

Eligere Touch



 **ETATRON**

IT NORME DI INSTALLAZIONE, USO E MANUTENZIONE

UK OPERATING INSTRUCTIONS AND MAINTENANCE

FR NOTICE D'INSTALLATION, EMPLOI ET ENTRETIEN

ES NORMAS DE INSTALACIÓN, USO Y MANUTENCIÓN

PR NORMAS DE INSTALAÇÃO, USO E MANUTENÇÃO

DE GEBRAUCHSANWEISUNG





ETATRON D.S.

CERTIFICATE OF CONFORMITY



ETATRON D.S. s.p.A.

Head Office

Via dei Ranuncoli, 53 - 00134 ROMA • ITALY

Tel. +39 06 93 49 891 • Fax +39 06 93 43 924

CC.I.A.A. 535990 - Trib. di Velletri 5170/85 • Cod. Fisc. 06632160583

P. Iva 01585941006 • N. Export M/7011798

Company subject to management and coordination of LASATEC S.r.l.

Internet: www.etatronds.com

e-mail: info@etatronds.com

AS MANUFACTURER OF CHEMICAL DOSING SYSTEMS

model: **ELIGERE TOUCH** powered from 110Vac to 240Vac

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

2014/30/UE: "Electromagnetic Compatibility"

2014/35/UE: "Low voltage Directive"

2011/65/UE and 2015/863/UE: "ROHS Regulations"

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

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

p. ETATRON D.S.

Eng. L. Polimeno

Technical Office

A handwritten signature in blue ink is written over a blue oval stamp. The stamp contains the text 'Technical Office' and a small 'V' at the bottom.

(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.

(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 we 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 rebuts.

(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.



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TOUCH SERIES INCLUDES SCREWS AND WALL BRACKETS FOR MOUNTING



*TOUCH series is **NOT** provided with sensors, which are available upon request.
Etatron declines any responsibility in case the controller is used with other brand probes and sensors*

1.0 USER INFORMATION USER INFORMATION SIGNS



WARNING: ignoring safety information can endanger life or result in serious injury !



CAUTION: ignoring safety information can result in injuries to persons or damage systems or materials !

□ **HIGH VOLTAGE:** ignoring this sign can result in death or serious injuries to persons !



NOTE or INFORMATION SOURCE



- this symbol "pointing finger" indicates programming steps.

- if no keys are pressed within 60 seconds, controller will display current measurements

Qualified and authorized personnel must carry out any work or repair on the unit: manufacturer declines any responsibility for consequences in case this rule is not complied.

Unqualified personnel should keep away from the plant and/or hazard areas.

The official operator of the system or the plant, when installing the unit, is responsible to fulfil the above rules.

2.0 TOUCH SERIES ENCLOSURE, MOUNTING AND COMMISSIONING

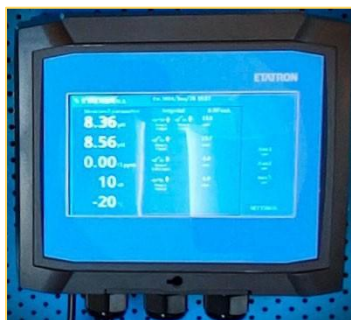
WALL MOUNTING ENCLOSURE P66

Enclosures IP66

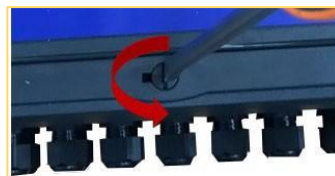
ABS, plastic, enclosure with hinged lid

UL94 HB (self-extinguish) V0

264w x 234,2h x 105



At the bottom of the lid there is a safety lock for closing the housing.



By using the hinged quick-release catch, the enclosures can easily be closed by hand - use a standard screwdriver to open



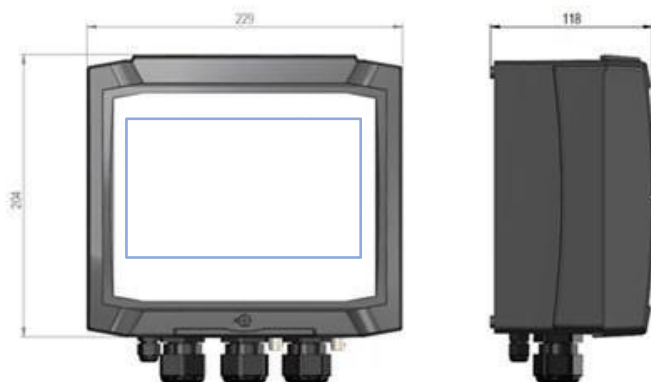
Once turned the release catch, press with both fingers at the same time to release the lid

- a. - Install the unit in a dry place and well away from heat sources; max environmental temperatures 40°C.
- b. - Carefully observe regulations in force in the various countries as in regards electrical installations.
- c. - Mount the controller on the wall using the screws and dabbles provided with the unit



VERY IMPORTANT NOTE FOR ENCLOSURE: when handling the unit bear in mind not to pull, drag, or mistreat the flat cable connecting the pcb display placed on the lid with main pcb.

2.1 OVERALL DIMENSIONS / ENCLOSURE CHARACTERISTICS



Dimension mm 264w x 144 x 234h

Net weight: 1380 gr

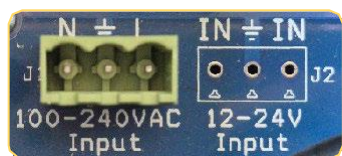
Gross weight: 1485 gr

Enclosure: Material – Protection **TOUCH**
Front controls
Working temperature

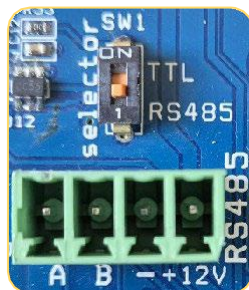
Plastic ABS-V0 fire-proof-IP66, hinged front panel with safe lock
Polycarbonate adhesive
0□50 °C

2.2 - ELECTRICAL WIRING CONNECTORS

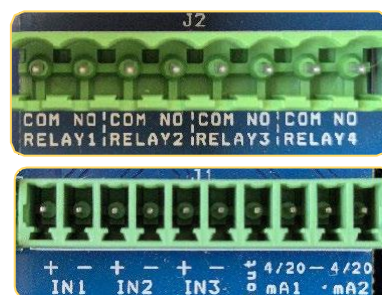
TOUCH4 is provided with 16 cable glands plus 2 BNC connectors for various input and output cable wirings. Complying with International electrical wiring rules, we advice not to connect more then one equipment on each pin.



Use for power cable



RS485 or TTL SELECT



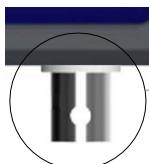
Relay outputs, level probe and sensors, and mA out



WHEN OPENING THE LID FOR SERVICING THE UNIT, ALWAYS DISCONNECT POWER SUPPLY !!!

2.3 - CONNECTING PH AND RX (ORP) ELECTRODES

Connect electrode to BNC connector



BNC connector for pH or RX (ORP) electrodes

i *Electrodes lifetime depends on the instalment and maintenance conditions. The longer the electrode will work more frequent calibrations are required. We recommend using good sample solutions or fresh reliable test kit still in good conditions (not old). For best system results, we recommend ensuring that pH is at required levels.*

2.4 - CONNECTING MEMBRANE CHLORINE SENSOR

PLEASE NOTE: TOUCH series offers various chlorine ranges by adapting the controller to the different type of sensors specifics:
Membrane type ion selective: **Chlorine** range 0÷2 Cl ppm; 0÷5 Cl ppm; 0÷20 Cl ppm; range 0÷20 Cl ppm (Total chlorine);
Membrane type for **PPM** measurements such as: Chlorine Dioxide, Bromine, Ozone, Peracetic Acid and others:
CLC amperometric open chlorine cell: range Free Chlorine range CLC 0÷10 Cl ppm (CLC is Systems chlorine open cell);

NOTE: the user must be careful of the sensor in his possession when he **must wire** the probe to the terminal board as shown in paragraph 4 on page 10÷11.

Place sensor into off-line holder and connect to Terminal board and check sensor wires configuration before connecting to mains.

SENSOR CABLE WIRINGS: FOR MORE COMMISSIONING DETAILS GO TO PAGE 37÷38

CHLORINE SENSOR TERMINAL BOARD			
	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



VERY IMPORTANT NOTE: when using sensors for other PPM measurements, wiring parameters may change, therefore, please contact and advice ETATRON SYSTEMS customer service.

If the ion-selective membrane sensors are incorrectly connected and / or have a wrong configuration, they can easily be damaged irreparably

2.5 - CONNECTING CD CONDUCTIVITY SENSOR

NOTE FOR CONDUCTIVITY SENSORS

TOUCH CD works with the principle of 2-electrodes conductivity open sensors, Graphite electrode or AISI 316 both with PTFE body. Also available with AISI 316 / PVC body.

FOR CONDUCTIVITY 4/6 WIRES (with internal temperature sensor) SENSORS: due to the various types on the market, in case operator wished to use such sensors, please contact ETATRON service or Local Dealer to get the right configuration for connecting to terminal board. **TOUCH CD is NOT suitable for inductive sensors !**

Disconnect the instrument from the power supply, install the conductivity sensor in the system or in a suitable probe holder. It is recommended to use a new probe or one in good condition. Connect CD sensor to the internal terminal board (page 10).

PLEASE NOTE: TOUCH CD automatically adapt itself to the different probes cell constant “K” characteristic consequently adjusting the various conductivity ranges display resolution, as shown in paragraph 8.5 of this booklet.

IMPORTANT: it is essential that the user knows the probe cell constant supplied by the manufacturer of the probe.

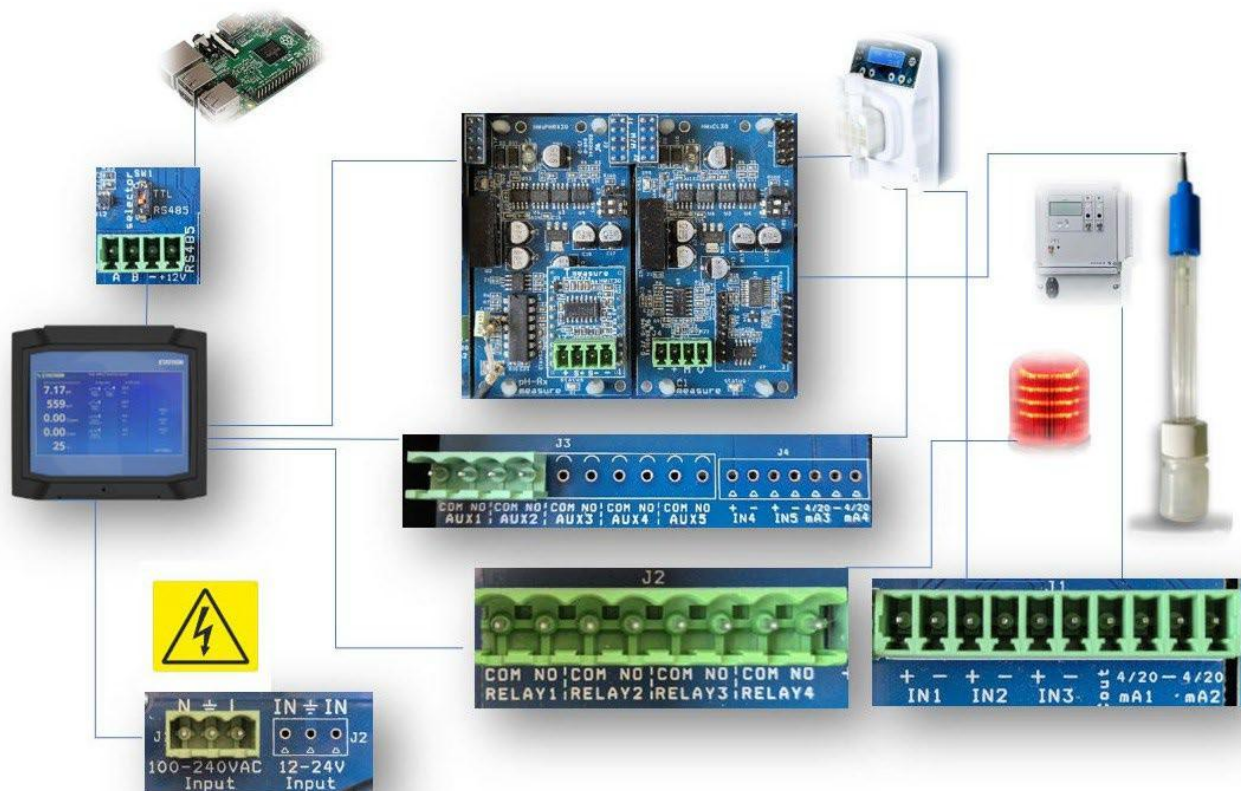
TOUCH CD will show µS values up to 1999 (microSiemens) above this value will automatically change to mS (milli Siemens).

CONDUCTIVITY TERMINAL BOARD		
S +	Conductivity Probe (WHITE wire)	(RED or WHITE wire)
+	Conductivity Probe (WHITE/BROWN wire)	
-	Conductivity Probe (BLACK/BROWN wire)	
S -	Conductivity Probe (BLACK wire)	(WHITE or RED wire)
TEMPERATURE TERMINAL BOARD		
+	PT100 temperature probe (RED wire)	
S +	PT100 temperature probe (BLUE wire)	
S -	PT100 temperature probe (GREEN wire)	
-	PT100 temperature probe (YELLOW wire)	

2.6 - CONNECTING TO MAIN POWER SUPPLY / PARALLEL CONNECTIONS

PARALLEL CONNECTIONS: when connecting the unit to main power supply in parallel with other inductive equipment (motors, pumps, blowers, solenoid and motorized valves), these gears must be electrically isolated and with a proper Ground system, to prevent damages from inductive voltages when switching ON-OFF. Try using a power switch to have separate connections via contact relay or relay. When this is not possible, contact ETATRON technical service.

EXAMPLE CONNECTION RELAY EXTERNAL UNITS 1-2-3-4-5 AND AUX1 AUX2 AUX3 ALARM



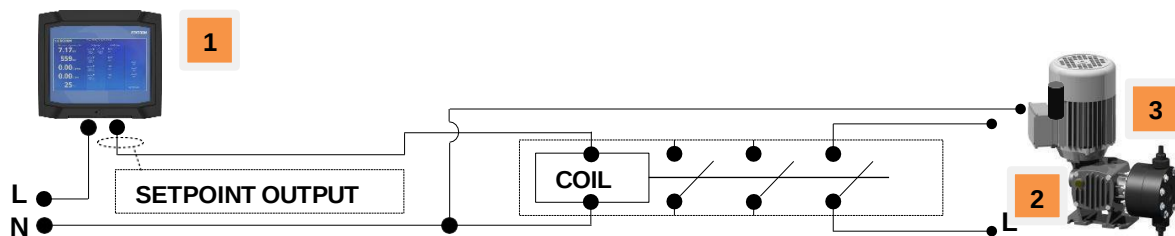
PLEASE REFER TO PARAGRAPH 4.0 "TERMINAL BOARD ELECTRICAL WIRING" PAGE 10÷11

EXAMPLE CONNECTION CONTROLLER-MOTOR DOSING PUMP RELAYS OUT 1-2-3

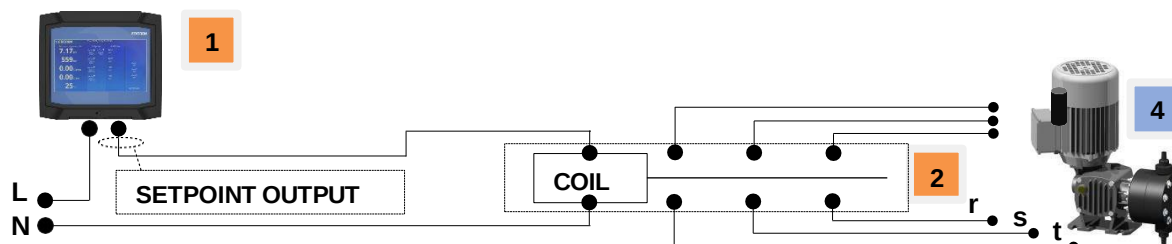
- | | | | |
|---|------------------------------------|---|----------------------------------|
| 1 | CONTROLLER | 3 | SINGLE PHASE MOTOR METERING PUMP |
| 2 | REMOTE CONTROL SWITCH 230V MAX 10A | 4 | TRI-PHASE MOTOR METERING PUMP |

L = one phase of mains network N = neutral r - s - t = represent each phase of tri-phase mains system

SINGLE-PHASE CONNECTIONS DIAGRAM THROUGH POWER SWITCH REMOTE CONTACT



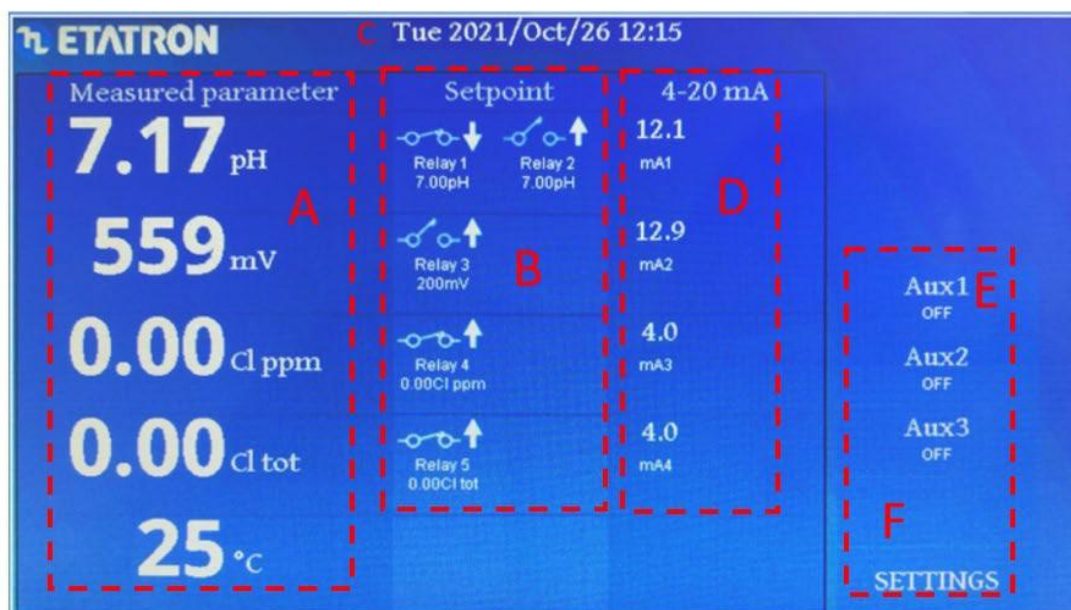
THREE-PHASE CONNECTIONS DIAGRAM THROUGH POWER SWITCH REMOTE CONTACT



KEEP IN MIND: unit with universal voltage 100÷250Vac (±10%) or 9÷24Vdc. If the actual voltage is constantly at the limit (lower or higher), or when spikes are much higher than mentioned range, the unit pcb is electronically protected against Voltage fluctuations; outside the above-mentioned ranges, controller will not work and circuit boards must be replaced. We **RECOMMEND** using voltage protections, checking system ground and, when connecting in parallel other units, using remote contact switch. A plant not built according to correct electrical rules, without a ground system, with frequent ON/OFF operations, could affect directly the circuit boards. It's also suggested installing a UPS (Uninterruptible Power Supply) to ensure power continuity. A discontinuous voltage with many On/Off operations, could affect pcb's integrity and Data loss.

3.0 DISPLAY DESCRIPTION

When choosing measure type Meter 1 and **Meter2** as **RX** shows **mV** values, and when choosing measure type meter 3, as ppm it will not show **Cl** but only **ppm**



Selecting **PT100** sensor display will show temperature readings, if manual it will **no** show of °C readings

- A:** touch this area to enter the calibration menu of the chosen measure
- B:** touch this area to enter the setpoint menu (not visualized if using Large digits display status, Expert menu)
- C:** touch this area to change the current date and time
- D:** touch this area to enter the 4-20mA menu (only in expert menu)
- E:** touch this area to enter the Auxiliary outputs menu (only in Expert menu)
- F:** touch this area to enter the main settings menu
- G:** touch this area to enter the temperature measured parameters

Once into any programming, touching **ESC** goes back one step, touching **HOME** goes to Main display.

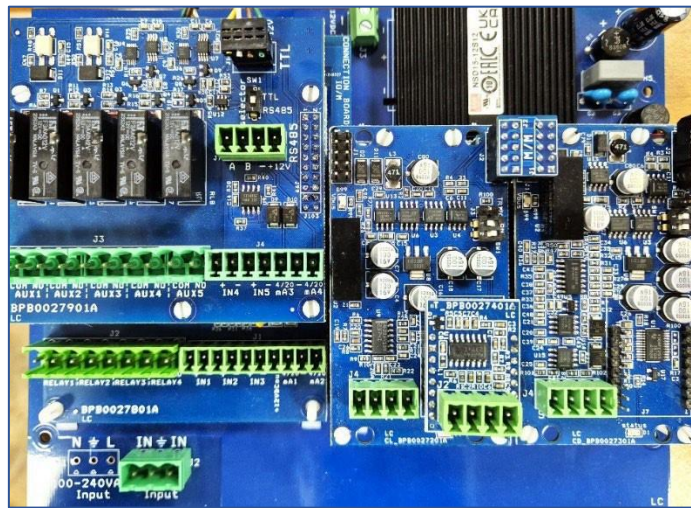
If there are more than one function active, messages appear in a continuous cycle lasting 3 sec. for each item. **ALARM** or **OVERDOSING** messages will disappear once measurements are restored according to programmed settings whilst Overdosing icon will remain; to delete activated icons from the display, keep pressing on **ESC**.

When messages appear, temperature status will NOT be shown.

Temperature value: setting Manual temperature mode, the temperature value will correspond only to the one selected. In case PT100 mode has been selected (and such sensor is connected), the temperature value shown will be the actual value of the system, compensation will be automatic. **Selecting MANUAL mode display will not show temperature measurements.**

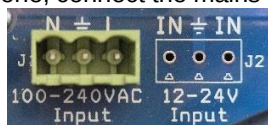
i Error displayed: **"NO LINK with meter"**: the two circuit boards, **measuring and I/O**, are linked together via RS485 protocol: in this case **check the electrical flat cable or the two circuit boards connecting pins alignment**; contact immediately ETATRON SYSTEMS service.

i PLEASE NOTE: when working with **Basic menu** the following display functions are **NOT AVAILABLE**: **mA** programming / **AUX** programming / **Temperature setpoint** programming



WHEN OPENING THE LID FOR SERVICING THE UNIT, ALWAYS DISCONNECT POWER SUPPLY !!!

- Unscrew the front panel and carefully open the lid.
- TOUCH series is provided with 2 m cable already wired onto the terminal board; in case user wishes to replace the cable with a longer one, connect the mains to neutral, earth, phase, unit switches **ON**, initially display **quickly** shows latest software review.



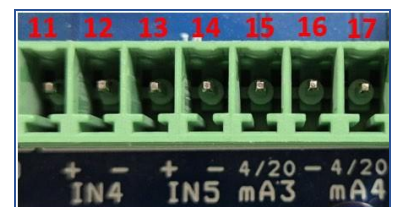
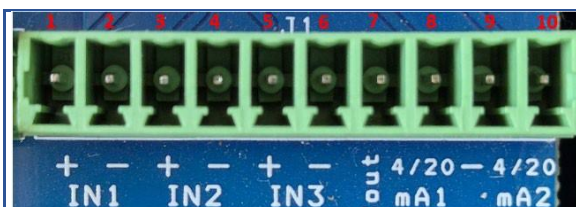
- **MAINS** connect power supply wires to following pins: **L** (line), **N** (neutral).



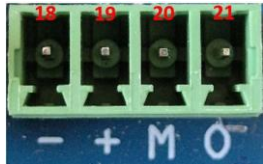
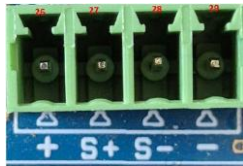
The terminal board is built with special pin for top safety: ensure to twist well the wire ends, use a small screwdriver to press the safety on top of the slot where insert the wire ends and, according International electrical rules, we advice not to connect more then one equipment on each pin.



Relay 1	Pin COM / N.A.	Setpoint 1 – Measure 1 - ON-OFF / timed pulse output relay PWM
Relay 2	Pin COM / N.A.	Setpoint 2 – Measure 1 - ON-OFF / timed pulse output relay PWM
Relay 3	Pin COM / N.A.	Setpoint 3 – Measure 2 - ON-OFF / timed pulse output relay PWM
Relay 4	Pin COM / N.A.	Setpoint 4 – Measure 3 - ON-OFF / timed pulse output relay PWM
AUX 1	Pin COM / N.A.	Setpoint 5 – Measure 4 - ON-OFF / timed pulse output relay PWM
AUX 2	Pin COM / N.A.	AUX1 ON-OFF auxiliary output time programmable
AUX 3	Pin COM / N.A.	AUX2 ON-OFF auxiliary output time programmable
AUX 4	Pin COM / N.A.	AUX3 ON-OFF auxiliary output time programmable
AUX 5	Pin COM / N.O.	ALARM output for operating the external signaling device



Pin 1 + / Pin 2 –	IN 1	Digital inputs for tank level switch Measure 1
Pin 3 + / Pin 4 –	IN 2	Digital inputs for tank level switch Measure 2
Pin 5 + / Pin 6 –	IN 3	Proximity Switch input BLACK + / BLUE – wires
Pin 7 +	+12Vdc out	Proximity Switch input 12Vdc BROWN wire
Pin 8 / Pin 9 –	4/20mA1	4-20mA output for Measure 1 for mA dosing pump or data device
Pin 9 – / Pin 10	4/20mA2	4-20mA output for Measure 2 for mA dosing pump or data device
Pin 11+ / Pin 12 –	IN 4	Digital Inputs for tank Level switch for Measure 3

Pin 13+ / Pin 14 – IN 5	Digital Inputs for tank Level switch for Measure 4
Pin 15 / Pin 16 – 4/20mA3	4-20mA output for dosing pump or data device for Measure 3
Pin 16 – / Pin 17 4/20mA4	4-20mA output for dosing pump or data device for Measure 4
 Chlorine sensor or PPM sensor Membrane type	Pin 18 (–) = – 12Vdc BLUE
	Pin 19 (+) = +12Vdc WHITE
	Pin 20 (M) = Measurement Chlorine sensor BROWN
	Pin 21 (0) = GROUND BLACK
 Chlorine sensor Open Cell type	Pin 18 = NO CONNECTION
	Pin 19 = NO CONNECTION
	Pin 20 = Measurement Chlorine sensor BLUE
	Pin 21 = GROUND BROWN
 Conductivity sensor 2 wires DO NOT CONNECT BRAIDED WIRE	Pin 22 = S+ WHITE
	Pin 23 = + WHITE/BROWN
	Pin 24 = – BLACK/BROWN
	Pin 25 = S– BLACK
 Temperature probe PT100 DO NOT CONNECT BRAIDED WIRE	Pin 26 = + RED
	Pin 27 = S+ BLUE
	Pin 28 = S– GREEN
	Pin 29 = – YELLOW
 RS485 / TTL connection For software ETACLOUD with RASPBERRY and installation ask for special manual	Pin 30 = A ORANGE
	Pin 31 = B YELLOW
	Pin 32 = – BLACK
	Pin 33 = +12V <i>Not connected</i>



KEEP IN MIND: unit with universal voltage 100□250Vac (±10%) or 9□24Vdc. If the actual voltage is constantly at the limit (lower or higher), or when spikes are much higher than mentioned range, the unit pcb is electronically protected against Voltage fluctuations; outside the above-mentioned ranges, controller will not work and circuit boards must be replaced. We **RECOMMEND** using voltage protections, checking system ground and, when connecting in parallel other units, using remote contact switch. A plant not built according to correct electrical rules, without a ground system, with frequent ON/OFF operations, could affect directly the circuit boards. It's also suggested installing a UPS (Uninterruptible Power Supply) to ensure power continuity. A discontinuous voltage with many On/Off operations, could affect the pcb's integrity and Data loss.

5.0 OPERATING MODES GLOSSARY

ON-OFF mode

- Unit is provided with ON-OFF mode which will activate (or deactivate in case of reverse mode ON) output relays Constant / ON-OFF dosing pumps mode or other ON-OFF equipment.

BENEFITS: it will work with most of ON-OFF equipment, which are also cost effective.

DISADVANTAGES: due to dosing equipment high output performance rate (frequency for dosing pump and peristaltic dispensers with motor rpm), this will result to a slight different value between actual measurement in the system and what controller shows.

USING EXTRA ON-OFF RELAY OUTPUT

- ON-OFF Relay** probably will connect a dosing pump; the free available relays can connect an alarm device (buzzer and light), programming different values then the ones for dosing pumps.

BENEFITS: increase safety measurements ensuring warning in case parameters are out of control.

ACID / ALKALINE - DIRECT / REVERSE DIRECTION MODE

- Set-points relays Direction mode are set as default as follow:

Set point 1 / Set point 2 PH or RX (Orp):

- **PH:** ACID mode meaning that output is active when measured value is higher than set point, connected dispensing unit will dose acid chemical.
- **RX:** DIRECT mode meaning that output is active when measured value is lower than set point, connected dispensing unit will dose chlorine (Oxidant).
- **RX:** REVERSE mode, output is active when measured value is higher than set point, connected dispensing unit will dose chlorine Reducing chemical.

Set point 3 RX (Orp):

- **RX:** DIRECT mode meaning that output is active when measured value is lower than set point, connected dispensing unit will dose chlorine (Oxidant).
- **RX:** REVERSE mode, output is active when measured value is higher than set point, connected dispensing unit will dose chlorine Reducing chemical.

Set point 4 Chlorine or PPM measurements:

- **CL or PPM:** DIRECT mode meaning that output is active when measured value is lower than set point, connected dispensing unit will dose chlorine (Oxidant).
- **CL or PPM:** REVERSE mode, output is active when measured value is higher than set point, connected dispensing unit will dose chlorine Reducing chemical.

Set point 4 CD CONDUCTIVITY measurements:

- **DIRECT** mode meaning that output is active when measured value is lower than set point.
- **REVERSE** mode, output is active when measured value is higher than set point.

User can change mode during programming or CD (conductivity) cell constant range (latter using expert menu>Measured Parameters).

ALARM MAX / Min function

- ☐ **Alarm** function allows selecting two points high and low passed which controller will go into alarm.

BENEFITS: increase safety measurements ensuring warning in case parameters are out of control.

HYSTERESIS

- ☐ **Hysteresis** is useful during ON-OFF mode set-point adjustment operations and is used to activate or deactivate output relays when selected hysteresis is reached. Hysteresis is useful when there are too many quick changes around set point, which could damage connected equipment. Increasing Hysteresis will allow moving away from set point according to required value.
Example with PH: if selected set point is 7.00 pH and Hysteresis set at 0.05, the two active points are 6.95 pH and 7.05 pH: within this range, set point is OFF and outputs are blocked, outside this range set point is ON (always in accordance with Acid or Alkaline mode). **RX (mV), CL/PPM, CD (conduct.) parameters work the same way according to programming settings.**

BENEFITS: ensuring good control the systems without stressing connected equipment.

DISADVANTAGES: user must remember that programmed hysteresis is slightly different from required set point.

DELAY

- ☐ **Delay time** blocks relay outputs (max 999 sec. programmable) to ensure that the outputs are active only when the sensors measurements are stable thus allowing the best results in terms of chemical balance.

PWM mode: Pulses Width Modulation / Timed pulses

- ☐ **Timed Pulses** also known as **PWM** "pulses with modulation" time/pause allows proportional mode on each ON-OFF set-point activating corresponding pulses with Start/Stop time cycle variation according to measured value in respect to set-point.

Window Width: pulses are timed ON and OFF according to the distance from selected set-point, programmable, example with pH parameter: if selected set point is 7.00 pH and measured value is 9.00 pH, **PWM** mode will start after reaching 8.50 pH with Time/Pause pulses and decreasing the active time while reaching set point value.

Cycle Time: PWM mode cycle 60 seconds (programmable): example set point 7.00 pH, 8.50 pH = active time 60 sec - pause time = 0 sec.; 7.75 pH active time= 30 sec / pause time 30 secand decreasing active time accordingly while reaching set point value. Cycle time depends on many variables such as: distance from injection point to treating system, how fast or slow set point must react, chemical concentration, etc....

Active Time MIN programmable: it sets the minimum time in which PWM is active; it overrides selected settings. Times Pulses Function is adjusted via 3 functions following the formula: Active Time according to selected formula = (measured value – set point) / window width * cycle time. If the result of the formula is < the selected Active Time Min, the latter will override the first, example: measured value 8.50 pH - set point 7.00 pH / Window Width 1.50 pH * Cycle time 60 sec = active time 4 sec.
In case user has selected **Active time min 5 sec**, this will be minimum time of PWM and not 4 sec.

RX (mV), CL/PPM, CD (conductivity) parameters work the same way according to programming settings.

BENEFITS: a proportional function more accurate than ON-OFF mode using simple equipment such as Constant mode dosing pumps and peristaltic dispensers.

DISADVANTAGES: user must be a professional to select the most accurate settings for excellent results.

ANALOG CURRENT OUTPUTS 4÷20 mA

Controller features 4 analog current signal mA outputs. The 4-20mA signal follows pH, RXmV and CL (ppm) or PPM selected settings.

Output mA provides two working mode to select according to the system operating requirements:

- **AUX** is a programmable function combined to the unit in real time thus driving remote equipment such as data logger, remote equipment such as data logger, PLC or Chart recorders or other equipment suitable to process a remote mA signal. At 4 mA corresponds the minimum pH, RX mV (ORP), CL/PPM, CD (conductivity) levels, at 20 mA corresponds the max measured pH or RX mV (ORP) and CL (ppm) levels; connected equipment will work accordingly.
- **DOSING SETPOINT**: mA output drives dosing pumps or equipment suitable to manage a mA incoming signal. At 4 mA corresponds the minimum pH, RX mV (ORP), CL/PPM, CD (conductivity) levels thus connected dosing pump will work at minimum capacity. At 20 mA corresponds the max measured or RX mV (ORP) and CL (ppm) or PPM levels connected dosing pump will work at max capacity (according to equipment adjustment settings).

BENEFITS: best results because pulses are extremely accurate in relation to measured levels.

DISADVANTAGES: user needs a specific dosing pump or other equipment suitable to process a remote mA signal.

OVERDOSING TIME

- **Over dosing time-out** alarm allows to select a period in which set point must be reached. If during this time set point is not reached, controller will block outputs operations including mA outputs (dosing pump), Alarm is ON shown on display and will activate a signalling device connected to alarm relay. **BENEFITS**: to prevent excess of chemical addition.

MAX DOSING / DOSING CHECK TIME

- These are extra safety functions ensuring that dosing operations are effected within the time selected by the operator. Relays connected to dosing pumps will open accordingly. This function allows no time limit, dosing continuously always in accordance to selected set points or, in case the operator wants to change settings, he can select the number of minutes (up to 999) within the selected hours. **Dosing check time** sets a time period (hours) in which the unit checks the total dosing time effected, example: every 3 hours' unit checks the total dosing time; if the dosing time has exceeded programmed selection, it will not effectuate any dosing until dosing time is restored to original programming.

BENEFITS: to prevent excess of chemical addition not only according the set point but also overruling any kind of the controller set point programming.

REAL TIME CLOCK / START-STOP TIME

- **Real time clock** allows driving via timer programming Auxiliary outputs, sensors cleaning (open chlorine cell) or any remote equipment for the period selected in the program. Operator can also program the working days and exact time of the unit operations via Start/Stop programming.

AUX OUTPUTS

- **Auxiliary outputs** control various functions related to remote equipment and dosing pump. Each output can drive remote equipment or devices according to a very accurate programming of minutes/hours/days/weeks.

BENEFITS: this function make this controller a very versatile management unit not only to measure chemical-physical parameters but also for other functions related to the systems where is installed.

START-UP DELAY

- **Start-up Delay time** stops the relay outputs when switching ON the unit thus allowing sensors to polarize ensuring correct measurements (programmable).

FLOW SENSOR “PROXIMITY SWITCH” FUNCTION

- **Flow Sensor**: in case, no water is running through the sensor cell holder (and eventually into the systems), flow sensor (proximity switch) will deactivate all outputs ensuring that no extra chemical is added.

TEMPERATURE

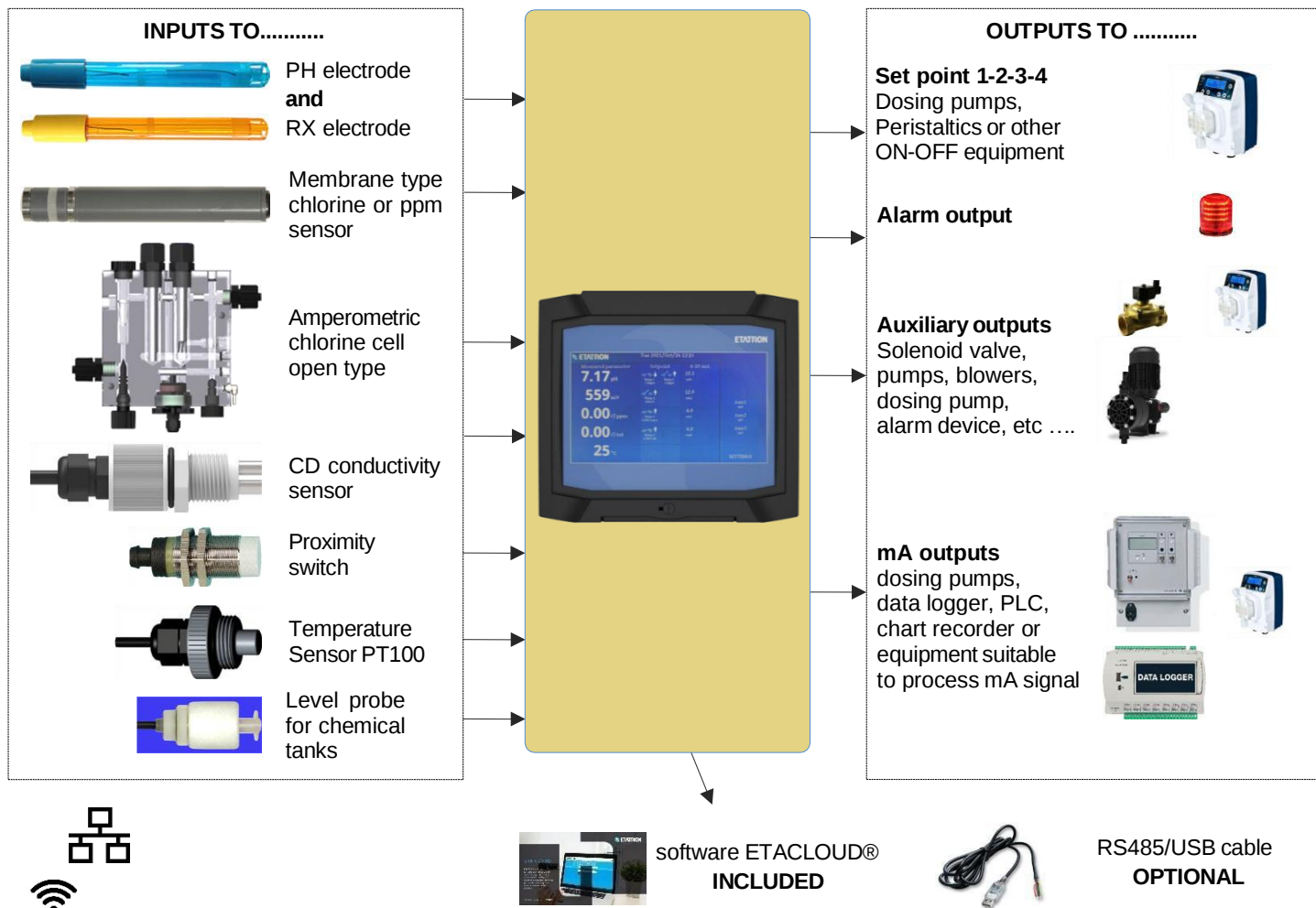
- Manual temperature compensation. 0÷100°C. Selecting **PT100** (latter with temperature sensor) **automatically compensates** temperature / sensor measurements, always giving the exact value against the current temperature. In Manual mode, if user does not select any temperature value, controller will set 25°C value as default, which can be changed. Temperature value is visualised only if using temperature sensor PT100. **NOTE: temperature setpoint is available only if using probe**

ETHERNET / RS485 and WiFi communication control unit with external OR internal module

- The TOUCH series is suitable for remote control via an RS485 expansion card with Modbus protocol using Etacloud® software, The control unit connection via RS485/ETHERNET and WiFi allows the operator to connect to the unit via PC, smartphone or tablet, and change the programming and visualise settings using Etacloud® software. The unit will send an email once reached the alarm level, the overdose settings, or finished the maximum dosing time of the metering pump.
- Etatron features a useful service which will allow the customers to monitor and control from anywhere in the world the controllers installed in any place in the world: ETACLOUD SYSTEM. Upon request, and only with the user written permission, Etatron can share the controllers monitoring ensuring the correct functioning, all in real time (refer to last page).

6.0 PROGRAMMING FUNCTIONS

Set-Points	Output Relays 1 - 2 - 3 - 4 - 5	3 set-point ON-OFF	Independent setting to activate Constant / ON-OFF mode dosing pumps, peristaltic or ON-OFF equipment.
		Set point	adjusts set-point value (ON-OFF mode).
		Hysteresis	It selects a measuring range around set-point value, blocking output relays (ON-OFF mode)
		Acid - Alkaline pH Direct - Reverse RX / CL PMM / CD	It selects output dosing relay dosing direction.
		PWM Proportional mode with modular pulses	Proportional time/pause pulses output will activate a Constant / ON-OFF mode dosing pumps, peristaltic or others ON-OFF equipment.
		Delay on set point	It selects a delay time (999 seconds adjustable) before activating relay output.
	Relay outputs AUX	Real-Time clock drives remote equipment or devices according to a very accurate programming of minutes/hours/days/weeks	
	Relay Alarm	Alarm min / Alarm Max	Alarm function selects alarm Lowest and Highest level passed which alarm relay will be ON or OFF.
4÷20mA1 4÷20mA2 4÷20mA3	AUX mA device	It allows to select pH, RX(Orp), Chlorine / PPM, CD CONDUCTIVITY levels corresponding to min. and max mA output analogical signal.	
	Dosing setpoint	driving mA dosing pumps or equipment suitable to work with mA signal	
Calibration	Calibration menu for pH and RX electrodes, Chlorine (Membrane or Open cell) or PPM sensors, CD sensor		
System Settings	Flow sensor	It activates (ON) or deactivates (OFF) flow sensor (proximity switch) input.	
	Manual temperature	It selects manual temperature compensation. 0÷100°C (Auto-Temp=OFF).	
	Auto-temperature Compensation	It compensates the temperature / electrode_sensor thus always measuring the exact value against the current temperature, function available only with PT100 sensor.	
	RS485/Ethernet WiFi	Remote control via RS485 / ETHERNET or WiFi control unit, Modbus protocol, Software ETACLOUD: operator is connected via pc, smartphone or tablet, also in WiFi	



NOTES FOR PROGRAMMER: try not to press the keys continuously. First, read the manual before programming or have the booklet handy so to be sure to perform a correct selection.

IMPORTANT: if keys are not pressed within 60 seconds, controller will display current measurements. For rapid advancement, **keep** pressed firmly either one of ◀▶ keys



When the controller is turned ON there will be displayed at the bottom the latest software upgrades.

Software is subject to revision without notice.

Controller will get set for measurements and ready to work.

i at this point, there could be some here are displayed some other messages status which could be ON due to actual measurements, just go ahead with programming.

Display shows pH, RX (orp) mV, Chlorine or PPM measurements and CD (conductivity) measurements according to initial selections according to the following paragraphs 8.4, 8.5, 8.6 and 8.7. If display shows unwanted programmed settings, due to previously programming, we recommend a reset of the unit (SETTINGS).

INITIAL DISPLAY shows measurements which are random since no calibrations have yet been done.

ETATRON If the controller has been already programmed, display will show previously selected programs.

CONTINUOUS MEASUREMENT DISPLAY shows when parameter measurements, function status and alarm indications.

When the controller is turned **ON** for the **first time**, there will be displayed a list of all the programming function keys which will not appear in the next switching ON operations.

Large measured value **Digits** are visualized by selecting Display status "Hide" (set point status not visualized, only **SETTINGS expert menu**)

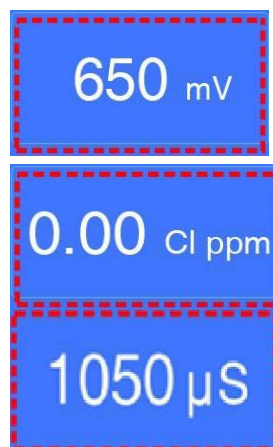


i Selecting Meter1 Measure type RX, windows will show RX values
Selecting Meter2 Measure type PH, windows will show PH values

i Selecting Meter3 Chlorine or PPM range, display shows values for according to selected range

i Selecting Meter4 for CD conductivity measurements, display will show μ S values up to 1999 (microSiemens) then automatically will change to mS (milli Siemens) above latter value

i at this point, there could be some here are displayed some other messages status which could be ON due to actual measurements, just go ahead with programming.



Display shows pH or Redox mV and Chlorine or PPM measurements according to selections that will make selected in following paragraph 8.4 and 8.5. If display shows programmed, display shows previously selected set points.

8.1 - SELECTING PROGRAMMING MENU LANGUAGE

Basic Menu

◀ Language ▶

English

It allows to select programming menu language.

☞ Touch **SET** to confirm selections

8.2 - DATE AND TIME – REAL TIME CLOCK

Real time clock allows driving via timer programming Auxiliary outputs, sensors cleaning (open chlorine cell) or any remote equipment for the period selected in the program. Operator can also program the working days and exact time of the unit operations via Start/Stop programming.

Current date (YYYY/MM/DD)			
1	2	3	DEL
4	5	6	CLEAR
7	8	9	ESC
/	0		SET

Current Time (hh:mm)			
1	2	3	DEL
4	5	6	CLEAR
7	8	9	ESC
:	0		SET

If during programming, operator wishes to change date and time, to enter the function touch the date place on top of the Main Display.



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8.3 - SELECTING PROGRAMMING MENU

Programming Mode

☐ Basic

☒ Expert

It allows to select programming menu mode.

☞ Touch **OK** to confirm selection



PLEASE NOTE: when working with **Basic menu** the following display functions are **NOT ACTIVE**:

- **mA** programming
- **AUX** programming
- **Temperature** programming

8.4 - SELECTING TEMPERATURE VALUE

Temperature mode

☐ PT100 Sensor

☒ Manual

Temperature			
1	2	3	DEL
4	5	6	CLEAR
7	8	9	ESC
/	0		SET

Select the water temperature value present in the system.

☞ Touch **OK** to confirm selection

8.5 - SELECTING METER 1 AND METER 2 MEASURING PARAMETER METER1

TOUCH series controller allows to select either PH or RX (ORP) on one both measurements in the same unit. Measuring parameter can be changed from PH to RX and consequently the display and measurement resolutions will change accordingly.

Meter 1: Measure Type	
☒	pH
☐	Rx

Selecting either one of the two menus, programming will change accordingly.

Meter 2: Measure Type	
☐	pH
☒	Rx

Selecting either one of the two menus, programming will change accordingly.

 Touch **OK** to confirm selection

If user wishes to change **Meter 1 and Meter 2 Measure Type** (and relative proper sensor), move to **EXPERT MENU**:

 **SETTINGS > EXPERT > MEASURED PARAMETERS > METER1 or METER2 MEASURE TYPE: PH or RX (ORP)**

At this point user can remain in EXPERT MENU or return to **BASIC MENU** by moving in **SETTINGS** and change menu mode

8.6 - SELECTING METER3 CHLORINE OR MEASURING RANGE

TOUCH series chlorine or ppm measurements controller is set as for 4 ranges of chlorine sensors:

- **Chlorine** Membrane type ion selective sensor CL 0-2 ppm **default** range; CL 0-20 ppm range; CLTotal 0-20 ppm range;
- **PPM** sensor range 0-20 ppm; range 0-2 ppm; range 0-200 ppm; range 0-2000 ppm; range 0-20000 ppm;
- **Open chlorine cell (CLC3 model)** range CLC 0-10 ppm.

After making the selection, consequently display and measurement resolutions will change accordingly.

Meter 3: Measure Type	
☒	Cl 0-2 ppm
☐	Cl 0-5 ppm
☐	Cl 0-200 ppm
☐	CLC 10 ppm
☐	0-2 ppm
☐	0-20 ppm
☐	0-200 ppm
☐	0-2000 ppm
☐	0-20000 ppm

Selecting the range required, consequently display and measurement resolutions will change accordingly.

REMINDER: Display will either show ppm or Cl ppm measurements value, according to the selection made. **If Cl ppm range was chosen and "Cl" does not appear, it means selection was not confirmed. Re-select the range and confirm OK**

 Touch **OK** to confirm selection

IMPORTANT: once selected **Meter 3 Measure Type**, **ENSURE**, to connect the **proper** Chlorine or PPM sensor.

In case, user wishes to change **Measure Type** (and relative proper sensor), move to: **> SETTINGS**

8.7 - SELECTING METER4 CD CONDUCTIVITY PROBE "K" FACTOR

TOUCH CD STANDARD CONDUCTIVITY RANGES

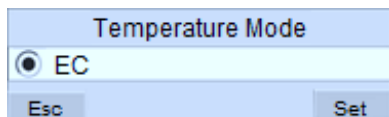
It is always RECCOMENDED and mandatory to use the correct K probe according to the range in which the controller is working.

- **K1** 2000 μ S $\square$ 20.00 mS (20.000 μ S): it can measure down to 1000 μ S but accuracy will be more approximated.
- **K5** 200 μ S $\square$ 2000 μ S

UPON REQUEST other ranges are available..

TOUCH CD will show μ S values up to 1999 (microSiemens) above this value will automatically change to mS (milli Siemens).

IMPORTANT: the above μ S ranges are just indicative: for example, a K1 probe can make good measurements below 1000 μ S, only resolution will be less accurate. However, the same concept doesn't apply the other way around: a K5 probe will never measure higher ranges than 2.000 μ S.



K selections starts from 1.000 and pressing $\blacktriangleleft\blacktriangleright$ value can reach up to 20.000 or down to 0,000

K1 select 1.000

K5 select 5.000

Display shows μ S but in selected value exceed 1999 μ S, it will show 2.00 mS

REMINDER: Display will either show μ S or mS measurements value, according to the selection made. **If mS range was chosen and does not appear, it means selection was not confirmed. Re-select the range and confirm OK**

Controller will adapt Measurement display resolution according to the type of probe used.

IMPORTANT: once selected CD probe K factor, **ENSURE**, to connect the **proper** Conductivity sensor.

Controller will adapt Measurement and Display resolution according to the probe used.

Touch **OK** to confirm selection

METER4 : EC probe K factor			
1	2	3	DEL
4	5	6	CLEAR
7	8	9	ESC
/	0		SET

IMPORTANT: once selected **Meter 4 Measure Type**, **ENSURE**, to connect the **proper** Conductivity sensor.

In case, user wishes to change **Meter 4 Measure Type** (and relative proper sensor), move to **EXPERT MENU**:

SETTINGS > EXPERT > MEASURED PARAMETERS > METER4 MEASURE TYPE: CD PROBE K FACTOR

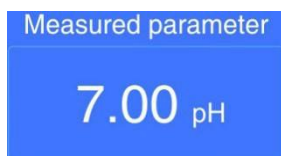
At this point user can remain in EXPERT MENU or return to **BASIC MENU** by moving in **SETTINGS** and change menu mode

BASIC MENU

9.0 MEASURED PARAMETER SETTINGS > BASIC MENU

9.1 - MEASURED PARAMETERS METER1 PH (OR RX ORP) > BASIC MENU

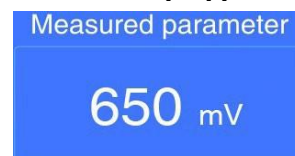
PH



Touch the area related to measuring parameter

* When selecting **Meter 1 Measure Type (RX)** all settings will read **mV**

RX (Orp)

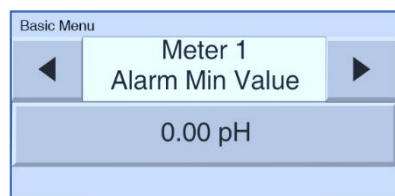


9.1.1 - ALARM LEVELS PROGRAMMING METER1 PH (OR RX ORP)

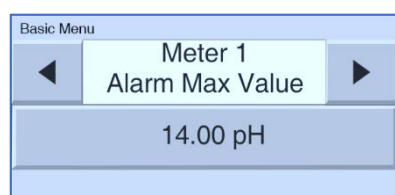
*Alarm programming will follow the measuring parameter selected in paragraph 8.5 **Meter 1 Measure Type**

Alarm function is connected to **ALARM RELAY**

METER1 PH



Here following are two programming steps: when selecting **Meter 1 Measure Type** as **PH** measurement, refer to **LEFT** column; selecting **RX** refer to **RIGHT** column.

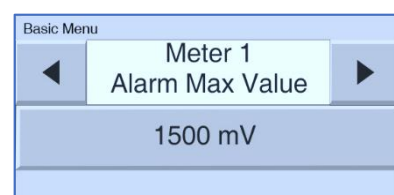
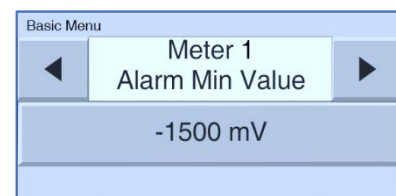


Alarm MIN function selects alarm LOWEST level passed which alarm relay will be ON.

Alarm function is connected to **ALARM RELAY**

Alarm MAX function selects alarm HIGHEST level passed which alarm relay will be ON.

METER1 RX (Orp)



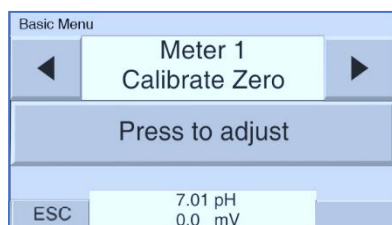
Touch **SET** to confirm selections

9.1.2 - CALIBRATING PH ELECTRODE

*Calibration operation will follow the measuring parameter selected in paragraph 8.5 **Meter 1 Measure Type**

In case RX has been selected, display will show mV calibration steps.

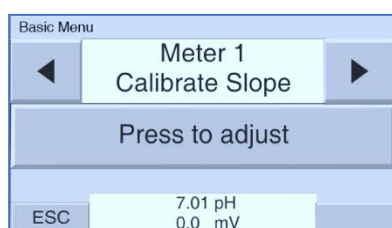
 According to the selected measure parameter, Calibration menu will show the electrode to calibrate. We recommend using fresh sample solutions or new electrode and sensors or at least in good conditions. For pH electrode cable length, we recommend max 9 m: for longer distances contact ETATRON or authorised Dealer. Displayed mV value shows sensor efficiency (according to the sensor manufacturer specifications)



* When starting calibration display shows random values

Dip pH electrode into 7.00 pH buffer solution for ZERO calibration, wait 2/3 min.

 Touch **PRESS TO ADJUST** until display shows 7.00 pH, wait 2/3 minutes
Rinse electrode with water (possible deionised) and dry it by tapping with clean cloth or paper napkins.



Dip pH electrode into 4 or 9 pH buffer solution for SLOPE calibration, wait 2/3 min.

 Touch **PRESS TO ADJUST** ensuring shows the buffer solution value, 4 or 9 pH, wait 2/3 minutes
 Touch **SET** to confirm selection
 Touch **ESC** to go back one step during programming

 The mV value at the bottom of the display shows the electrode signal thus indicating the electrode efficiency: for the electrode signal values, refer to electrode instructions and technical characteristics, however the mV value must match the one of the buffer solution used for calibration, allowance $\pm 20\text{mV}$.

 In case selecting Meter1 Measure type RX, for electrode calibration refer to hereinafter paragraph 9.2.2

9.2 - MEASURED PARAMETERS METER2 RX ORP (or PH) > BASIC MENU

RX (Orp)



Touch the area related to measuring parameter

* When selecting **Meter 2 Measure Type (RX)** all settings will read **mV**

PH

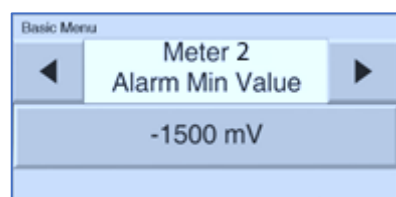


9.2.1 - ALARM LEVELS PROGRAMMING METER2 RX ORP (or PH)

*Alarm programming will follow the measuring parameter selected in paragraph 8.5 **Meter 2 Measure Type**

Alarm function is connected to **ALARM RELAY**

METER2 RX (Orp)

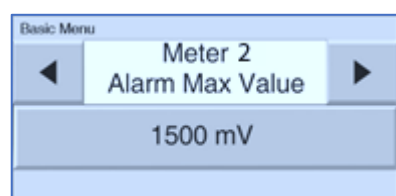


Here following are two programming steps: when selecting **Meter 2 Measure Type** as **PH** measurement, refer to **RIGHT** column; selecting **RX** refer to **LEFT** column.

Alarm MIN function selects alarm LOWEST level passed which alarm relay will be ON.

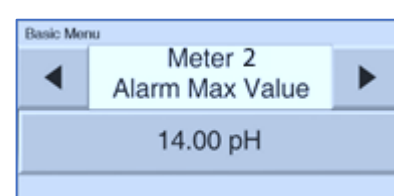
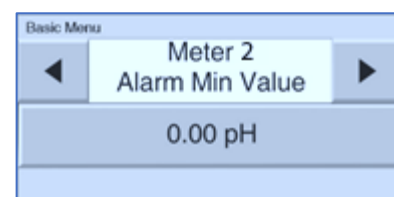
Alarm function is connected to **ALARM RELAY**

Alarm MAX function selects alarm HIGHEST level passed which alarm relay will be ON.

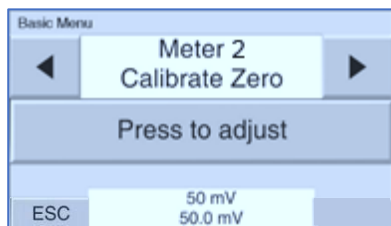


 Touch **SET** to confirm selections

METER2 PH



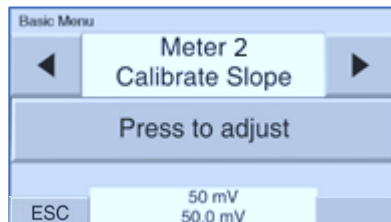
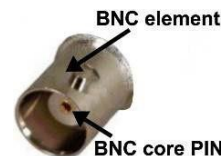
9.2.2 - CALIBRATING METER2 RX ORP ELECTRODE



**It shows random values*

Short circuit BNC connector using a metal wire (eg: screwdriver), connect pin core with BNC external element.

☞ Touch **PRESS TO ADJUST** until display shows 0 mV, wait 2/3 min. Rinse electrode with water (possible deionised) and dry it by tapping with clean cloth or paper napkins.



**It shows random values*

Dip Rx electrode into RX buffer solution for "Slope" calibration, wait 2/3 minutes.

☞ Touch **PRESS TO ADJUST** to show buffer solution value mV, wait 2/3 min.

☞ Touch **SET** to confirm selection

☞ Touch **ESC** to go back one step during programming



The mV value at the bottom of the display shows the electrode signal thus indicating the electrode efficiency: for the electrode signal values, refer to electrode instructions and technical characteristics, however the mV value must match the one of the buffer solution used for calibration, allowance $\pm 20\text{mV}$.



In case selecting Meter2 Measure type PH, for electrode calibration refer to previous paragraph 9.1.2

9.3 - MEASURED PARAMETER METER3 CL (CHLORINE)_PPM > BASIC MENU

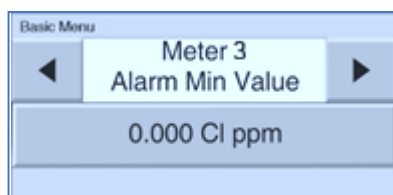
* Parameters Meter3 operation follow the chlorine/ppm settings selected in paragraph 8.6 selecting **Chlorine/ PPM range**



Select the required range, consequently, display and measurement resolutions will change accordingly. **REMINDER:** Display will either show ppm or Cl ppm measurement values, according to the selection made when starting programming. **If Cl ppm range is chosen and "Cl" does not appear, it means selection was not confirmed. Re-select the range and confirm OK.**

9.3.1 - ALARM LEVELS PROGRAMMING METER3 CHLORINE_PPM

Alarm function is connected to **ALARM RELAY**



Alarm MIN selects alarm LOWEST level passed which alarm relay will be ON.

Alarm function is connected to **ALARM RELAY**

Alarm MAX selects alarm HIGHEST level passed which alarm relay will be ON.

Default set point 0.000 CL ppm or PPM range = 2 cl ppm (or ppm, not default)

Selecting other ranges will show **0.00** = range 20 Cl ppm **or** ppm **and** 5 Cl ppm

0.00 Total chlorine = range 20 Cl ppm

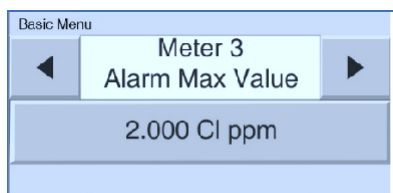
0.00 = CLC open chlorine cell range 10 Cl ppm

0.0 ppm = range 200 ppm

0 ppm = range 2000 ppm

REMINDER: Display will either show Cl ppm or ppm measurements value, according to the range selection made when starting programming.

☞ Touch **SET** to confirm selection



9.3.2 - CALIBRATING METER3 CHLORINE_PPM SENSOR

Calibration operation will follow the chlorine_ppm settings selected in paragraph 8.6 Selecting **Chlorine/ PPM range**

☞ Confirm selection and to approach next submenu.



According to the selected measure parameter, Calibration menu will show the electrode to calibrate.

We recommend using fresh sample solutions or new electrode and sensors or at least in good conditions.

For pH electrode cable length, we recommend max 9 m: for longer distances contact ETATRON or authorised Dealer.

Displayed mV value shows sensor efficiency (according to the sensor manufacturer specifications)

Ozone slope calibration: use DPD1 and **multiply** the result by **0,66**

Chlorine Dioxide slope calibration: use DPD1 and **multiply** the result by **1,9**

Hydrogen Peroxide slope calibration: use its own reagent

Dissolved Oxygen Zero calibration with water solution and sodium bisulphate; for slope calibration use portable kit.

IMPORTANT: membrane sensors type, CLS series **DO NOT NEED** ZERO calibration.

However, if sensor conditions are **not ideal**, we **RECOMMEND ZERO** calibration.

For **OPEN** type amperometric cell (ETATRON CLC model) **ZERO Calibration is required !** Therefore, use **Expert menu**.



During Calibration, it may appear the sign – (minus) which either disappears or is removed by correct values settings ! The mV value at the bottom of the display shows the mV sensor signal thus indicating the sensor efficiency. We recommend a constant control and recalibration of the sensor by means of DPD1 and DPD3 or, when using OPEN chlorine cells (CLC series) to clean **cell electrodes**

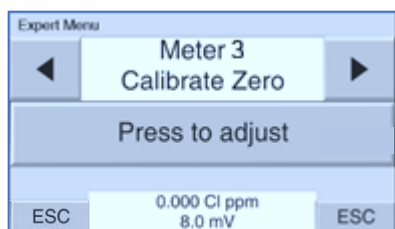
The **ZERO** adjustment must be made under realistic operating conditions with chlorine-free water ! (read note herein below).

ONLY EXPERT MENU !!!

REMINDER: let the system water run through the sensor holder: chlorine sensor needs normally **minimum 2/3 hours** before polarising; ensure that the flow into the sensor cell holder is stabilised before proceeding with calibration.

The mV value at the bottom of the display shows sensor signal in mV thus indicating the sensor efficiency.

NOTE: ideally it takes few hours before the value stabilizes, however the best reference is the Cl ppm values reading visualized on the display. If **ZERO calibration is necessary**, follow some of the following methods:



B. a simple method for calibrating ZERO is to carry out the controller **electronic Zero** as follow: short circuit pins M-0 (13-14) of the internal terminal board. **Operator must be an expert.**

For this step **ENSURE to DISCONNECT THE SENSOR !!!!** Press **▲ ▼** until showing **0.00** and then confirm **OK**.

NOTE: this mode guarantees the instrument electronic ZERO, this may not be equivalent

to the real value of chlorine-free water, which is the chemical physical ZERO chlorine into water.

B. Closed water flow circuit chlorine-free value:

- FOR OPEN CHLORINE CELL: introduce a chlorine-free water stream into the Cell, about 40□50 l/h.
- FOR MEMBRANE ION-SELECTIVE SENSORS: deep the sensor into a chlorine-free water container and gently shake the it (without touching any surface or ensuring no air bubbles) and wait for the measurement to stabilize.

1st INSTALLATION wait that values stabilise (about 2 hours): **PRESS TO ADJUST ◀ ▶** until showing **0.00** confirm with **SET**

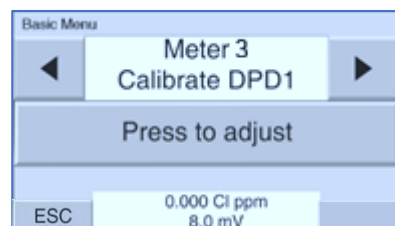
2nd RICALIBRATION wait that values stabilise (minimum 1 hour or longer): **PRESS TO ADJUST ◀ ▶** until showing **0.00** confirm with **SET**

C. Activated carbons, only for OPEN TYPE AMPLOMETRIC CELL (ETATRON CLC model).

- Install a by-pass system ahead of the sensor holder and let the water run through an Activated Carbon cartridge: **PRESS TO ADJUST ◀ ▶** until showing **0.00** confirm with **SET**

NOTE: activated carbons tend to reduce the pH value thus making the calibration redundant, must be changed after each calibration and do not guarantee the effective Zero value. This mode is the least recommended due to its complexity

PROCEDE TO CALIBRATION POINT / IMPORTANT: CHECK SENSOR-CONTROLLER INPUT mV SIGNAL



 Select required sample solution value and verify with test kit **DPD1** for free chlorine or **DPD3** for Total chlorine, or by means of portable controller,

 Touch **SET** to confirm selection

 Touch **ESC** to go back one step during programming

Select required sample solution value and verify with test kit **DPD1** for free chlorine or **DPD3** for Total chlorine, or by means of portable controller measures the concentration of free (or total) chlorine ppm in water.

NOTE: keep in mind that it takes a few hours (minimum 2/3) before the value reading stabilizes, however, the best reference is to visualize the Cl ppm value shown on the display.

9.4 - MEASURED PARAMETER METER4 CD CONDUCTIVITY > BASIC MENU

* Parameters Meter4 follow the CD conductivity settings selected in paragraph 8.7 selecting **CD K factor probe range**

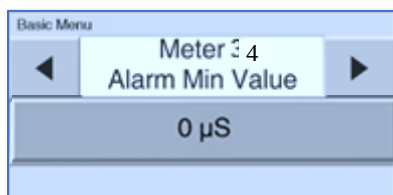
Measured parameter
10.00 mS

Select the required range, consequently, display and measurement resolutions will change accordingly.

CD conductivity measurements, display will show μS values up to 1999 (microSiemens) then automatically will change to mS (milli Siemens) above latter value

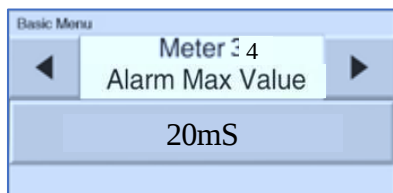
9.4.1 - ALARM LEVELS PROGRAMMING METER4 CD CONDUCTIVITY

Alarm function is connected to **ALARM RELAY**



Alarm MIN selects alarm LOWEST level passed which alarm relay will be ON.

Alarm function is connected to **ALARM RELAY**



Alarm MAX selects alarm HIGHEST level passed which alarm relay will be ON.

☛ Touch **SET** to confirm selection

9.4.2 - CALIBRATING METER4 CD CONDUCTIVITY SENSOR

TOUCH CD STANDARD CONDUCTIVITY RANGES

It is always RECCOMENDED and mandatory to use the correct K probe according to the range in which the controller is working.

- **K1** 2000 μS □ 20.00 mS (20.000 μS): it can measure down to 2000 μS but accuracy will be more approximated.
- **K5** 200 μS □ 2000 μS : it can measure down to 300 μS but accuracy will be more approximated.

UPON REQUEST other ranges are available only after ETATRON SYSTEMS Srl approval and with corresponding probe K factor:

- > **K 0,6 / 0,8** up to 50 mS (50.000 μS): using ETATRON probe with graphite electrodes or another brand equivalent type.
- > **K10** 20 μS □ 200 μS with appropriate probe.

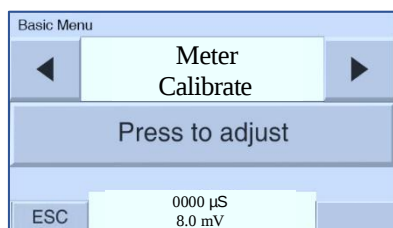
IMPORTANT NOTES:

- if NO temperature sensor is used, move to **Expert Menu Settings > Temperature > Manual** to change it to required temperature value;
- when calibrate the sensor ensure that the probe electrodes do not touch any surface except the solution;
- ensure that the sensor is firmly positioned without movements into the solution container;
- wait the necessary time until calibration measurement is stabilised (about 10 min). During calibration, measurements values will always tend to have a very small variation but this will not prevent from continuing unit operation.

A message will appear before calibration reminding:



We recommend making a sample solution which matches the required CD value in the system (normally the set-point value); using a good portable CD meter, ensure conductivity levels correspond to the CD requirements. Use a Conductivity sensor with cell constant according to the selected K factor range (paragraph 9.2) with max cable length of 4 m. After calibration wait 5/10 minutes for measure to stabilise.



* When starting calibration display shows random values

Dip the sensor the sample solution

☛ Touch **PRESS TO ADJUST** until display shows the sample solution value wait 5/10 min (until measure is stable, which is within the sensor K range)

☛ Touch **SET** to confirm selection

☛ Touch **ESC** to go back one step during programming

* It will show the value according to previously selected constant cell K range. Controller will adapt Measurement and Display resolution according to the type of probe used.

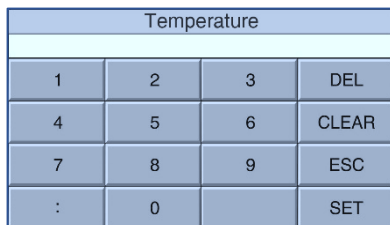
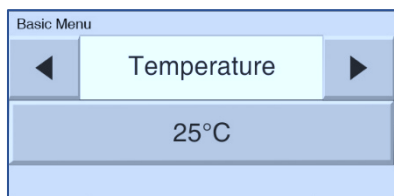
IMPORTANT: once selected CD probe K factor, **ENSURE**, to connect the **proper** Conductivity sensor.

9.5 - MEASURED PARAMETER TEMPERATURE > BASIC MENU



☞ Touch the area related to measuring parameter

NOTE: Temperature value is visualised **ONLY** if using temperature sensor PT100



☞ Press ◀▶ to show the environmental temperature. Selecting ESC (instead of entering a temperature value) controller will set 25°C value as default, which can be changed.

Selecting PT100 allows temperature/electrode measurements compensation, always giving the exact value against the current temperature.



Alarm MIN function selects alarm LOWEST level

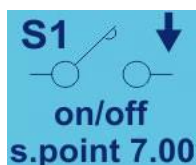
Alarm function is connected to **ALARM RELAY**

Alarm MAX function selects alarm HIGHEST level

10.0 SET POINT PROGRAMMING > BASIC MENU

10.1 - SET POINT 1 PH

PH



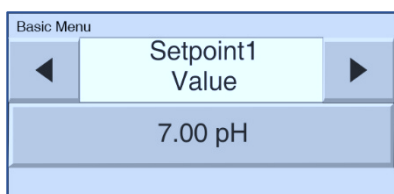
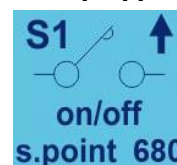
METER1 / BASIC MENU



TOUCH THE BLUE AREA
TO ACCESS **S1** PROGRAMMING

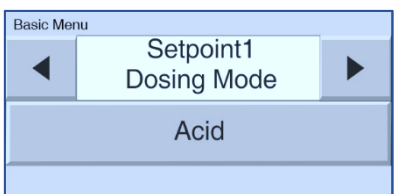
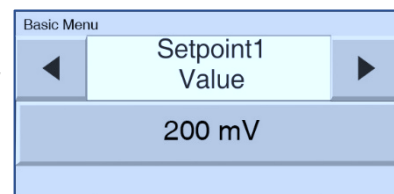
10.1.1 - SET POINT 1 RX (ORP)

RX (Orp)



Here following are two programming steps: when selecting **Measure Param.1** as **PH** measurement, **refer to left column**; selecting **RX** refer to **right column**.

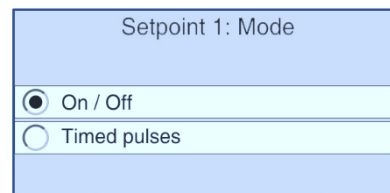
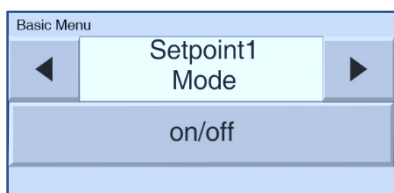
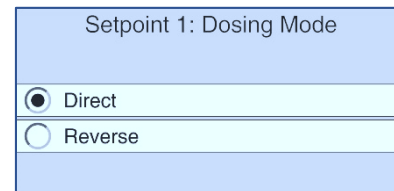
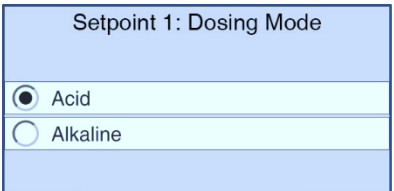
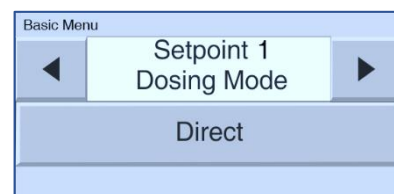
Set point menu will activate output relays for dosing pumps or other equipment **UNTIL** selected set-point level is reached.



pH set point 1 is set for **Acid mode** operation: output is active when measured value is **higher** than selected set point, dosing pump injects **acid**.
Alkaline mode: output is active when measured value is **lower**, dosing pump injects **alkaline**.

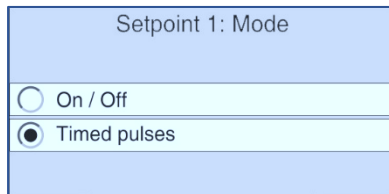
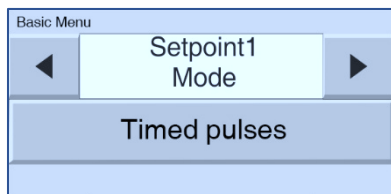
Rx set point 1 is set for **Direct mode** operation: output is active when measured value is **lower** than selected set-point, dosing pump injects **chlorine** (Oxidant).

Reverse mode: output is active when measured value is **higher**, dosing pump injects **chlorine reducer**.



IN EXPERT MODE

Unit is provided with **ON-OFF mode** which will activate or deactivate in case of reverse mode ON) output relays such as Constant / ON-OFF mode dosing pumps or other ON-OFF mode equipment.



Timed Pulses known as PWM “pulses with modulation” time / pause action allowing proportional mode on each ON-OFF set point according to measured value.

NOTE: display will show this icon 

Default activating point at 1.50 pH
Default activating point at 150 mV

For more accurate “Timed Pulses” PWM settings, select “Expert” menu from initial settings

☛ Touch **SET** to confirm selections

☛ Touch **ESC** goes back one step during programming.

10.2 - SET POINT2 PH

PH



METER1 / BASIC MENU

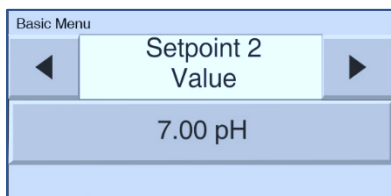
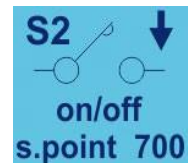


TOUCH THE BLUE AREA
TO ACCESS **S2** PROGRAMMING

Selecting Meter1 as RX
refer to RIGHT column

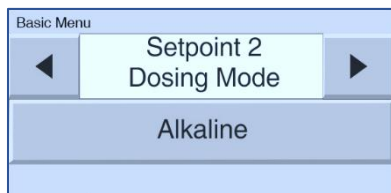
10.2.1 - SET POINT2 RX

RX (Orp)



Here following are two programming steps: when selecting **Measure Param.1** as **PH** measurement, refer to left column; selecting **RX** refer to right column.

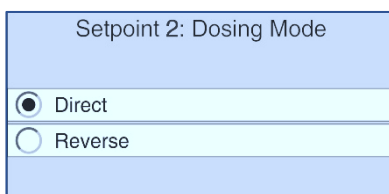
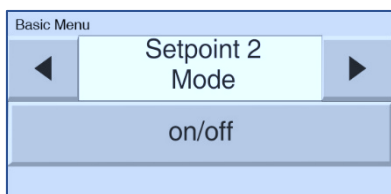
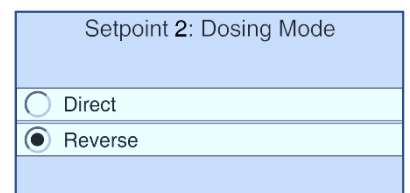
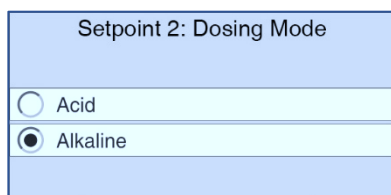
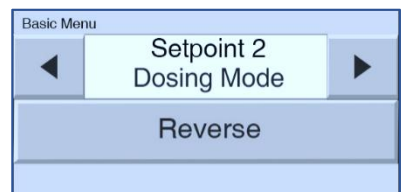
Set point menu will activate output relays for dosing pumps or other equipment **UNTIL** selected set-point level is reached.



pH set point 2 is set for **Alkaline mode** operation: output is active when measured value is **lower** than selected set point, dosing pump injects **alkaline**. **Acid mode**: output is active when measured value is **higher**, dosing pump injects **acid**.

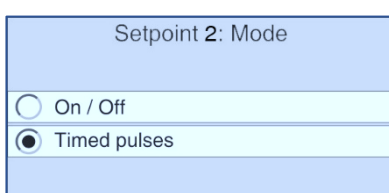
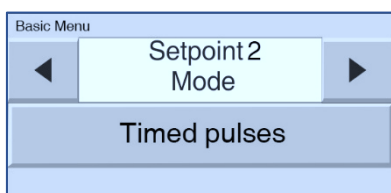
Rx set point 2 is set for **Reverse mode** operation: output is active when measured value is **higher** than selected set-point, dosing pump injects **chlorine reducer**.

Direct mode: output is active when measured value is **lower**, dosing pump injects **chlorine** (Oxidant).



IN EXPERT MODE

Unit is provided with **ON-OFF mode** which will activate or deactivate in case of reverse mode ON) output relays such as Constant / ON-OFF mode dosing pumps or other ON-OFF mode equipment.



Timed Pulses known as PWM “pulses with modulation” time / pause action allowing proportional mode on each ON-OFF set point according to measured value.

NOTE: display will show this icon 

Default activating point at 1.50 pH
Default activating point at 150 mV

For more accurate “Timed Pulses” PWM settings, select “Expert” menu from initial settings

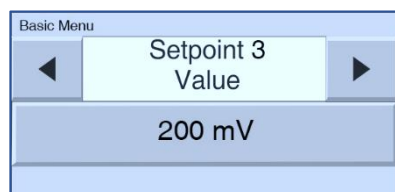
☛ Touch **SET** to confirm selections

☛ Touch **ESC** goes back one step during programming.

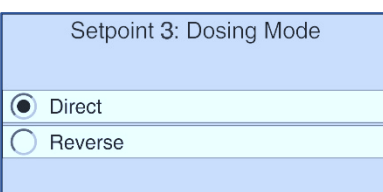
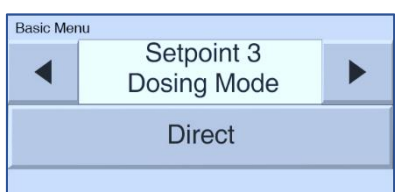
10.3 - SET POINT3 RX (REDOX ORP) METER2 > BASIC MENU



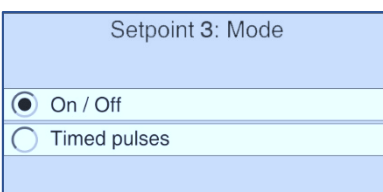
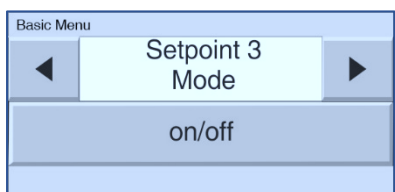
Touch the area related to setpoint3 **S3**



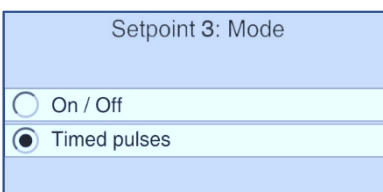
Set point will activate output relays for dosing pumps or other equipment once selected set-point level is reached.



Rx set point 3 is set for **Direct mode** operation: output is active when measured value is **lower** than selected set-point, dosing pump injects **chlorine** (Oxidant).
Reverse mode: output is active when measured value is **higher**, dosing pump injects **chlorine reducer**.



Unit is provided with **ON-OFF mode** which will activate or deactivate in case of reverse mode ON) output relays such as Constant / ON-OFF mode dosing pumps or other ON-OFF mode equipment.



Timed Pulses known as PWM “pulses with modulation” time / pause action allowing proportional mode on each ON-OFF set point according to measured value.

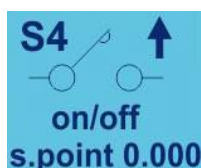
NOTE: display will show this icon

Default activating point at 1.50 pH
Default activating point at 150 mV

For more accurate “Timed Pulses” PWM settings, select “Expert” menu from initial settings

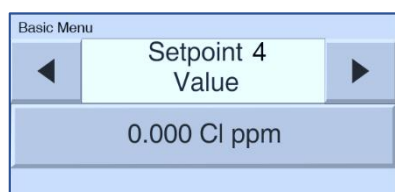
- Touch **SET** to confirm selections
- Touch **ESC** goes back one step during programming.

10.4 - SET POINT4 CL CHLORINE OR PPM MEASUREMENTS METER3 > BASIC MENU



Touch the area related to setpoint4 **S4**. TOUCH series Chlorine or PPM measurements controller is set as **default** for a sensor range 0-2 CL ppm. Select the required range, consequently, display and measurement resolutions will change accordingly.

REMINDER: Display will either show Cl ppm or PPM measurement values, according to the selection made when starting programming in paragraph 8.6 - SELECTING CHLORINE MEASURING RANGE. If “Cl ppm” range was chosen and “Cl” does not appear, it means selection was not confirmed. Re-select the range and confirm OK.



Set point will activate output relays for dosing pumps or other equipment once selected set-point level is reached.

Default set point 0.000 CL ppm or PPM range = 2 cl ppm (or ppm, not default)

Selecting other ranges will show **0.00** = range 20 Cl ppm **or** ppm **and** 5 Cl ppm

0.00 Total chlorine = range 20 Cl ppm

0.00 = CLC open chlorine cell range 10 Cl ppm

0.0 ppm = range 200 ppm / **0 ppm** = range 2000 ppm

0 ppm = range 20000 ppm

Basic Menu

Setpoint 4
Dosing Mode

Direct

Setpoint 4: Dosing Mode

☒ Direct

☐ Reverse

CL set point 3 is set for **Direct mode** operation: output is active when measured value is **lower** than selected set-point, dosing pump injects **chlorine**.

Reverse mode: output is active when measured value is **higher**, dosing pump injects **chlorine reducer**.

Basic Menu

Setpoint 4
Mode

on/off

Setpoint 4: Mode

☒ On / Off

☐ Timed pulses

Unit is provided with **ON-OFF mode** which will activate or deactivate in case of reverse mode ON) output relays such as Constant / ON-OFF mode dosing pumps or other ON-OFF mode equipment.

Timed Pulses known as PWM “pulses with modulation” time/pause action thus allowing proportional mode on each ON-OFF set point according to measured value.
Default activating point at 0,050 Cl ppm or ppm (range 2 Cl ppm or ppm); 0,05 (range 5-10-20 Cl ppm); 5 ppm (range 200 ppm); 50 ppm (range 2000 ppm).

NOTE: display will show this icon 

For more accurate “Timed Pulses” PWM settings, select “Expert” menu from initial settings

 Touch **SET** to confirm selections

 Touch **ESC** goes back one step during programming.

10.5 - SET POINT5 CD CONDUCTIVITY METER4 > BASIC MENU



Basic Menu

Setpoint 45
Value

0.000 Cl ppm



Touch the area related to setpoint **S5**.

Keep in mind that the value displayed is automatically adjusted to the selected conductivity range cell constant “K” characteristic in previous paragraph 8.7.

REMINDER: CD will show μ S values up to 1999 (microSiemens) above this value will automatically change to mS (milli Siemens).

Set point will activate output relays for dosing pumps or other equipment once selected set-point level is reached. Display will show μ S values but in case setpoint value exceed 1999 μ S, it will show 2.00 mS (decreasing the value will return to μ S reading).

Basic Menu

Setpoint 45
Dosing Mode

Direct

Setpoint 5: Dosing Mode

☒ Direct

☐ Reverse

CD set point 5 is set for **Direct mode** operation: output is active when measured value is **lower** than selected set-point.

Reverse mode operation: output is active when measured value is **higher** than selected set-point.

Basic Menu

Setpoint 5
Mode

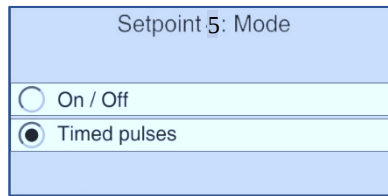
on/off

Setpoint 5: Mode

☐ On / Off

☒ Timed pulses

Unit is provided with **ON-OFF mode** which will activate or deactivate in case of reverse mode ON) output relays such as Constant / ON-OFF mode dosing pumps or other ON-OFF mode equipment.



Timed Pulses known as PWM “pulses with modulation” time / pause action allowing proportional mode on each ON-OFF set point according to measured value.
Default activating 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 0-100.000 μ S).
NOTE: display will show this icon 

For more accurate “Timed Pulses” PWM settings, select “Expert” menu from initial settings

- Touch **SET** to confirm selections
- Touch **ESC** goes back one step during programming.

11.0 SETTINGS > BASIC MENU

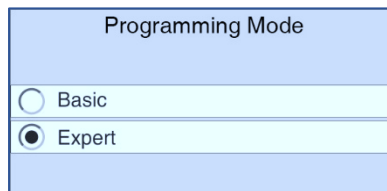
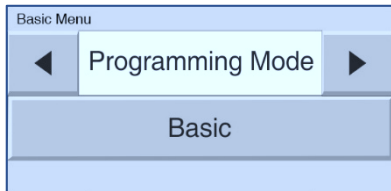
SETTINGS



Touch the area related to controller settings



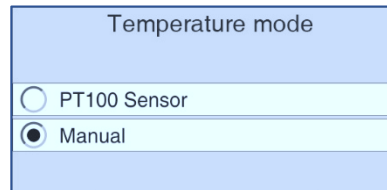
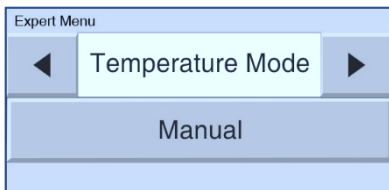
It selects programming menu language.



BASIC programming: simplified mode for not professional operators

EXPERT programming: complete programming including functions for a more refined control and results.

IF USER HAS SELECTED TEMPERATURE “MANUAL” MODE, IT WILL SHOW:



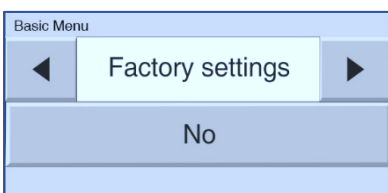
Touch Right arrow 

NOTE: Selecting ESC (instead of entering a temperature value) controller will set 25°C value as default, which can be changed.

Temperature value is visualised only if using temperature sensor PT100, NOT in Manual mode.

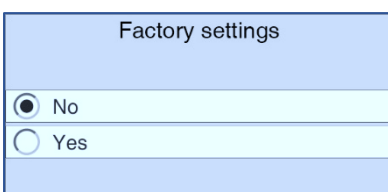
The above windows will not appear when selecting PT100 sensor mode

 After selecting, e.g. choosing EXPERT, at first display will still show Basic but as soon as moving to other steps it will change to Expert, and vice versa.



FACTORY SETTINGS: it restores factory default settings. To be used ONLY when parameters or measurements are not responding correctly or when user wants to ensure to re-program from zero. Not to abuse, continuous restoring can affect controller efficiency.

Touch **NO** to enter Factory settings selections.



Once confirmed **YES**, display will be OFF for 1 second than will return to starting display.

- Touch **SET** to confirm selections
- Touch **ESC** goes back one step during programming.

EXPERT MENU

12.0 MEASURED PARAMETER SETTINGS > EXPERT MENU

12.1 - MEASURED PARAMETERS METER1 PH (OR RX ORP) > EXPERT MENU

PH

Measured parameter

7.00 pH

Touch the area related to measuring parameter
* When selecting **Meter 1 Measure Type (RX)** all settings will read **mV**

RX (Orp)

Measured parameter

650 mV

12.1.1 - SELECTING MEASURING PARAMETER METER1 PH (OR RX ORP)

TOUCH series controller allows to select either PH or RX (ORP) measurements in the same unit. Measuring parameter can be changed from PH to RX and consequently the display and measurement resolutions will change accordingly.

Expert Menu

Meter 1 Measure type

pH

Meter 1: Measure Type

☒ pH

☐ Rx

Selecting either one of the two menus, will change the Main Menu programming accordingly.

Touch **SET** to confirm selection

IMPORTANT: once selected PH or RX **Meter 1 Measure Type ENSURE**, to connect the **proper** electrode.

12.1.2 - MEASURE PRIORITY METER1

Expert Menu

Meter 1 Measure priority

Disabled

Meter 1: Measure priority

☒ Disabled

☐ Enabled

pH priority enables controller to reach first pH set point then to move to chlorine dosing operations ensuring measuring stability. PH priority ENABLED chlorine is OFF; automatically Chlorine ON once reached pH set point (function only available on Meter1).
ONLY VALID FOR PH PRIORITY

Touch **SET** to confirm selection

12.1.3 - ALARM LEVELS PROGRAMMING METER1 PH (OR RX ORP)

*Alarm programming will follow the measuring parameter selected in paragraph 8.5 **Meter 1 Measure Type**

Alarm function is connected to **ALARM RELAY**

METER1 PH

Expert Menu

Meter 1 Alarm Min Value

0.00 pH

Here following are two programming steps: when selecting **Meter 1 Measure Type** as **PH** measurement, refer to **LEFT** column; selecting **RX** refer to **RIGHT** column.

Expert Menu

Meter 1 Alarm Max Value

14.00 pH

Alarm MIN function selects alarm LOWEST level passed which alarm relay will be ON.
Alarm function is connected to **ALARM RELAY**
Alarm MAX function selects alarm HIGHEST level passed which alarm relay will be ON.

Touch **SET** to confirm selections

METER1 RX (Orp)

Expert Menu

Meter 1 Alarm Min Value

-1500 mV

Expert Menu

Meter 1 Alarm Max Value

1500 mV

12.1.4 - STARTUP DELAY METER1 PH (OR RX ORP)



Start-up Delay time “blocks” the relay outputs when switching ON the unit thus allowing sensors to polarize ensuring correct measurements.

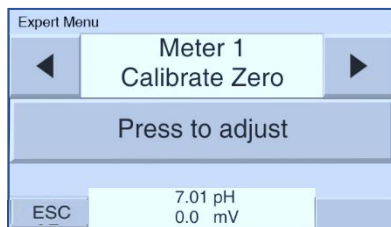
- ☛ Touch **0 min** and select Start up delay from appearing keyboard
- ☛ Touch **SET** to confirm selection

12.1.5 - CALIBRATING METER1 PH ELECTRODE

*Calibration operation will follow the measuring parameter selected in paragraph 8.5 **Meter 1 Measure Type**

In case RX has been selected, display will show mV calibration steps.

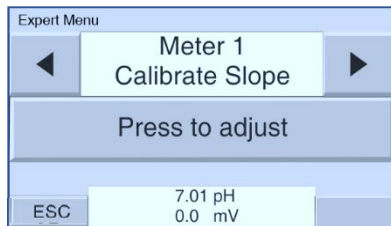
 According to the selected measure parameter, Calibration menu will show the electrode to calibrate. We recommend using fresh sample solutions or new electrode and sensors or at least in good conditions. For pH electrode cable length, we recommend max 9 m: for longer distances contact ETATRON or authorised Dealer. Displayed mV value shows sensor efficiency (according to the sensor manufacturer specifications)



* When starting calibration display shows random values

Dip pH electrode into 7.00 pH buffer solution for ZERO calibration, wait 2/3 min.

- ☛ Touch **PRESS TO ADJUST** until display shows 7.00 pH, wait 2/3 minutes
- Rinse electrode with water (possible deionised) and dry it by tapping with clean cloth or paper napkins.



Dip pH electrode into 4 or 9 pH buffer solution for SLOPE calibration, wait 2/3 min.

- ☛ Touch **PRESS TO ADJUST** ensuring shows the buffer solution value, 4 or 9 pH, wait 2/3 minutes
- ☛ Touch **SET** to confirm selection
- ☛ Touch **ESC** to go back one step during programming

 The mV value at the bottom of the display shows the electrode signal thus indicating the electrode efficiency: for the electrode signal values, refer to electrode instructions and technical characteristics, however the mV value must match the one of the buffer solution used for calibration, allowance $\pm 20\text{mV}$.

 In case selecting Meter1 Measure type RX, for electrode calibration refer to hereinafter paragraph 12.2.4

NOTE: DURING CALIBRATION 4-20mA OUTPUTS ARE BLOCKED UNTIL CALIBRATING STEP IS OVER

12.2 - MEASURED PARAMETERS METER2 RX ORP (OR PH) > EXPERT MENU

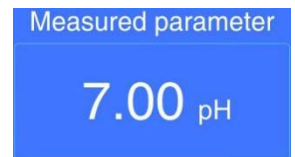
RX (Orp)



Touch the area related to measuring parameter

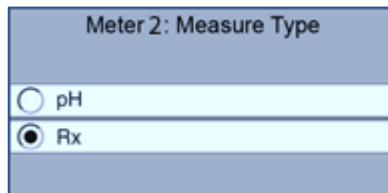
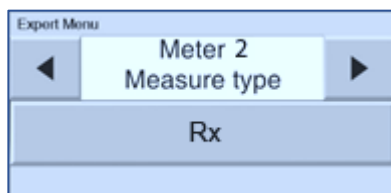
* When selecting **Meter 2 Measure Type (RX)** all settings will read **mV**

PH



12.2.1 - SELECTING MEASURING PARAMETER METER2 RX ORP (OR PH)

TOUCH series controller allows to select either PH or RX (ORP) measurements in the same unit. Measuring parameter can be changed from PH to RX and consequently the display and measurement resolutions will change accordingly.



Selecting either one of the two menus, will change the Main Menu programming accordingly.

Touch **SET** to confirm selection

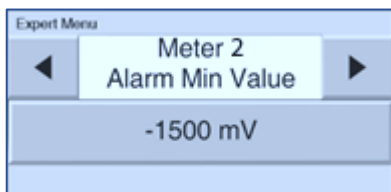
IMPORTANT: once selected PH or RX **Meter 2 Measure Type ENSURE**, to connect the **proper** electrode.

12.2.2 - ALARM LEVELS PROGRAMMING METER2 RX ORP (or PH)

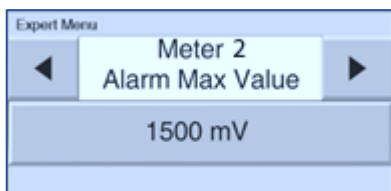
*Alarm programming will follow the measuring parameter selected in paragraph 8.5 **Meter 2 Measure Type**

Alarm function is connected to **ALARM RELAY**

METER2 RX (Orp)



Here following are two programming steps: when selecting **Meter 2 Measure Type as PH** measurement, refer to **RIGHT** column; selecting **RX** refer to **LEFT** column.

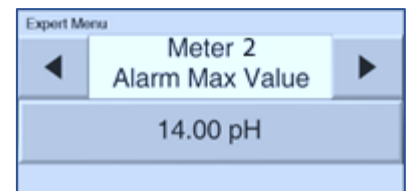
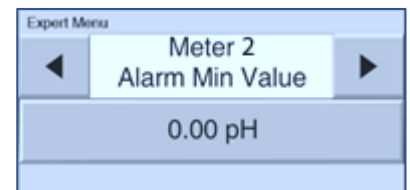


Alarm MIN function selects alarm LOWEST level passed which alarm relay will be ON.

Alarm function is connected to **ALARM RELAY**

Alarm MAX function selects alarm HIGHEST level passed which alarm relay will be ON.

METER2 PH



Touch **SET** to confirm selections

12.2.3 - STARTUP DELAY METER2 RX ORP (or PH)

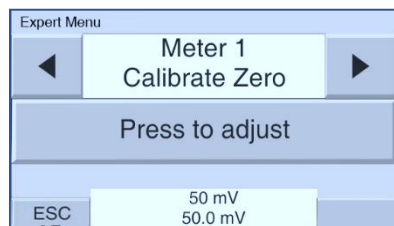


Start-up Delay time "blocks" the relay outputs when switching ON the unit thus allowing sensors to polarize ensuring correct measurements.

Touch **0 min** and select Start up delay from appearing keyboard

Touch **SET** to confirm selection

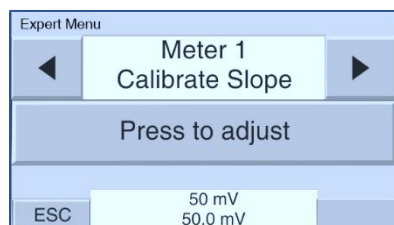
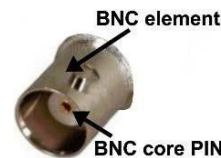
12.2.4 - CALIBRATING METER2 RX (ORP) ELECTRODE



*It shows random values

Short circuit BNC connector using a metal wire (eg: screwdriver), connect pin core with BNC external element.

Touch **PRESS TO ADJUST** until display shows 0 mV, wait 2/3 min. Rinse electrode with water (possible deionised) and dry it by tapping with clean cloth or paper napkins.



*It shows random values

Dip Rx electrode into RX buffer solution for "Slope" calibration, wait 2/3 minutes.

Touch **PRESS TO ADJUST** to show buffer solution value mV, wait 2/3 min.

Touch **SET** to confirm selection

Touch **ESC** to go back one step during programming

i The mV value at the bottom of the display shows the electrode signal thus indicating the electrode efficiency: for the electrode signal values, refer to electrode instructions and technical characteristics, however the mV value must match the one of the buffer solution used for calibration, allowance $\pm 20\text{mV}$.

i In case selecting Meter2 Measure type PH, for electrode calibration refer to previous paragraph 12.1.5

NOTE: DURING CALIBRATION 4-20mA OUTPUTS ARE BLOCKED UNTIL CALIBRATING STEP IS OVER

12.3 - MEASURED PARAMETER METER3 CL (CHLORINE)_PPM > EXPERT MENU

* Parameters Meter2 operation follow the chlorine/ppm settings selected in paragraph 8.6 selecting **Chlorine/ PPM range**



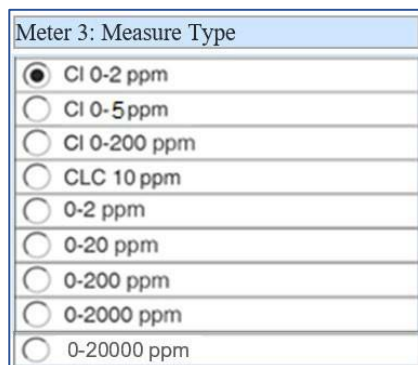
Select the required range, consequently, display and measurement resolutions will change accordingly. **REMINDER:** Display will either show ppm or Cl ppm measurement values, according to the selection made when starting programming. If Cl ppm range is chosen and "Cl" does not appear, it means selection was not confirmed. Re-select the range and confirm OK.

12.3.1 - MEASURE TYPE METER3 CL (CHLORINE)_PPM RANGE

TOUCH series chlorine controller is set as for 8 ranges of chlorine or ppm measurements sensors:

- **CLS** membrane type ion selective: range 0÷2 Cl ppm; range 0÷20 Cl ppm; range 0÷20 Cl ppm (Total chlorine);
- **CLS** membrane type for PPM measurements such as: Chlorine Dioxide, Bromine, Ozone, Peracetic Acid and others: range 0÷2 ppm; range 0÷20 ppm; range 0÷20 ppm; range 0÷200 ppm; range 0÷2000 ppm; range 0÷20000 ppm;
- **CLC** open type chlorine cell: range CLC 0÷10 Cl ppm;

Once making a selection consequently display and measurement resolutions will change accordingly.



Selecting the range required, consequently display and measurement resolutions will change accordingly.

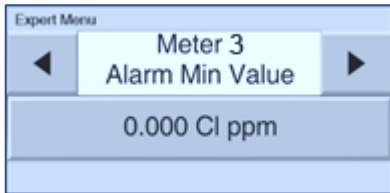
REMINDER: Display will either show ppm or Cl ppm measurements value, according to the selection made. If Cl ppm range was chosen and "Cl" does not appear, it means selection was not confirmed. Re-select the range and confirm OK

Touch **OK** to confirm selection

IMPORTANT: once selected **Meter 3 Measure Type**, **ENSURE**, to connect the **proper** Chlorine or PPM sensor.

12.3.2 - ALARM LEVELS PROGRAMMING METER3 CL (CHLORINE)_PPM

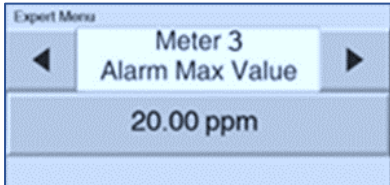
Alarm function is connected to **RELAY ALARM**



Alarm MIN selects alarm LOWEST level passed which alarm relay will be ON.

Alarm function is connected to **RELAY ALARM**

Alarm MAX selects alarm HIGHEST level passed which alarm relay will be ON.



Default set point **0.000 CL ppm or PPM range = 2 cl ppm (or ppm, not default)**

Selecting other ranges will show **0.00 = range 20 Cl ppm or ppm and 5 Cl ppm**

0.00 Total chlorine = range 20 Cl ppm

0.00 = CLC open chlorine cell range 10 Cl ppm

0.0 ppm = range 200 ppm

0 ppm = range 2000 ppm

0 ppm = range 20000 ppm

REMINDER: Display will either CL ppm or ppm measurements value, according to the range selection made when starting programming

☞ Touch **SET** to confirm selection

12.3.3 - STARTUP DELAY METER3 CL (CHLORINE)_PPM



Start-up Delay time “blocks” the relay outputs when switching ON the unit thus allowing sensors to polarize ensuring correct measurements.

☞ Touch **0 min** and select Start up delay from appearing keyboard

☞ Touch **SET** to confirm selection

12.3.4 - CALIBRATING METER3 CL (CHLORINE)_PPM SENSOR

Calibration operation will follow the chlorine ppm settings selected in paragraph 8.6 Selecting **Chlorine/PPM range**

☞ Confirm selection and to approach next submenu.

 According to the selected measure parameter, Calibration menu will show the electrode to calibrate.
We recommend using fresh sample solutions or new electrode and sensors or at least in good conditions.
For pH electrode cable length, we recommend max 9 m: for longer distances contact ETATRON or authorised Dealer.
Displayed mV value shows sensor efficiency (according to the sensor manufacturer specifications)

Ozone slope calibration: use DPD1 and **multiply** the result by **0,66**

Chlorine Dioxide slope calibration: use DPD1 and **multiply** the result by **1,9**

Hydrogen Peroxide slope calibration: use its own reagent

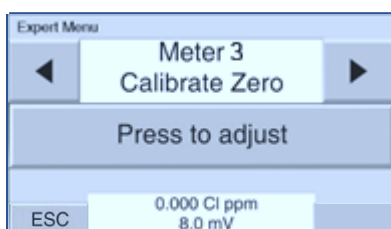
Dissolved Oxygen Zero calibration with water solution and sodium bisulphate; for slope calibration use portable kit.

IMPORTANT: membrane sensors type, CLS series **DO NOT NEED** ZERO calibration.

However, if sensor conditions are **not ideal**, we **RECOMMEND ZERO** calibration.

For **OPEN** type amperometric cell (ETATRON CLC model) **ZERO Calibration is required !**

 During Calibration, it may appear the sign – (minus) which either disappears or is removed by correct values settings !
The mV value at the bottom of the display shows the mV sensor signal thus indicating the sensor efficiency. We recommend a constant control and recalibration of the sensor by means of DPD1 and DPD3 or, when using OPEN chlorine cells (CLC series) to clean **cell electrodes**



☞ Touch the area ensuring **NOT** to press **SET**, after waiting 5/10 minutes

The **ZERO** adjustment must be made under realistic operating conditions with chlorine-free water ! (read note herein below). **ONLY EXPERT MENU !!!**

REMINDER: let the system water run through the sensor holder: chlorine sensor need normally **minimum 2/3 hours** before polarising; ensure that the flow into the sensor cell holder is stabilised before proceeding with calibration.

The mV value at the bottom of the display shows sensor signal in mV thus indicating the sensor efficiency.

NOTE: ideally it takes few hours before the value stabilizes, however the best reference is the Cl ppm values reading visualized on the display. If **ZERO calibration is necessary**, follow some of the following methods:

B. a simple method for calibrating ZERO is to carry out the controller **electronic Zero** as follow: short circuit pins M-0 (13-14) of the internal terminal board. **Operator must be an expert.**

For this step **ENSURE to DISCONNECT THE SENSOR !!!!** Press ▲ ▼ until showing **0.00** and then confirm **OK**.

NOTE: this mode guarantees the instrument electronic ZERO, this may not be equivalent to the real value of chlorine-free water, which is the chemical physical ZERO chlorine into water.

B. Closed water flow circuit chlorine-free value:

- FOR OPEN CHLORINE CELL: introduce a chlorine-free water stream into the Cell, about 40□50 l/h.
- FOR MEMBRANE ION-SELECTIVE SENSORS: deep the sensor into a chlorine-free water container and gently shake the it (without touching any surface or ensuring no air bubbles) and wait for the measurement to stabilize.

1st INSTALLATION wait that values stabilise (about 2 hours): **PRESS TO ADJUST** ◀ ▶ until showing **0.00** confirm with **SET**

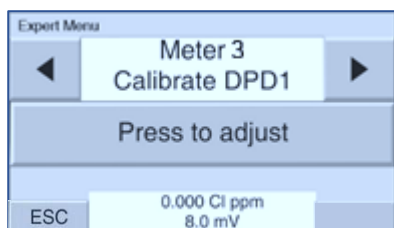
2nd RICALIBRATION wait that values stabilise (minimum 1 hour or longer): **PRESS TO ADJUST** ◀ ▶ until showing **0.00** confirm with **SET**

C. Activated carbons, only for OPEN TYPE AMPLOMETRIC CELL (ETATRON CLC model).

- Install a by-pass system ahead of the sensor holder and let the water run through an Activated Carbon cartridge: **PRESS TO ADJUST** ◀ ▶ until showing **0.00** confirm with **SET**

NOTE: activated carbons tend to reduce the pH value thus making the calibration redundant, must be changed after each calibration and do not guarantee the effective Zero value. This mode is the least recommended due to its complexity

PROCEDE TO CALIBRATION POINT / IMPORTANT: CHECK SENSOR-CONTROLLER INPUT mV SIGNAL



- Select required sample solution value and verify with test kit **DPD1** for free chlorine or **DPD3** for Total chlorine, or by means of portable controller,
- Touch **SET** to confirm selection
- Touch **ESC** to go back one step during programming

Select required sample solution value and verify with test kit **DPD1** for free chlorine or **DPD3** for Total chlorine, or by means of portable controller measures the concentration of free (or total) chlorine ppm in water.

NOTE: it takes a **few hours (2-3)** before the value reading stabilizes, however, the best reference is to visualize the Cl ppm value shown on the display. **DURING CALIBRATION 4-20mA OUTPUTS ARE BLOCKED UNTIL CALIBRATING STEP IS OVER**

12.4 - MEASURED PARAMETER METER4 CD CONDUCTIVITY > EXPERT MENU

* Parameters Meter4 follow the CD conductivity settings selected in paragraph 8.7 selecting **CD K factor probe range**



Select the required range, consequently, display and measurement resolutions will change accordingly.
CD conductivity measurements, display will show µS values up to 1999 (microSiemens) then automatically will change to mS (milli Siemens) above latter value

12.4.1 - MEASURE TYPE METER4 CD CONDUCTIVITY PROBE "K" FACTOR

TOUCH CD STANDARD CONDUCTIVITY RANGES

It is always RECCOMENDED and mandatory to use the correct K probe according to the range in which the controller is working.

- K1** 2000 µS □ 20.00 mS (20.000 µS): it can measure down to 1000 µS but accuracy will be more approximated.
- K5** 200 µS □ 2000 µS

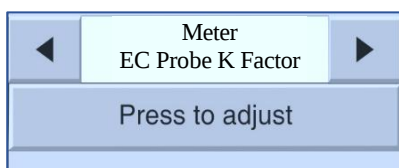
UPON REQUEST other ranges are available only after ETATRON SYSTEMS Srl approval and with corresponding probe K factor:

> **K 0,6 / 0,8** up to 50 mS (50.000 µS) > **K10** 20 µS □ 200 µS with appropriate probe.

TOUCH CD will show µS values up to 1999 (microSiemens) above this value will automatically change to mS (milli Siemens).

IMPORTANT: before selecting CD probe K factor and starting calibration, **ENSURE**, to connect the **proper** Conductivity sensor.

IMPORTANT: the above µS ranges are just indicative: for example, a K1 probe can make good measurements below 1000 µ S, only resolution will be less accurate. However, the same concept doesn't apply the other way around: a K5 probe will never measure higher ranges than 2.000 µS.



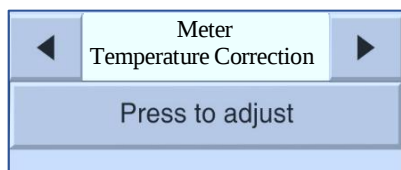
METER4 : EC probe K factor			
1	2	3	DEL
4	5	6	CLEAR
7	8	9	ESC
/	0		SET

K selections starts from 1.000 and pressing ◀ ▶ value can reach up to 20.000 or down to 0,000
K1 select 1.000
K5 select 5.000
Display shows µS but in selected value exceed 1999 µS, it will show 2.00 mS

Controller will adapt Measurement and Display resolution according to the type of probe used.

- Touch **OK** to confirm selection

12.4.2 - TEMPERATURE CORRECTION



CD alfa factor is the correction factor for conductivity measurement in function of temperature: EVERY CONDUCTIVITY SENSOR IS TEMPERATURE-DEPENDENT. Conductivity varies linearly according to the temperature of the solution. This coefficient normalizes the measurement of the conductivity 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 want to normalize the reading. Alfa factor ensures best measurement results and Accuracy.

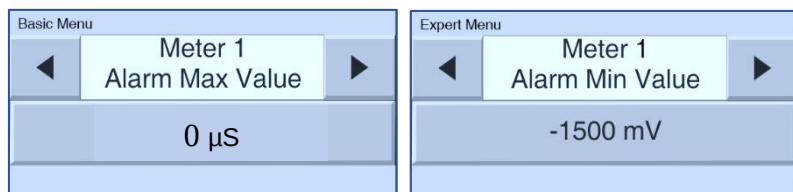
☞ Touch Right arrow □

EVERY CONDUCTIVITY SENSOR IS TEMPERATURE DEPENDENT. Conductivity varies linearly according to the temperature of the solution. Normally the best measurements are obtained by automatic temperature compensation using PT100 temperature sensor. Whenever operator DOES NOT have the temperature sensor, we strongly recommend setting use MANUAL temperature programming step. TOUCH series allows to choose between:

- **MANUAL** selecting the buffer solution and/or environmental current temperature (default set at 25°C)
- **PT100** allowing automatic temperature compensation connecting a PT100 temperature probe.

12.4.3 - ALARM LEVELS PROGRAMMING METER4 CD CONDUCTIVITY

Alarm function is connected to **ALARM RELAY**



Alarm MIN selects alarm LOWEST level passed which alarm relay will be ON. Alarm function is connected to **ALARM RELAY** Alarm MAX selects alarm HIGHEST level passed which alarm relay will be ON.

☞ Touch **SET** to confirm selection

12.4.4 - STARTUP DELAY METER4 CD CONDUCTIVITY



Start-up Delay time “blocks” the relay outputs when switching ON the unit thus allowing sensors to polarize ensuring correct measurements.

☞ Touch **0 min** and select Start up delay from appearing keypad

☞ Touch **SET** to confirm selection

12.4.5- CALIBRATING METER4 CD CONDUCTIVITY SENSOR

TOUCH CD STANDARD CONDUCTIVITY RANGES

It is always RECOMMENDED and mandatory to use the correct K probe according to the range in which the controller is working.

- **K1** 2000 μ S $\square$ 20.00 mS (20.000 μ S): it can measure down to 2000 μ S but accuracy will be more approximated.
- **K5** 200 μ S $\square$ 2000 μ S: it can measure down to 300 μ S but accuracy will be more approximated.

UPON REQUEST other ranges are available only after ETATRON SYSTEMS Srl approval and with corresponding probe K factor:

- > **K 0,6 / 0,8** up to 50 mS (50.000 μ S): using ETATRON probe with graphite electrodes or another brand equivalent type.
- > **K10** 20 μ S $\square$ 200 μ S with appropriate probe.

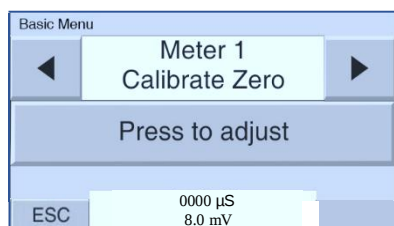
IMPORTANT NOTES:

- if NO temperature sensor is used, move to **Expert Menu Settings > Temperature > Manual** to change it to required temperature value;
- when calibrate the sensor ensure that the probe electrodes do not touch any surface except the solution;
- ensure that the sensor is firmly positioned without movements into the solution container;
- wait the necessary time until calibration measurement is stabilised (about 10 min). During calibration, measurements values will always tend to have a very small variation but this will not prevent from continuing unit operation.

A message will appear before calibration reminding:



We recommend making a sample solution which matches the required CD value in the system (normally the set-point value); using a good portable CD meter, ensure conductivity levels correspond to the CD requirements. Use a Conductivity sensor with cell constant according to the selected K factor range (paragraph 9.2) with max cable length of 4 m. After calibration wait 5/10 minutes for measure to stabilise.



* When starting calibration display shows random values
Dip the sensor the sample solution

Touch **PRESS TO ADJUST** until display shows the sample solution value wait 5/10 min (until measure is stable, which is within the sensor K range)

Touch **SET** to confirm selection

Touch **ESC** to go back one step during programming

* It will show the value according to previously selected constant cell K range. Controller will adapt Measurement and Display resolution according to the type of probe used.

IMPORTANT: once selected CD probe K factor, **ENSURE**, to connect the **proper** Conductivity sensor.

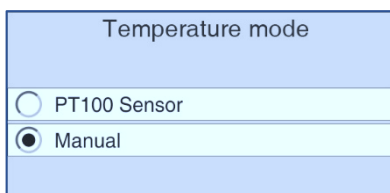
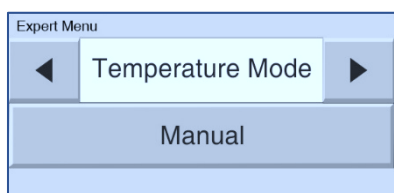
12.5 - MEASURED PARAMETER TEMPERATURE > EXPERT MENU



Touch the area related to measuring parameter

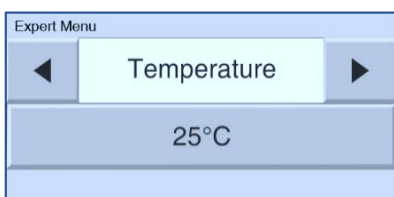
NOTE: Temperature value is visualised **ONLY** if using temperature sensor PT100

12.5.1 - TEMPERATURE > MANUAL COMPENSATION SETTING



Press **◀▶** to show the environmental temperature. Selecting ESC (instead of entering a temperature value) controller will set 25°C value as default, which can be changed

Selecting PT100 allows temperature/electrode measurements compensation, always giving the exact value against the current temperature.



Temperature			
1	2	3	DEL
4	5	6	CLEAR
7	8	9	ESC
:	0		SET

Touch the temperature value shown to change value

12.5.2 - TEMPERATURE > AUTOMATIC COMPENSATION

Temperature mode

☒ PT100 Sensor

☐ Manual

Expert Menu

Temperature Mode

PT100 Sensor

☞ Select PT100

i If Operator will select in AUX4 programming function Temperature Setpoint, enabling PT100 will allow to select a temperature setpoint touching window **T.Setpoint**

12.5.3 - ALARM LEVELS PROGRAMMING TEMPERATURE

Alarm function is connected to **ALARM RELAY**

Expert Menu

Temperature Alarm Min Value

0 °C

Expert Menu

Temperature Alarm Max Value

100 °C

Alarm MIN selects alarm LOWEST level passed which alarm relay will be ON.

Alarm function is connected to **ALARM RELAY**

Alarm MAX selects alarm HIGHEST level passed which alarm relay will be ON.

12.5.4 - STARTUP TIME TEMPERATURE FUNCTION

Expert Menu

Temperature Startup time

0 min

Start-up Delay time “freezes” the relay outputs when switching ON the unit thus allowing sensors to polarize ensuring correct measurements.

12.5.5 - CALIBRATING TEMPERATURE SENSOR

Expert Menu

Temperature Calibrate

Press to adjust

Dip temperature sensor into the liquid at know value, wait 2/3 min.

☞ Touch **PRESS TO ADJUST** until display shows the above liquid value, wait 2/3 minutes

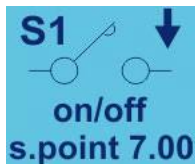
☞ Touch **SET** to confirm selection

☞ Touch **ESC** to go back one step during programming

13.0 SET POINT PROGRAMMING > EXPERT MENU

13.1 - SET POINT 1 PH

PH



Expert Menu

Setpoint1 Value

7.00 pH

METER1 > EXPERT MENU



TOUCH THE BLUE AREA
TO ACCESS **S1**

Here following are two programming steps: when selecting **Measure Param.1** as **PH** measurement, refer to left column; selecting **RX** refer to right column.

Set point menu will activate output relays for dosing pumps or other equipment **UNTIL** selected set-point level is reached.

1 .1.1 - SET POINT 1 RX (ORP)

RX (Orp)



Expert Menu

Setpoint1 Value

200 mV

Expert Menu

Setpoint1
Dosing Mode

Acid

Setpoint 1: Dosing Mode

☒ Acid

☐ Alkaline

Expert Menu

Setpoint1
Mode

on/off

pH set point 1 is set for **Acid mode** operation: output is active when measured value is **higher** than selected set point, dosing pump injects **acid**. **Alkaline mode**: output is active when measured value is **lower**, dosing pump injects **alkaline**.

Rx set point 1 is set for **Direct mode** operation: output is active when measured value is **lower** than selected set-point, dosing pump injects **chlorine** (Oxidant). **Reverse mode**: output is active when measured value is **higher**, dosing pump injects **chlorine reducer**.

Expert Menu

Setpoint 1
Dosing Mode

Direct

Setpoint 1: Dosing Mode

☒ Direct

☐ Reverse

Setpoint 1: Mode

☒ On / Off

☐ Timed pulses

Unit is provided with **ON-OFF mode** which will activate or deactivate in case of reverse mode ON) output relays such as Constant / ON-OFF mode dosing pumps or other ON-OFF mode equipment.

↩ SELECTING MODE “ON-OFF” NEXT PROGRAMMING STEP □ “HYSTERESIS”

↩ SELECTING MODE “TIMED PULSES” WILL REQUIRE NEXT PARAMETERS SETTINGS

Expert Menu

Setpoint1
Mode

Timed pulses

Setpoint 1: Mode

☐ On / Off

☒ Timed pulses

Timed Pulses known as PWM “pulses with modulation” time / pause action allowing proportional mode on each ON-OFF set point according to measured value.

NOTE: display will show this icon 

Default activating point at 1.50 pH
Default activating point at 150 mV

For more accurate “Timed Pulses” PWM settings, programm next menu settings.

PH TIMED PULSES PROGRAMMING

Expert Menu

Setpoint 1
Window Value

1.50 pH

Window Width: pulses are timed ON and OFF according to the distance from selected set-point, **default 1.50 pH** (programmable), e.g.: if selected set point is 7.00 pH and window width 1.50 pH; at measured value 9.00 pH, **PWM** mode starts after reaching 8.50 pH with Time/Pause pulses and decreasing the active time while reaching set point value.

Expert Menu

Setpoint 1
Cycle Time

60 sec

Cycle Time: PWM mode cycle 60 seconds (programmable): e.g. set point 7.00 pH and window width 1.50 pH; at measured value 8.50 pH = active time 60 sec / pause time = 0 sec.; at measured value 7.75 pH active time= 30 sec / pause time 30 sec and decreasing active time accordingly while reaching setpoint value. Cycle time depends on many variables such as: distance from injection point to the system to treat, reaction time required, chemical concentration, etc...

Expert Menu

Setpoint 1
Min.Active Time

5 sec

Active Time MIN programmable: it sets the minimum time in which PWM is active; it overrules selected settings. Times Pulses Function follows the following formula:
Active Time MIN = [(measured value – set point) / window width] * cycle time.
If the result of the formula is < the selected Active Time Min, **the latter with overrule the first.** However, we suggest keeping the default active time shown when programming, that is 5 seconds.

Expert Menu

Setpoint 1
Overdosing Time

0 min

Overdosing time-out alarm selects a period for reaching set-point. If set point is not reached within time, controller will block outputs operations including mA outputs. Alarm is ON shown on display and will activate Alarm relay activating an alarm device.

Max Dosing extra safety function ensuring dosing is carried out within selected time. Relays dosing pumps will open accordingly. This function allows no time limit (dosing continuously in accordance to selected set points) or selects minutes (up to 999) and hours, for example dosing 999 min. within 24 hours.

Window Width: pulses are timed ON and OFF according to the distance from selected set-point, **default 150 mV** (programmable), e.g.: if selected set point is 750 mV and window width 150 mV; and measured value 500 mV, **PWM** mode starts after reaching 550 mV with Time/Pause pulses and decreasing the active time while reaching set point value.

Cycle Time: PWM mode cycle 60 seconds (programmable): e.g. set point 700 mV and window width 150 mV; at measured value 550 mV = active time 60 sec / pause time = 0 sec.; at measured value 625 mV active time= 30 sec / pause time 30 sec and decreasing active time accordingly while reaching setpoint value. Cycle time depends on many variables such as: distance from injection point to the system to treat, reaction time required, chemical concentration, etc...

Active Time MIN programmable: it sets the minimum time in which PWM is active; it overrules selected settings. Times Pulses Function follows the following formula:
Active Time MIN = [(measured value – set point) / window width] * cycle time.
 If the result of the formula is < the selected Active Time Min, **the latter with overrule the first.** However, we suggest keeping the active time shown when programming, that is 5 seconds.

Expert Menu
Setpoint 1
Max Dosing Time
0 min

Expert Menu
Setpoint 1
Window Value
150 mV

Expert Menu
Setpoint 1
Cycle Time
60 sec

Expert Menu
Setpoint 1
Min.Active Time
5 sec

↶ SELECTING MODE “ON-OFF” NEXT PROGRAMMING STEPS ARE AS FOLLOW

Expert Menu
Setpoint 1
Hysteresis
0.05 pH

Expert Menu
Setpoint 1
Delay
5 sec

NOT AVAILABLE WITH TIMED PULSES MODE
 Hysteresis is used to activate or deactivate output relays when selected value is reached. It is useful when there are too many and/or quick changes, which could damage connected equipment. Increasing Hysteresis will allow to move away from set point value.

Expert Menu
Setpoint 1
Hysteresis
10 mV

NOT AVAILABLE WITH TIMED PULSES MODE
 Delay time blocks relay outputs to ensure that the outputs are active only when the sensors measurements are stable thus allowing the best results in terms of chemical balance.

*BACK TO SETPOINT PROGRAMMING STEPS FROM EITHER “ON-OFF” OR “TIMED PULSES” MODE

Expert Menu
Setpoint 1
Overdosing Time
0 min

Expert Menu
Setpoint 1
Max Dosing Time
0 min

Expert Menu
Setpoint 1
Dosing Check Time
0 h

Overdosing time-out alarm selects a period for reaching set-point. If set point is not reached within time, controller will block outputs operations including mA outputs. Alarm is ON shown on display and will activate Alarm relay activating an alarm device.

Max Dosing extra safety function ensuring dosing is carried out within selected time. Relays dosing pumps will open accordingly. This function allows no time limit (dosing continuously in accordance to selected set points) or selects minutes (up to 999) and hours, for example dosing 999 min. within 24 hours.

In case of programming Max Dosing different than 0, operator can select a **Dosing check time** period (hours) in which the unit checks the total dosing time effected, example: every 3 hours unit checks the total dosing time; if the dosing time has exceeded programmed selection, it will not effect any dosing until dosing time is restored to original programming.

Expert Menu

Setpoint 1
No Flux Delay

5 sec

A **delay time** can be set for **lack of flow**; if the lack of flow is greater than the set time, the controller waits the time set in the “Start Delay” parameter, before possibly enabling the various outputs for the pump control.

Expert Menu

Setpoint 1
Level Delay

5 sec

You can set a **delay time on the level alarm**, the controller goes into alarm as soon as it receives the contact from the relevant one level probe, but deactivates the operation of the pumps connected to it only after the previously set time

Touch **SET** to confirm selections

Touch **ESC** goes back one step during programming.

13.2 - SET POINT 2 PH

PH



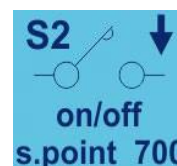
METER1 / EXPERT MENU



TOUCH THE BLUE AREA
TO ACCESS **S2** PROGRAMMING

13.2.1 - SET POINT 2 RX (ORP)

RX (Orp)



Selecting Meter1 as RX
refer to RIGHT column

Expert Menu

Setpoint2
Value

7.00 pH

Set point will activate output relays for dosing pumps or other equipment once selected set-point level is reached.

Expert Menu

Setpoint2
Dosing Mode

Alkaline

pH set point 2 is set for **Alkaline mode** operation: output is active when measured value is **lower** than selected set point, dosing pump injects **alkaline**. **Acid mode**: output is active when measured value is **higher**, dosing pump injects **acid**.

Setpoint 1: Dosing Mode

☐ Acid

☒ Alkaline

Rx set point 2 is set for **Reverse mode** operation: output is active when measured value is **higher** than selected set-point, dosing pump injects **chlorine reducer**. **Direct mode**: output is active when measured value is **lower**, dosing pump injects **chlorine** (Oxidant).

Expert Menu

Setpoint2
Value

200 mV

Expert Menu

Setpoint 2
Dosing Mode

Reverse

Setpoint 2: Dosing Mode

☐ Direct

☒ Reverse

Expert Menu

Setpoint2
Mode

on/off

Setpoint 2: Mode

☒ On / Off

☐ Timed pulses

Unit is provided with **ON-OFF mode** which will activate or deactivate in case of reverse mode ON) output relays such as Constant / ON-OFF mode dosing pumps or other ON-OFF mode equipment.

↩ SELECTING MODE “**ON-OFF**” NEXT PROGRAMMING STEP □ “**HYSTERESIS**”

↩ SELECTING MODE “**TIMED PULSES**” WILL REQUIRE NEXT PARAMETERS SETTINGS

Expert Menu

Setpoint2
Mode

Timed pulses

Setpoint 2: Mode

☐ On / Off

☒ Timed pulses

Timed Pulses known as PWM “pulses with modulation” time / pause action allowing proportional mode on each ON-OFF set point according to measured value.

NOTE: display will show this icon 

Default activating point at 1.50 pH
Default activating point at 150 mV

For more accurate “**Timed Pulses**” PWM settings, programm next menu settings.

PH TIMED PULSES PROGRAMMING

Expert Menu		
◀	Setpoint 2 Window Value	▶
1.50 pH		

Window Width: pulses are timed ON and OFF according to the distance from selected set-point, **default 1.50 pH** (programmable), e.g.: if selected set point is 7.00 pH and window width 1.50 pH; at measured value 9.00 pH, **PWM** mode starts after reaching 8.50 pH with Time/Pause pulses and decreasing the active time while reaching set point value.

Expert Menu		
◀	Setpoint 2 Cycle Time	▶
60 sec		

Cycle Time: PWM mode cycle 60 seconds (programmable): e.g. set point 7.00 pH and window width 1.50 pH; at measured value 8.50 pH = active time 60 sec / pause time = 0 sec.; at measured value 7.75 pH active time= 30 sec / pause time 30 sec and decreasing active time accordingly while reaching setpoint value. Cycle time depends on many variables such as: distance from injection point to the system to treat, reaction time required, chemical concentration, etc...

Expert Menu		
◀	Setpoint 2 Min.Active Time	▶
5 sec		

Active Time MIN programmable: it sets the minimum time in which PWM is active; it overrules selected settings. Times Pulses Function follows the following formula:
Active Time MIN = [(measured value – set point) / window width] * cycle time.
 If the result of the formula is < the selected Active Time Min, **the latter with overrule the first.** However, we suggest keeping the default active time shown when programming, that is 5 seconds.

RX (ORP) TIMED PULSES PROGRAMMING

Window Width: pulses are timed ON and OFF according to the distance from selected set-point, **default 150 mV** (programmable), e.g.: if selected set point is 750 mV and window width 150 mV; and measured value 500 mV, **PWM** mode starts after reaching 550 mV with Time/Pause pulses and decreasing the active time while reaching set point value.

Cycle Time: PWM mode cycle 60 seconds (programmable): e.g. set point 700 mV and window width 150 mV; at measured value 550 mV = active time 60 sec / pause time = 0 sec.; at measured value 625 mV active time= 30 sec / pause time 30 sec and decreasing active time accordingly while reaching setpoint value. Cycle time depends on many variables such as: distance from injection point to the system to treat, reaction time required, chemical concentration, etc...

Active Time MIN programmable: it sets the minimum time in which PWM is active; it overrules selected settings. Times Pulses Function follows the following formula:
Active Time MIN = [(measured value – set point) / window width] * cycle time.
 If the result of the formula is < the selected Active Time Min, **the latter with overrule the first.** However, we suggest keeping the active time shown when programming, that is 5 seconds.

Expert Menu		
◀	Setpoint 2 Window Value	▶
150 mV		

Expert Menu		
◀	Setpoint 2 Cycle Time	▶
60 sec		

Expert Menu		
◀	Setpoint 2 Min.Active Time	▶
5 sec		

↪ SELECTING MODE “ON-OFF” NEXT PROGRAMMING STEPS ARE AS FOLLOW ↪

Expert Menu		
◀	Setpoint 2 Hysteresis	▶
0.05 pH		

NOT AVAILABLE WITH TIMED PULSES MODE

Hysteresis is used to activate or deactivate output relays when selected value is reached. It is useful when there are too many and/or quick changes, which could damage connected equipment. Increasing Hysteresis will allow to move away from set point value.

Expert Menu		
◀	Setpoint 2 Hysteresis	▶
10 mV		

Expert Menu		
◀	Setpoint 2 Delay	▶
5 sec		

NOT AVAILABLE WITH TIMED PULSES MODE

Delay time blocks relay outputs to ensure that the outputs are active only when the sensors measurements are stable thus allowing the best results in terms of chemical balance.

* BACK TO SETPOINT PROGRAMMING STEPS FROM EITHER “ON-OFF” OR “TIMED PULSES” MODE

Expert Menu

Setpoint 2
Overdosing Time

0 min

Overdosing time-out alarm selects a period for reaching set-point. If set point is not reached within time, controller will block outputs operations including mA outputs. Alarm is ON shown on display and will activate Alarm relay activating an alarm device.

Expert Menu

Setpoint 2
Max Dosing Time

0 min

Max Dosing extra safety function ensuring dosing is carried out within selected time. Relays dosing pumps will open accordingly. This function allows no time limit (dosing continuously in accordance to selected set points) or selects minutes (up to 999) and hours, for example dosing 999 min. within 24 hours.

Expert Menu

Setpoint 2
Dosing Check Time

0 h

In case of programming Max Dosing different than 0, operator can select a **Dosing check time** period (hours) in which the unit checks the total dosing time effected, example: every 3 hours unit checks the total dosing time; if the dosing time has exceeded programmed selection, it will not effect any dosing until dosing time is restored to original programming.

- Touch **SET** to confirm selections
- Touch **ESC** goes back one step during programming.

13.3 - SET POINT3 RX (REDOX ORP) METER2 > EXPERT MENU



Touch the area related to setpoint3 **S3**

Expert Menu

Setpoint 3
Value

200 mV

Set point will activate output relays for dosing pumps or other equipment once selected set-point level is reached.

Expert Menu

Setpoint 3
Dosing Mode

Direct

Setpoint 3: Dosing Mode

☒ Direct

☐ Reverse

Rx set point 3 is set for **Direct mode** operation: output is active when measured value is **lower** than selected set-point, dosing pump injects **chlorine** (Oxidant).

Reverse mode: output is active when measured value is **higher**, dosing pump injects **chlorine reducer**.

Unit is provided with **ON-OFF mode** which will activate or deactivate in case of reverse mode ON) output relays such as Constant / ON-OFF mode dosing pumps or other ON-OFF mode equipment.

Expert Menu

Setpoint 3
Mode

on/off

Setpoint 3: Mode

☒ On / Off

☐ Timed pulses

SELECTING MODE **"ON-OFF"** NEXT PROGRAMMING STEP □ **"HYSTERESIS"**

SELECTING MODE **"TIMED PULSES"** WILL REQUIRE NEXT PARAMETERS SETTINGS

Expert Menu

Setpoint 3
Mode

Timed pulses

Setpoint 3: Mode

☐ On / Off

☒ Timed pulses

Timed Pulses known as PWM "pulses with modulation" time / pause action allowing proportional mode on each ON-OFF set point according to measured value.

NOTE: display will show this icon

Default activating point at 150 mV

For more accurate **"Timed Pulses"** PWM settings, programm next menu settings.

RX (REDOX ORP) MEASUREMENTS TIMED PULSES PROGRAMMING

Expert Menu

Setpoint 3
Window Value

150 mV

Window Width: pulses are timed ON and OFF according to the distance from selected set-point, **default 150 mV** (programmable), e.g.: if selected set point is 750 mV and window width 150 mV; and measured value 500 mV, **PWM** mode starts after reaching 550 mV with Time/Pause pulses and decreasing the active time while reaching set point value.

Expert Menu

Setpoint 3
Cycle Time

60 sec

Cycle Time: PWM mode cycle 60 seconds (programmable): e.g. set point 700 mV and window width 150 mV; at measured value 550 mV = active time 60 sec / pause time = 0 sec.; at measured value 625 mV active time= 30 sec / pause time 30 sec and decreasing active time accordingly while reaching setpoint value. Cycle time depends on many variables such as: distance from injection point to the system to treat, reaction time required, chemical concentration, etc...

Expert Menu

Setpoint 3
Min.Active Time

5 sec

Active Time MIN programmable: it sets the minimum time in which PWM is active; it overrides selected settings. Times Pulses Function follows the following formula:

Active Time MIN = [(measured value – set point) / window width] * cycle time.

If the result of the formula is < the selected Active Time Min, **the latter with override the first.** However, we suggest keeping the active time shown when programming, that is 5 seconds.

↩ SELECTING MODE “ON-OFF” NEXT PROGRAMMING STEPS ARE AS FOLLOW

Expert Menu

Setpoint 3
Hysteresis

10 mV

NOT AVAILABLE WITH TIMED PULSES MODE

Hysteresis is used to activate or deactivate output relays when selected value is reached. It is useful when there are too many and/or quick changes, which could damage connected equipment. Increasing Hysteresis will allow to move away from set point value.

Expert Menu

Setpoint 3
Delay

5 sec

NOT AVAILABLE WITH TIMED PULSES MODE

Delay time blocks relay outputs to ensure that the outputs are active only when the sensors measurements are stable thus allowing the best results in terms of chemical balance.

*BACK TO SETPOINT PROGRAMMING STEPS FROM EITHER “ON-OFF” OR “TIMED PULSES” MODE

Expert Menu

Setpoint 3
Overdosing Time

0 min

Overdosing time-out alarm selects a period for reaching set-point. If set point is not reached within time, controller will block outputs operations including mA outputs. Alarm is ON shown on display and will activate Alarm relay activating an alarm device.

Expert Menu

Setpoint 3
Max Dosing Time

0 min

Max Dosing extra safety function ensuring dosing is carried out within selected time. Relays dosing pumps will open accordingly. This function allows no time limit (dosing continuously in accordance to selected set points) or selects minutes (up to 999) and hours, for example dosing 999 min. within 24 hours.

Expert Menu

Setpoint 3
Dosing Check Time

0 h

In case of programming Max Dosing different than 0, operator can select a **Dosing check time** period (hours) in which the unit checks the total dosing time effected, example: every 3 hours unit checks the total dosing time; if the dosing time has exceeded programmed selection, it will not effect any dosing until dosing time is restored to original programming.

Expert Menu

Setpoint 3
No Flux Delay

5 sec

A **delay time** can be set for **lack of flow**; if the lack of flow is greater than the set time, the controller waits the time set in the “Start Delay” parameter, before possibly enabling the various outputs for the pump control.

Expert Menu

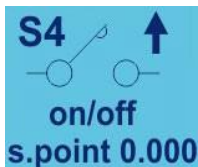
Setpoint 3
Level Delay

5 sec

You can set a **delay time on the level alarm**, the controller goes into alarm as soon as it receives the contact from the relevant one level probe, but deactivates the operation of the pumps connected to it only after the previously set time

- Touch **SET** to confirm selections
- Touch **ESC** goes back one step during programming.

13.4 - SET POINT4 CL CHLORINE OR PPM MEASUREMENTS METER3 > EXPERT MENU



Touch the area related to setpoint3 **S3**. TOUCH series Chlorine or PPM measurements controller is set as default for a sensor range 0-2 CL ppm. Select the required range, consequently, display and measurement resolutions will change accordingly.

REMINDER: Display will either show *Cl ppm* or *PPM* measurement values, according to the selection made when starting programming in paragraph 8.6 - SELECTING CHLORINE MEASURING RANGE. If “Cl ppm” range was chosen and “Cl” does not appear, it means selection was not confirmed. Re-select the range and confirm OK.

Expert Menu

Setpoint 4
Value

0.000 Cl ppm

Default set point 0.000 CL ppm or PPM range = 2 cl ppm (or ppm, not default)
 Selecting other ranges will show **0.00** = range 20 Cl ppm or ppm and 5 Cl ppm
0.00 Total chlorine = range 20 Cl ppm
0.00 = CLC open chlorine cell range 10 Cl ppm
0.0 ppm = range 200 ppm
0 ppm = range 2000 ppm and 20000 ppm

Expert Menu

Setpoint 4
Dosing Mode

Direct

Setpoint 4: Dosing Mode

☒ Direct

☐ Reverse

CL set point 3 is set for **Direct mode** operation: output is active when measured value is **lower** than selected set-point, dosing pump injects **chlorine**.

Reverse mode: output is active when measured value is **higher**, dosing pump injects **chlorine reducer**.

Expert Menu

Setpoint 4
Mode

on/off

Setpoint 4: Mode

☒ On / Off

☐ Timed pulses

Unit is provided with **ON-OFF mode** which will activate or deactivate in case of reverse mode ON) output relays such as Constant / ON-OFF mode dosing pumps or other ON-OFF mode equipment.

↩ SELECTING MODE “**ON-OFF**” NEXT PROGRAMMING STEP □ “**HYSTERESIS**”

↩ SELECTING MODE “**TIMED PULSES**” WILL REQUIRE NEXT PARAMETERS SETTINGS

Expert Menu

Setpoint 4
Mode

Timed pulses

Setpoint 4: Mode

☐ On / Off

☒ Timed pulses

*Timed Pulses also known as PWM “pulses with modulation” time/pause allows proportional mode on each ON-OFF set point activating corresponding pulses on output relay according to measured value and always relating to the previous selected settings.
Default activating point at 0,050 Cl ppm or ppm (range 2 Cl ppm or ppm); 0,05 (range 5-10-20 Cl ppm);

5 ppm (range 200 ppm); 50 ppm (range 2000 ppm).

NOTE: display will show this icon 

For more accurate “**Timed Pulses**” PWM settings, program next menu settings.

CHLORINE OR PPM MEASUREMENTS TIMED PULSES PROGRAMMING

Expert Menu

Setpoint 4
Window Value

0.050 Cl ppm

Window Width: pulses are timed ON and OFF according to the distance from selected set-point, programmable, e.g.: working with a chlorine range 0-2 Cl ppm and window width 0,050; if selected set point is 0,500 Cl ppm and measured value is 0,400 ppm **PWM** mode starts after reaching 0,450 Cl ppm (0,050 Cl ppm) with Time/Pause pulses according to selected time Cycle in seconds.

Expert Menu

Setpoint 4
Cycle Time

60 sec

Cycle Time: PWM mode cycle 60 seconds (programmable): e.g. setpoint 0,500 Cl ppm, window width 0,050; at measured value 0,450 Cl ppm = active time 60 sec / pause time = 0 sec.; at value 0,475 Cl ppm active time= 30 sec / pause time 30 sec and decreasing active time accordingly while reaching setpoint value. Cycle time depends on many variables such as: distance from injection point to the system to treat, reaction time required, chemical concentration, etc....

Expert Menu

Setpoint 4
Min.Active Time

5 sec

Active Time MIN programmable: it sets the minimum time in which PWM is active; it overrules selected settings. Times Pulses Function follows the following formula:

Active Time MIN = [(measured value – set point) / window width] * cycle time.

If the result of the formula is < the selected Active Time Min, **the latter with overrule the first.** However, we suggest keeping the default active time shown when programming, that is 5 seconds.

↶ SELECTING MODE “**ON-OFF**” NEXT PROGRAMMING STEPS ARE AS FOLLOW

Expert Menu

Setpoint 4
Hysteresis

0.005 Cl ppm

NOT AVAILABLE WITH TIMED PULSES MODE

Hysteresis is used to activate or deactivate output relays when selected value is reached. It is useful when there are too many and/or quick changes, which could damage connected equipment. Increasing Hysteresis will allow to move away from set point value.

Default Hysteresis 0,005 Cl ppm (range 0-2 Cl ppm or ppm); **0,05** (range 0-20 Cl ppm or ppm, Free and Total Cl / range 5 Cl ppm), **0,05 Cl ppm** (range 0-10 Cl ppm, CLC open cell); **0.5 ppm** = range 200 ppm; **5 ppm** = range 2000 ppm. PRESS **VALUE TO PROGRAMM**

Expert Menu

Setpoint 4
Delay

5 sec

NOT AVAILABLE WITH TIMED PULSES MODE

Delay time blocks relay outputs to ensure that the outputs are active only when the sensors measurements are stable thus allowing the best results in terms of chemical balance.

*BACK TO SETPOINT PROGRAMMING STEPS FROM EITHER “**ON-OFF**” OR “**TIMED PULSES**” MODE

Expert Menu

Setpoint 4
Overdosing Time

0 min

Overdosing time-out alarm selects a period for reaching set-point. If set point is not reached within time, controller will block outputs operations including mA outputs. Alarm is ON shown on display and will activate Alarm relay activating an alarm device.

Expert Menu

Setpoint 4
Max Dosing Time

0 min

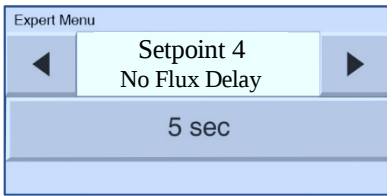
Max Dosing extra safety function ensuring dosing is carried out within selected time. Relays dosing pumps will open accordingly. This function allows no time limit (dosing continuously in accordance to selected set points) or selects minutes (up to 999) and hours, for example dosing 999 min. within 24 hours.

Expert Menu

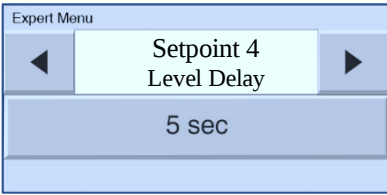
Setpoint 4
Dosing Check Time

0 h

In case of programming Max Dosing different than 0, operator can select a **Dosing check time** period (hours) in which the unit checks the total dosing time effected, example: every 3 hours unit checks the total dosing time; if the dosing time has exceeded programmed selection, it will not effect any dosing until dosing time is restored to original programming.



A **delay time** can be set for **lack of flow**; if the lack of flow is greater than the set time, the controller waits the time set in the “Start Delay” parameter, before possibly enabling the various outputs for the pump control.

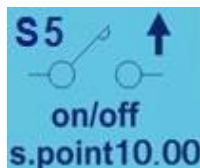


You can set a **delay time on the level alarm**, the controller goes into alarm as soon as it receives the contact from the relevant one level probe, but deactivates the operation of the pumps connected to it only after the previously set time

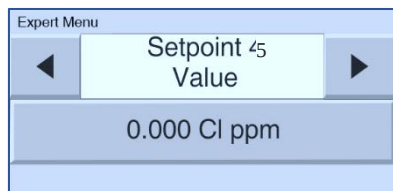
- ☛ Touch **SET** to confirm selections
- ☛ Touch **ESC** goes back one step during programming.

13.5 - SET POINT5 CD CONDUCTIVITY METER3 > EXPERT MENU

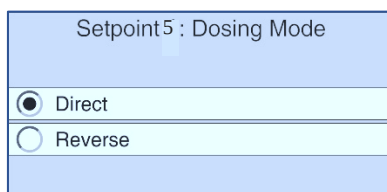
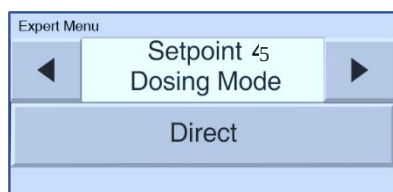
Touch the area related to setpoint4 **S5** Keep in mind that the value displayed is automatically adjusted to the selected conductivity range cell constant “K” characteristic in previous paragraph 8.7.



REMINDER: CD will show μS values up to 1999 (microSiemens) above this value will automatically change to mS (milli Siemens).

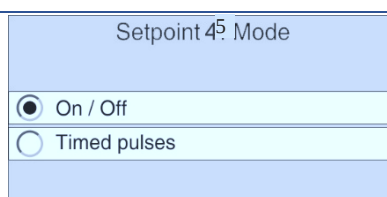


Set point will activate output relays for dosing pumps or other equipment once selected set-point level is reached. Display will show μS values but in case setpoint value exceed 1999 μS , it will show 2.00 mS (decreasing the value will return to μS reading).



EC set point 5 is set for **Direct mode** operation: output is active when measured value is **lower** than selected set-point.

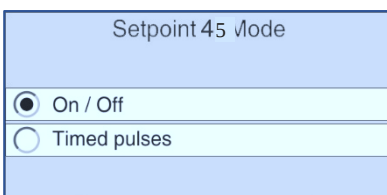
Reverse mode operation: output is active when measured value is **higher** than selected set-point.



Unit is provided with **ON-OFF mode** which will activate or deactivate in case of reverse mode ON) output relays such as Constant / ON-OFF mode dosing pumps or other ON-OFF mode equipment.

↩ SELECTING MODE “ON-OFF” NEXT PROGRAMMING STEP □ “HYSTERESIS”

↩ SELECTING MODE “TIMED PULSES” WILL REQUIRE NEXT PARAMETERS SETTINGS

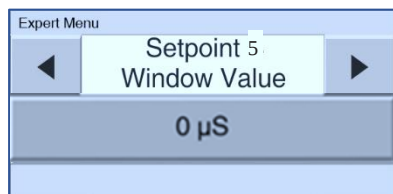


Timed Pulses known as PWM “pulses with modulation” time / pause action allowing proportional mode on each ON-OFF set point according to measured value.

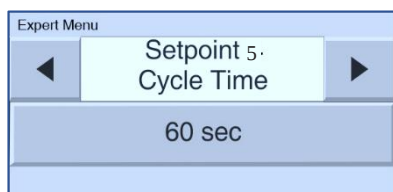
Default activating point at 1000 μS (range 0-20.000 μS DEFAULT); **100 μS** (range 0-2000 μS); **0,10 μS** (range 0-200 μS); **10000 μS** (range 0-100.000 μS)

For more accurate “Timed Pulses” PWM settings, programm next menu settings.

CD CONDUCTIVITY MEASUREMENTS TIMED PULSES PROGRAMMING



Window Width (example with range 2000 μS): pulses are timed ON and OFF according to the distance from selected set point, programmable, example: if CD selected set point is 700 μS and window width 100 μS ; at measured value is 600 μS , **PWM** mode will start with Time/Pause pulses and decreasing the active time while reaching set point value.



Cycle Time: PWM mode cycle 60 seconds (programmable): e.g. CD set point 700 μS , window width 100 μS ; at measured value 600 μS = active time 60 sec / pause time = 0 sec.; at measured value 650 μS CD active time= 30 sec / pause time 30 sec ... and decreasing active time accordingly while reaching setpoint value. Cycle time depends on many variables such as: distance from injection point to the system to treat, reaction time required, chemical concentration, etc....

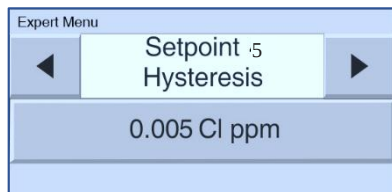


Active Time MIN programmable: it sets the minimum time in which PWM is active; it overrules selected settings. Times Pulses Function follows the following formula:

Active Time MIN = [(measured value – set point) / window width] * cycle time.

If the result of the formula is < the selected Active Time Min, **the latter with overrule the first**. However, we suggest keeping the default active time shown when programming, that is 5 seconds.

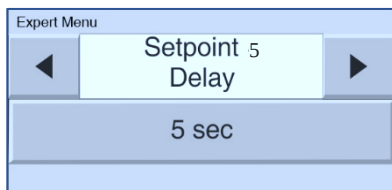
↩ SELECTING MODE “**ON-OFF**” NEXT PROGRAMMING STEPS ARE AS FOLLOW



NOT AVAILABLE WITH TIMED PULSES MODE

Hysteresis is used to activate or deactivate output relays when selected value is reached. It is useful when there are too many and/or quick changes, which could damage connected equipment. Increasing Hysteresis will allow to move away from set point value.

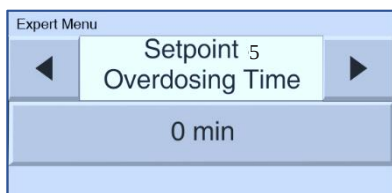
PRESS VALUE TO PROGRAMM



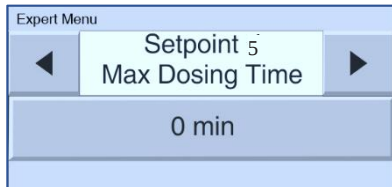
NOT AVAILABLE WITH TIMED PULSES MODE

Delay time blocks relay outputs to ensure that the outputs are active only when the sensors measurements are stable thus allowing the best results in terms of chemical balance.

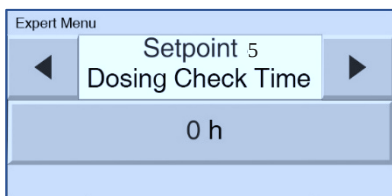
* BACK TO SETPOINT PROGRAMMING STEPS FROM EITHER “**ON-OFF**” OR “**TIMED PULSES**” MODE



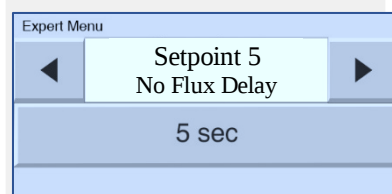
Overdosing time-out alarm selects a period for reaching set-point. If set point is not reached within time, controller will block outputs operations including mA outputs. Alarm is ON shown on display and will activate Alarm relay activating an alarm device.



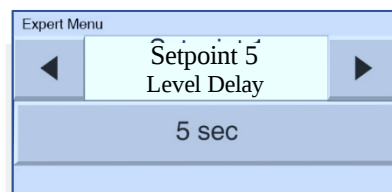
Max Dosing extra safety function ensuring dosing is carried out within selected time. Relays dosing pumps will open accordingly. This function allows no time limit (dosing continuously in accordance to selected set points) or selects minutes (up to 999) and hours, for example dosing 999 min. within 24 hours.



In case of programming Max Dosing different than 0, operator can select a **Dosing check time** period (hours) in which the unit checks the total dosing time effected, example: every 3 hours unit checks the total dosing time; if the dosing time has exceeded programmed selection, it will not effect any dosing until dosing time is restored to original programming.



A **delay time** can be set for **lack of flow**; if the lack of flow is greater than the set time, the controller waits the time set in the “Start Delay” parameter, before possibly enabling the various outputs for the pump control.

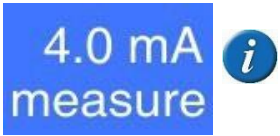


You can set a **delay time on the level alarm**, the controller goes into alarm as soon as it receives the contact from the relevant one level probe, but deactivates the operation of the pumps connected to it only after the previously set time

⏮ Touch **ESC** goes back one step during programming.

NOTE: DURING CALIBRATION 4-20mA OUTPUTS ARE BLOCKED UNTIL CALIBRATING STEP IS OVER

Touch the area related to **mA** programming



- **mA Device** driving data logger or other equipment suitable to work with mA signal.
- **DOSING SETPOINT**: driving dosing pumps suitable to work with mA signal
- **mA Device(T)** driving data logger or other equipment suitable to work with mA signal, linked with temperature measurement

*** RX display will appear in case selecting at the beginning or during operations, **Meter 1 Measure Type**.

14.1.1 - 4-20mA1 PH > AUX FUNCTION



14.1.2 - 4-20mA1 RX > AUX FUNCTION

Proportional analog 4-20mA follows the option previously selected either pH or Rx measuring parameter.

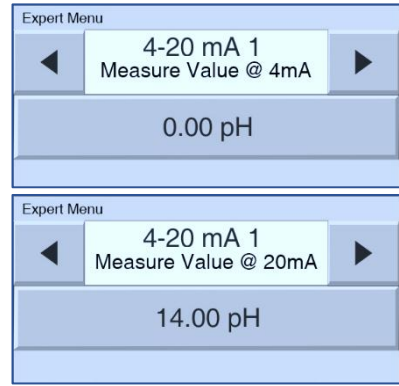
Touch **SET** to confirm selection scrivere info su nuove mod mA Device e ma device T

Proportional analog 4-20 mA outputs are combined to the unit measurements in real time of either pH or RX thus driving remote equipment such as data logger, PLC or recorders or other equipment suitable to process a mA signal.

mA1 PH

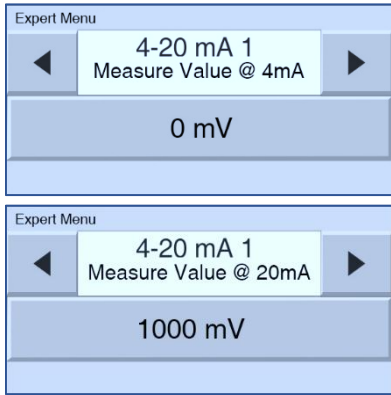
mA Device FUNCTION

mA1 RX (Orp)



*Programming according selected **METER1** valid for: **4-20mA1 pH / 4-20mA1 RX (ORP)**

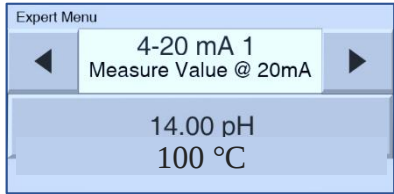
Select the value corresponding to 4 and 20 mA points according to **Setpoint 1** settings



- Touch **SET** to confirm selection.
- Touch **ESC** to go back one step during programming

mA (1,2,3) Device(T) FUNCTION

There is the possibility of having an output linked to the value of the **temperature** measurement



14.1.3 - 4-20mA1 PH > DOSING SETPOINT

14.1.4 - 4-20mA1 RX > DOSING SETPOINT

Proportional analog 4-20mA follows the option previously selected either pH or Rx measuring parameter.

☛ Touch **SET** to confirm selection

mA1 PH

DOSING SETPOINT

mA1 RX (Orp)

*Programming according selected **METER1** valid for:
4-20mA1 pH / 4-20mA1 RX (ORP)

Select the setpoint value

pH is set for **Acid mode** operation: output is active when measured value is **higher** than selected set point, dosing pump injects **acid**. **Alkaline mode**: output is active when measured value is **lower**, dosing pump injects **alkaline**.

Rx (Orp) is set for **Direct mode** operation: output is active when measured value is **lower** than selected set-point, dosing pump injects **chlorine** (Oxidant). **Reverse mode**: output is active when measured value is **higher**, dosing pump injects **chlorine reducer**.

Window Width: sets the distance from set point at which point 4-20mA mode will start: 4mA = 0 dosing pump pulse, 20mA = max dosing pump pulses frequency. Window width depends on many variables: distance injection point, reaction time, chemical concentration %, etc....

Overdosing time-out alarm selects a period for reaching set-point. If set point is not reached within time, controller will block outputs operations including mA outputs. Alarm is ON shown on display and will activate Alarm relay activating an alarm device.

In case of programming Max Dosing different than 0, operator can select a **Dosing check time** period (hours) in which the unit checks the total dosing time effected, example: every 3 hours unit checks the total dosing time; if the dosing time has exceeded programmed selection, it will not effect any dosing until dosing time is restored to original programming

Max Dosing extra safety function ensuring dosing is carried out within selected time. Relays dosing pumps will open accordingly. This function allows no time limit (dosing continuously in accordance to selected set points) or selects minutes (up to 999) and hours, for example dosing 999 min. within 24 hours.

Touch **SET** to confirm selections

Touch **ESC** goes back one step during programming.

14.2 - 4-20mA RX (ORP) METER2 > mA Device FUNCTION

Expert Menu	4-20 mA 2 Mode	4-20 mA 1: Mode
◀ ▶		☐ Dosing setpoint ☐ Dosing setpoint ☐ mA Device(T)
Press to adjust		

Meter2 Proportional analog 4-20mA follows the option previously selected either RX (or pH) Meter2 measuring parameter.

☛ Touch **SET** to confirm selection

Proportional analog 4-20 mA outputs are combined to the unit measurements in real time of either pH or RX thus driving remote equipment such as data logger, PLC or recorders or other equipment suitable to process a mA signal.

Expert Menu	4-20 mA 2 Measure Value @ 4mA	Expert Menu	4-20 mA 2 Measure Value @ 20mA
◀ ▶		◀ ▶	
0 mV		1000 mV	

Select the value corresponding to 4 and 20 mA points according to **Setpoint 3** settings

☛ Touch **SET** to confirm selection.

☛ Touch **ESC** to go back one step during programming

14.2.1 - 4-20mA RX (ORP) METER2 > DOSING SETPOINT

Expert Menu	4-20 mA 2 Setpoint Value
◀ ▶	
200 mV	

*Programming according selected **METER2** valid for:
4-20mA2 RX (ORP) / 4-20mA2 pH

Select the setpoint value

Expert Menu	4-20 mA 2 Dosing Mode
◀ ▶	
Direct	

4-20 mA2 Dosing Mode
☒ Direct ☐ Reverse

RX (Orp) is set for **Direct mode** operation: output is active when measured value is **lower** than selected set-point, dosing pump injects **chlorine** (Oxidant).

Reverse mode: output is active when measured value is **higher**, dosing pump injects **chlorine reducer**.

Expert Menu	4-20 mA 2 Window Value
◀ ▶	
150 mV	

Window Width: sets the distance from set point at which point 4-20mA mode will start: 4mA = 0 dosing pump pulse, 20mA = max dosing pump pulses frequency. Window width depends on many variables: distance injection point, reaction time, chemical concentration %, etc....

Expert Menu	4-20 mA 2 Overdosing Time
◀ ▶	
0 min	

Overdosing time-out alarm selects a period for reaching set-point. If set point is not reached within time, controller will block outputs operations including mA outputs. Alarm is ON shown on display and will activate Alarm relay activating an alarm device.

Expert Menu	4-20 mA 2 Dosing Check Time
◀ ▶	
1 h	

In case of programming Max Dosing different than 0, operator can select a **Dosing check time** period (hours) in which the unit checks the total dosing time effected, example: every 3 hours unit checks the total dosing time; if the dosing time has exceeded programmed selection, it will not effect any dosing until dosing time is restored to original programming

Expert Menu	4-20 mA 2 Max Dosing Time
◀ ▶	
0 min	

Max Dosing extra safety function ensuring dosing is carried out within selected time. Relays dosing pumps will open accordingly. This function allows no time limit (dosing continuously in accordance to selected set points) or selects minutes (up to 999) and hours, for example dosing 999 min. within 24 hours.

☛ Touch **SET** to confirm selections

☛ Touch **ESC** goes back one step during programming.

14.3 - 4-20mA3 CL CHLORINE_PPM MEASUREMENTS METER3 > mA Device FUNCTION

Expert Menu

4-20 mA 3 Mode

Aux

4-20 mA 1: Mode

☐ mA Device

☐ Dosing setpoint

☐ mA Device(T)

Proportional analog 4-20 mA outputs are combined to the unit measurements in real time of chlorine measurements thus driving remote equipment such as data logger, PLC or Chart recorders or other equipment suitable to process a remote mA signal.

☛ Touch **SET** to confirm selection

Expert Menu

4-20 mA 3 Measure Value @ 4mA

0.000 Cl ppm

Expert Menu

4-20 mA 3 Measure Value @ 20mA

2.000 Cl ppm

TOUCH series proportional analog 4-20mA follows the option previously selected among the chlorine measuring range, consequently, display and measurement resolutions will change accordingly.

Select value corresponding to 4 and 20 mA according to **Setpoint 4** settings

REMINDER: Display will either show ppm or Cl ppm measurements value, according to the selection made when starting programming. **If Cl ppm range was chosen and "Cl" does not appear, it means selection was not confirmed. Re-select the range, confirm OK.**

☛ Touch **SET** to confirm selection.

☛ Touch **ESC** to go back one step during programming

14.3.1 - 4-20mA3 CL CHLORINE_PPM MEASUREMENTS METER3 > DOSING SETPOINT

Expert Menu

4-20 mA 3 Mode

Dosing setpoint

4-20 mA3: Mode

☐ Aux

☒ Dosing setpoint

☛ Touch **SET** to confirm selection

Expert Menu

4-20 mA 3 Setpoint Value

0.000 Cl ppm

☛ Select the setpoint value

Set point will activate output relays for dosing pumps or other equipment once selected set-point level is reached. **Default** set point **0.000 Cl ppm or ppm range** = Cl 2 ppm ppm

Default set point **0.000 CL ppm or PPM range** = 2 cl ppm (or ppm not default)

Selecting other ranges will show **0.00** = range 20 Cl ppm **or** ppm **and** 5 Cl ppm

0.00 Total chlorine = range 20 Cl ppm

0.00 = CLC open chlorine cell range 10 Cl ppm

0.0 ppm = range 200 ppm

0 ppm = range 2000 ppm ALSO 20000 ppm

CL set point is set for **Direct mode** operation: output is active when measured value is **lower** than selected set-point, dosing pump injects **chlorine**.

Reverse mode: output is active when measured value is **higher**, dosing pump injects **chlorine reducer**.

Expert Menu

4-20 mA 3 Dosing Mode

Direct

4-20 mA3 Dosing Mode

☒ Direct

☐ Reverse

Expert Menu

4-20 mA 3 Window Value

0.050 Cl ppm

Window Width: sets the distance from set point at which point 4-20mA mode will start: 4mA = 0 dosing pump pulse, 20mA = max dosing pump pulses frequency. Window width depends on many variables: distance injection point, reaction time, chemical concentration %, etc....

Expert Menu

4-20 mA 3 Overdosing Time

0 min

Overdosing time-out alarm selects a period for reaching set-point. If set point is not reached within time, controller will block outputs operations including mA outputs. Alarm is ON shown on display and will activate Alarm relay activating an alarm device.

Expert Menu

4-20 mA 3 Dosing Check Time

1 h

In case of programming Max Dosing different than 0, operator can select a **Dosing check time** period (hours) in which the unit checks the total dosing time effected, example: every 3 hours unit checks the total dosing time; if the dosing time has exceeded programmed selection, it will not effect any dosing until dosing time is restored to original programming

Expert Menu

4-20 mA 3
Max Dosing Time

0 min

Max Dosing extra safety function ensuring dosing is carried out within selected time. Relays dosing pumps will open accordingly. This function allows no time limit (dosing continuously in accordance to selected set points) or selects minutes (up to 999) and hours, for example dosing 999 min. within 24 hours.

- Touch **SET** to confirm selections
- Touch **ESC** goes back one step during programming.

15.0 AUX OUTPUTS > EXPERT MENU

Four Auxiliary outputs can control various functions related to remote equipment and dosing pump including automatic Open chlorine cell cleaning and Temperature set-point. Each output can drive remote equipment or devices according to a very accurate programming of minutes/hours/days/weeks.

BENEFITS: this function make this controller a very versatile management unit not only to measure chemical-physical parameters but also for other functions related to the systems where is installed such as flocculants dosing pumps, open solenoid valves, irrigation systems, other devices connected to the main system.

15.2 - SETTING AUX #1 - #2 - #3 > REMOTE EQUIPMENT

Remote equipment: controller controls external equipment which can be programmed according to the different selected settings according to the system requirements. **NOTE:** each AUX controls **ONLY** one equipment, therefore ensure that each AUX selected program have different settings.

Expert Menu

Aux1
Program 1

Edit

Each AUX has up to 99 Programs: AUX can control and/or drive external device and dosing pump according to a selected program

- Touch **EDIT** to enter Programs selection

Expert Menu

Program 1
Duration

0 min

Program 1: duration

1	2	3	DEL
4	5	6	CLEAR
7	8	9	ESC
.	0		SET

Duration time indicates the amount of minutes Aux output relay is operative.
NOTE: selecting 0 (zero), the next two steps will not appear.

- Touch **SET** to confirm

The following steps will appear only if operator has programmed the "Duration time"

Expert Menu

Program 1
Start time

00:00

Start Time (hh:mm)

1	2	3	DEL
4	5	6	CLEAR
7	8	9	ESC
.	0		SET

Start time selects the time Aux will start to be operative.

Expert Menu

Program 1
Monday

No

Program 1: Monday

☒ No
☐ Yes

Enables the day of the week in which Aux is operative.

- Touch **SET** to confirm selections
- Touch **ESC** goes back one step during programming.

15.3 - SETTING AUX #3 FUNCTIONS

Expert Menu

Aux 3
Mode

Remote Equipment

Aux 3 Mode

☒ Remote Equipment
☐ T.Setpoint

Aux3 can either control and/or drive external device and dosing pump external equipment or enable a Temperature Setpoint to control external temperature connected equipment

MEASURED PARAMETER TEMPERATURE > Select MANUAL/PT100 > SELECT PT10To enter TEMPERATURE SETPOINT PROGRAMMING > move into T. SETPOINT window and follow paragraph.

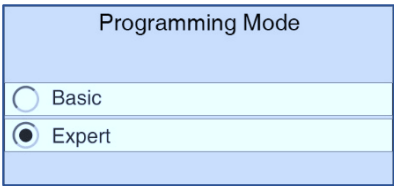
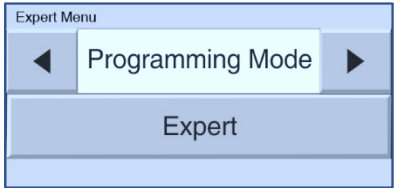
17.0 SETTINGS > EXPERT MENU



☞ Touch the area related to **Settings**

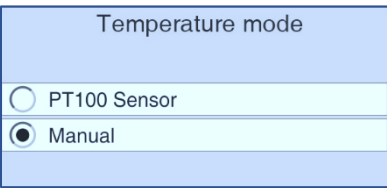
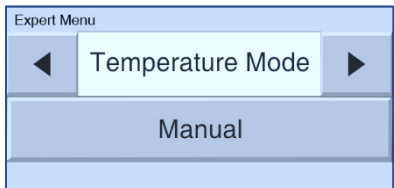


It allows to select the programming menu language.



BASIC programming: simplified mode for not professional operators
EXPERT programming: complete programming including functions for a more refined control and results.

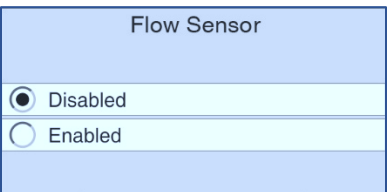
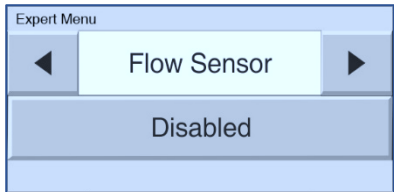
IF USER HAS SELECTED TEMPERATURE “MANUAL” MODE, IT WILL SHOW:



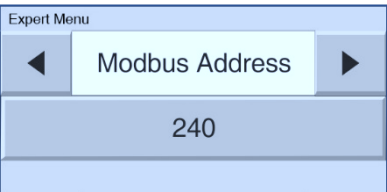
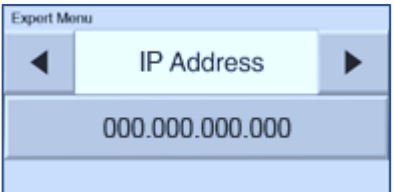
☞ Touch Right arrow

NOTE: Selecting ESC (instead of entering a temperature value) controller will set 25°C value as default, which can be changed.
Temperature value is visualised only if using temperature sensor PT100, NOT in Manual mode.

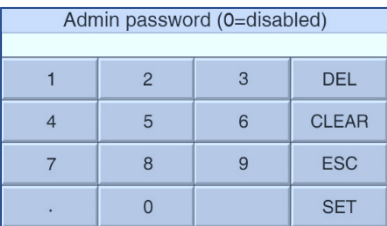
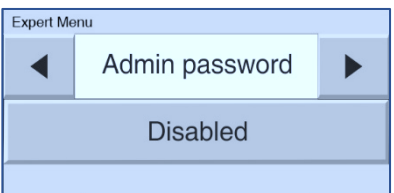
The above windows will not appear when selecting PT100 sensor mode



Flow sensor enabled in case no water into sensor cell holder (proximity switch will deactivate all outputs ensuring that no extra chemical is added. The Main display it will show the flow sensor icon in case there is no water in the sensor holder.

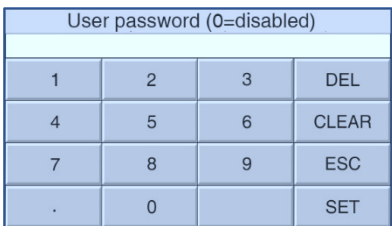
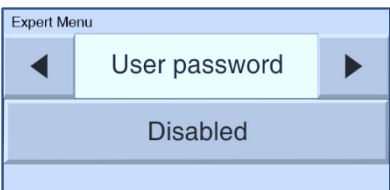


Connect to local network via IP address.
Modbus address enables the unit to connect RS485. Operator can select from minimum 2 to max 240. Default is 240.



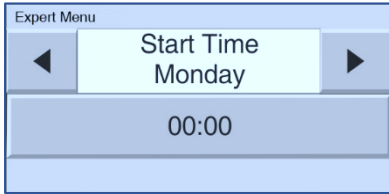
FORGET IT !!!!!!! Once enabled password when visualizing Main Display, to enter any programming and settings, unit will ask the password. Admin password will enable entering Expert Menu. In case no password is required keep it disabled.

Administrator can select **User password**: Once enabled password when visualizing Main Display, to enter any programming and settings, unit asks User password enabling **only** Basic Menu. User password only appears after selecting Admin password.



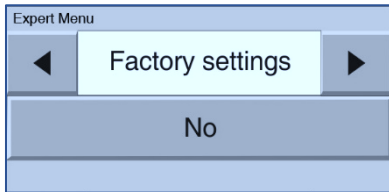


☞ **Real time clock** programs working days and time of the unit operations.



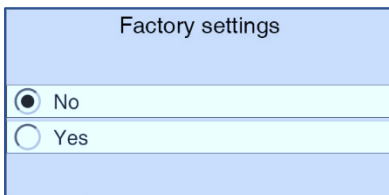
☞ Select day by touching Right arrow □

☞ Change time using keyboard appearing by touching the time value.



FACTORY SETTINGS: it restores factory default settings. To be used **ONLY** when parameters or measurements are not responding correctly or when user wants to ensure to re-program from zero. Not to abuse, continuous restoring can affect controller efficiency.

☞ Touch **NO** to enter Factory settings selections.



Once confirmed **YES**, display will be OFF for 1 second than will return to starting display.

☞ Touch **SET** to confirm selections

☞ Touch **ESC** goes back one step during programming.

18.0 – PH & ORP SENSORS - USE AND MAINTENANCE

Refer to the manual of the electrodes used.

18.1 – CHLORINE PROBE - USE AND MAINTENANCE

Refer to the manual of the Chlorine probe used.

18.2- CONDUCTIVITY SENSORS NOTES



TOUCH CD works with simple conductivity 2-electrode open sensors, Graphite electrode **OR** AISI 316 both with PTFE body. Also available with AISI 316 / PVC body.

FOR CONDUCTIVITY 4 WIRES (with internal temperature sensor) SENSORS: due to the various types on the market, in case operator wished to use such sensors, please contact ETATRON service or Local Dealer to get the right configuration for connecting to terminal board. TOUCH CD is NOT suitable for inductive sensors !

The unit automatically adjust itself for various conductivity ranges by adapting the controller to different probes cell constant “K” characteristic. Conductivity measurement are in micro Siemens features 4 K factor ranges (Cell Constant) suitable for:

IMPORTANT: the above μS ranges are just indicative, considering that, for example, a K1 probe can make good measurements below 2000 μS , only resolution will be less accurate. However, the same concept does not apply to higher ranges.

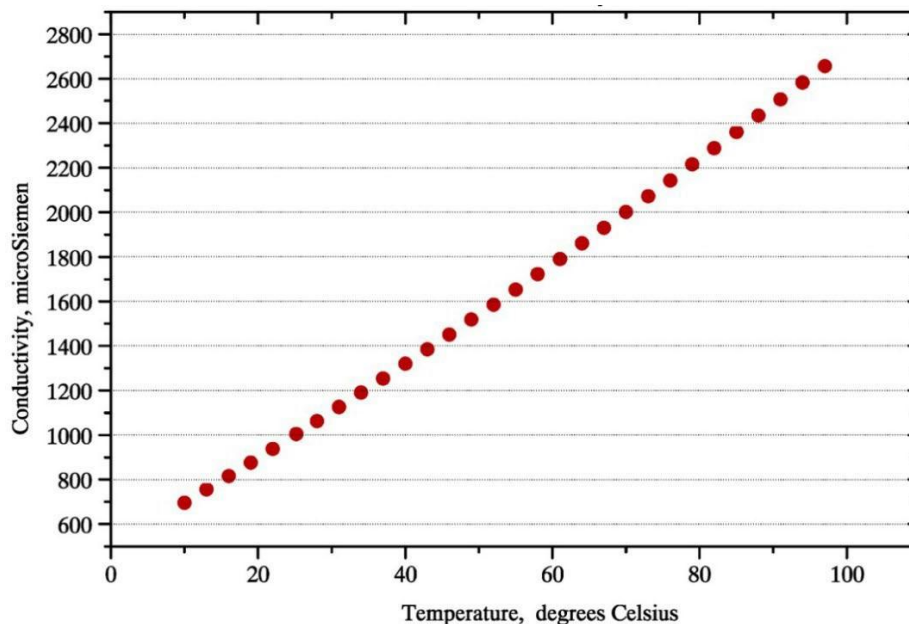
18.3 - TEMPERATURE / CD ALFA FACTOR

CD alfa factor

CD alfa factor is the correction factor for conductivity measurement in function of temperature: EVERY CONDUCTIVITY SENSOR IS TEMPERATURE-DEPENDENT. Conductivity varies linearly according to the temperature of the solution. This coefficient normalizes the measurement of the conductivity at the reference temperature of 25° C. Alfa factor ensures best measurement results and accuracy. 2% per °C is an average found typical of many water samples with some dissolved solids. Over wide temperature spans (e.g. 0 to 100 °C) the temperature compensation factor may not remain constant,

TOUCH CD automatically adjust itself for various conductivity ranges by adapting the controller to different probes cell constant “K” characteristic. Conductivity measurement are in micro Siemens features 4 K factor ranges (Cell Constant) suitable for:

IMPORTANT: the above μS ranges are just indicative, considering that, for example, a K1 probe can make good measurements below 2000 μS , only resolution will be less accurate. However, the same concept does not apply to higher ranges.



18.4 - CONDUCTIVITY SENSORS MAINTENANCE

Sensor Storage

Short term: rinse the sensor electrodes in demineralised water; allow drying and storing dry.

Long term: rinse the sensor electrodes in demineralised water, allow to dry, cover with tip with a plastic shipping cap, store dry.

Monthly Maintenance

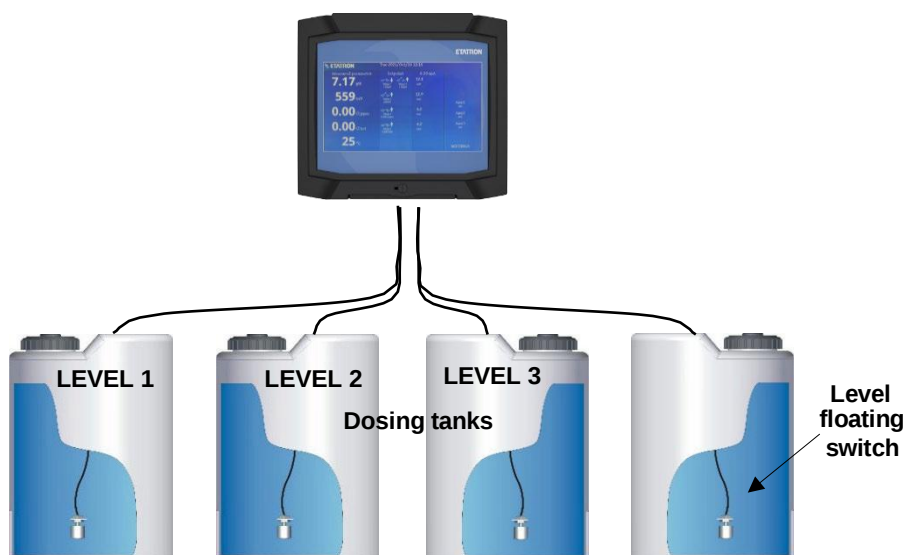
A monthly maintenance check is recommended by grab sample calibration since the sensor is typically installed in the process and not easy to remove. Follow the procedure under calibration by grab sample.

Keep a log of the cell constant at each monthly calibration.

When to clean your sensor

Various factors can affect the physical limits on the liquid and the apparent cell constant; scale, biological growths, oils, wax, gum, etc all reduce the area for current-carrying liquid. Periodic cleaning of conductivity sensors in continuous use will remove these deposits; restore the conducting surfaces, controlled cell volume, and thus the cell constant.

19.0 LEVEL CONTROL PROBES AND DOSING TANKS INSTALLATION



20.0 TROUBLESHOOTING CONTROLLER



WARNING: ignoring safety information can endanger life or result in serious injury !



BEWARE: in presence of gas or an environment saturated with gas, ensure to disconnect the power supply of the chlorine gas dosing equipment; ensure also to secure the power supply to other equipment being part of the plant.



Before working on the unit, disconnect it from mains network

MALFUNCTION	POSSIBLE CAUSE	SOLUTION
1. Display is OFF	No power supply	a. Check electrical connections b. Check if mains correspond to power supply printed instrument label.
	Burning smell	Check pcb and replace it under ETATRON authorization
2. Error NO LINK	Problem with I/O circuit board (Input/Output). Wrong alignment of the pins between circuit boards	Check the electrical display flat cable or the connecting pins alignment between measuring and I/O boards. If problem persists, contact ETATRON.
3. Display measurements do not move (there are no changes)	PH / Redox levels are NOT stable	Double check levels by means of portable instrument or colorimetric kit, particularly PH level for Chlorine reference measure.
	Chlorine levels are NOT stable	Double check levels by means of portable instrument or colorimetric kit, particularly PH level for Chlorine reference measure.
	Conductivity levels are NOT stable	Double check levels by means of portable instrument or colorimetric kit, particularly Temperature reference measure.
	Signal from sensor doesn't change	Repeat sensor calibration and if the problem remains change the probe
4. Display measurements change continuously (measuring jumps)	Electrical disturbs from electrical local network	Check the electrical local network. Check system ground connection.
	Micro-Electrical disturbs into the measuring liquid	Check controller calibration, if controller measures correctly eliminate electrical disturbs and refer to below point A.
5. It is not possible to complete sensor calibration procedure	Buffer solution kit old or contaminated	Change buffer solution and use portable Kit
	Sensor is defective	Check here following below hints.
IMPORTANT TESTS in the above cases 2, 3, 4, always test the unit functioning making the following steps: D. Dismount the unit from the system and mount it into another room or you own lab without connection to other equipment but directly to local network mains. E. Recreate into a bucket with fresh water the physical-chemical conditions as in the plant, for chlorine and pH levels. F. Program the unit and calibrate the sensor/s. a. If results are a correct unit functioning, it means there are problems with the systems b. If problems persist, change sensor with brand new: if problem persist, the unit is defective, contact ETATRON Systems or Dealer		
5. Set-point relay doesn't close the contact	Set-point value is incorrect	Change set-point value
	Set-point "direction" mode is incorrect	Change set-point function mode, direct or reverse, from the menu functions



KEEP IN MIND: unit with universal voltage 100□250Vac (±10%) or 9□24Vdc. If the actual voltage is constantly at the limit (lower or higher), or when spikes are much higher than mentioned range, the unit pcb is electronically protected against Voltage fluctuations; outside the above-mentioned ranges, controller will not work and circuit boards must be replaced. We **RECOMMEND** using voltage protections, checking system ground and, when connecting in parallel other units, using remote contact switch. A plant not built according to correct electrical rules, without a ground system, with frequent ON/OFF operations, could directly affect the circuit boards. It is also suggested installing a UPS (Uninterruptible Power Supply) to ensure power continuity. A discontinuous voltage along with many On/Off operations, could affect the pcb's integrity and Data loss.

TROUBLESHOOTING HINTS FOR CONDUCTIVITY SENSOR

Slow Response typically due to excessive sample line length and low flow, thus producing long sample transport lags. Resolve by adding a fast-flow loop with the sensor in a short side stream, or by shortening the line. Slow response can also be caused by a build-up of dirt in the sample line. In this case the problem may be alleviated by changing the take-off point or by installing a knock-out pot.

Readings consistently low or spike low characteristic of bubbles in the sample line passing through the sensor or hanging up in the sensor.

Readings gradually falling the controller can no longer be calibrated properly. This problem is typical of scale or sludge/slime deposits in the sensor. The sensor may need cleaning.

Readings at maximum under all conditions. First verify that controller is displaying conductivity using Conductivity portable controller.

21.0 CONTROLLER TECHNICAL CHARACTERISTICS

Measuring range PH:	▪ 0 pH 14 pH (0 100 °C) ▪ Resolution □ 0.01 pH ▪ Accuracy 0.5% of input range ▪ Input resistance > 10¹² Ohm ▪ Zero: □ 10% adjustment range from calibration point ▪ Gain calibration: □ 15% electrode adjustment gain ▪ Hysteresis: 0.05 pH (programmable) ▪ PWM / timed pulses activating point: 1.50 pH or 150mV (programmable)												
Measuring range RX (ORP):	▪ range – 1500 mV+1500 mV ▪ Input resistance > 10¹² Ohm ▪ Resolution □ 1 mV ▪ Accuracy 0.5% of input range ▪ Input resistance > 10¹² Ohm ▪ Hysteresis: 10 mV (programmable) ▪ PWM / timed pulses activating point: 150 mV (programmable)												
Measuring range Chlorine range ppm (free or total) or PPM, Membrane type sensor:	Dynamic measuring range input ± 2500 mV (it reaches ± 2995 mV) <table><tr><td>▪ 0÷2 ppm=Resolution 0.001</td><td>Hysteresis=0.005</td><td>PWM point=0.050 ppm</td></tr><tr><td>▪ 0÷5/10/20 ppm=Resolution 0.01</td><td>Hysteresis= 0.05</td><td>PWM point=0.50 ppm</td></tr><tr><td>▪ 0÷200 ppm=Resolution 0.1 ppm</td><td>Hysteresis= 0.5</td><td>PWM point=5 ppm</td></tr><tr><td>▪ 0÷2000 ppm=Resolution 1 ppm</td><td>Hysteresis= 5</td><td>PWM point=50 ppm</td></tr></table>	▪ 0÷2 ppm=Resolution 0.001	Hysteresis=0.005	PWM point=0.050 ppm	▪ 0÷5/10/20 ppm=Resolution 0.01	Hysteresis= 0.05	PWM point=0.50 ppm	▪ 0÷200 ppm=Resolution 0.1 ppm	Hysteresis= 0.5	PWM point=5 ppm	▪ 0÷2000 ppm=Resolution 1 ppm	Hysteresis= 5	PWM point=50 ppm
▪ 0÷2 ppm=Resolution 0.001	Hysteresis=0.005	PWM point=0.050 ppm											
▪ 0÷5/10/20 ppm=Resolution 0.01	Hysteresis= 0.05	PWM point=0.50 ppm											
▪ 0÷200 ppm=Resolution 0.1 ppm	Hysteresis= 0.5	PWM point=5 ppm											
▪ 0÷2000 ppm=Resolution 1 ppm	Hysteresis= 5	PWM point=50 ppm											
Measuring range Chlorine range ppm (free), Amperometric Open Cell type:	▪ 0÷10 ppm (Open type sensor or cell) / Resolution 0.10 ppm ▪ range 0÷10 ppm = Hysteresis / PWM point = 0.50 ppm												
Conductivity CD Measuring range and K factor (cell constant):	▪ K 1 ranges up to 20.00 mS / Hysteresis / PWM point = 500 µS Resolution 10 µS ▪ K 5 ranges up to 2.000 µS / Hysteresis / PWM point = 50 µS Resolution 1 µS ▪ K10 ranges up to 200 µS / Hysteresis / PWM point = 0,50 µS Resolution 0,1 µS ▪ K 0.6 / K 0.8 ranges up to 50.00 mS / Hysteresis / PWM point = 5000 µS Resolution 1000 µS (only with graphite sensor electrodes)												
Temperature setting:	Manual or automatic compensation (latter combined temperature probe PT100) ▪ Resolution 0.1% °C ▪ Accuracy: ± 0.5% °C												
Temperature probe range:	– 20 ... 100°C ▪ Resolution 0.1% °C ▪ Accuracy: ± 0.5% °C												
Power supply:	Universal power supply 100□250Vac / 5W at 240Vac												

Microprocessor technology:	Upon request power supply 9□36 Vdc / 9□24 Vac
Linearity, Stability Reproducibility:	SMD components mounting, digital controls keypad 6 key
Display:	□ 0.5 % under standard conditions
Delay on Set-point:	back-lit TOUCH SCREEN display 7"
Start-up Delay:	Delay time relay activation, programmable for each set-point (999 sec.)
Power consumption = Nominal current:	Delay time relay when switching ON the unit, programmable
Internal electrical protection:	230Vac 9,8W 45mA ▪ 24Vac-dc 9,8W 408mA ▪ 12Vdc 9,8W 816mA
Level / Remote relay control	power supplier guarantees electrical protection (instead of fuse)
	Chemical additive level (level switch not included) output voltage +5Vdc

Output RELAY A (set-point 1):	PH or RX (Orp) ON-OFF / PWM mode voltage free contact, relay 5Amax 230Vac
Output RELAY B (set-point 2):	PH or RX (Orp) ON-OFF / PWM mode voltage free contact, relay 5Amax 230Vac
Output RELAY C (set-point 3):	RX (Orp) or PH ON-OFF/PWM mode voltage free contact, relay 5Amax 230Vac
Output RELAY D (set-point 3):	CL chlorine or PPM ON-OFF/PWM mode voltage free contact, relay 5Amax 230Vac
Outputs: Output RELAY E (set-point 3):	CD (conductivity) ON-OFF/PWM mode voltage free contact, relay 5Amax 230Vac
Output RELAY F (AUX1):	AUXILIARY ON-OFF remote equipment or cleaning cell free contact 5Amax 230Vac
Output RELAY G (AUX2):	AUXILIARY ON-OFF remote equipment free contact 5Amax 230Vac
Output RELAY H (AUX3):	AUX ON-OFF for remote equipment via Timer or enabling Temperature Set point
Output RELAY I (ALARM):	ALARM contact voltage free 5Amax 230Vac

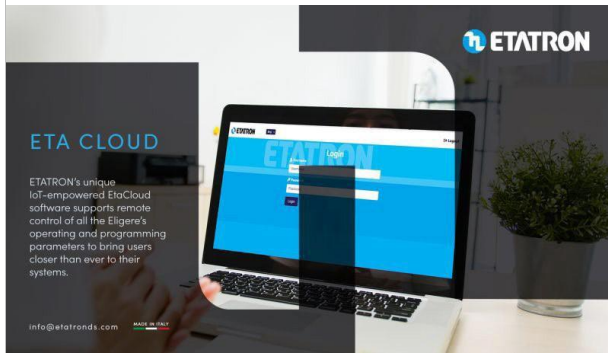
FLUX sensor (proximity switch):	It blocks output operations in case of no flow into the sensor cell
0/4...20 mA1 output:	Adjustable (500 □ max input impedance), with galvanic separation. Related to PH or RX measuring settings.
Outputs: 0/4...20 mA2 output:	Adjustable (500 □ max input impedance), with galvanic separation. Related to RX or PH measuring settings.
0/4...20 mA3 output:	Adjustable (500 □ max input impedance), with galvanic separation. Related to CL chlorine or PPM measurement settings.
0/4...20 mA4 output:	Adjustable (500 □ max input impedance), with galvanic separation. Related to CD (conductivity) measurement settings.

Signal for chlorine sensor	1W a 12V = 80mA, available for sensor running aprox. 50mA (membrane type)
Unit load:	Resistive load 5A at 230Vac / Inductive load 0.5A at 230Vac
Outputs: Insulation voltage relay output:	> 3000Vac
Relay contact lifespan:	□ 5x10 ⁴ switching operations (5A at 230Vac)

Unit Working temperature:	Ideal working temperature 5°C÷40°C, withstand 0°C÷45°C
Environmental Conditions:	Possibly dry environment, altitude up to 2000m, Relative humidity 80% for temperatures up to 31°C decreasing linearly to 50% relative humidity at 40°C. Pollution degree 2.
Noise Level:	Irrelevant
Transport and storage conditions:	– 5□60°C possibly dry environment

Ethernet/RS485-WiFi:	EtaCloud software
	ETHERNET / RS485 connection INTERNAL module + micro SD memory card 16 GB
	Ethernet connection by RJ45 IP68 connector or WiFi
	Data Logger via Etatron software "EtaCloud®"

UPON REQUEST:	"ETACLOUD" for remote control via the "Internet" through ETATRON server
	Data Logger via ETATRON software "EtaCloud"
	RS485/USB cable (to connect unit to a pc via RS485 protocol or WiFi) also capable to connect to PLC by a RS485/USB adaptor (upon request Etatron provides registers protocol to use with third party software)
	RS485/USB cable (to connect TOUCH unit to a pc via RS485 protocol)

ETACLOUD SYSTEM

Etatron features a useful service which will allow the customers to monitor and control from anywhere in the world the controllers installed in any place in the world: ETACLOUD SYSTEM. This platform, installed in Etatron own server, will enable the user in charge with servicing the plant, to remote control and monitor Etatron

instrument operations: the user, in possess of the controller authentication certificate, will create a free internet account in Etatron server: user will access its own personal area. The platform will show a geographical map (which can be zoomed at like) pointing out all the registered controllers the user has installed in the area; once identified the controller to monitor, the user will log in the controller software allowing the visualization of the current measurements and have the possibility to modify all the main parameters.

ETACLOUD SYSTEM is available for those controller that feature RS485 Modbus protocol, Ethernet connection, internal connection and Etacloud® software.