING BACK TO THE SETPOINT PROGRAMMING STEPS FROM "ON-OFF" MODE OR FROM "PROPORTIONAL" MODE

The MIN and MAX Alarm function selects the alarm levels beyond which the alarm relay is triggered on.



MENU SETPOINT 3 (CI) ◀ Alarm MIN ▶ 0 ppm *BASIC MENU*	MENU SETPOINT 3 (CI) ◀ Alarm MIN ▶ 0.000 CI-ppm *BASIC MENU*	MENU SETPOINT 3 (CI) ◀ Alarm MIN ▶ 0.00 CI-ppm *BASIC MENU*	MENU SETPOINT 3 (CI) ◀ Alarm MIN ▶ 0.00 CI-ppm *BASIC MENU*
MENU SETPOINT 3 (CI) ◀ Alarm MIN ▶ 0.00 CI-ppm *BASIC MENU*	MENU SETPOINT 3 (CI) ◀ Alarm MIN ▶ 0.00 CI-ppm *BASIC MENU*		
MENU SETPOINT 3 (CI) ◀ Alarm MAX ▶ 2 ppm *BASIC MENU*	MENU SETPOINT 3 (CI) ◀ Alarm MAX ▶ 20 ppm *BASIC MENU*	MENU SETPOINT 3 (CI) ◀ Alarm MAX ▶ 200 ppm *BASIC MENU*	MENU SETPOINT 3 (CI) ◀ Alarm MAX ▶ 2000 ppm *BASIC MENU*
MENU SETPOINT 3 (CI) ◀ Alarm MAX ▶ 20000 ppm *BASIC MENU*	MENU SETPOINT 3 (CI) ◀ Alarm MAX ▶ 2.0 CI-ppm *BASIC MENU*	MENU SETPOINT 3 (CI) ◀ Alarm MAX ▶ 5.00 CI-ppm *BASIC MENU*	MENU SETPOINT 3 (CI) ◀ Alarm MAX ▶ 20.00 CI-ppm *BASIC MENU*
MENU SETPOINT 3 (CI) ◀ Alarm MAX ▶ 20.00 CI-ppm *BASIC MENU*	MENU SETPOINT 3 (CI) ◀ Alarm MAX ▶ 10.00 CI-ppm *BASIC MENU*		

ONLY WHEN USING METERING PUMPS

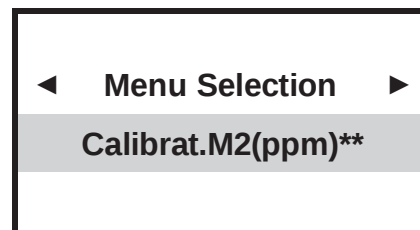
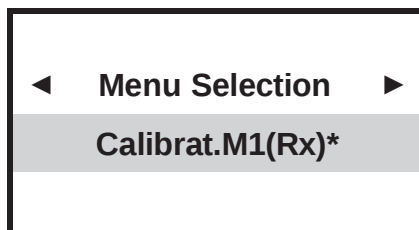
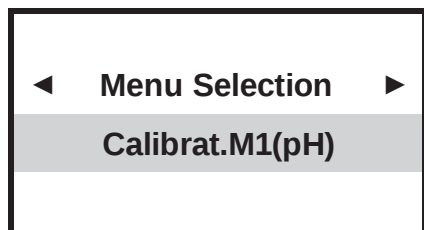
MENU SETPOINT 3 (CI) ◀ Priming ▶ OFF *BASIC MENU*
--

MENU SETPOINT 3 (CI) ◀ Priming ▶ ON *BASIC MENU*

The priming function blocks the setpoint value to allow the metering pump to remain primed.

- Press **ESC** to go back to **MENU SELECTION** or press **ESC ESC** to go back to **MEASUREMENT DISPLAY**.

5.14.5 Sensor calibration



- Press **OK/MENU** to confirm the selection and go to the next sub-menu.

5.14.5.1 PH electrode calibration > BASIC MENU

Please refer to par. 5.8.5.1 on page 5-35.

5.14.5.2 RX (REDOX) electrode calibration > BASIC MENU

Please refer to par. 5.8.5.2 on page 5-36.

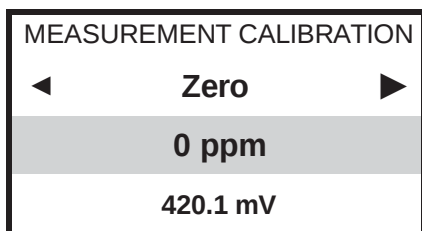
5.14.5.3 CHLORINE SENSOR CALIBRATION

The chlorine parameter has 3 ranges suitable for ion-selective membrane sensors (one of which for the Total chlorine) and 1 range for open type amperometric cells.

During calibration, the - (minus) sign might be displayed, which disappears or is removed by correct settings! The mV value in the lower part of the display shows the sensor signal in mV thus indicating the sensor's efficiency. It is recommended to perform constant checks and recalibration of the sensor via DPD1 and DPD3 or, when using Open chlorine cells, to clean the cell's electrodes.



- **FOR OPEN CELLS:** add a flow of system water without Chlorine into the Cell, about 40-50 l/h.
- **FOR ION-SELECTIVE MEMBRANE SENSORS:** place the sensor in a container with system water with no chlorine readings and gently stir the sensor (preventing the tip from touching any surface and without any air bubbles) and wait for the measurement to stabilise.



- Wait 5/10 minutes, press ◀▶ until **0.00** is displayed, press **OK/MENU**.

If the chemical ZERO (chlorine-free water) cannot be carried out, the ZERO calibration must not be changed, DO NOT SHORTEN the measurement.

The operator must STRICTLY be an expert:

NOTE: this method assures calibration of the instrument's **electronic ZERO**, this might not be equivalent to the real value of the water without chlorine, i.e. the chemical physical Zero of chlorine-free water.

For this operation **DISCONNECT THE SENSOR !!!!**

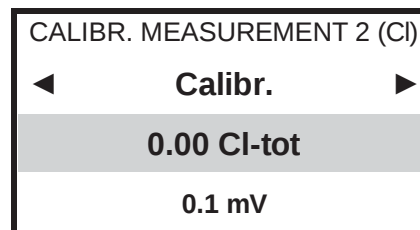
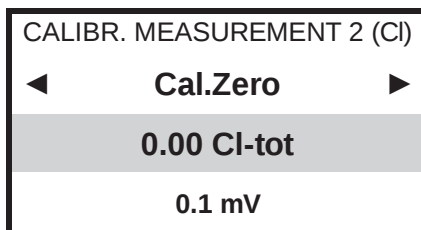
- Press and hold ▲▼ until 0.00 is displayed then confirm ► **OK/MENU**

Another way to calibrate Zero, in the case of Open cells, is to use activated carbon filters.

- Install a by-pass system in front of the sensor holder and pass water at a constant flow rate of 40/50 l/h through an activated carbon cartridge.
- Press ▲▼ until **0.00** is shown, then confirm ► **OK / MENU**.

NOTE: Activated Carbon tends to reduce the pH reading thus making calibration redundant, it may only be used for one operation and does not guarantee the actual Zero. This is the least recommended method due to its complexity.

GO TO THE SECOND CALIBRATION POINT



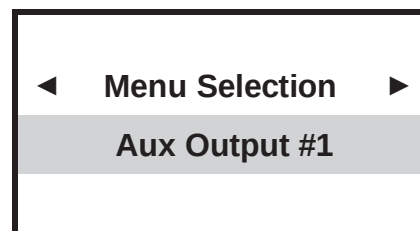
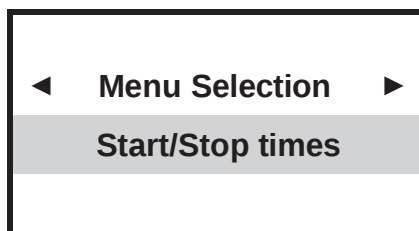
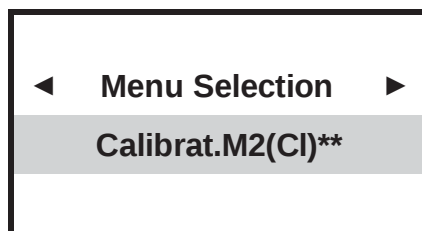
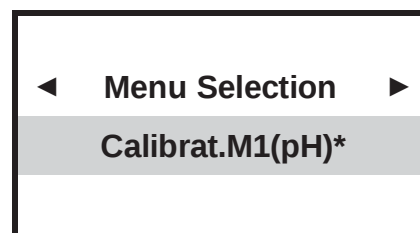
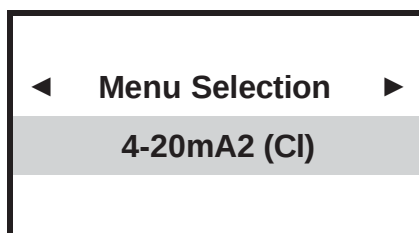
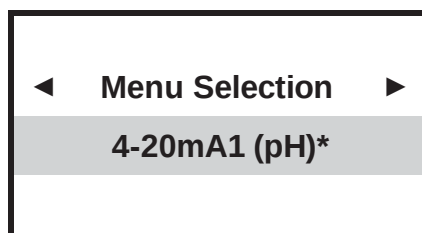
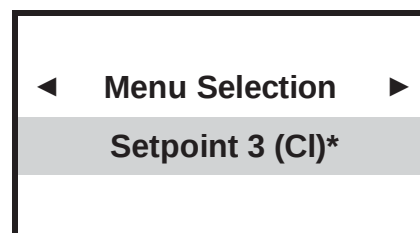
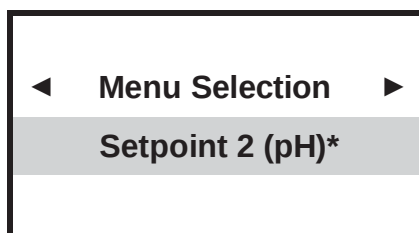
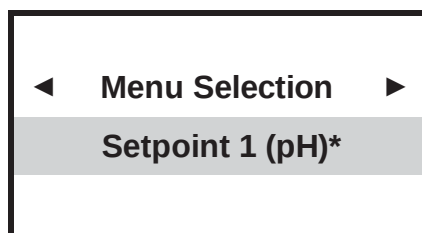
- Press **OK/MENU** to confirm the selection.
- Press **ESC** to go back to the **MENU SELECTION**
- Press **ESC ESC** to go back to the **MEASUREMENT DISPLAY**.

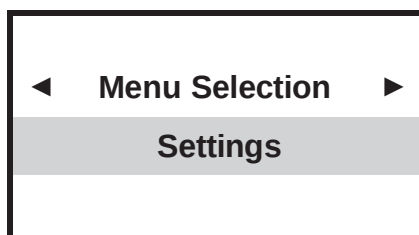
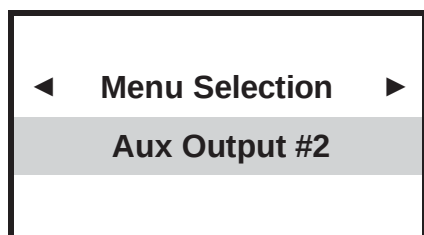


For CALIBRATION and MAINTENANCE, ALWAYS refer to the manual of the relevant probe

5.14.6 MAIN MENU > EXPERT PROGRAMMING MENU

These are all the steps included in the Main menu configuration with the EXPERT programming menu:





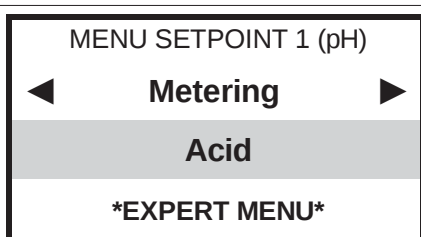
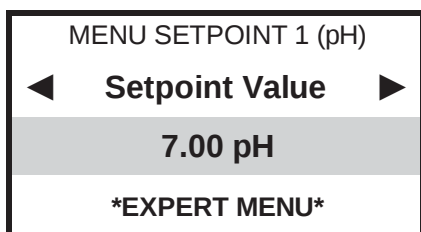
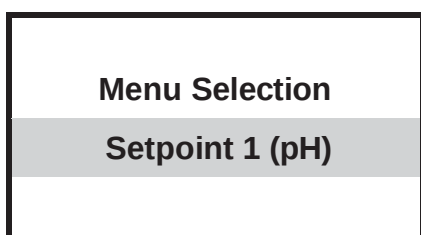
- Press **OK/MENU** to confirm the selection and to go on to the next sub-menu.
- Press **ESC** to go back to the **MEASUREMENT DISPLAY**.

5.14.6.1 SETPOINT 1 PH AND SETPOINT 1 RX > EXPERT MENU



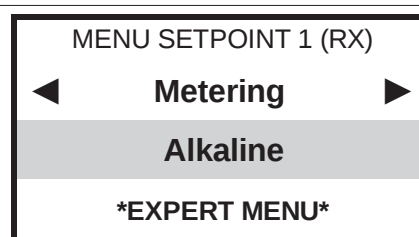
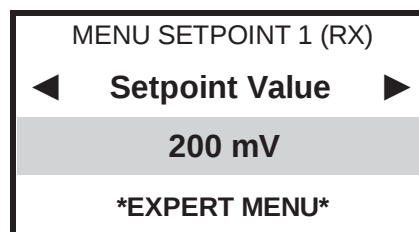
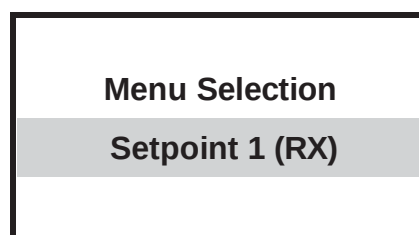
The setpoint activates the output relays for the metering pumps or other devices until the setpoint value is reached.

SETPOINT1 PH

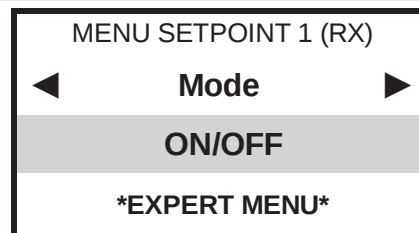
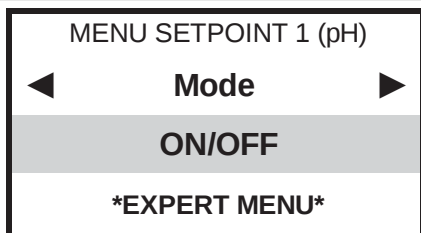
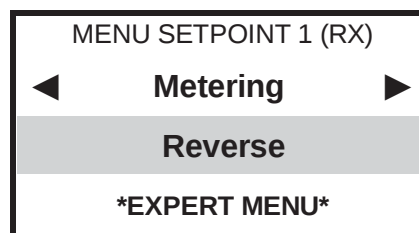
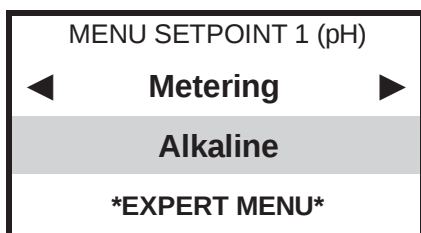


Setpoint 1 is set for operations in ACID mode, the output is active when the measured value is higher than the selected setpoint, the connected pump meters out an acid product.

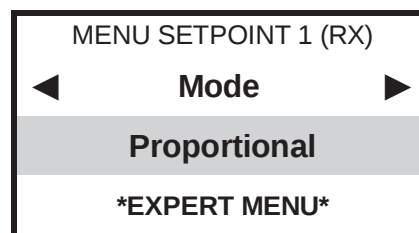
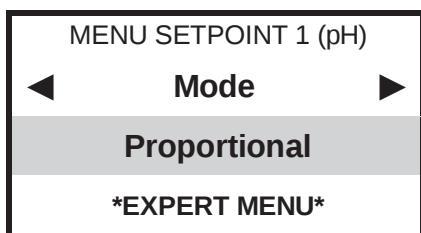
SETPOINT1 (RX)



Setpoint 1 is set for operations in DIRECT mode: the output is active when the measured value is lower than the selected setpoint, the connected pump meters out an oxidising product.



The unit has an **ON-OFF** mode which switches on or off (if the reverse mode is ON) the output relays of Constant / ON-OFF metering pumps or other ON-OFF equipment.



Modular pulses, also known as PWM “pulse width modulation”, support a proportional mode on each ON-OFF setpoint, activating the corresponding pulses on the output relays based on the measured value. When the Expert Menu is used, other parameters need to be programmed.

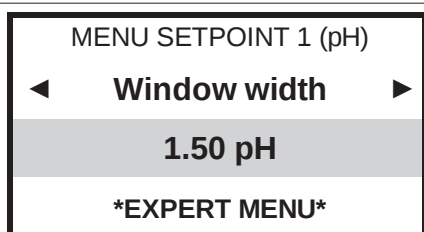


SELECTING '**ON-OFF**' THE NEXT PROGRAMMING STEP: '**HYSTERESIS**'.



SELECTING "**PROPORTIONAL**" REQUIRES PROGRAMMING THE NEXT STEPS

PWM PROPORTIONALMODE FOR PH WITH TIMED PULSES



Window width: pulses are timed ON and OFF based on the distance from the selected setpoint, programmable, example: if the selected setpoint is 7.00 pH and the measured value is 9.00 pH, the **PWM** mode starts after reaching 8.50 pH with Time/Pause pulses and decreasing the active time while reaching the setpoint.

MENU SETPOINT 1 (pH) ◀ Cycle Duration ▶ 60 sec *EXPERT MENU*	Cycle Duration: the PWM mode has a 60 second cycle (programmable), example: setpoint is 700 mV, measured value 850 pH = active time 60 sec - pause time = 0 sec; at 7.75 pH active time = 30 sec - pause time = 30 sec... as a consequence the active time decreases while reaching the setpoint. The cycle time depends on many variables, such as: distance from the injection point of the system to be treated, how fast or slowly the setpoint must react, chemical concentration, etc.
MENU SETPOINT 1 (pH) ◀ Min.Active Time ▶ *EXPERT MENU*	MIN Active Time: programmable. Defines the minimum time for which PWM is active; prevails over the selected settings. The pulse modulation function is adjusted with 3 functions according to the following formula: Active Time in accordance with the selected formula = (measured value - setpoint) / (period width * cycle time). If the result of the formula is < of that selected with MIN Active Time, the latter prevails on the former.

PWM PROPORTIONAL MODE FOR RX WITH TIMED PULSES

MENU SETPOINT 1 (pH) ◀ Window width ▶ 1.50 pH *EXPERT MENU*	Window width: pulses are timed ON and OFF based on the distance from the selected setpoint (programmable). Example: if the selected setpoint is 750 mV and the measured value is 500 mV, the PWM mode starts after reaching 550 mV with Time/Pause pulses and decreasing the active time while reaching the setpoint.
MENU SETPOINT 1 (pH) ◀ Cycle Duration ▶ *EXPERT MENU*	Cycle Duration: the PWM mode has a 60 second cycle (programmable), example: setpoint is 700 mV, at measured value 550 mV = active time 60 sec - pause time = 0 sec; at 625 mV active time = 30 sec - pause time = 30 sec... as a consequence the active time decreases while reaching the setpoint. The cycle time depends on many variables, such as: distance from the injection point of the system to be treated, how fast or slowly the setpoint must react, chemical concentration, etc.
MENU SETPOINT 1 (pH) ◀ Min.Active Time ▶ *EXPERT MENU*	MIN Active Time: programmable. Defines the minimum time for which PWM is active; prevails over the selected settings. The pulse modulation function is adjusted with 3 functions according to the following formula: Active Time in accordance with the selected formula = (measured value - setpoint) / (period width * cycle time). If the result of the formula is < of that selected with MIN Active Time, the latter prevails on the former.



SELECTING 'ON-OFF' THE NEXT PROGRAMMING STEP: 'HYSTERESIS'.

FUNCTION NOT AVAILABLE WITH PROPORTIONAL MODE

MENU SETPOINT 1 (pH)	
◀	Hysteresis ▶
0.05 pH	
EXPERT MENU	

MENU SETPOINT 1 (RX)	
◀	Hysteresis ▶
0.05 pH	
EXPERT MENU	

Hysteresis is useful during operations to adjust the setpoints in ON-OFF mode and is used to enable and disable the output relay when the selected hysteresis has been achieved.

Hysteresis is useful when there are too many quick swings around the setpoint, that might damage the connected device.

FUNCTION NOT AVAILABLE WITH PROPORTIONAL MODE

MENU SETPOINT 1 pH / RX	
◀	Set point del. ▶
5 sec	
EXPERT MENU	

The Delay time blocks the output relays (max 999 sec. programmable) to ensure the outputs are active only when the measurements are stable, thus assuring the best results in terms of chemical balance.



* GOING BACK TO THE SETPOINT PROGRAMMING STEPS FROM THE “ON-OFF” MODE OR “PROPORTIONAL” MODE.

MENU SETPOINT 1 (pH)	
◀	Measurement Type ▶
pH	
EXPERT MENU	

MENU SETPOINT 1 (RX)	
◀	Measurement Type ▶
Rx	
EXPERT MENU	

The PH measurement parameter can be changed into RX by simple programming and by using the RX electrode.

MENU SETPOINT 1 (pH)	
◀	MIN Alarm ▶
0.00 pH	
EXPERT MENU	

MENU SETPOINT 1 (RX)	
◀	MIN Alarm ▶
– 1500 mV	
EXPERT MENU	

The MIN Alarm function selects a **MINIMUM** alarm level after which the alarm relay is triggered.

MENU SETPOINT 1 (pH)	
◀	MAX Alarm ▶
14.00 pH	
EXPERT MENU	

MENU SETPOINT 1 (RX)	
◀	MAX Alarm ▶
1500 mV	
EXPERT MENU	

The MAX Alarm function selects a **MAXIMUM** alarm level after which the alarm relay is triggered.

MENU SETPOINT 1 (pH)	
◀	Overdose ▶
00.00 h:m	
EXPERT MENU	

With the **overdose time alarm** one can select a period during which the setpoint must be reached. If the setpoint is not reached during this period of time, the instrument blocks output operations, including those in mA (metering pumps), the alarm is displayed as ON and triggers a signalling instrument if it is connected to the alarm relay.

MENU SETPOINT 1 pH / RX	
◀	Max. Dosing ▶
000 (unlimited)	
EXPERT MENU	

MENU SETPOINT 1 pH / RX	
◀	Max. Dosing ▶
000 m / 00 h	
EXPERT MENU	

Maximum Dosing is an extra safety function that ensures metering is completed in the selected time.

This function makes it possible to eliminate time limits (continuous metering according to the selected setpoints) or to select the minutes (up to 999) and the hours, for instance metering for 999 minutes in 24 hours.

MENU SETPOINT 1 pH / RX	
◀	Start-up Delay ▶
00.00 h:m	
EXPERT MENU	

The **start-up delay** stops the output relays when the unit is switched on, thus allowing the sensor to polarise assuring reliable measurements (programmable).

MENU SETPOINT 1 pH / RX	
◀	No Flux Delay ▶
00.00 h:m	
EXPERT MENU	

It is possible to set a **no flux delay time**; if the lack of flow is longer than the set time, the controller waits for the time set in the 'Start Delay' parameter, before eventually enabling the various outputs to control the pumps.

MENU SETPOINT 1 pH	
◀	Level Delay ▶
00.00 h:m	
EXPERT MENU	

It is possible to set a **delay time on the level alarm**, the controller goes into alarm as soon as it receives contact from the relevant level probe, but only switches off the pumps connected to it after the previously set time.

ONLY WHEN USING METERING PUMPS

MENU SETPOINT 1 pH / RX	
◀	Priming ▶
OFF	
EXPERT MENU	

MENU SETPOINT 1 pH / RX	
◀	Priming ▶
ON	
EXPERT MENU	

The priming function blocks the setpoint value to allow the metering pump to remain primed.

- Press **ESC** to go back to **MENU SELECTION** or press **ESC ESC** to go back to **MEASUREMENT DISPLAY**.

5.14.6.2 SETPOINT 2 PH AND SETPOINT 2 RX > EXPERT MENU

The two programming stages are below: when **Measurement Type** pH is selected, refer to the left column; when selecting RX refer to the right column.



The setpoint activates the output relays for the metering pumps or other devices until the setpoint value is reached.

SETPOINT2 PH

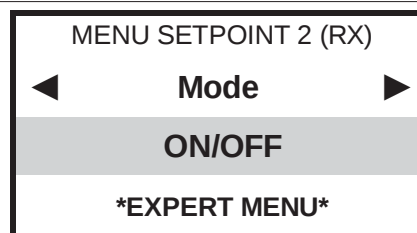
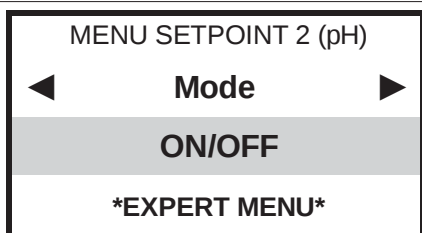
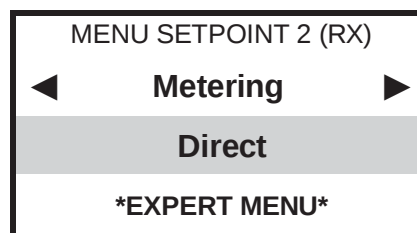
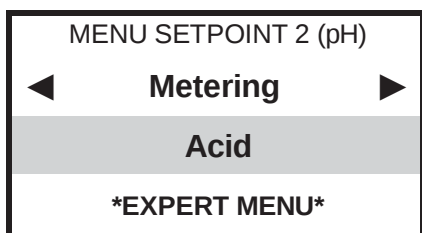
Menu Selection	
Setpoint 2 (pH)	

MENU SETPOINT 2 (pH)	
◀	Setpoint Value ▶
7.00 pH	
EXPERT MENU	

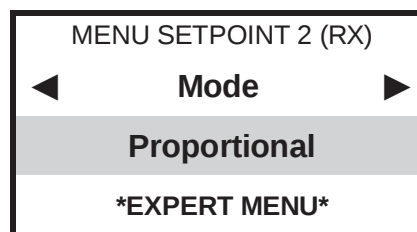
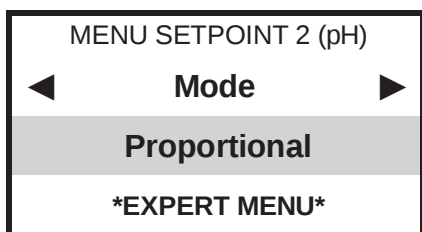
SETPOINT2 RX

Menu Selection	
Setpoint 2 (RX)	

MENU SETPOINT 2 (RX)	
◀	Setpoint Value ▶
200 mV	
EXPERT MENU	



The unit has an **ON-OFF** mode which switches on or off (if the reverse mode is ON) the output relays of Constant / ON-OFF metering pumps or other ON-OFF equipment.



Modular pulses, also known as PWM “pulse width modulation”, support a proportional mode on each ON-OFF setpoint, activating the corresponding pulses on the output relays based on the measured value. When the Expert Menu is used, other parameters need to be programmed.

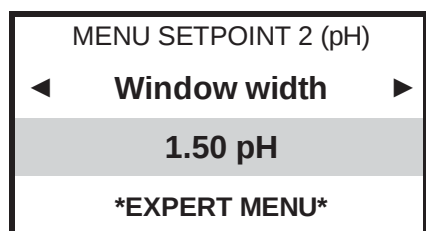


SELECTING '**ON-OFF**' THE NEXT PROGRAMMING STEP: '**HYSTERESIS**'.



SELECTING “**PROPORTIONAL**” REQUIRES PROGRAMMING THE NEXT STEPS

PWM PROPORTIONALMODE FOR PH WITH TIMED PULSES



Window width: pulses are timed ON and OFF based on the distance from the selected setpoint, programmable, example: if the selected setpoint is 7.00 pH and the measured value is 9.00 pH, the **PWM** mode starts after reaching 8.50 pH with Time/Pause pulses and decreasing the active time while reaching the setpoint.

MENU SETPOINT 2 (pH) ◀ Cycle Duration ▶ 60 sec *EXPERT MENU*	Cycle Duration: the PWM mode has a 60 second cycle (programmable), example: setpoint is 700 mV, measured value 850 pH = active time 60 sec - pause time = 0 sec; at 7.75 pH active time = 30 sec - pause time = 30 sec... as a consequence the active time decreases while reaching the setpoint. The cycle time depends on many variables, such as: distance from the injection point of the system to be treated, how fast or slowly the setpoint must react, chemical concentration, etc.
MENU SETPOINT 2 (pH) ◀ Min.Active Time ▶ 5 sec *EXPERT MENU*	MIN Active Time: programmable. Defines the minimum time for which PWM is active; prevails over the selected settings. The pulse modulation function is adjusted with 3 functions according to the following formula: Active Time in accordance with the selected formula = (measured value - setpoint) / (period width * cycle time). If the result of the formula is < of that selected with MIN Active Time, the latter prevails on the former.

PWM PROPORTIONAL MODE FOR RX WITH TIMED PULSES

MENU SETPOINT 2 (RX) ◀ Window width ▶ 150 mV *EXPERT MENU*	Window width: pulses are timed ON and OFF based on the distance from the selected setpoint (programmable). Example: if the selected setpoint is 750 mV and the measured value is 500 mV, the PWM mode starts after reaching 550 mV with Time/Pause pulses and decreasing the active time while reaching the setpoint.
MENU SETPOINT 2 (RX) ◀ Cycle Duration ▶ 60 sec *EXPERT MENU*	Cycle Duration: the PWM mode has a 60 second cycle (programmable), example: setpoint is 700 mV, the measured value is 550 mV = active time 60 sec - pause time = 0 sec; at 625 mV active time = 30 sec - pause time = 30 sec... as a consequence the active time decreases while reaching the setpoint. The cycle time depends on many variables, such as: distance from the injection point of the system to be treated, how fast or slowly the setpoint needs to react, chemical concentration, etc.
MENU SETPOINT 2 (RX) ◀ Min.Active Time ▶ 5 sec *EXPERT MENU*	MIN Active Time: programmable. Defines the minimum time for which PWM is active; prevails over the selected settings. The pulse modulation function is adjusted with 3 functions according to the following formula: Active Time in accordance with the selected formula = (measured value - setpoint) / (period width * cycle time). If the result of the formula is < of that selected with MIN Active Time, the latter prevails on the former.



SELECTING 'ON-OFF' THE NEXT PROGRAMMING STEP: 'HYSTERESIS'.

FUNCTION NOT AVAILABLE WITH PROPORTIONAL MODE

MENU SETPOINT 2 (pH)		
◀	Hysteresis	▶
0.05 pH		
EXPERT MENU		

MENU SETPOINT 2 (RX)		
◀	Hysteresis	▶
10 mV		
EXPERT MENU		

Hysteresis is useful during operations to adjust the setpoints in ON-OFF mode and is used to enable and disable the output relay when the selected hysteresis has been achieved.

Hysteresis is useful when there are too many quick swings around the setpoint, that might damage the connected device.

FUNCTION NOT AVAILABLE WITH PROPORTIONAL MODE

MENU SETPOINT 2 pH / RX		
◀	Set point del.	▶
5 sec		
EXPERT MENU		

The Delay time blocks the output relays (max 999 sec. programmable) to ensure the outputs are active only when the measurements are stable, thus assuring the best results in terms of chemical balance.



* GOING BACK TO THE SETPOINT PROGRAMMING STEPS FROM THE “ON-OFF” MODE OR “PROPORTIONAL” MODE.

MENU SETPOINT 2 pH / RX		
◀	Overdose	▶
00.00 h:m		
EXPERT MENU		

With the overdose time alarm one can select a period during which the setpoint must be reached. If the setpoint is not reached during this period of time, the instrument blocks output operations, including those in mA (metering pumps), the alarm is displayed as ON and triggers a signalling instrument if it is connected to the alarm relay.

MENU SETPOINT 2 pH / RX		
◀	Max. Dosing	▶
000 (no limit)		
EXPERT MENU		

MENU SETPOINT 2 pH / RX		
◀	Max. Dosing	▶
000 m / 00 h		
EXPERT MENU		

Maximum Dosing is an extra safety function that ensures metering is completed in the selected time.

This function makes it possible to eliminate time limits (continuous metering according to the selected setpoints) or to select the minutes (up to 999) and the hours, for instance metering for 999 minutes in 24 hours.

MENU SETPOINT 1 pH	
◀	No Flux Delay ▶
00.00 h:m	
EXPERT MENU	

It is possible to set a **no flux delay time**; if the lack of flow is longer than the set time, the controller waits for the time set in the 'Start Delay' parameter, before eventually enabling the various outputs to control the pumps.

MENU SETPOINT 1 pH	
◀	Level Delay ▶
00.00 h:m	
EXPERT MENU	

It is possible to set a **delay time on the level alarm**, the controller goes into alarm as soon as it receives contact from the relevant level probe, but only switches off the pumps connected to it after the previously set time.

ONLY WHEN USING METERING PUMPS

MENU SETPOINT 2 pH / RX	
◀	Priming ▶
OFF	
EXPERT MENU	

MENU SETPOINT 2 pH / RX	
◀	Priming ▶
ON	
EXPERT MENU	

The priming function blocks the setpoint value to allow the metering pump to remain primed.

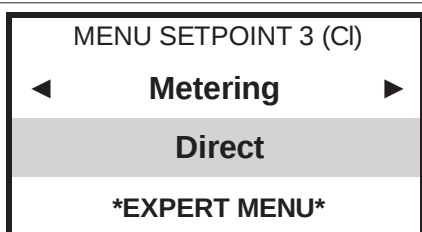
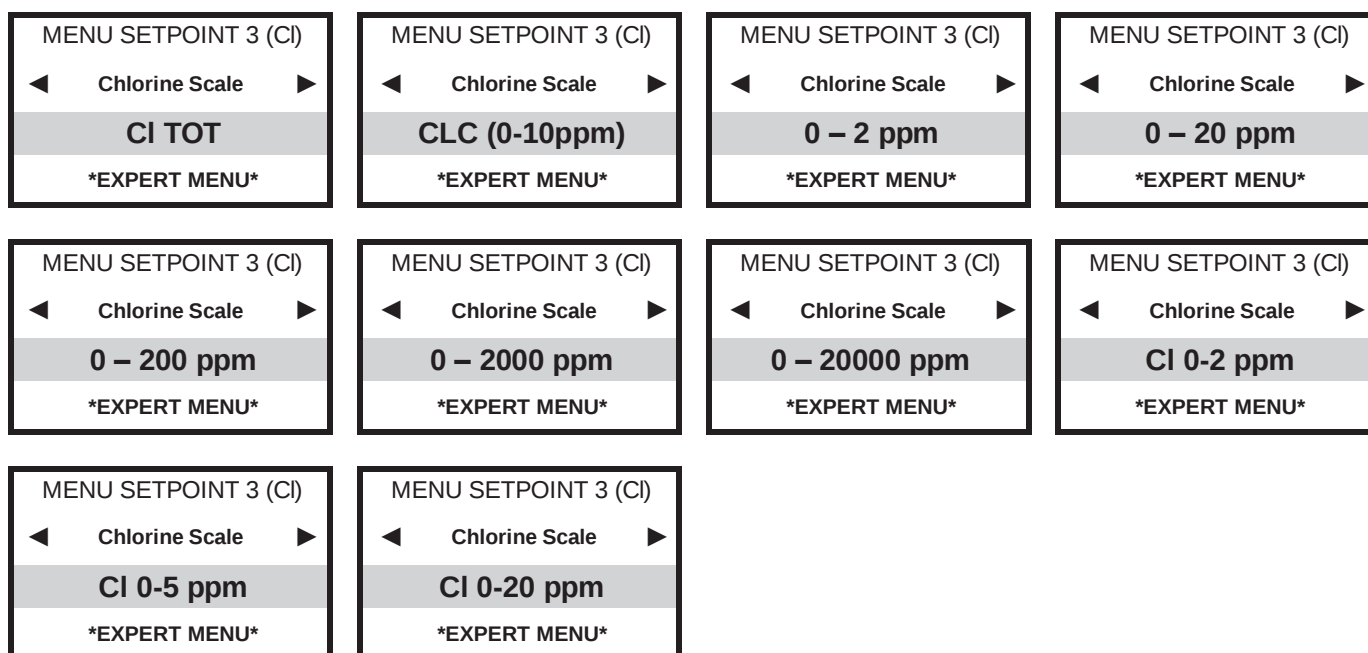
- Press **ESC** to go back to **MENU SELECTION** or press **ESC ESC** to go back to **MEASUREMENT DISPLAY**.

5.14.6.3 SETPOINT 3 CI CHLORINE > EXPERT MENU

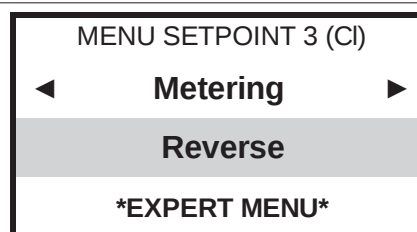
The chlorine instrument is preset by default for a 0-2 ppm range. By selecting the required chlorine range, the values displayed change accordingly. The setpoints will activate the output relays for the metering pumps or other devices once the setpoint level is selected.

The display shows the values according to the selected Chlorine Scale.

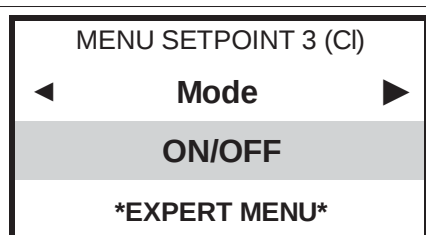
◀	Menu Selection ▶
Setpoint 3 (CI)	



Direct mode: the output is active when the measured value is lower than the one selected in the setpoint.



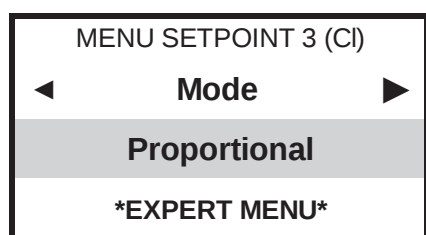
Reverse mode: the output is active even if the measured value is higher than the one selected in the setpoint.



The unit has an **ON-OFF** mode which switches on or off (if the reverse mode is ON) the output relays of Constant / ON-OFF metering pumps or other ON-OFF equipment.



SELECTING 'ON-OFF' THE NEXT STEP WILL BE: "MIN ALARM" (SET POINT1 ONLY)



*Modular pulses, also known as PWM "pulse width modulation", support a proportional mode on each ON-OFF setpoint, activating the corresponding pulses on the output relays based on the measured value and always relating to the previous selected settings. The default activation point is **0.050 ppm** (2 CI ppm); **0.50 ppm** (range 20 CI ppm, **20 CI ppm** (Total), **0-10ppm** CLC Cell).



SELECTING 'ON-OFF' THE NEXT PROGRAMMING STEP: 'HYSTERESIS'.



SELECTING “**PROPORTIONAL**” REQUIRES PROGRAMMING THE NEXT STEPS

PWM PROPORTIONAL MODE FOR PH WITH TIMED PULSES

MENU SETPOINT 3 (Cl) ◀ Window width ▶ 0.050 ppm *EXPERT MENU*	MENU SETPOINT 3 (Cl) ◀ Window width ▶ 0.50 ppm *EXPERT MENU*	MENU SETPOINT 3 (Cl) ◀ Window width ▶ 5 ppm *EXPERT MENU*	MENU SETPOINT 3 (Cl) ◀ Window width ▶ 50 ppm *EXPERT MENU*
MENU SETPOINT 3 (Cl) ◀ Window width ▶ 500 ppm *EXPERT MENU*	MENU SETPOINT 3 (Cl) ◀ Window width ▶ 0.050 CL-ppm *EXPERT MENU*	MENU SETPOINT 3 (Cl) ◀ Window width ▶ 0.50 CL-ppm *EXPERT MENU*	MENU SETPOINT 3 (Cl) ◀ Window width ▶ 0.50 CL-ppm *EXPERT MENU*
MENU SETPOINT 3 (Cl) ◀ Window width ▶ 0.50 CL-TOT *EXPERT MENU*	MENU SETPOINT 3 (Cl) ◀ Window width ▶ 0.50 CL-ppm *EXPERT MENU*		

Pulse width: pulses are timed ON and OFF based on the distance from the selected setpoint, programmable. Example: with a selected chlorine range at 2 Cl ppm, if the selected setpoint is 0.500 Cl ppm and the measured value is 0.400 Cl ppm, the **PWM** mode starts after reaching 0.450 Cl ppm with Time/Pause pulses and decreasing the active time while reaching the setpoint.

MENU SETPOINT 3 (Cl) ◀ Cycle Duration ▶ 60 sec *EXPERT MENU*	Cycle Duration: the PWM mode has a 60 second cycle (programmable), example: setpoint is 0.500 Cl ppm = active time 60 sec - pause time = 0 sec; 0.475 Cl ppm active time = 30 sec - pause time = 30 sec... as a consequence the active time decreases while reaching the setpoint. The cycle time depends on many variables, such as: distance from the injection point of the system to be treated, how fast or slowly the setpoint must react, chemical concentration, etc.
MENU SETPOINT 3 (Cl) ◀ Min.Active Time ▶ Min.Active Time *EXPERT MENU*	MIN Active Time: programmable. Defines the minimum time for which PWM is active; prevails over the selected settings. The pulse modulation function is adjusted with 3 functions according to the following formula: Active Time in accordance with the selected formula = (measured value - setpoint) / (period width * cycle time). If the result of the formula is < of that selected with Active Time



SELECTING ‘**ON-OFF**’ THE NEXT PROGRAMMING STEP: ‘**HYSTERESIS**’.

FUNCTION NOT AVAILABLE WITH PROPORTIONAL MODE

Hysteresis is useful during operations to adjust the setpoints in ON-OFF mode and is used to enable or disable the output relay when the selected hysteresis has been achieved. Hysteresis is useful when there are too many quick swings around the setpoint, that might damage the connected device. By increasing hysteresis it is possible to move away from the setpoint in accordance with the required value.

MENU SETPOINT 3 (CI) ◀ Hysteresis ▶ 0.005 ppm *EXPERT MENU*	MENU SETPOINT 3 (CI) ◀ Hysteresis ▶ 0.05 ppm *EXPERT MENU*	MENU SETPOINT 3 (CI) ◀ Hysteresis ▶ 0.5 ppm *EXPERT MENU*	MENU SETPOINT 3 (CI) ◀ Hysteresis ▶ 5 ppm *EXPERT MENU*
MENU SETPOINT 3 (CI) ◀ Hysteresis ▶ 50 ppm *EXPERT MENU*	MENU SETPOINT 3 (CI) ◀ Hysteresis ▶ 0.005 CI-ppm *EXPERT MENU*	MENU SETPOINT 3 (CI) ◀ Hysteresis ▶ 0.05 CI-ppm *EXPERT MENU*	MENU SETPOINT 3 (CI) ◀ Hysteresis ▶ 0.05 CI-ppm *EXPERT MENU*
MENU SETPOINT 3 (CI) ◀ Hysteresis ▶ 0.05 CI-tot *EXPERT MENU*	MENU SETPOINT 3 (CI) ◀ Hysteresis ▶ 0.05 CI-ppm *EXPERT MENU*		

FUNCTION NOT AVAILABLE WITH PROPORTIONAL MODE

MENU SETPOINT 3 (CI) ◀ Set point del. ▶ 5 sec *EXPERT MENU*
--

The Delay time blocks the output relays (max 999 sec. programmable) to ensure the outputs are active only when the measurements are stable, thus assuring the best results in terms of chemical balance.



* GOING BACK TO THE SETPOINT PROGRAMMING STEPS FROM THE “ON-OFF” MODE OR “PROPORTIONAL” MODE.

FUNCTION ONLY VALID FOR SET POINT1 TO CHANGE THE PREVIOUSLY SELECTED CHLORINE RANGE

- Ion-selective membrane sensor range 0-2 Cl ppm (default); range 0-20 Cl ppm; range 0-20 Cl ppm (Total);
- Open type amperometric cell (CLC model) range 0-10 Cl ppm.

Once the selection is made, the display and measurement resolutions change accordingly.

In the event of changing the range, ensure the appropriate sensor is used!

MENU SETPOINT 3 (Cl) ◀ Chlorine Scale ▶ CI TOT *EXPERT MENU*	MENU SETPOINT 3 (Cl) ◀ Chlorine Scale ▶ CLC (0-10ppm) *EXPERT MENU*	MENU SETPOINT 3 (Cl) ◀ Chlorine Scale ▶ 0 – 2 ppm *EXPERT MENU*	MENU SETPOINT 3 (Cl) ◀ Chlorine Scale ▶ 0 – 20 ppm *EXPERT MENU*
MENU SETPOINT 3 (Cl) ◀ Chlorine Scale ▶ 0 – 200 ppm *EXPERT MENU*	MENU SETPOINT 3 (Cl) ◀ Chlorine Scale ▶ 0 – 2000 ppm *EXPERT MENU*	MENU SETPOINT 3 (Cl) ◀ Chlorine Scale ▶ 0 – 20000 ppm *EXPERT MENU*	MENU SETPOINT 3 (Cl) ◀ Chlorine Scale ▶ Cl 0-2 ppm *EXPERT MENU*
MENU SETPOINT 3 (Cl) ◀ Chlorine Scale ▶ Cl 0-5 ppm *EXPERT MENU*	MENU SETPOINT 3 (Cl) ◀ Chlorine Scale ▶ Cl 0-20 ppm *EXPERT MENU*		

FUNCTION ONLY AVAILABLE WITH SETPOINT 1

The MIN Alarm function selects a **MINIMUM** alarm level, after which the alarm relay is triggered.

MENU SETPOINT 3 (CI) ◀ Alarm MIN ▶ 0.000 ppm *EXPERT MENU*	MENU SETPOINT 3 (CI) ◀ Alarm MIN ▶ 0.00 ppm *EXPERT MENU*	MENU SETPOINT 3 (CI) ◀ Alarm MIN ▶ 0.0 ppm *EXPERT MENU*	MENU SETPOINT 3 (CI) ◀ Alarm MIN ▶ 0 ppm *EXPERT MENU*
MENU SETPOINT 3 (CI) ◀ Alarm MIN ▶ 0 ppm *EXPERT MENU*	MENU SETPOINT 3 (CI) ◀ Alarm MIN ▶ 0.000 Cl-ppm *EXPERT MENU*	MENU SETPOINT 3 (CI) ◀ Alarm MIN ▶ 0.00 Cl-ppm *EXPERT MENU*	MENU SETPOINT 3 (CI) ◀ Alarm MIN ▶ 0.00 Cl-ppm *EXPERT MENU*
MENU SETPOINT 3 (CI) ◀ Alarm MIN ▶ 0.00 Cl-ppm *EXPERT MENU*	MENU SETPOINT 3 (CI) ◀ Alarm MIN ▶ 0.00 Cl-ppm *EXPERT MENU*		

The MAX Alarm function selects a **MAXIMUM** alarm level, after which the alarm relay is triggered.

MENU SETPOINT 3 (CI) ◀ Alarm MAX ▶ 2 ppm *EXPERT MENU*	MENU SETPOINT 3 (CI) ◀ Alarm MAX ▶ 20 ppm *EXPERT MENU*	MENU SETPOINT 3 (CI) ◀ Alarm MAX ▶ 200 ppm *EXPERT MENU*	MENU SETPOINT 3 (CI) ◀ Alarm MAX ▶ 2000 ppm *EXPERT MENU*
MENU SETPOINT 3 (CI) ◀ Alarm MAX ▶ 20000 ppm *EXPERT MENU*	MENU SETPOINT 3 (CI) ◀ Alarm MAX ▶ 2.0 Cl-ppm *EXPERT MENU*	MENU SETPOINT 3 (CI) ◀ Alarm MAX ▶ 5.00 Cl-ppm *EXPERT MENU*	MENU SETPOINT 3 (CI) ◀ Alarm MAX ▶ 20.00 Cl-ppm *EXPERT MENU*
MENU SETPOINT 3 (CI) ◀ Alarm MAX ▶ 20.00 Cl-ppm *EXPERT MENU*	MENU SETPOINT 3 (CI) ◀ Alarm MAX ▶ 10.00 Cl-ppm *EXPERT MENU*		

MENU SETPOINT 3 (CI)

◀ **Overdose** ▶

00.00 h:m

EXPERT MENU

With the **overdose time alarm** one can select a period during which the setpoint must be reached. If the setpoint is not reached during this period of time, the instrument blocks output operations, including those in mA (metering pumps), the alarm is displayed as ON and triggers a signalling instrument if it is connected to the alarm relay.

MENU SETPOINT 3 (CI)

◀ **Max. Dosing** ▶

000 (no limit)

EXPERT MENU

MENU SETPOINT 3 (CI)

◀ **Max. Dosing** ▶

000 m / 00 h

EXPERT MENU

Maximum Dosing is an extra safety function that ensures metering is completed in the selected time.

This function makes it possible to eliminate time limits (continuous metering according to the selected setpoints) or to select the minutes (up to 999) and the hours, for instance metering for 999 minutes in 24 hours.

MENU SETPOINT 3 (CI)

◀ **Start-up Delay** ▶

00.00 h:m

EXPERT MENU

The start-up delay stops the output relays when the unit is switched on, thus allowing the sensor to polarise assuring correct measurements (programmable).

MENU SETPOINT 3 (CI)

◀ **No Flux Delay** ▶

00.00 h:m

EXPERT MENU

It is possible to set a **no flux delay time**; if the lack of flow is longer than the set time, the controller waits for the time set in the 'Start Delay' parameter, before eventually enabling the various outputs to control the pumps.

MENU SETPOINT 3 (CI)

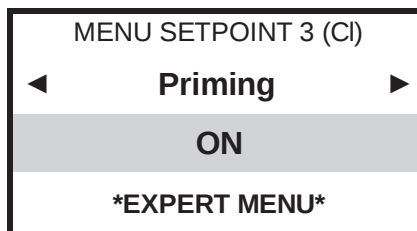
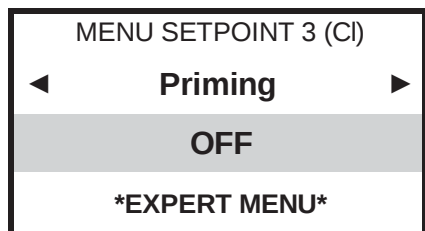
◀ **Level Delay** ▶

00.00 h:m

EXPERT MENU

It is possible to set a **delay time on the level alarm**, the controller goes into alarm as soon as it receives contact from the relevant level probe, but only switches off the pumps connected to it after the previously set time.

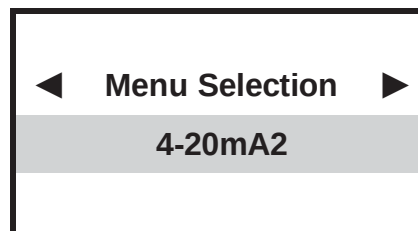
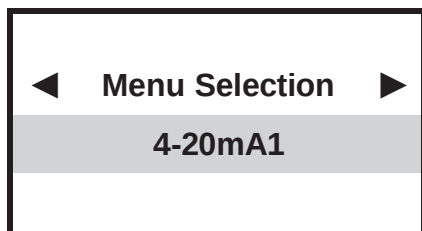
ONLY WHEN USING METERING PUMPS



The priming function blocks the setpoint value to allow the metering pump to remain primed.

- Press **ESC** to go back to **MENU SELECTION** or press **ESC ESC** to go back to **MEASUREMENT DISPLAY**.

5.14.6.4 ANALOGUE 4-20MA OUTPUTS FUNCTION SELECTION > EXPERT MENU



- Press **OK/MENU** to go into mA mode. In mA mode the instrument lets you choose two operative functions:
- mA DEVICE:** external devices suited to operating with mA signal such as data loggers or data recorders or other mA equipment.
- DOSING SETPOINT:** through the control of metering pumps suited to controlling an mA external digital signal.

5.14.6.5 4-20mA1 OUTPUT PH OR RX > Remote Devices Function

Please refer to par. 5.13.10.1 on page 5-157.

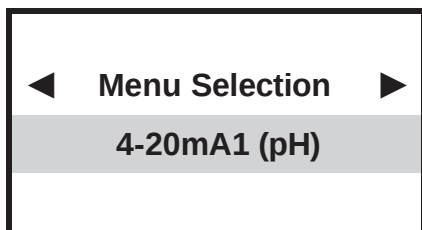
5.14.6.6 4-20mA1 OUTPUT PH OR RX > DOSING FUNCTION ON SETPOINT

The 4-20mA1 analogue output of the instrument follows the options previously selected in **Measurement Type** i.e. **pH** or **RX**.

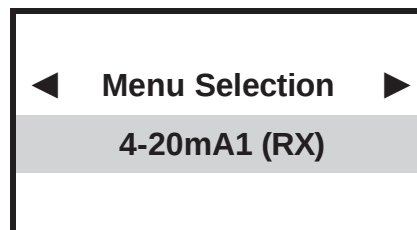


Please note that the value displayed is automatically adjusted according to the **Measurement Type** selected.

mA1 pH



mA1 RX



mA1 pH

SETTING 4-20mA1 (pH)	
◀	mA output mode ▶
Setpoint	
EXPERT MENU	

mA1 RX

SETTING 4-20mA1 (RX)	
◀	mA output mode ▶
Setpoint	
EXPERT MENU	

SETTING 4-20mA1 (pH)	
◀	Setpoint Value ▶
7.00 pH	
EXPERT MENU	

SETTING 4-20mA1 (RX)	
◀	Setpoint Value ▶
200 mV	
EXPERT MENU	

Select the Set point value to control the metering pump or other equipment suited to processing the mA signal.

SETTING 4-20mA (pH)	
◀	Metering ▶
Acid	
EXPERT MENU	

Setpoint mA is set for operations in **ACID** mode, the output is active when the measured value is higher than the selected setpoint, the connected pump meters out an acid product.

SETTING 4-20mA (RX)	
◀	Metering ▶
Direct	
EXPERT MENU	

Setpoint mA is set for operations in **DIRECT** mode: if the measured value is lower than the selected setpoint, the connected pump meters out an oxidising product.

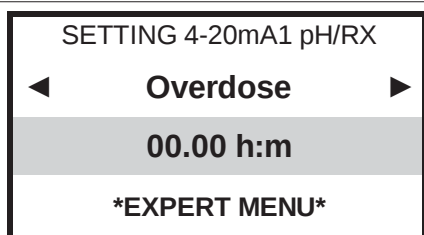
SETTING 4-20mA1 (pH)	
◀	Metering ▶
Alkaline	
EXPERT MENU	

SETTING 4-20mA1 (RX)	
◀	Metering ▶
Reverse	
EXPERT MENU	

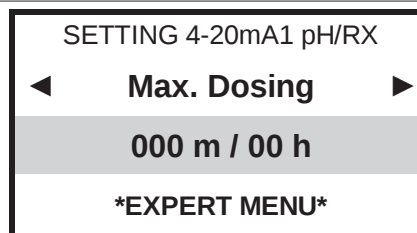
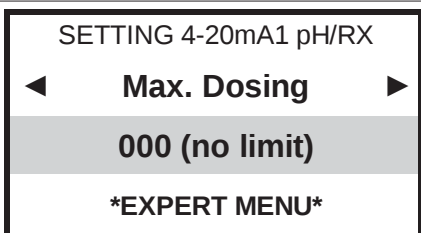
SETTING 4-20mA1 (pH)	
◀	Window width ▶
1.50 pH	
EXPERT MENU	

SETTING 4-20mA1 (RX)	
◀	Window width ▶
150 mV	
EXPERT MENU	

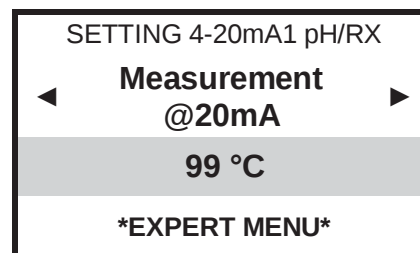
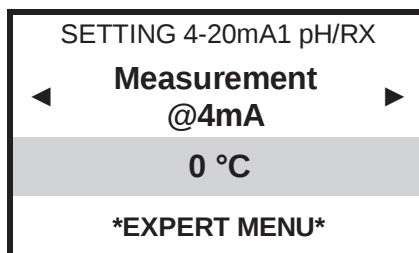
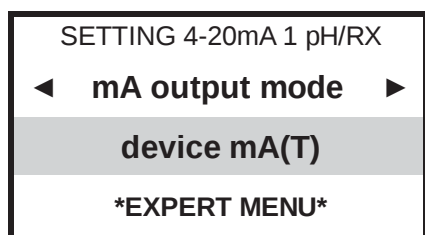
The window width sets the distance from the setting point where the 4-20mA mode starts: 4mA = 0 metering pump pulse, 20mA = max impulsive frequency of the metering pump. The window width depends on many variables: distance injection point, reaction time, chemical solution, etc.



With the **overdose time** alarm one can select a period during which the setpoint must be reached. If the setpoint is not reached during this period of time, the instrument blocks output operations, including those in mA (metering pumps), the alarm is displayed as ON and triggers a signalling instrument connected to the alarm relay.



Maximum Dosing is a safety function that ensures metering is completed in the selected time. The relays of the metering pumps open accordingly. This function makes it possible to eliminate time limits (continuous metering according to the selected setpoints) or to select the minutes (up to 999) and the hours, for instance metering for 999 minutes in 24 hours.



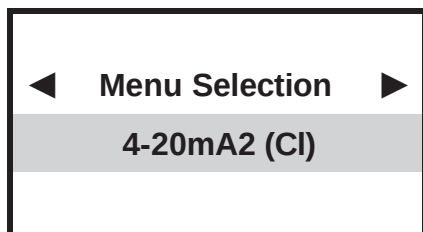
- Press **ESC** to go back to **MENU SELECTION** or press **ESC ESC** to go back to **CONTINUOUS MEASUREMENT**.

5.14.6.7 4-20mA3 CHLORINE Output > REMOTE DEVICES Function

The analogue 4-20mA2 output of the instrument follows the setting selected in **CHLORINE SCALE**.



Please note that the displayed value is automatically adjusted according to the **Chlorine Scale** range previously entered.



Depending on what you choose in the chlorine scale of setpoint 3, if you choose a unit of measurement with *ppm* then 'ppm' will be displayed, if you choose a unit of measurement with *Cl*, 'Cl' will be displayed.

SETTING 4-20mA2 (CI)

◀ **mA output mode** ▶

mA Device

EXPERT MENU

The 4-20mA proportional analogue outputs are according to the measurements in real time in order to drive remote equipment such as data loggers, PLCs or graphic recorders or other equipment suited to processing a remote mA signal

Select the value corresponding to 4 and 20 mA based on Setpoint 3.

SETTING 4-20mA2 (CI) ◀ Measurement @4mA ▶ 0.000 ppm *EXPERT MENU*	SETTING 4-20mA2 (CI) ◀ Measurement @4mA ▶ 0.00 ppm *EXPERT MENU*	SETTING 4-20mA2 (CI) ◀ Measurement @4mA ▶ 0.0 ppm *EXPERT MENU*	SETTING 4-20mA2 (CI) ◀ Measurement @4mA ▶ 0 ppm *EXPERT MENU*
SETTING 4-20mA2 (CI) ◀ Measurement @4mA ▶ 0 ppm *EXPERT MENU*	SETTING 4-20mA2 (CI) ◀ Measurement @4mA ▶ 0.000 CI-ppm *EXPERT MENU*	SETTING 4-20mA2 (CI) ◀ Measurement @4mA ▶ 0.00 CI-ppm *EXPERT MENU*	SETTING 4-20mA2 (CI) ◀ Measurement @4mA ▶ 0.00 CI-ppm *EXPERT MENU*
SETTING 4-20mA2 (CI) ◀ Measurement @4mA ▶ 0.00 CI-tot *EXPERT MENU*	SETTING 4-20mA2 (CI) ◀ Measurement @4mA ▶ 0.00 CI-ppm *EXPERT MENU*		
SETTING 4-20mA2 (CI) ◀ Measurement @20mA ▶ 2.000 ppm *EXPERT MENU*	SETTING 4-20mA2 (CI) ◀ Measurement @20mA ▶ 20.00 ppm *EXPERT MENU*	SETTING 4-20mA2 (CI) ◀ Measurement @20mA ▶ 200.0 ppm *EXPERT MENU*	SETTING 4-20mA2 (CI) ◀ Measurement @20mA ▶ 2000 ppm *EXPERT MENU*
SETTING 4-20mA2 (CI) ◀ Measurement @20mA ▶ 20000 ppm *EXPERT MENU*	SETTING 4-20mA2 (CI) ◀ Measurement @20mA ▶ 2.000 CI-ppm *EXPERT MENU*	SETTING 4-20mA2 (CI) ◀ Measurement @20mA ▶ 5.00 CI-ppm *EXPERT MENU*	SETTING 4-20mA2 (CI) ◀ Measurement @20mA ▶ 20.00 CI-ppm *EXPERT MENU*
SETTING 4-20mA2 (CI) ◀ Measurement @20mA ▶ 20.00 CI-tot *EXPERT MENU*	SETTING 4-20mA2 (CI) ◀ Measurement @20mA ▶ 10.00 CI-ppm *EXPERT MENU*		

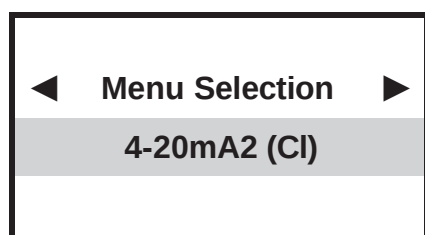
- Press **ESC** to go back to **MENU SELECTION** or press **ESC ESC** to go back to **MEASUREMENT DISPLAY**.

5.14.6.8 4-20mA2 OUTPUT CHLORINE > DOSING FUNCTION ON SETPOINT

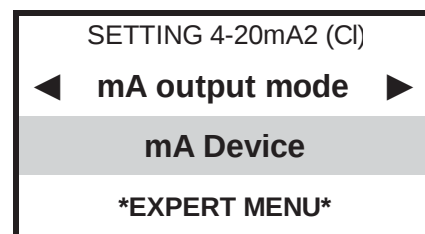
The analogue 4-20mA2 output of the instrument follows the setting selected in **CHLORINE SCALE**.



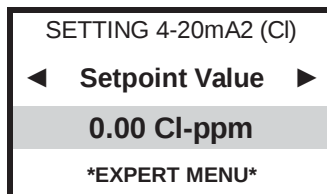
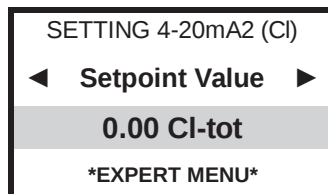
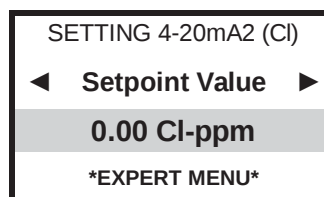
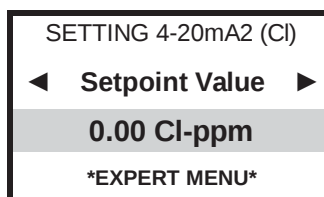
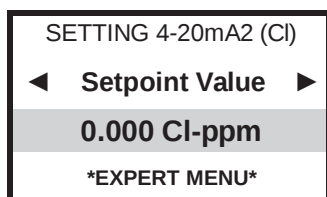
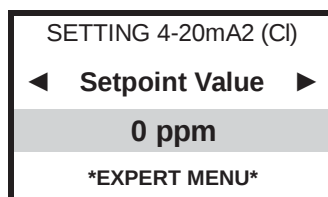
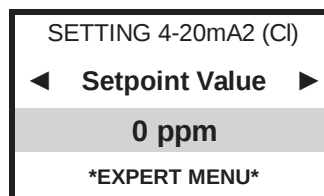
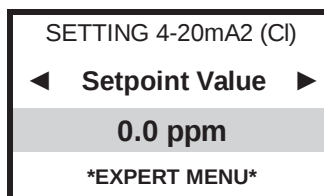
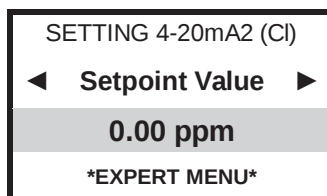
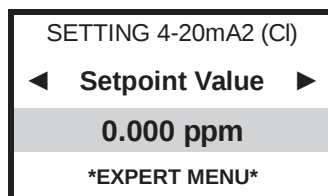
Please note that the displayed value is automatically adjusted according to the conductivity range of the previously selected cell constant "K".



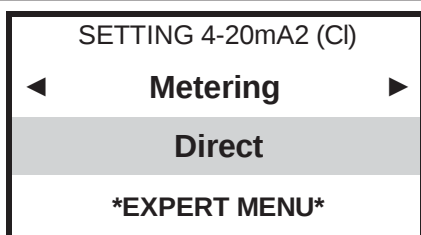
Depending on what you choose in the chlorine scale of setpoint 3, if you choose a unit of measurement with *ppm* then 'ppm' will be displayed, if you choose a unit of measurement with *Cl*, 'Cl' will be displayed.



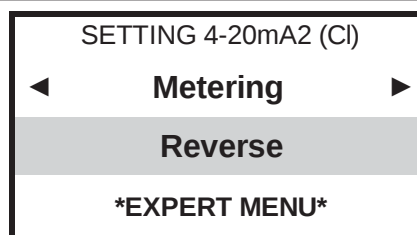
The 4-20mA proportional analogue outputs are according to the measurements in real time in order to drive remote equipment such as data loggers, PLCs or graphic recorders or other equipment suited to processing a remote mA signal



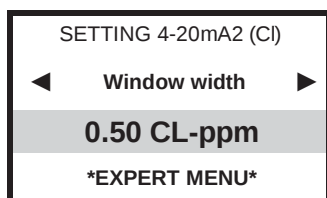
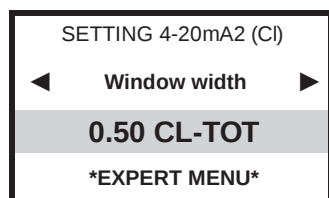
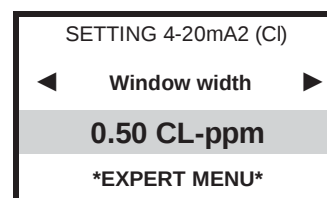
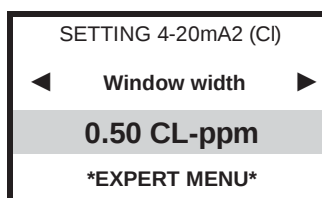
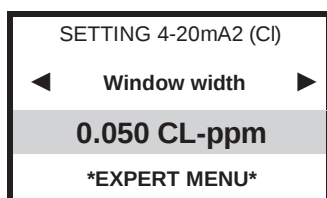
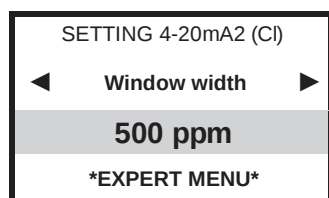
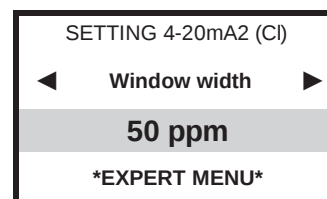
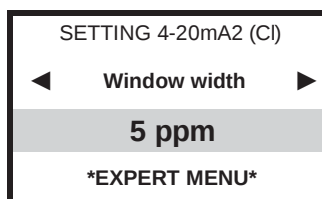
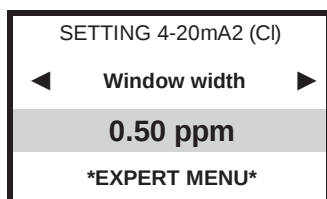
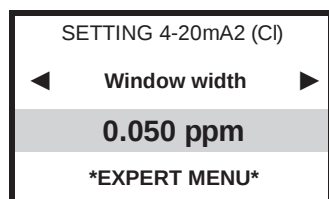
Select the Set point value to control the metering pump or other equipment suited to processing an mA signal.



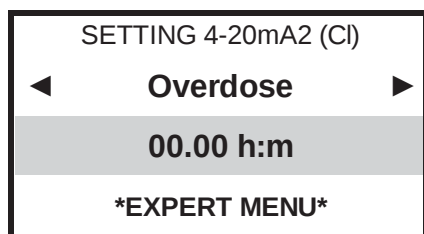
Direct mode: the output is active when the measured value is lower than the one selected in the setpoint.



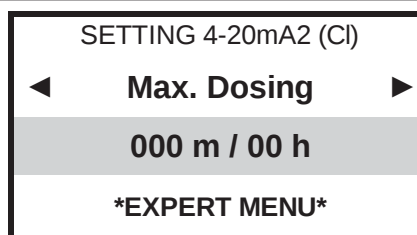
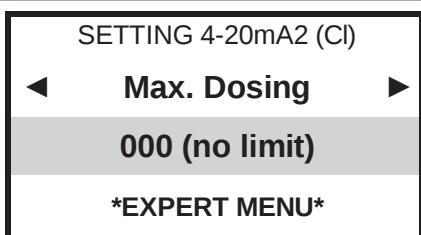
Reverse mode: the output is active even if the measured value is higher than the one selected in the setpoint.



Pulse width: pulses are timed ON and OFF based on the distance from the selected setpoint, programmable. Example: with a selected chlorine range at 2 Cl ppm, if the selected setpoint is 0.500 Cl ppm and the measured value is 0.400 Cl ppm, the PWM mode starts after reaching 0.450 Cl ppm with Time/Pause pulses and decreasing the active time while reaching the setpoint.



With the **overdose time** alarm one can select a period during which the setpoint must be reached. If the setpoint is not reached during this period of time, the instrument blocks output operations, including those in mA (metering pumps), the alarm is displayed as ON and triggers a signalling instrument connected to the alarm relay.



Maximum Metering is a safety function that ensures metering is completed in the selected time. The relays of the metering pumps open accordingly. This function makes it possible to eliminate time limits (continuous metering according to the selected setpoints) or to select the minutes (up to 999) and the hours, for instance metering for 999 minutes in 24 hours.

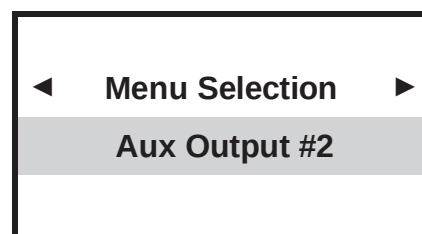
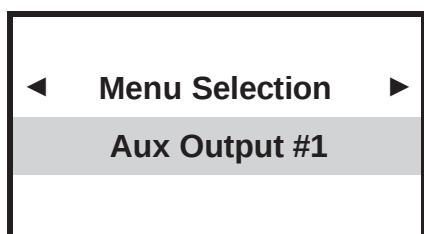
5.14.7 SETTINGS > EXPERT MENU

Please refer to par. 5.7.1 on page 5-21.

5.14.7.1 AUX OUTPUTS > EXPERT MENU

The **auxiliary outputs** control various functions connected to any type of remote On-Off device controlled by a timer in real time. The AUX output may control a device or appliance thanks to very accurate programming of minutes/hours/days/weeks.

ADVANTAGES: this function makes this instrument a very versatile control unit not only to measure chemical physical parameters but also for other functions connected to the system where it is installed.



- Press **OK/MENU** to confirm the selection and to go on to the next sub-menu.
- Press **'ESC'** to go back to **'MAIN MENU'** or press **"ESC" "ESC"** to go back to **'CONTINUOUS MEASUREMENT'**.

AUX 1		Programme 01	
Active time (m:s)		01 : 00	
Start time (h:s)		10 : 30	
Enabl. days		Mon : N	
Tue: N	Wed: N	Thu: N	
Fri: N	Sat: N	Sun: N	
Wk. 1: S	2: S	3: S	4: N

AUX 2		Programme 01	
Active time (m:s)		01 : 00	
Start time (h:s)		10 : 30	
Enabl. days		Mon : N	
Tue: N	Wed: N	Thu: N	
Fri: N	Sat: N	Sun: N	
Wk. 1: S	2: S	3: S	4: N

The settings of the program entail many steps, which may be selected to have absolute operating precision (up to 99 programs for each AUX output).

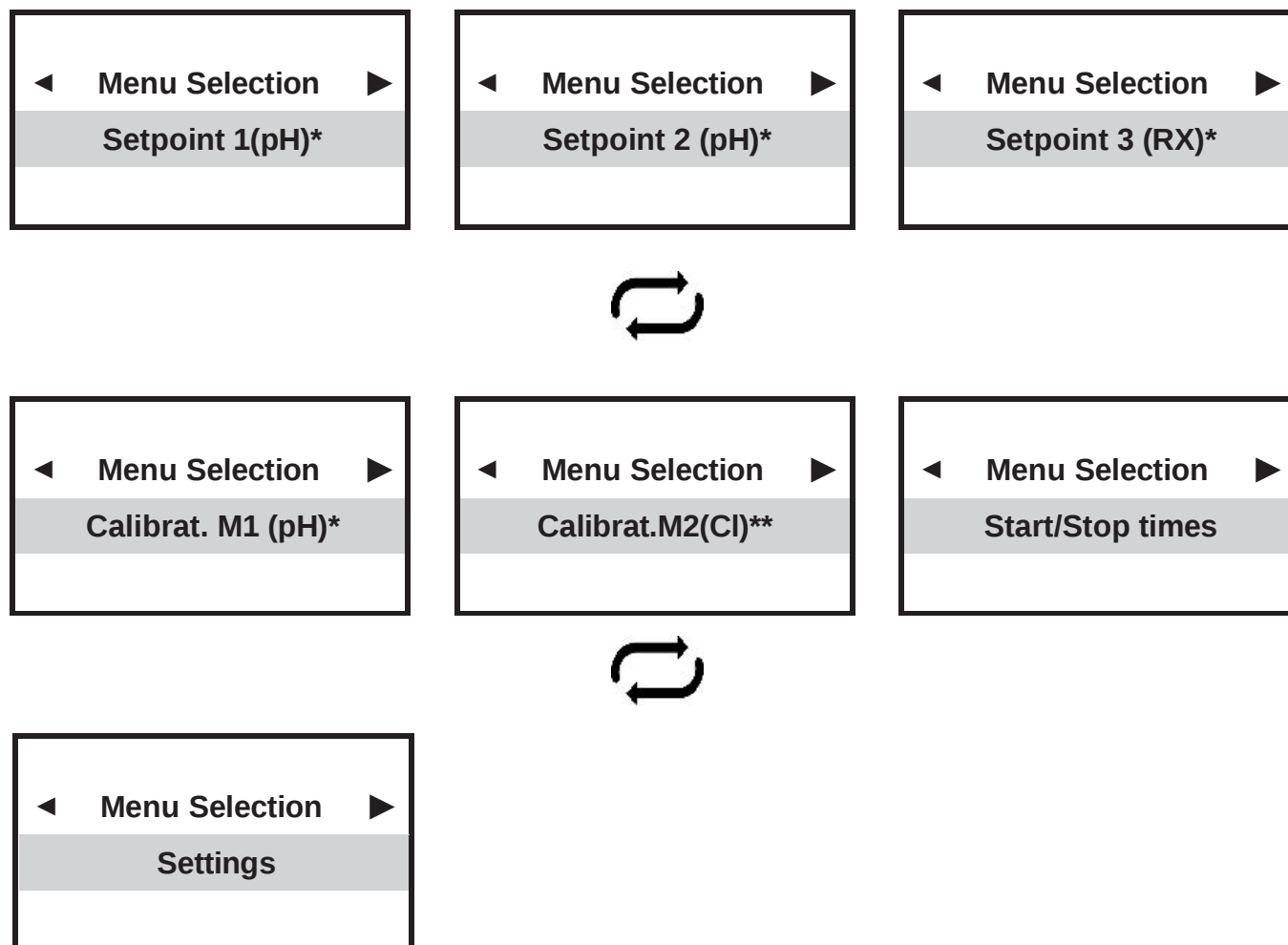
AUX 1 or AUX 2	Program 01	- Press ◀ ▶ select program number (up to 99). - Confirm by pressing OK, automatically goes to the next step.
Active time	(m:s) 01:00	Selects the active time of the connected On/Off device - Press ◀ ▶ to select the minutes, confirm OK to move to the next digits. - Press ◀ ▶ to select the seconds, confirm OK to move to the next step.
Start time	(h:m) 10:30	Selects the start time of the connected On/Off device. - Press ◀ ▶ to select the hours, confirm OK to move to the next digits. - Press ◀ ▶ to select the minutes, confirm OK to move to the next step.
Enabled days	Mon : N ... Y	Selects the days during which the connected equipment is operational. - Press ◀ ▶ to select the days of activity ◀ ▶ N no or Y yes. - Confirm by pressing OK, automatically goes to the next step.
Weeks	1:Y 2:N 3:N 4:N	Selects the weeks of the month during which the connected equipment is operational. - Press ◀ ▶ to select the weeks of activity ◀ ▶ N no or Y yes. - Confirm by pressing OK, automatically goes to the next step.

- Press **ESC** to go back to **MENU SELECTION** or press **ESC ESC** to go back to **MEASUREMENT DISPLAY**.

5.15 PROGRAMMING: ELIGERE 02 PH-RX

5.15.1 MAIN MENU > BASIC PROGRAMMING MENU

These are all the steps included in the **Main menu** configuration with the **BASIC** programming menu:



- Press **OK/MENU** to confirm the selection and to go on to the next sub-menu.
- Press **ESC** to go back to the **MEASUREMENT DISPLAY**.

5.15.2 SETPOINT 1 PH AND SETPOINT 1 RX > BASIC MENU

Please refer to par. 5.14.2 on page 5-166.

5.15.3 SETPOINT 2 PH AND SETPOINT 2 RX > BASIC MENU

Please refer to par. 5.14.3 on page 5-168.

5.15.4 SETPOINT 3 RX (REDOX-ORP) > BASIC MENU

◀ Menu Selection ▶

Setpoint 3 (RX)

MENU SETPOINT 3 (RX)

◀ Setpoint Value ▶

200 mV

BASIC MENU

The setpoints activate the output relays for the metering pumps or other devices until the setpoint is reached



SELECTING 'ON-OFF' THE NEXT STEP WILL BE: "MIN ALARM" (SET POINT1 ONLY)

MENU SETPOINT 3 (RX)

◀ Mode ▶

Proportional

BASIC MENU

*Modular pulses, also known as PWM "pulse width modulation", support a proportional mode on each ON-OFF setpoint, activating the corresponding pulses on the relays based on the measured value.

Default activation point 150 mV

For more accurate settings of the "Modular pulses" PWM, select the "Expert" menu in the initial settings.



* GOING BACK TO THE SETPOINT PROGRAMMING STEPS FROM "ON-OFF" MODE OR FROM "PROPORTIONAL" MODE

The MIN and MAX Alarm function selects the alarm levels beyond which the alarm relay is triggered on.

MENU SETPOINT 3 (RX)

◀ MIN Alarm ▶

-1500 mV

EXPERT MENU

The MIN Alarm function selects a **MINIMUM** alarm level, after which the alarm relay is triggered.

MENU SETPOINT 3 (RX)

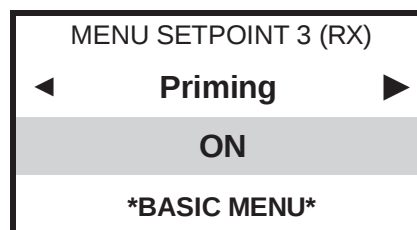
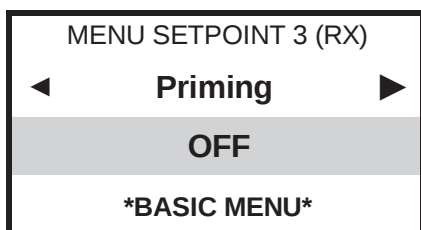
◀ MAX Alarm ▶

1500 mV

EXPERT MENU

The MAX Alarm function selects a **MAXIMUM** alarm level, after which the alarm relay is triggered.

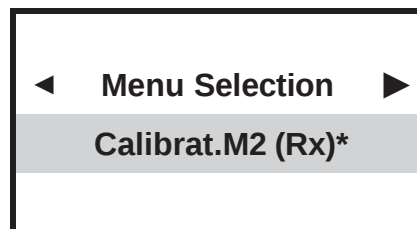
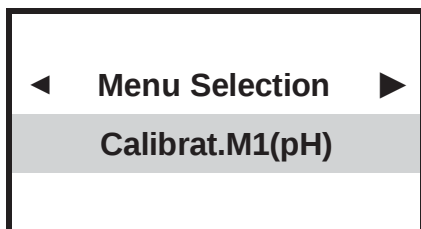
ONLY WHEN USING METERING PUMPS



The priming function blocks the setpoint value to allow the metering pump to remain primed, the outputs are not active.

- Press **ESC** to go back to **MENU SELECTION** or press **ESC ESC** to go back to **MEASUREMENT DISPLAY**.

5.15.5 Sensor calibration



- Press **OK/MENU** to confirm the selection and go to the next sub-menu.

5.15.5.1 PH electrode calibration > BASIC MENU

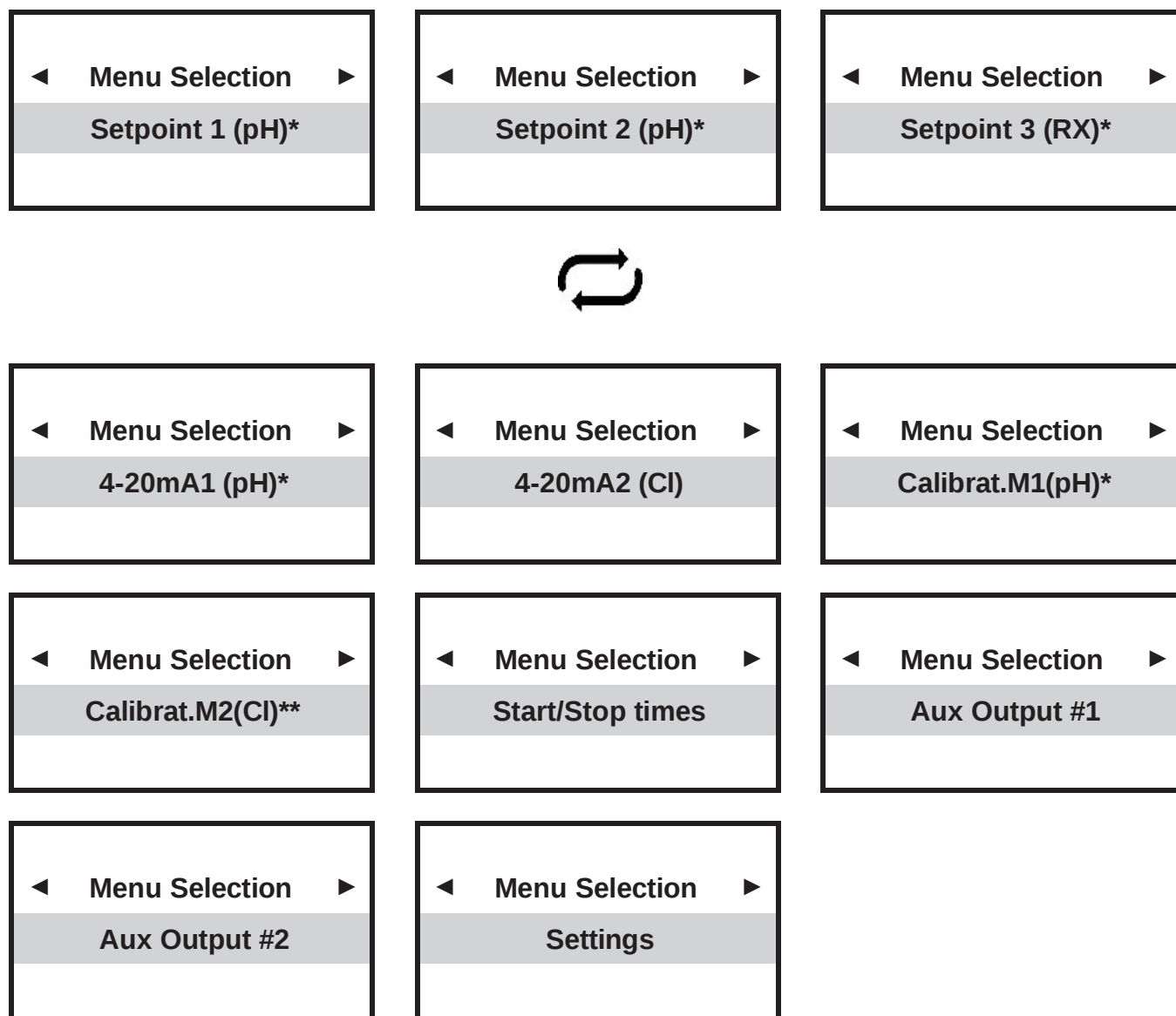
Please refer to par. 5.8.5.1 on page 5-35.

5.15.5.2 RX (REDOX) electrode calibration > BASIC MENU

Please refer to par. 5.8.5.2 on page 5-36.

5.15.6 MAIN MENU > EXPERT PROGRAMMING MENU

These are all the steps included in the Main menu configuration with the EXPERT programming menu:



- Press **OK/MENU** to confirm the selection and to go on to the next sub-menu.
- Press **ESC** to go back to the **MEASUREMENT DISPLAY**.

5.15.7 SETPOINT 1 PH AND SETPOINT 1 RX > EXPERT MENU

The two programming stages are below: when **Measurement Type** pH is selected, refer to the left column; when selecting RX refer to the right column.



The setpoint activates the output relays for the metering pumps or other devices until the setpoint value is reached.

SETPOINT1 PH

◀	Menu Selection	▶
Setpoint 1 (pH)		

MENU SETPOINT 1 (pH)		
◀	Setpoint Value	▶
7.00 pH		
EXPERT MENU		

MENU SETPOINT 1 (pH)		
◀	Metering	▶
Acid		
EXPERT MENU		

Setpoint 1 is set for operations in **ACID** mode, the output is active when the measured value is higher than the selected setpoint, the connected pump meters out an acid product.

MENU SETPOINT 1 (pH)		
◀	Metering	▶
Alkaline		
EXPERT MENU		

SETPOINT1 RX

◀	Menu Selection	▶
Setpoint 1 (RX)		

MENU SETPOINT 1 (RX)		
◀	Setpoint Value	▶
200 mV		
EXPERT MENU		

MENU SETPOINT 1 (RX)		
◀	Metering	▶
Direct		
EXPERT MENU		

Setpoint 1 is set for operations in **DIRECT** mode: the output is active when the measured value is lower than the selected setpoint, the connected pump meters out an oxidising product.

MENU SETPOINT 1 (RX)		
◀	Metering	▶
Reverse		
EXPERT MENU		

MENU SETPOINT 1 (pH)	
◀	Mode ▶
ON/OFF	
EXPERT MENU	

MENU SETPOINT 1 (RX)	
◀	Mode ▶
ON/OFF	
EXPERT MENU	

The unit has an **ON-OFF** mode which switches on or off (if the reverse mode is ON) the output relays of Constant / ON-OFF metering pumps or other ON-OFF equipment.

MENU SETPOINT 1 (pH)	
◀	Mode ▶
Proportional	
EXPERT MENU	

MENU SETPOINT 1 (RX)	
◀	Mode ▶
Proportional	
EXPERT MENU	

Modular pulses, also known as PWM “pulse width modulation”, support a proportional mode on each ON-OFF set-point, activating the corresponding pulses on the output relays based on the measured value. When the Expert Menu is used, other parameters need to be programmed.



SELECTING '**ON-OFF**' THE NEXT PROGRAMMING STEP: '**HYSTERESIS**'.



SELECTING "**PROPORTIONAL**" REQUIRES PROGRAMMING THE NEXT STEPS

PWM PROPORTIONALMODE FOR PH WITH TIMED PULSES

MENU SETPOINT 1 (pH)	
◀	Window width ▶
1.50 pH	
EXPERT MENU	

Window width: pulses are timed ON and OFF based on the distance from the selected setpoint, programmable, example: if the selected setpoint is 7.00 pH and the measured value is 9.00 pH, the **PWM** mode starts after reaching 8.50 pH with Time/Pause pulses and decreasing the active time while reaching the setpoint.

MENU SETPOINT 1 (pH)	
◀	Cycle Duration ▶
60 sec	
EXPERT MENU	

Cycle Duration: the PWM mode has a 60 second cycle (programmable), example: setpoint is 700 mV, measured value 850 pH = active time 60 sec - pause time = 0 sec; at 7.75 pH active time = 30 sec - pause time = 30 sec... as a consequence the active time decreases while reaching the setpoint. The cycle time depends on many variables, such as: distance from the injection point of the system to be treated, how fast or slowly the setpoint must react, chemical concentration, etc.

MENU SETPOINT 1 (pH)	
◀	Min.Active Time ▶
5 sec	
EXPERT MENU	

MIN Active Time: programmable. Defines the minimum time for which PWM is active; prevails over the selected settings. The pulse modulation function is adjusted with 3 functions according to the following formula: Active Time in accordance with the selected formula = (measured value - setpoint) / (period width * cycle time).
If the result of the formula is < of that selected with MIN Active Time, the latter prevails on the former.

PWM PROPORTIONAL MODE FOR RX WITH TIMED PULSES

MENU SETPOINT 1 (RX)	
◀	Window width ▶
150 mV	
EXPERT MENU	

Window width: pulses are timed ON and OFF based on the distance from the selected setpoint (programmable). Example: if the selected setpoint is 750 mV and the measured value is 500 mV, the **PWM** mode starts after reaching 550 mV with Time/Pause pulses and decreasing the active time while reaching the setpoint.

MENU SETPOINT 1 (RX)	
◀	Cycle Duration ▶
60 sec	
EXPERT MENU	

Cycle Duration: the PWM mode has a 60 second cycle (programmable), example: setpoint is 700 mV, at measured value 550 mV = active time 60 sec - pause time = 0 sec; at 625 mV active time = 30 sec - pause time = 30 sec... as a consequence the active time decreases while reaching the setpoint. The cycle time depends on many variables, such as: distance from the injection point of the system to be treated, how fast or slowly the setpoint must react, chemical concentration, etc.

MENU SETPOINT 2 (RX)	
◀	Min.Active Time ▶
5 sec	
EXPERT MENU	

MIN Active Time: programmable. Defines the minimum time for which PWM is active; prevails over the selected settings. The pulse modulation function is adjusted with 3 functions according to the following formula: Active Time in accordance with the selected formula = (measured value - setpoint) / (period width * cycle time).
If the result of the formula is < of that selected with MIN Active Time, the latter prevails on the former.



SELECTING 'ON-OFF' THE NEXT PROGRAMMING STEP: 'HYSTERESIS'.

FUNCTION NOT AVAILABLE WITH PROPORTIONAL MODE

Hysteresis is useful during operations to adjust the setpoints in ON-OFF mode and is used to enable and disable the output relay when the selected hysteresis has been achieved.

Hysteresis is useful when there are too many quick swings around the setpoint, that might damage the connected device.

MENU SETPOINT 1 (pH)	
◀	Hysteresis ▶
0.05 pH	
EXPERT MENU	

MENU SETPOINT 1 (RX)	
◀	Hysteresis ▶
10 mV	
EXPERT MENU	

FUNCTION NOT AVAILABLE WITH PROPORTIONAL MODE

MENU SETPOINT 1 pH / RX	
◀	Set point del. ▶
5 sec	
EXPERT MENU	

*The **Delay time** blocks the output relays (max 999 sec. programmable) to ensure the outputs are active only when the measurements are stable, thus assuring the best results in terms of chemical balance.*



* GOING BACK TO THE SETPOINT PROGRAMMING STEPS FROM THE “ON-OFF” MODE OR “PROPORTIONAL” MODE.

MENU SETPOINT 1 (pH)	
◀	Measurement Type ▶
pH	
EXPERT MENU	

MENU SETPOINT 1 (RX)	
◀	Measurement Type ▶
Rx	
EXPERT MENU	

The PH measurement parameter may be changed into RX by simple programming and by using the RX electrode

MENU SETPOINT 1 (pH)	
◀	MIN Alarm ▶
0.00 pH	
EXPERT MENU	

MENU SETPOINT 1 (RX)	
◀	MIN Alarm ▶
– 1500 mV	
EXPERT MENU	

The MIN Alarm function selects a **MINIMUM** alarm level after which the alarm relay is triggered.

MENU SETPOINT 1 (pH)	
◀	MAX Alarm ▶
14.00 pH	
EXPERT MENU	

MENU SETPOINT 1 (RX)	
◀	MAX Alarm ▶
1500 mV	
EXPERT MENU	

The MAX Alarm function selects a **MAXIMUM** alarm level after which the alarm relay is triggered.

MENU SETPOINT 1 pH / RX	
◀	Overdose ▶
00.00 h:m	
EXPERT MENU	

With the **overdose time alarm** one can select a period during which the setpoint must be reached. If the setpoint is not reached during this period of time, the instrument blocks output operations, including those in mA (metering pumps), the alarm is displayed as ON and triggers a signalling instrument if it is connected to the alarm relay.

MENU SETPOINT 1 pH / RX	
◀	Max. Dosing ▶
000 (no limit)	
EXPERT MENU	

MENU SETPOINT 1 pH / RX	
◀	Max. Dosing ▶
000 m / 00 h	
EXPERT MENU	

Maximum Dosing is an extra safety function that ensures metering is completed in the selected time.

This function makes it possible to eliminate time limits (continuous metering according to the selected setpoints) or to select the minutes (up to 999) and the hours, for instance metering for 999 minutes in 24 hours.

MENU SETPOINT 1 pH / RX	
◀	Start-up Delay ▶
00.00 h:m	
EXPERT MENU	

The **start-up delay** stops the output relays when the unit is switched on, thus allowing the sensor to polarise assuring reliable measurements (programmable).

MENU SETPOINT 1 pH / RX	
◀	No Flux Delay ▶
00.00 h:m	
EXPERT MENU	

It is possible to set a **no flux delay time**; if the lack of flow is longer than the set time, the controller waits for the time set in the 'Start Delay' parameter, before eventually enabling the various outputs to control the pumps.

MENU SETPOINT 1 pH	
◀	Level Delay ▶
00.00 h:m	
EXPERT MENU	

It is possible to set a **delay time on the level alarm**, the controller goes into alarm as soon as it receives contact from the relevant level probe, but only switches off the pumps connected to it after the previously set time.

ONLY WHEN USING METERING PUMPS

MENU SETPOINT 1 pH / RX	
◀	Priming ▶
OFF	
EXPERT MENU	

MENU SETPOINT 1 pH / RX	
◀	Priming ▶
ON	
EXPERT MENU	

The priming function blocks the setpoint value to allow the metering pump to remain primed.

- Press **ESC** to go back to **MENU SELECTION** or press **ESC ESC** to go back to **MEASUREMENT DISPLAY**.

5.15.8 SETPOINT 2 PH AND SETPOINT 2 RX > EXPERT MENU

The two programming stages are below: when **Measurement Type** pH is selected, refer to the left column; when selecting RX refer to the right column.



The setpoint activates the output relays for the metering pumps or other devices until the setpoint value is reached.

SETPOINT2 PH

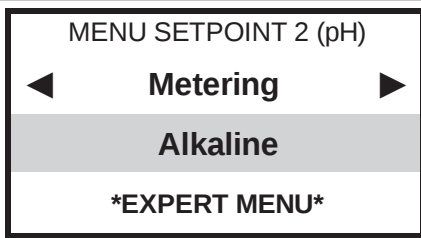
Menu Selection	
Setpoint 2 (pH)	

MENU SETPOINT 2 (pH)	
◀	Setpoint Value ▶
7.00 pH	
EXPERT MENU	

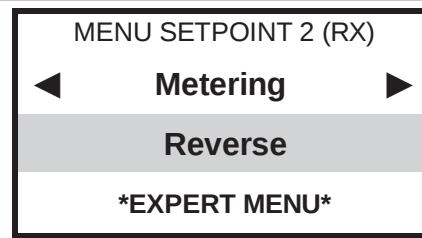
SETPOINT2 RX

Menu Selection	
Setpoint 2 (RX)	

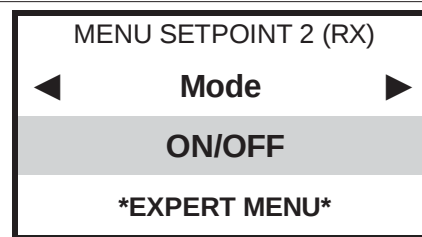
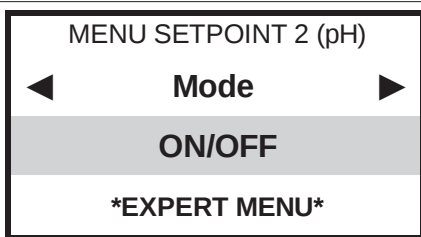
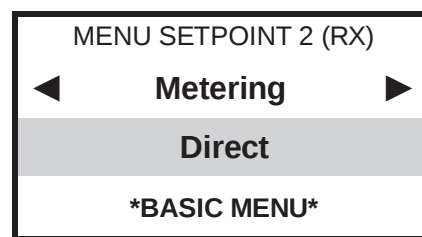
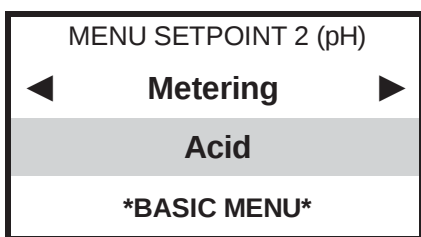
MENU SETPOINT 2 (RX)	
◀	Setpoint Value ▶
200 mV	
EXPERT MENU	



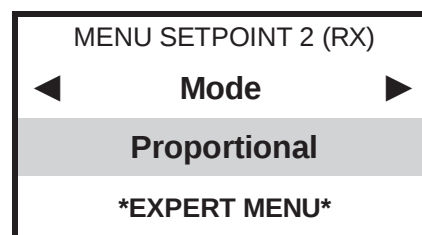
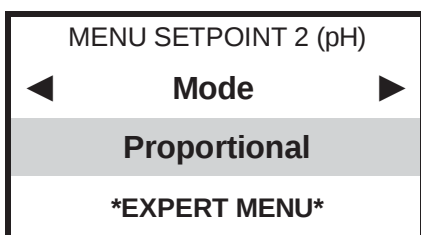
Setpoint 2 is set for operations in **ALKALINE** mode: the output is active when the measured value is higher than the selected setpoint, the connected pump meters out an alkaline product.



Setpoint 2 is set for operations in **REVERSE** mode, the output is active when the measured value is lower than the selected setpoint, the connected pump meters out a chlorine reducing agent.



The unit has an **ON-OFF** mode which switches on or off (if the reverse mode is ON) the output relays of Constant / ON-OFF metering pumps or other ON-OFF equipment.



Modular pulses, also known as PWM “pulse width modulation”, support a proportional mode on each setpoint, activating the corresponding pulses on the output relays based on the measured value and always relating to the previous settings of the selected hysteresis. When the Expert Menu is used, other parameters need to be programmed.



SELECTING '**ON-OFF**' THE NEXT PROGRAMMING STEP: '**HYSTERESIS**'.



SELECTING “**PROPORTIONAL**” REQUIRES PROGRAMMING THE NEXT STEPS

PWM PROPORTIONALMODE FOR PH WITH TIMED PULSES

MENU SETPOINT 2 (pH) ◀ Window width ▶ 1.50 pH *EXPERT MENU*	Window width: pulses are timed ON and OFF based on the distance from the selected setpoint, programmable, example: if the selected setpoint is 7.00 pH and the measured value is 9.00 pH, the PWM mode starts after reaching 8.50 pH with Time/Pause pulses and decreasing the active time while reaching the setpoint.
MENU SETPOINT 2 (pH) ◀ Cycle Duration ▶ 60 sec *EXPERT MENU*	Cycle Duration: the PWM mode has a 60 second cycle (programmable), example: setpoint is 700 mV, measured value 850 pH = active time 60 sec - pause time = 0 sec; at 7.75 pH active time = 30 sec - pause time = 30 sec... as a consequence the active time decreases while reaching the setpoint. The cycle time depends on many variables, such as: distance from the injection point of the system to be treated, how fast or slowly the setpoint must react, chemical concentration, etc.
MENU SETPOINT 2 (pH) ◀ Min.Active Time ▶ 5 sec *EXPERT MENU*	MIN Active Time: programmable. Defines the minimum time for which PWM is active; prevails over the selected settings. The pulse modulation function is adjusted with 3 functions according to the following formula: Active Time in accordance with the selected formula = (measured value - setpoint) / (period width * cycle time). If the result of the formula is < of that selected with MIN Active Time, the latter prevails on the former.

PWM PROPORTIONAL MODE FOR RX WITH TIMED PULSES

MENU SETPOINT 2 (RX) ◀ Window width ▶ 150 mV *EXPERT MENU*	Window width: pulses are timed ON and OFF based on the distance from the selected setpoint (programmable). Example: if the selected setpoint is 750 mV and the measured value is 500 mV, the PWM mode starts after reaching 550 mV with Time/Pause pulses and decreasing the active time while reaching the setpoint.
MENU SETPOINT 2 (RX) ◀ Cycle Duration ▶ 60 sec *EXPERT MENU*	Cycle Duration: the PWM mode has a 60 second cycle (programmable), example: setpoint is 700 mV, the measured value is 550 mV = active time 60 sec - pause time = 0 sec; at 625 mV active time = 30 sec - pause time = 30 sec... as a consequence the active time decreases while reaching the setpoint. The cycle time depends on many variables, such as: distance from the injection point of the system to be treated, how fast or slowly the setpoint needs to react, chemical concentration, etc.

MENU SETPOINT 2 (RX)

◀ Min.Active Time ▶

5 sec

EXPERT MENU

MIN Active Time: programmable. Defines the minimum time for which PWM is active; prevails over the selected settings. The pulse modulation function is adjusted with 3 functions according to the following formula: Active Time in accordance with the selected formula = (measured value - setpoint) / (period width * cycle time).
If the result of the formula is < of that selected with MIN Active Time, the latter prevails on the former.



SELECTING 'ON-OFF' THE NEXT PROGRAMMING STEP: 'HYSTERESIS'.

FUNCTION NOT AVAILABLE WITH PROPORTIONAL MODE

MENU SETPOINT 2 (pH)

◀ Hysteresis ▶

0.05 pH

EXPERT MENU

MENU SETPOINT 2 (RX)

◀ Hysteresis ▶

10 mV

EXPERT MENU

Hysteresis is useful during operations to adjust the setpoints in ON-OFF mode and is used to enable and disable the output relay when the selected hysteresis has been achieved.

Hysteresis is useful when there are too many quick swings around the setpoint, that might damage the connected device.

FUNCTION NOT AVAILABLE WITH PROPORTIONAL MODE

MENU SETPOINT 2 pH / RX

◀ Set point del. ▶

5 sec

EXPERT MENU

The Delay time blocks the output relays (max 999 sec. programmable) to ensure the outputs are active only when the measurements are stable, thus assuring the best results in terms of chemical balance.



* GOING BACK TO THE SETPOINT PROGRAMMING STEPS FROM THE "ON-OFF" MODE OR "PROPORTIONAL" MODE.

MENU SETPOINT 2 pH / RX

◀ Overdose ▶

00.00 h:m

EXPERT MENU

With the overdose time alarm one can select a period during which the setpoint must be reached. If the setpoint is not reached during this period of time, the instrument blocks output operations, including those in mA (metering pumps), the alarm is displayed as ON and triggers a signalling instrument if it is connected to the alarm relay.

MENU SETPOINT 2 pH / RX		
◀	Max. Dosing	▶
000 (no limit)		
EXPERT MENU		

MENU SETPOINT 2 pH / RX		
◀	Max. Dosing	▶
000 m / 00 h		
EXPERT MENU		

Maximum Dosing is an extra safety function that ensures metering is completed in the selected time.

This function makes it possible to eliminate time limits (continuous metering according to the selected setpoints) or to select the minutes (up to 999) and the hours, for instance metering for 999 minutes in 24 hours.

ONLY WHEN USING METERING PUMPS

MENU SETPOINT 2 pH / RX		
◀	Priming	▶
OFF		
EXPERT MENU		

MENU SETPOINT 2 pH / RX		
◀	Priming	▶
ON		
EXPERT MENU		

The priming function blocks the setpoint value to allow the metering pump to remain primed.

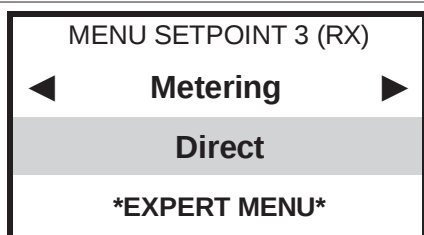
- Press **ESC** to go back to **MENU SELECTION** or press **ESC ESC** to go back to **MEASUREMENT DISPLAY**.

5.15.9 SETPOINT 3 RX (REDOX-ORP) > EXPERT MENU

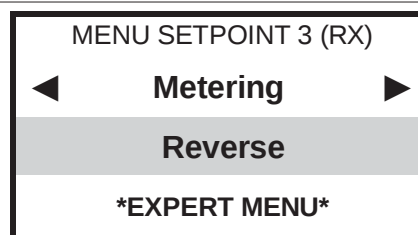
◀ Menu Selection ▶	
Setpoint 3 (RX)	

MENU SETPOINT 3 (RX)		
◀	Setpoint Value	▶
0 mv		
EXPERT MENU		

The setpoints activate the output relays for the metering pumps or other devices until the setpoint is reached.



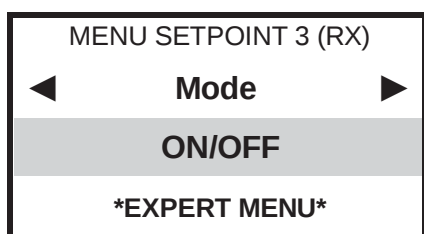
Direct mode: the output is active when the measured value is lower than the one selected in the setpoint, the connected pump meters out an oxidising product.



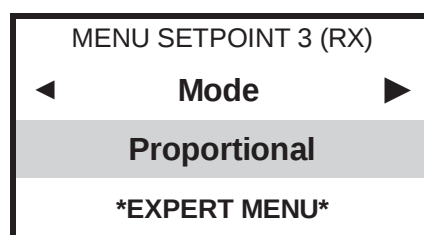
Reverse mode: the output is active, also the measured value is higher than the one selected in the setpoint, the connected pump meters out a reducing agent.



SELECTING 'ON-OFF' THE NEXT STEP WILL BE: "MIN ALARM" (SET POINT1 ONLY)



The unit has an **ON-OFF** mode which switches on or off (if the reverse mode is ON) the output relays of Constant / ON-OFF metering pumps or other ON-OFF equipment.



*Modular pulses, also known as PWM "pulse width modulation", support a proportional mode on each ON-OFF setpoint, activating the corresponding pulses on the relays based on the measured value.

Default activation point 150 mV

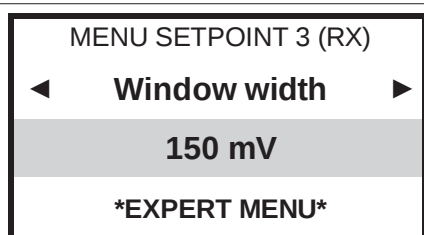


SELECTING 'ON-OFF' THE NEXT PROGRAMMING STEP: 'HYSTERESIS'



* GOING BACK TO THE SETPOINT PROGRAMMING STEPS FROM "ON-OFF" MODE OR FROM "PROPORTIONAL" MODE

PWM PROPORTIONAL MODE FOR PH WITH TIMED PULSES



Window width: pulses are timed ON and OFF based on the distance from the selected setpoint, programmable, example: if the selected setpoint is 750 mV and the measured value is 500 mV, the **PWM** mode starts after reaching 550 mV with Time/Pause pulses and decreasing the active time while reaching the setpoint

MENU SETPOINT 3 (RX) ◀ Cycle Duration ▶ 60 sec *EXPERT MENU*	Cycle Duration: the PWM mode has a 60 second cycle (programmable), example: setpoint is 700 mV, at measured value 550 mV = active time 60 sec - pause time = 0 sec; at 625 mV active time = 30 sec - pause time = 30 sec... as a consequence the active time decreases while reaching the setpoint. The cycle time depends on many variables, such as: distance from the injection point of the system to be treated, how fast or slowly the setpoint must react, chemical concentration, etc.
MENU SETPOINT 3 (RX) ◀ Min.Active Time ▶ *EXPERT MENU*	MIN Active Time: programmable. Defines the minimum time for which PWM is active; prevails over the selected settings. The pulse modulation function is adjusted with 3 functions according to the following formula: Active Time in accordance with the selected formula = (measured value - setpoint) / (period width * cycle time). If the result of the formula is < of that selected with Active Time



SELECTING 'ON-OFF' THE NEXT PROGRAMMING STEP: 'HYSTERESIS'.

FUNCTION NOT AVAILABLE WITH PROPORTIONAL MODE

MENU SETPOINT 3 (RX)

◀ **Hysteresis** ▶

10 mV

EXPERT MENU

Hysteresis is useful during operations to adjust the setpoints in ON-OFF mode and is used to enable or disable the output relay when the selected hysteresis has been achieved. Hysteresis is useful when there are too many quick swings around the setpoint, that might damage the connected device. By increasing hysteresis it is possible to move away from the setpoint in accordance with the required value.

FUNCTION NOT AVAILABLE WITH PROPORTIONAL MODE

MENU SETPOINT 3 (RX)

◀ **Set point del.** ▶

5 sec

EXPERT MENU

The Delay time blocks the output relays (max 999 sec. programmable) to ensure the outputs are active only when the measurements are stable, thus assuring the best results in terms of chemical balance.



* GOING BACK TO THE SETPOINT PROGRAMMING STEPS FROM THE "ON-OFF" MODE OR "PROPORTIONAL" MODE.

FUNCTION ONLY AVAILABLE WITH SETPOINT 1

MENU SETPOINT 3 (RX)	
◀	MIN Alarm ▶
-1500 mV	
EXPERT MENU	

The MIN Alarm function selects a **MINIMUM** alarm level, after which the alarm relay is triggered.

MENU SETPOINT 3 (RX)	
◀	MAX Alarm ▶
1500 mV	
EXPERT MENU	

The MAX Alarm function selects a **MAXIMUM** alarm level, after which the alarm relay is triggered.

MENU SETPOINT 3 (RX)	
◀	Overdose ▶
00.00 h:m	
EXPERT MENU	

With the **overdose time alarm** one can select a period during which the setpoint must be reached. If the setpoint is not reached during this period of time, the instrument blocks output operations, including those in mA (metering pumps), the alarm is displayed as ON and triggers a signalling instrument if it is connected to the alarm relay.

MENU SETPOINT 3 (RX)	
◀	Max. Dosing ▶
000 (no limit)	
EXPERT MENU	

MENU SETPOINT 3 (RX)	
◀	Max. Dosing ▶
000 m / 00 h	
EXPERT MENU	

Maximum Dosing is an extra safety function that ensures metering is completed in the selected time.

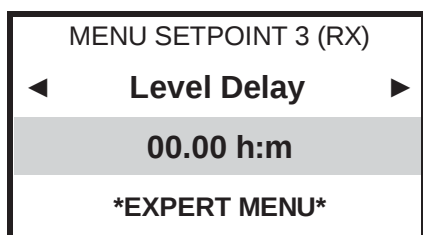
This function makes it possible to eliminate time limits (continuous metering according to the selected setpoints) or to select the minutes (up to 999) and the hours, for instance metering for 999 minutes in 24 hours.

MENU SETPOINT 3 (RX)	
◀	Start-up Delay ▶
00.00 h:m	
EXPERT MENU	

The start-up delay stops the output relays when the unit is switched on, thus allowing the sensor to polarise assuring correct measurements (programmable).

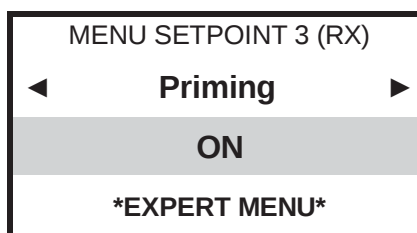
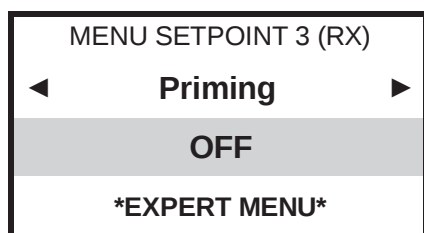
MENU SETPOINT 3 (RX)	
◀	No Flux Delay ▶
00.00 h:m	
EXPERT MENU	

It is possible to set a **no flux delay time**; if the lack of flow is longer than the set time, the controller waits for the time set in the 'Start Delay' parameter, before eventually enabling the various outputs to control the pumps.



It is possible to set a **delay time on the level alarm**, the controller goes into alarm as soon as it receives contact from the relevant level probe, but only switches off the pumps connected to it after the previously set time.

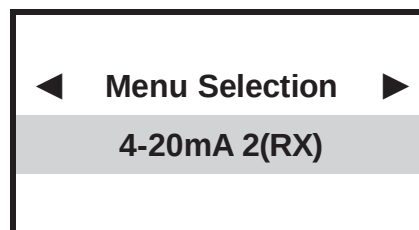
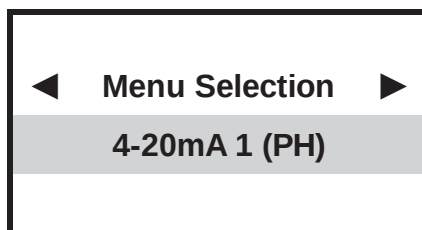
ONLY WHEN USING METERING PUMPS



The priming function blocks the setpoint value to allow the metering pump to remain primed.

- Press **ESC** to go back to **MENU SELECTION** or press **ESC ESC** to go back to **MEASUREMENT DISPLAY**.

5.15.10 ANALOGUE 4-20mA OUTPUTS FUNCTION SELECTION > EXPERT MENU



- Press **OK/MENU** to go into mA mode. In mA mode the instrument lets you choose two operative functions:
- EXTERNAL DEVICES:** suited to operating with mA signal such as data loggers or data recorders or other mA equipment.
- SETPOINT** through the control of metering pumps suited to controlling an mA external digital signal.

5.15.10.1 4-20mA1 OUTPUT PH OR RX > Remote Devices Function

Please refer to par. 5.13.10.1 on page 5-157.

5.15.10.2 4-20mA1 OUTPUT PH / 4-20mA2 RX > DOSING FUNCTION ON SETPOINT

The 4-20mA1 analogue output of the instrument follows the options previously selected in **Measurement Type** i.e. **pH** or **RX**.

The 4-20mA2 output is preset as default for **RX Measurement**.



Please note that the value displayed is automatically adjusted according to the **Measurement Type** selected.

mA1 pH

Menu Selection

4-20mA1 (pH)

SETTING 4-20mA1 (pH)

◀ mA output mode ▶

Setpoint

EXPERT MENU

SETTING 4-20mA1 (pH)

◀ Setpoint Value ▶

7.00 pH

EXPERT MENU

mA2 RX

Menu Selection

4-20mA2 (RX)

SETTING 4-20mA2 (RX)

◀ mA output mode ▶

Setpoint

EXPERT MENU

SETTING 4-20mA2 (RX)

◀ Setpoint Value ▶

200 mV

EXPERT MENU

Select the Set point value to control the metering pump or other equipment suited to processing the mA signal.

SETTING 4-20mA1 (pH)

◀ Metering ▶

Acid

EXPERT MENU

Setpoint mA is set for operations in **ACID** mode, the output is active when the measured value is higher than the selected setpoint, the connected pump meters out an acid product.

SETTING 4-20mA2 (RX)

◀ Metering ▶

Direct

EXPERT MENU

Setpoint mA is set for operations in **DIRECT** mode: if the measured value is lower than the selected setpoint, the connected pump meters out an oxidising product.

SETTING 4-20mA1 (pH)
◀ Metering ▶
Alkaline
EXPERT MENU

SETTING 4-20mA2 (RX)
◀ Metering ▶
Reverse
EXPERT MENU

Selected, the connected pump meters out an acid product.

SETTING 4-20mA1 (pH)
◀ Window width ▶
1.50 pH
EXPERT MENU

SETTING 4-20mA2 (RX)
◀ Window width ▶
150 mV
EXPERT MENU

The window width sets the distance from the setting point where the 4-20mA mode starts: 4mA = 0 metering pump pulse, 20mA = max impulsive frequency of the metering pump. The window width depends on many variables: distance injection point, reaction time, chemical solution, etc.

SETTING 4-20mA1 pH/RX
◀ Overdose ▶
00.00 h:m
EXPERT MENU

With the **overdose time** alarm one can select a period during which the setpoint must be reached. If the setpoint is not reached during this period of time, the instrument blocks output operations, including those in mA (metering pumps), the alarm is displayed as ON and triggers a signalling instrument connected to the alarm relay.

SETTING 4-20mA1 pH/RX
◀ Max. Dosing ▶
000 (no limit)
EXPERT MENU

SETTING 4-20mA1 pH/RX
◀ Max. Dosing ▶
000 m / 00 h
EXPERT MENU

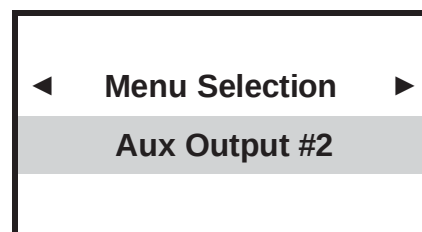
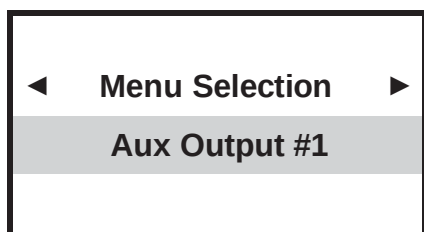
Maximum Dosing is a safety function that ensures metering is completed in the selected time. The relays of the metering pumps open accordingly. This function makes it possible to eliminate time limits (continuous metering according to the selected setpoints) or to select the minutes (up to 999) and the hours, for instance metering for 999 minutes in 24 hours.

- Press **ESC** to go back to **MENU SELECTION** or press **ESC ESC** to go back to **CONTINUOUS MEASUREMENT**.

5.15.11 AUX OUTPUTS > EXPERT MENU

The **auxiliary outputs** control various functions connected to any type of remote On-Off device controlled by a timer in real time. The AUX output may control a device or appliance thanks to very accurate programming of minutes/hours/days/weeks.

ADVANTAGES: this function makes this instrument a very versatile control unit not only to measure chemical physical parameters but also for other functions connected to the system where it is installed.



- Press **OK/MENU** to confirm the selection and to go on to the next sub-menu.
- Press **'ESC'** to go back to **'MAIN MENU'** or press **"ESC" "ESC "**to go back to **'CONTINUOUS MEASUREMENT'**.

AUX 1		Programme 01
Active time (m:s)		01 : 00
Start time (h:s)		10 : 30
Enabl. days		Mon : N
Tue: N	Wed : N	Thu: N
Fri: N	Sat : N	Sun: N
Wk. 1 : S	2 : S	3 : S 4 : N

AUX 2		Programme 01
Active time (m:s)		01 : 00
Start time (h:s)		10 : 30
Enabl. days		Mon : N
Tue: N	Wed : N	Thu: N
Fri: N	Sat : N	Sun: N
Wk. 1 : S	2 : S	3 : S 4 : N

The settings of the program entail many steps, which may be selected to have absolute operating precision (up to 99 programs for each AUX output).

AUX 1 or AUX 2	Program 01	• Press ◀ ▶ select program number (up to 99). • Confirm by pressing OK, automatically goes to the next step.
Active time	(m:s) 01:00	Selects the active time of the connected On/Off device • Press ◀ ▶ to select the minutes, confirm OK to move to the next digits. • Press ◀ ▶ to select the seconds, confirm OK to move to the next step.
Start time	(h:m) 10:30	Selects the start time of the connected On/Off device. • Press ◀ ▶ to select the hours, confirm OK to move to the next digits. • Press ◀ ▶ to select the minutes, confirm OK to move to the next step.

Enabled days	Mon : N ... Y	Selects the days during which the connected equipment is operational. - Press ◀ ▶ to select the days of activity ◀ ▶ N no or Y yes. - Confirm by pressing OK, automatically goes to the next step.
Weeks	1:Y 2:N 3:N 4:N	Selects the weeks of the month during which the connected equipment is operational. - Press ◀ ▶ to select the weeks of activity ◀ ▶ N no or Y yes. - Confirm by pressing OK, automatically goes to the next step.

- Press **ESC** to go back to **MENU SELECTION** or press **ESC ESC** to go back to **MEASUREMENT DISPLAY**.

6 MAINTENANCE

6.1 CLEANING AND MAINTENANCE OF ELECTRODES

6.1.1 Notes on ELECTRODES / pH and RX cleaning and maintenance

ELIGERE 03 PH-RX-CL 01 pH(RX) 02 PH(RX)-CD 02 PH(RX)-CL 02 PH-RX	The formation of deposits on the electrode produces reading errors. The required cleaning operation depends on the type of deposit in question. In case of thin deposits, shake the electrode or spray it with distilled water. Organic residues or especially stubborn deposits must be removed by means of chemicals. Mechanical cleaning of the bulb should only be performed in extreme cases, but take into account that abrasion may cause irreparable damage. If cleaning does not completely restore effectiveness of the electrode, the electrode might have got old. Ageing will show in a measurement error or in a slow response. Check the mV value displayed at the bottom of the screen during Calibration operations: this is a way to check electrode effectiveness, if the value deviates from the values indicated in the electrode specifications (contained in its instructions), change the electrode or contact ETATRON or the authorised dealer.
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6.1.2 Reconditioning valid for PH and RX electrodes

ELIGERE 03 PH-RX-CL 01 pH(RX) 02 PH(RX)-CD 02 PH(RX)-CL 02 PH-RX	The following chemical treatments may be performed to recondition the electrode until bulb cleaning. 1) Immerse the electrode tip in hydrochloric acid 0.1N (HCl) for 15 seconds, then rinse with water and dip the electrode again in a 0.1 N sodium hydroxide solution (NaOH) for 15 seconds, followed by a second rinse. Repeat this sequence three times, then perform another test measurement. If the reading is still incorrect, go to point 2. 2) Immerse the electrode tip in a 20% ammonium bifluoride solution (NH₂F-HF) for two or three minutes, then rinse with water and perform another measurement test. If the reading is still incorrect, proceed to point 3. 3) Immerse the tip of the electrode in 5% hydrofluoric acid (HF) for 10 seconds, then rinse thoroughly in water and very quickly in 5N hydrochloric acid (HCl), followed by a second rinse in water. If the test measurement still gives incorrect results, the only thing to do is change the electrode.
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We suggest using new buffer solutions or still in good conditions (not old) or a reliable test kit.
 As for the lengths of the pH electrode cable we advise max 9 m: contact ETATRON for longer distances.

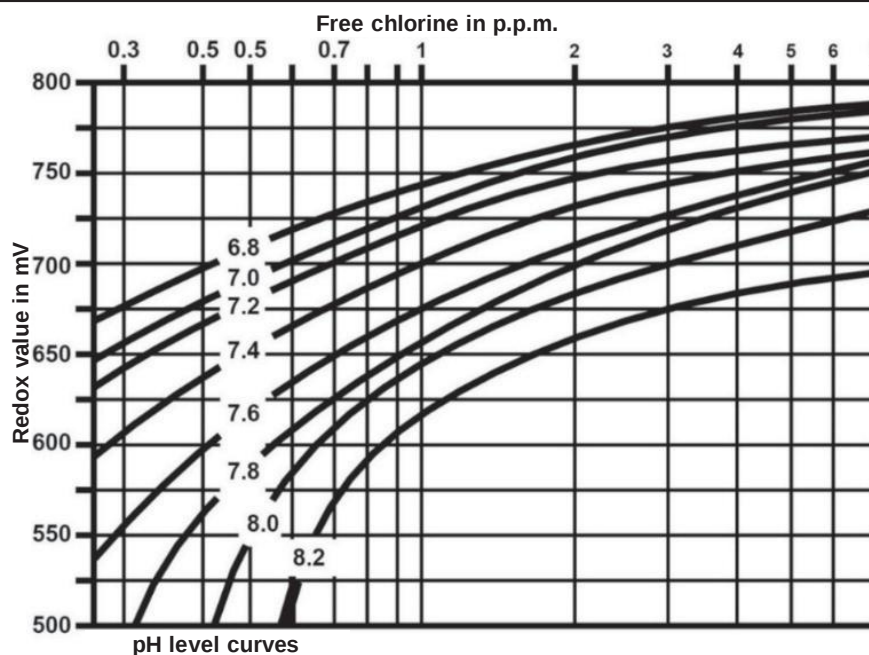
6.1.3 CHLORINE electrodes - Cleaning and Maintenance

ELIGERE 03 PH-RX-CL 02 PH(RX)-CL	For cleaning and maintenance of the chlorine probes, refer to the probe's manual.
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6.1.4 CURVE of the oxide/redox reduction potential (ORP)

ELIGERE
03 PH-RX-CL
01 pH(RX)
02 PH(RX)-CD
02 PH(RX)-CL
02 PH-RX

Redox measurements depend on the stability of the pH level.
 To obtain the mV value for programming, the operator must find the exact point that intersects the axis of the required ppm value, the curve of the measured pH = the mV settings (axis on the left):



6.2 CONDUCTIVITY SENSORS

ELIGERE
01 CD

The ELIGERE-CD unit works with simple conductivity sensors with 2 open electrodes, with AISI 316 and graphite electrodes.



FOR 4-WIRE CONDUCTIVITY SENSORS (with internal temperature sensor): as various types are available on the market, should the operator wish to use this type of sensor, contact ETATRON D.S. service or your local dealer for the correct set-up for connecting to the terminal board.

The ELIGERE-CD unit is NOT suitable for EC inductive sensors!

The ELIGERE CD device is automatically adjusted based on the conductivity ranges by adapting the regulator to the various characteristics of the probe cells' "K" constant.

The conductivity measurement is in microsiemens with 4 ranges of the K factor (Cell constant) suitable for:

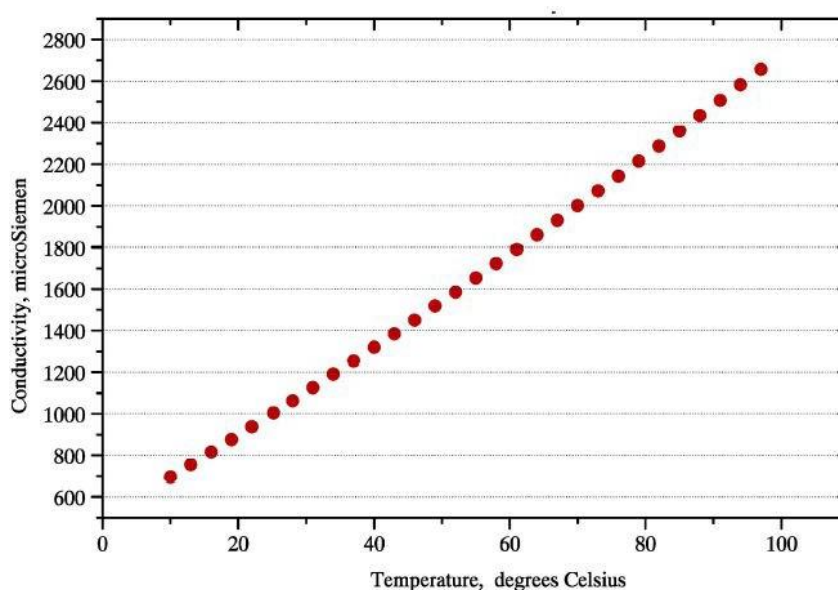
IMPORTANT: the μS ranges above are purely indicative; considering that, for example, a K1 probe can measure correctly below 1000 μS , the resolution will simply be less precise. However, the same concept does not apply for high ranges also.

6.2.1 TEMPERATURE correction (EC Alpha factor)

ELIGERE 01 CD

The EC Alpha factor is the correction factor of the conductivity measurement according to temperature: EVERY CONDUCTIVITY SENSOR DEPENDS ON THE TEMPERATURE. Conductivity changes linearly according to the temperature of the solution. This coefficient normalises the conductivity measurement at the reference temperature of 25°C. The alpha factor guarantees the best result in terms of precision.

The typical average of most water samples with some dissolved solids is 2% per °C. In wide temperature ranges (e.g. from 0 to 100°C) the temperature offset factor may not remain constant.



6.3 CONDUCTIVITY PROBES

ELIGERE 01 CD COOL 02 PH(RX)-CD

The instrument works with a simple conductivity sensor with open 2-electrode system, one graphite electrode or AISI 316, both with PTFE body. Also available in AISI 316 with PVC body.



FOR 4/6 WIRE CONDUCTIVITY SENSORS (with built-in temperature sensor) by virtue of the various models on the market, should the operator wish to use these sensors, they are kindly requested to contact the ETATRON service or the local dealer to receive the correct set-up for connecting to the terminal board.

The instrument is NOT suitable for inductive sensors!

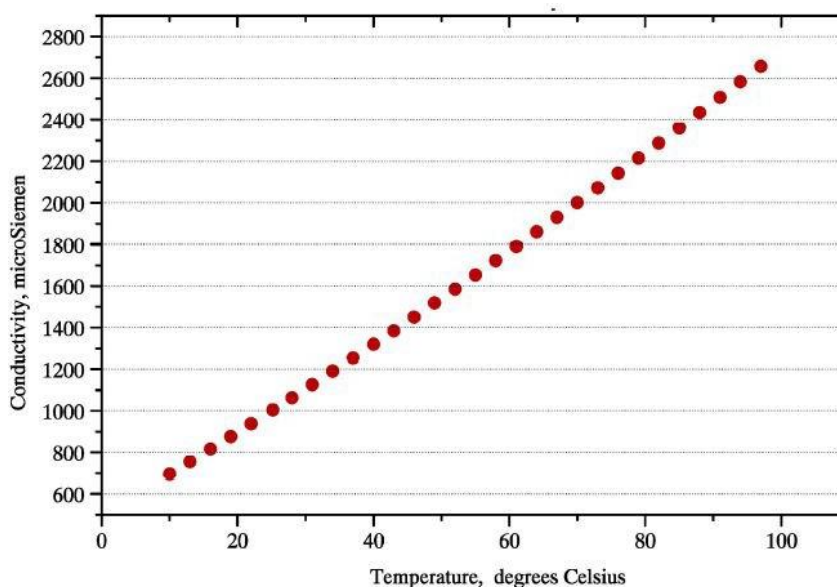
The ELIGERE 0x - CD COOL instrument is automatically adjusted for various conductivity ranges and adapts to the various features of cell constants "K". However, at the start of programming and in Expert Menu - Setpoint 1" the user may adjust the desired K factor.

IMPORTANT: the conductivity ranges described above are only indicative; considering that, for example, a K1 probe (range 20 mS) is able to perform fair measurements below 2000 µS, only resolution will be less accurate. However, the same concept does not apply to higher ranges.

6.3.1 ALPHA factor / TEMPERATURE / CONDUCTIVITY

ELIGERE
01 CD COOL
02 PH(RX)-CD

The CE alpha factor is a corrective factor for the conductivity measurements to take into account the temperature: EACH CONDUCTIVITY SENSOR DEPENDS ON THE TEMPERATURE. Conductivity changes linearly with the temperature of the solution. This coefficient normalises the conductivity measurements at the reference temperature of 25°C. The alpha factor assures the best measurement result and the best accuracy. 2% for every °C, is on average the typical value found for many water samples with dissolved solids. Over a wide temperature range (e.g. 0-100 °C) the temperature offset factor might not remain constant.



6.3.2 ALPHA factor / TEMPERATURE / CONDUCTIVITY

ELIGERE
02 PH(RX)-CD

SENSOR STORAGE

Short term: rinse the sensor electrodes in demineralised water; allow them to dry and reuse.
Long term: as above, plus cover the electrodes, store in a dry place.

Monthly Maintenance

It is recommended to perform calibration on a monthly basis. Follow the procedure set out under calibration. Keep track of the cell constant at each monthly calibration.

When to clean the sensor

Various factors may influence the physical limits on the liquid and apparent cell constant; scaling, biological cultures, oil, wax, rubber etc. all reduce the actual liquid flow area. Periodic cleaning of the conductivity sensors in use removes these deposits and restores conduction surfaces, cell volume hence cell constant.

7 INSTRUMENT TROUBLESHOOTING



WARNING.

Ignoring the safety information may endanger your life or cause severe injuries!



CAUTION.

In the presence of gas or in premises saturated with gas, ensure you disconnect the device's power supply for metering the Chlorine gas; also ensure the power supply of other equipment making up the system is secured.



Before working on the unit, disconnect it from the mains.

MALFUNCTION	POSSIBLE CAUSE	SOLUTION
Display is OFF	Power failure	Check the electrical connections Check whether the mains match the power supply printed on the label.
	Burnt smell	Check the board and replace it following authorisation by ETATRON
The measurement display remains fixed (there are no changes)	pH or RX levels are NOT stable	Check again using a portable instrument.
	Conductivity levels are NOT stable	Check again using a portable instrument or portable conductivity kit
	The signal from the sensor does not change	Repeat sensor calibration and if the problem persists, change the sensor.
The measurement display changes all the time (measurement surges)	Electrical disruption from the local mains	Check the local mains. Check the earthing system connections
	Micro-electrical disturbances in the measured fluid	Check instrument calibration, if the instrument measures correctly eliminate the electrical disturbances and refer to point A
The sensor calibration procedure cannot be completed	Old or contaminated buffer solution kit	Change buffer solution and use a portable kit
	Faulty sensor	Adhere to the recommendations below

IMPORTANT TESTS: in cases 2, 3, 4 above always test operation of the unit with the following steps:

A. Take down the unit from the system and install it in another room or laboratory without connections to other devices, but directly to the local mains.

B. Recreate in a container with fresh water the chemical-physical conditions of the system and relevant conductivity value.

C. Program the unit and calibrate the sensor.

a. If the results show correct unit operation, this means the issues lie within the system.

b. If the problem persists, replace the sensor with a new one; if the problem continues, the unit is faulty, contact the Manufacturer or authorised Dealer.

MALFUNCTION	POSSIBLE CAUSE	SOLUTION
The setpoint relay does not close the contact	Incorrect setpoint	Correct the setpoint
	Incorrect setpoint mode	Change the setpoint operating mode, direct or reverse, on the functions menu

REMEMBER: unit with universal voltage 100-250 VAC ($\pm 10\%$) or 9-24VDC. If the real voltage is constantly at the limit (minimum or maximum), or when the peaks are far above the mentioned range, the unit input is electrically protected against voltage fluctuations; outside the range mentioned above, the instrument does not work and the printed circuit must be replaced.



It is recommended to use voltage protections, check the earthing system and, when other equipment is connected in parallel, use a contactor. Furthermore, ETATRON **recommends** installing a UPS (genset) to assure continuity thus ensuring no data are lost. A system that is set up without following the proper electrical design rules, without an earthing system, with frequent ON/OFF operations, might directly undermine the printed circuit.

Suggestions for troubleshooting CONDUCTIVITY SENSORS

- **Slow Response:** typically due to excessive length of the collection system and slow flow, which therefore results in long delays in sample conveyance. Solve by adding a fast flow circuit with the sensor on the short current side or by shortening the line. A slow response may also be caused by a dirt buildup in the collecting line. In this case the problem may be mitigated by changing the collection point and installing a knock-out pot.
- **Constantly low readings/low peaks:** typical of bubbles in the collection line that remain between the probe electrodes.
- **Gradually decreasing readings:** the instrument cannot be adequately calibrated. This problem is typical of scaling or deposits of fouling/sludge on the sensor. The sensor must be cleaned.
- **Maximum readings in any condition:** first of all ensure the instrument is showing the conductivity by using a portable conductivity meter.