



**ITC**   
DOSING PUMPS



**WTR PRO**

WTRPRO CI-pH

WTRPRO PIQ

ENGLISH



### **SAFETY RULES**

To avoid personal or enviromental damages and to guarantee a proper operation of the equipment, the staff in charge of the installation, set up and maintenance of the equipment must follow the instructions of this manual, specially those recommendations and warnings explicitly detailed. In addition, specific instructions for the chemical products to be dosed should be followed.

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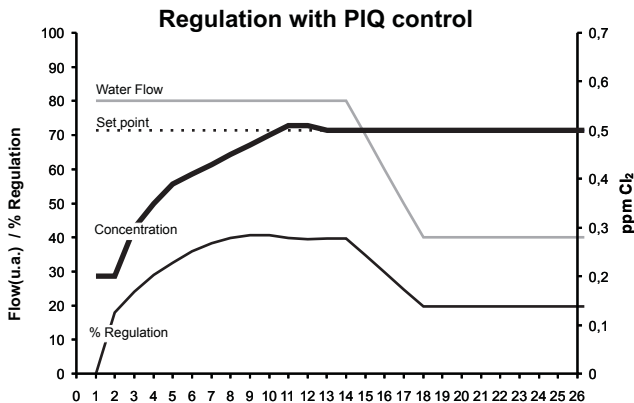
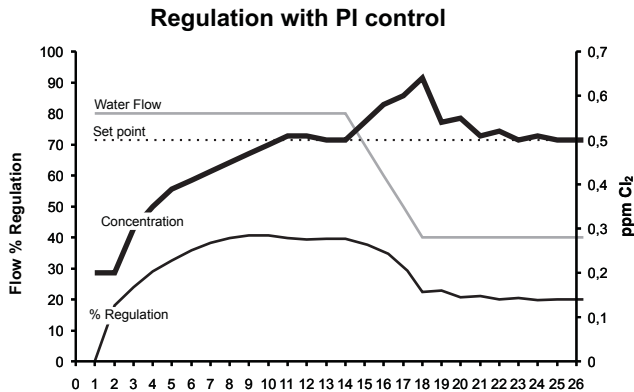
# 1 GENERAL DESCRIPTION



The WTRPRO controller together with the DOSITEC and DOSTEC dosing pumps constitute a complete control and dosing system for water treatments. WTRPRO controller allows the user to monitor flow, pH, free chlorine and temperature, and to regulate them by means of the control outputs for dosing pump (or proportional valve in treatment systems with gas chlorine).

Depending on the configuration, control in recirculation (or closed circuit) by means of output relay, or in- line control by means of analogic output (mA) with PI regulation, can be done.

For WTRpro PIQ controller, the regulation algorithm uses the flow information to control free chlorine. This way, a better response is obtained when set point is being approached. Also the changes due to water flow fluctuations are minimised. (See graphics)





## WTRPRO models

### WTRPRO pH-Cl

Reading system and automatic adjustment of pH and free Chlorine  
Control 4-20mA with PI adjustment or for proportional relay, for pH and free Chlorine

Output for maximum and minimum alarm, for pH and free Chlorine

Output 4-20mA for register, for pH and free Chlorine

PC communication (RS485)

### WTRPRO PIQ

Automatic reading and regulation system of the pH and free Chlorine with adjustment to the flow (PIQ)

Control 4-20mA with adjustment PIQ or for proportional relay, for pH and free Chlorine

Outputs alarms of maximum and minimum, for pH and free Chlorine

Output alarm flow zero







Output 4-20mA of register, for pH and free Chlorine

Communication PC (Rs485)

## System description



① LCD Screen

② Keyboard:  Confirm  
 Exit without confirm  
  Increase / reduce value  
  Move left/right

③ Connections ruler guide

## 2 TRANSPORT AND MAINTENANCE



The original packaging is designed to ensure that the transport and storage of the system can be carried out without causing damages to the system, provided these processes are performed inside dry, ventilated areas and away from sources of heat.

The packaging includes:

WTRPRO controller

Instruction manual

## 3 TECHNICAL FEATURES

Power supply: 230VAC (+/-10%) - 50/60Hz  
+12Vdc

Protection: IP65

Work temperature: 0 - 45 °C

Relative Humidity max.: 95% (without condensation)

### MEASURE LIMITS

Flow: 0.00 - 9999 (m<sup>3</sup>/h ó gph)

PH: 0.00 - 14.00

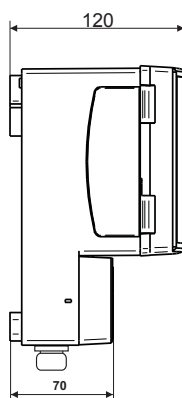
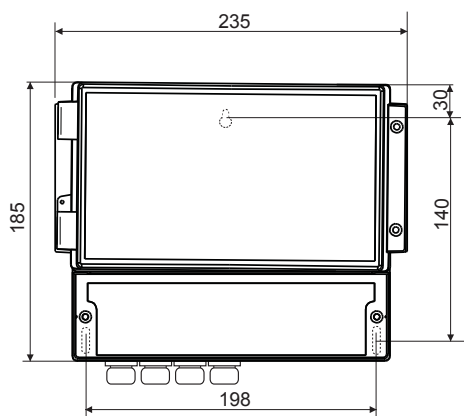
(pH reading with temperature compensation)

Free chlorine: 0.00 - 3.00 ppm

(Free Chlorine reading with ph compensation in the status of 6.5-9.0)

Temperature: 0.0 - 100 °C ; 32.0 - 212 °F

### DIMENSIONS





### **WTRpro pH-Cl :**

- pH input. Optically isolated for the pH sensor connection.
- Chlorine input. Optically isolated for the free Chlorine sensor connection (ref;44-010)
- Output control pH: Type 4-20mA with adjustment PI or by proportional relay.
- Output control free Chlorine: Type 4-20mA with adjustment PI or by proportional relay.
- Output 4-20mA for register of the PH and free Chlorine
- Output RS485 for connection to PC
- Output pH alarms: Relay output NO 24V AC - 1A maximum.
- Output alarm free Chlorine: Relay output NO 24V AC - 1
- Output alarm flow zero sensor in holder sensor(Q switch): Relay NO 24V AC - 1A maximum

### **WTRpro PIQ:**

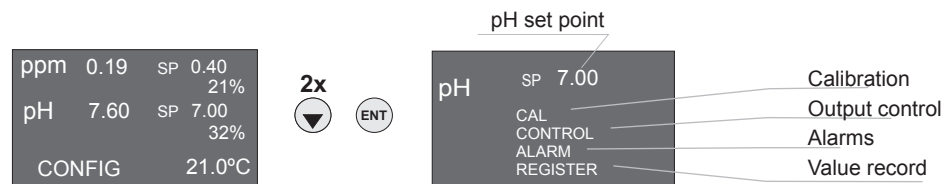
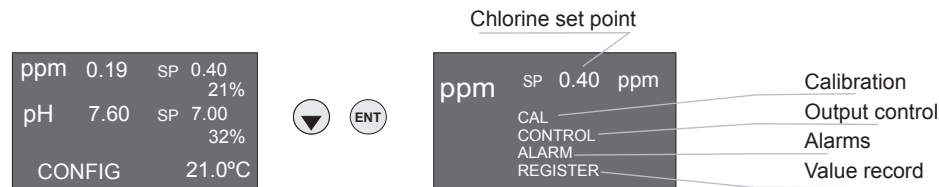
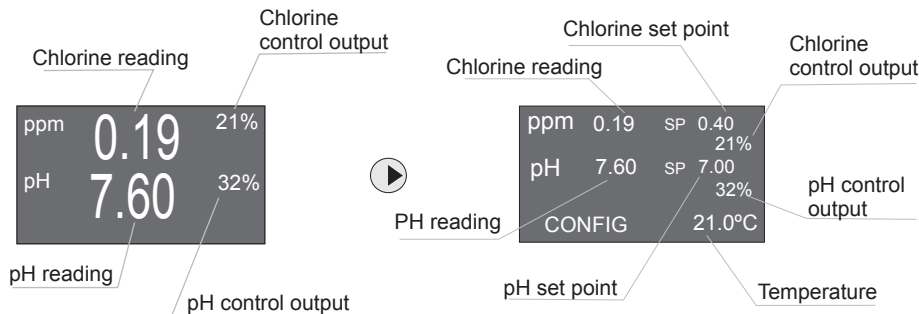
- pH input. Optically optically isolated for the pH sensor connection.
- Chlorine input. Optically isolated for the free Chlorine sensor connection (ref;44-010)
- Flow input. Pulse input optically isolated for high frequency flowmeters (paddle wheel or electromagnetic)
- Output control pH: Type 4-20mA with adjustment PI or by proportional relay.
- Output control free Chlorine: Type 4-20mA with adjustment PI or by proportional relay.
- Output 4-20mA for register of the PH and free Chlorine
- Output RS485 for connection to PC
- Output pH alarm: Relay NO 24V AC -1A maximum
- Output free Chlorine alarm: Relay NO 24V AC - 1A maximum.
- Output flow sensor's alarm in the sensor holder (Q Switch): Relay NO 24V AC 1A maximum

# 4 OPERATION



## 4.1 START SCREENS AND MENU ACCES

### WTRPRO pH-CI

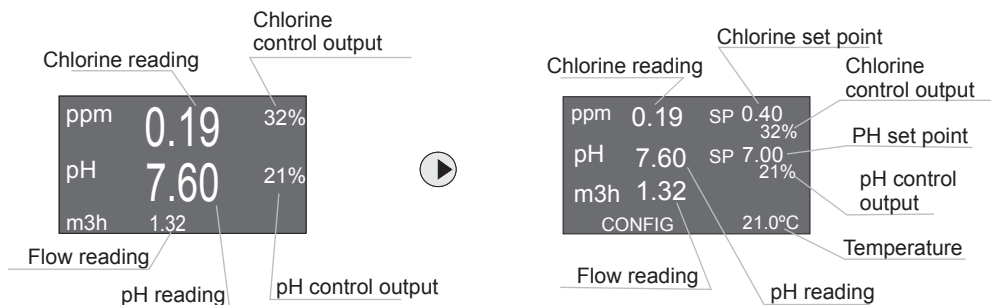


NOTE: When Q=0 alarm is activated, press ESC and access quickly to a menu of a parameter

Example: To access the ppm menu (Chlorine). Now the display will not be blocked for the alarm, and the sensor can be calibrated.



## WTRPRO PIQ



ppm	0.19	SP	0.40
			32%
pH	7.60	SP	7.00
			21%
m3h	1.32		
CONFIG			21.0°C



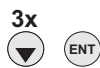
Chlorine set point	
ppm	SP 0.40 ppm
CAL	Calibration
CONTROL	Output control
ALARM	Alarms
REGISTER	Value record

ppm	0.19	SP	0.40
			32%
pH	7.60	SP	7.00
			21%
m3h	1.32		
CONFIG			21.0°C



pH set point	
pH	SP 7.00
CAL	Calibration
CONTROL	Output control
ALARM	Alarms
REGISTER	Value record

ppm	0.19	SP	0.40
			32%
pH	7.60	SP	7.00
			21%
m3h	1.32		
CONFIG			21.0°C



Flow	
m3h	
CAL	Calibration
ALARM	Alarms

# 4.2 SET POINT (SP)



## 4.2.1 FREE CHLORINE SET POINT

ppm SP 0.40 ppm  
CAL  
CONTROL  
ALARM  
REGISTER



ppm SP 0.40 ppm  
CAL  
CONTROL  
ALARM  
REGISTER

Free chlorine set point value.  
Change values with ▼▲ and  
confirm with ENT

## 4.2.2 pH SET POINT

pH SP 7.00  
CAL  
CONTROL  
ALARM  
REGISTER



pH SP 7.00  
CAL  
CONTROL  
ALARM  
REGISTER

Ph set point value.  
Change values with ▼▲ and  
confirm with ENT



## 4.3 CALIBRATION

### 4.3.1 FREE CHLORINE CALIBRATION

ppm SP 0.40 ppm  
CAL  
CONTROL  
ALARM  
REGISTER

2x



ppm SP 0.40 ppm  
CAL  
CONTROL  
ALARM  
REGISTER

There are two methods to calibrate:

1 point, Normal calibration procedure.

2 points, Initial calibration procedure for a installation with low chlorine readings.

Polarization time:

The sensor must be with chlorine water flow for 24 hours prior to calibration.

Another option is to have the sensor with chlorine water for one hour, calibrate, and repeat the calibration after 24 hours.

ENT

CL CAL  
1 POINT  
2 POINTS  
CLEANING

Routine calibration with 1 point.  
To confirm with ENT.

ENT

CL CAL 1 POINT  
0.50 ppm  
0.44

Wait until you have a stable reading.

Take sample of this water and measure the chlorine level with the DPD-1 test kit. Press ▼▲ to introduce the value of the DPD-1 measurement and confirm with ENT

Current reading of the uncalibrated sensor

ENT

CL CAL 2 POINTS  
1 POINT  
2 POINTS  
CLEANING

Initial calibration through 2 points.  
Confirm with ENT

ENT

CL CAL 2 POINTS  
0.00 ppm 0.50 ppm  
0.12

Let water at 0.00 ppm flow through the sensor.  
Wait for a stable reading and confirm with ENT

Current reading of the uncalibrated sensor

ENT

CL CAL 2 POINTS  
0.00 ppm 0.50 ppm  
0.44

Let water flow through the sensor for 10 minutes

Take sample of this water and measure the chlorine level with the DPD-1 test kit. Press ▼▲ to introduce the value of the DPD-1 measurement and confirm with ENT

Current reading of the uncalibrated sensor

ENT

CL CAL.  
1 POINT  
2 POINTS  
CLEANING

With the CLEANING option a sensor cleaning is done. This function will have to use when the readings are incorrect. Normally the sensor cleaning process takes 1 minute, but are necessary 20 minutes more to obtain again the correct reading. (See paragraph 4.8.3).

Press ENT to start the cleaning



### 4.3.2 pH CALIBRATION

pH SP 7.00  
CAL  
CONTROL  
ALARM  
REGISTER



pH SP 7.00  
CAL  
CONTROL  
ALARM  
REGISTER

ENT

PH CAL  
BUFFER 7 4 / 9  
6.33

Introduce the sensor in the buffer of pH7  
Wait 1 minute and confirm with ENT

Current reading of the uncalibrated sensor

ENT

PH CAL  
BUFFER 7 4 / 9  
3.21

Press ►◄ in order to select 4 or 9 (according to the buffer to use)  
Introduce the sensor in the correct buffer (pH4 or pH9)  
Wait a minute and confirm with ENT

Current reading of the uncalibrated sensor

### 4.3.3 FLOWMETER CALIBRATION

m3h SP 0.50 %  
CAL  
CONTROL  
ALARM  
REGISTER



m3h SP 0.50 %  
CAL  
CONTROL  
ALARM  
REGISTER

ENT

Q CAL.  
K-FACTOR 27.5 Pul/L  
DOS. FLOW 200 L/H

K-Factor (pulses/liter or pulses/gallon):  
See flowmeter manual to determine the K-factor  
Change values with ▼ ▲ and confirm with ENT

When K-FACTOR = 0, the PIQ control will be disabled, it will be working by means PI control.

ENT

Q CAL.  
K-FACTOR 27.5 Pul/L  
DOS. FLOW 200 L/H

The nominal flow of the dosing pump in the work conditions.  
Change values with ▼ ▲ and confirm with ENT



## 4.4 CONTROL SELECTION OUTPUT

The system have one or two outputs (according to the model) for the dosing pumps control. Set each output in the corresponding parameter menu.

m3h SP 0.50 %

CAL  
CONTROL  
ALARM  
REGISTER



m3h SP 0.50 %

CAL  
**CONTROL**  
ALARM  
REGISTER



**Q CONTROL**

CONTROL **ON** / OFF

Dosing pump control

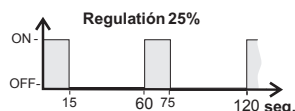
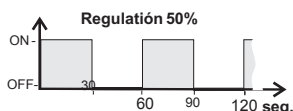
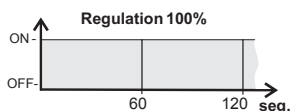
**ON:** activated

**OFF:** not activated

Press ► to change it, and confirm with **ENT**

There are two types of control outputs:

**RELAY output:** Generally used for recirculation dosing. Using this on/off command the output will remain activated, in 60-second cycles, for the corresponding time so as to achieve the desired regulation. Examples:



**4-20mA output:** Generally used in-line dosing. A dosing pump is needed with 4-20mA analogue input. Using the parameter LIMIT OUT enables the user to limit the maximum flow of the dosing pump. Example: *LIMIT OUT 50 % -> The output is limited to 12mA; maximum dosing flow is reduced by half*



**Q CONTROL**

CONTROL **ON** / OFF

**RELE** / 4-20 mA

Type of control for the dosing pump

**RELE:** relay sign on / off

Press ► to change it, and validate with **ENT**



**Q CONTROL**

CONTROL **ON** / OFF

RELE / **4-20 mA**

Type of control for the dosing pump

**4-20mA:** analogical sign 4-20mA

Press ► to change it, and validate with **ENT**



**Q CONTROL**

CONTROL **ON** / OFF

RELE / 4-20 mA

LIMIT OUT: **100%**

Limit of the sign 4-20mA

Change value with ▼ ▲ and validate with **ENT**

For further information see paragraph 4.8.1

4.5 ALARMS



4.5.1 FREE CHLORINE ALARM

ppm SP 0.40 ppm  
CAL  
CONTROL  
ALARM  
REGISTER



ppm SP 0.40 ppm  
CAL  
CONTROL  
ALARM  
REGISTER



CL ALARM  
ppm+ 0.20 --- s  
ppm- 0.00 --- s  
REARM: Y  
STOP: N

Higher differential in relation to set point  
Increase or decrease by pressing ▼ ▲ and validate with ENT



CL ALARM  
ppm+ 0.20 30 s  
ppm- 0.00 --- s  
REARM: Y  
STOP: N

Time allowed away from greater differential before alarm is activated  
Increase or decrease by pressing ▼ ▲ and validate with ENT



CL ALARM  
ppm+ 0.20 30 s  
ppm- 0.20 --- s  
REARM: Y  
STOP: N

Lower differential in relation to set point  
Increase or decrease by pressing ▼ ▲ and validate with ENT



CL ALARM  
ppm+ 0.20 30 s  
ppm- 0.20 30 s  
REARM: Y  
STOP: N

Time allowed away from greater differential before alarm is activated  
Increase or decrease by pressing ▼ ▲ and validate with ENT



CL ALARM  
ppm+ 0.20 30 s  
ppm- 0.20 30 s  
REARM: ☒ Y  
STOP: N

Automatic reset of the alarm when the reading is correct.  
Y: auto reset  
N: no auto reset  
Press ▼ ▲ to change it, and validate with ENT



CL ALARM  
ppm+ 0.20 30 s  
ppm- 0.20 30 s  
REARM: Y  
STOP: P

If the alarm sounds the control stops for:  
P: Selected parameter  
T: All parameters  
N: None  
Press ▼ ▲ to change it, and validate with ENT

4.5.2 ALARM pH



pH SP 7.00  
CAL  
CONTROL  
ALARM  
REGISTER



pH SP 7.00  
CAL  
CONTROL  
ALARM  
REGISTER

ENT

PH	ALARM	
pH+	1.00	s
pH-	0.00	--- s
REARM: Y		
STOP: N		

Higher differential in relation to set point  
Increase or decrease by pressing ▼ ▲ and validate with ENT

ENT

PH	ALARM	
pH+	1.00	25 s
pH-	0.00	--- s
REARM: Y		
STOP: N		

Time allowed away from greater differential before alarm is activated  
Increase or decrease by pressing ▼ ▲ and validate with ENT

ENT

PH	ALARM	
pH+	1.00	25 s
pH-	0.50	--- s
REARM: Y		
STOP: N		

Lower differential in relation to set point  
Increase or decrease by pressing ▼ ▲ and validate with ENT

ENT

PH	ALARM	
pH+	1.00	25 s
pH-	0.50	20 s
REARM: Y		
STOP: N		

Time allowed away from greater differential before alarm is activated  
Increase or decrease by pressing ▼ ▲ and validate with ENT

ENT

PH	ALARM	
pH+	1.00	25 s
pH-	0.50	20 s
REARM: Y		
STOP: N		

Automatic reset of the alarm when the reading is correct.  
Y: auto reset  
N: no auto reset  
Press ▼ ▲ to change it, and validate with ENT

ENT

PH	ALARM	
pH+	1.00	25 s
pH-	0.50	20 s
REARM: Y		
STOP: P		

If the alarm sounds the control stops for:  
P: Selected parameter  
T: All parameters  
N: None  
Press ▼ ▲ to change it, and validate with ENT

4.5.3 FLOW ALARM



The flow detector of the sensor holder (Ref 44-020) is used to stop the control in case of insufficient flow. At this moment “ALARM Q=0 ”will appear on-screen and will activate alarm output “ALM “ (” ALM Sw. Q ”). When the flow is correct again, it reset automatically. If you do not have a flow detector, a bridge must be placed in terminals 1-3 of the Q Switch.

If there is a flowmeter in the principal pipe (model WTRPRO PIQ) the alarm can be configured. If programmed the alarm can rearm the control and stop the parameters .



ENT  
▼

Q ALARM

Q = 0 20 s

REARM: Y  
STOP: N

Time allowed at zero flow before alarm is activated  
(----s =disabled alarm)  
Increase or decrease by pressing ▼▲ and validate with ENT

ENT

Q ALARM

Q = 0 20 s

REARM: ☒ Y  
STOP: N

Automatic reset of the alarm when the reading is correct.  
Y: auto reset  
N: no auto reset  
Press ▼▲ to change it, and validate with ENT

ENT

Q ALARM

Q = 0 20 s

REARM: Y  
STOP: ☐ P

In case of alarm the control stops of:  
P: Chosen parameter  
T: All the parameters  
Press ▼▲ to change it, and validate with ENT



## 4.6 VALUES REGISTER

The system has one or two output 4-20mA analogue outputs for registering values (depending on the model). Configure the output within the corresponding parameter.

m3h	SP	0.50	%
CAL			
CONTROL			
ALARM			
REGISTER			

5x



m3h	SP	0.50	%
CAL			
CONTROL			
ALARM			
REGISTER			

ENT



Q	REGISTER		
4 mA:	0.00	m3h	
20 mA:	100.0	m3h	

Introduce the corresponding value for 4mA output  
Increase or decrease by pressing ▼ ▲ and validate with ENT.

ENT



Q	REGISTER		
4 mA:	0.00	m3h	
20 mA:	100.0	m3h	

Introduce the corresponding value for 20mA output  
Increase or decrease by pressing ▼ ▲ and validate with ENT.

## 4.7 CONFIGURATIONS MENU (CONFIG)



pH 7.60 SP 7.00  
25%

CONFIG 21.0°C



CONFIG

T DELAY  
UNITS  
ACID CONTROL  
OXID CONTROL  
TEMP. SENSOR

### 4.7.1 INSTALATION DELAY TIME ( T DELAY)

This parameter corresponds to the time between two consecutive orders by the WTRPRO for positioning the regulation outputs. For a correct regulation, this time has to be greater than the one that takes a drop of product dosed in moving from the point of injection to the point where the sensor is. (See Section 6-Start-Up)

In the WTRPRO pH-Q model, equipped with a flowmeter, the parameter Q test makes it possible to establish a reference flow in order to define a variable Tdelay.

For a Qtest=0, the Tdelay will be fixed.

For a Qtest other than 0, the Tdelay will change in inverse proportion to the change of the flow variation.

Example:

For a Qtest=20m<sup>3</sup>/h, and an initial Tdelay of 20 seconds, when the flow is 40m/h, then the Tdelay will be 10 seconds.



CONFIG

T DELAY

UNITS  
ACID CONTROL  
OXID CONTROL  
TEMP. SENSOR



CONFIG T DELAY

Q test: 150 m3h  
T delay pH: 15 s  
T delay: 15 s

Introduce the reference flow to define the values of the Tdelay

Change value with ▼▲ and validate with ENT



CONFIG T DELAY

Q test: 150 m3h  
T delay pH: 15 s  
T delay: 15 s

Introduce the Delay Time (Tdelay) of the pH, which is the time that passes between two consecutive orders (see paragraph 6)

Increase or decrease by pressing ▼▲ and validate with ENT



CONFIG T DELAY

Q test: 150 m3h  
T delay pH: 15 s  
T delay: 15 s

Introduce the Delay Time (Tdelay) for the RX, which is the time that passes between two consecutive orders ( see paragraph 6)

Increase or decrease by pressing ▼▲ and validate with ENT



## 4.7.2 UNITS

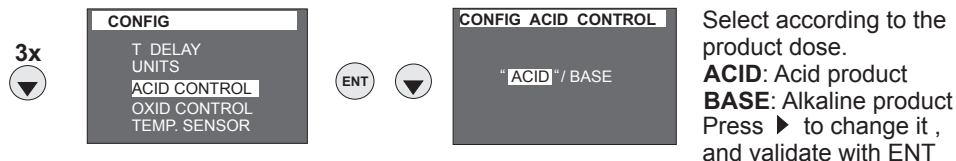


### LITERS: GALLONS

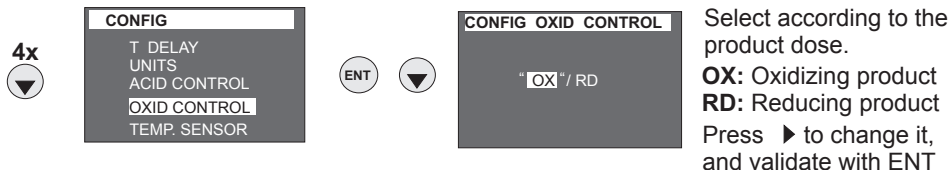
°C: degrees centigrade / °F: degrees Fahrenheit

%: percentage / ppm: parts per million

## 4.7.3 FOR PH ACID/BASE CONTROL

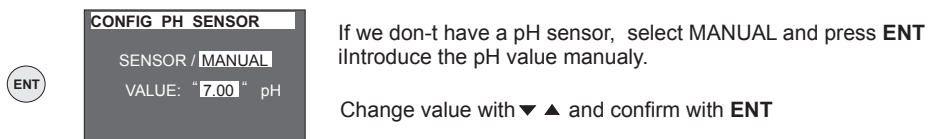
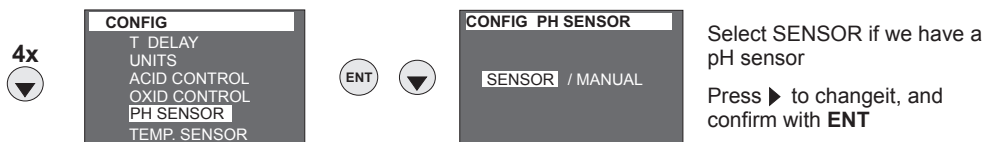


## 4.7.4 FOR OXIDATION/REDUCTION CONTROL



## 4.7.5 PH SENSOR

With this parameter we select if we have pH sensor. If we don't have a sensor we can introduce the pH value manually in order to adjust the free chlorine reading.





#### 4.7.5 TEMPERATURE SENSOR

The equipment has compensation of temperature for the pH reading. In case of not having sensor of temperature, introduce the value manually for it's compensation

4x



CONFIG

T DELAY  
UNITS  
ACID CONTROL  
OXID CONTROL  
TEMP. SENSOR



CONFIG TEMP. SENSOR

SENSOR / MANUAL

Select sensor if you have a temperature sensor.

Press ► to change it, and validate with ENT



CONFIG TEMP. SENSOR

SENSOR / MANUAL

VALUE: "21.0" °C

If there isn't a temperature sensor introduce the value manually

Change value with ▼ ▲ and validate with ENT

4.8 SET UP CONFIGURATION



pH 7.60 SP 7.00  
25%

CONFIG 21.0°C

▶ + ◀

SET UP

CONTROL PI  
COMMUNICATION  
CLEANING FREQUENCY  
TIME

4.8.1 PI CONTROL

The adjustment of pH values and free Chlorine is realized by a proportional integral regulation (PI).

The model WTRPRO-PIQ incorporates the flow information in the regulation PI, obtaining a PIQ regulation.

The reference flow for the PIQ calculation is the flow just after the first Tdelay. It is possible to update this value setting the control for 1 second (see paragraph 4.4). The adjustment of the flow will be done according to the refresh time (see paragraph 4.8.4).

The parameters to change the approximationPI curve are Kp(Proportional) and Ki (Integral).

The default values (Kp=10, Ki=20) are standard values for a vast majority of instalations where in-line control is performed.

For a control in recirculation, the value of Ki = 0, except in special applications.

▼

SET UP

CONTROL PI  
COMMUNICATION  
CLEANING FREQUENCY  
TIME

ENT ▼

ENT

SET UP CONTROL PI

mV Kp 10  
pH Ki 20

Free chlorine control , proportionality  
contant for the control PI  
Kp:10  
Change value with ▼ ▲ and  
validate with ENT

ENT

SET UP CONTROL PI

mV Kp 10  
pH Ki 20

Free chlorine control, integral constant for the control PI  
Ki:20  
Change valueu with ▼ ▲ validate with ENT

ENT

SET UP CONTROL PI

mV Kp 10  
pH Ki 20

pH control, proportionality constant for the PI control  
Kp:10  
Change value with ▼ ▲ , and validate with ENT

ENT

SET UP CONTROL PI

mV Kp 10  
pH Ki 20

pH control, integral constant for the PI control  
Ki:20  
Change value with ▼ ▲ , and validate with ENT

## 4.8.2 COMMUNICATION



2x



<b>SET UP</b>
CONTROL PI
<b>COMMUNICATION</b>
CLEANING FREQUENCY
TIME



<b>SET UP COMMUNICATION</b>
Nº comunicat.: <b>1</b>

Identification of the equipment for connection to an RS 485

Press ▼ ▲ to change it, and validate with ENT

## 4.8.3 CLEANING FREQUENCY

3x



<b>SET UP</b>
CONTROL PI
COMMUNICATION
<b>CLEANING FREQUENCY</b>
TIME



<b>SET UP CLEANING FREQ</b>
Control: " <b>HOLD</b> " / OFF
Time: 1 min.
Periode: 8 h.

Control type during the cleaning sensor

Press ▼ ▲ to change it, and validate with ENT

The cleaning process of the sensor default last 1 minute, but 20 additional minutes are needed to have again the correct reading (the reading is visualized in flashing signal). During this time we can determine the type of control.

**HOLD:** The control will continue in the same position that it was before activating the cleaning.

**OFF:** The control stops during the cleaning.



<b>SET UP CLEANING FREQ</b>
Control: <b>HOLD</b> / OFF
Time: <b>1</b> min.
Periode: 8 h.

Sensor's cleanning time .  
Change value with ▼▲  
and confirm with ENT

<b>SET UP CLEANING FREQ</b>
Control: <b>HOLD</b> / OFF
Time: 1 min.
Periode: <b>8</b> h.

Frequency for the cleaning activation  
Change value with ▼▲  
and confirm with ENT

## 4.8.4 TIME REFRESH

4x



<b>SET UP</b>
CONTROL PI
COMMUNICATION
CLEANING FREQUENCY
<b>TIME</b>



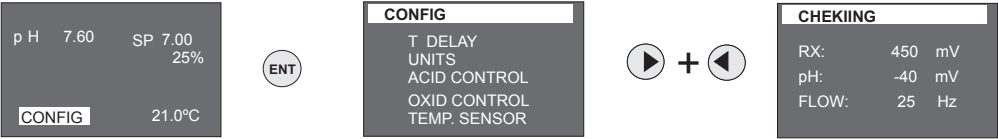
<b>SET UP TIME</b>
T. refresh: <b>5</b> s.

Time refresh of the flow for PIQ calculation (PI adjustment determined to the flow)  
Change value with ▼ ▲ and to confirm with ENT

4.8.3 CHECKING



In the CHECKING menu we can verify the state of the sensors, visualizing the readings of the sensors in mV or in Hz, according to the sensor.

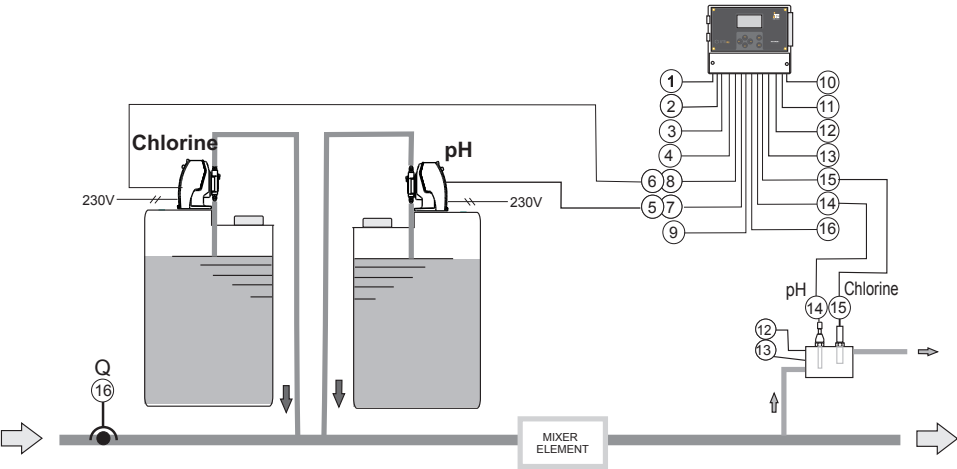


# 5 INSTALLATION AND WIRING

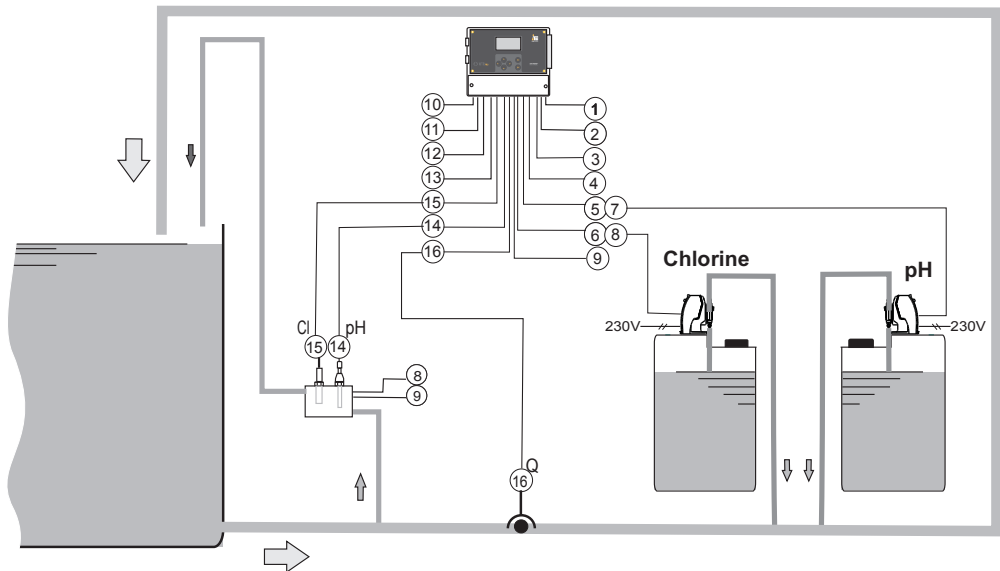


Choose a place protected from the water, away from sources of heat and direct sunlight to install the system.

## In-line dosing



## Recirculation dosing

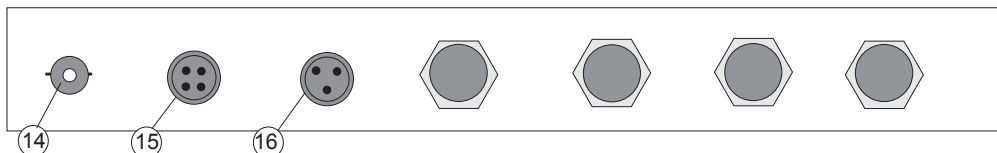
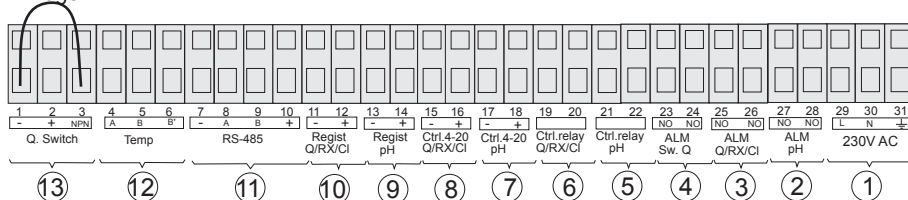


## WIRING



- ① Power supply 230 V AC +/- 10%, 50/60Hz (n° 29,30,31)
- ② Alarm output pH. Relay NO, 24V AC-1A máx(n° 27,28)
- ③ Alarm output free Chlorine. Relay NO, 24V AC-1A máx(n° 25,26)
- ④ Flow detector alarm output, Switch Q. Relay NO, 24V AC-1A máx(n° 23,24)
- ⑤ Output control relay pH (n° 21,22)
- ⑥ Output control relay free Chlorine Cl (n° 19,20)
- ⑦ Output control 4-20 mA pH (n° 17,18)
- ⑧ Output control 4-20 mA free Chlorine Cl (n° 15,16)
- ⑨ Output register pH (n° 13,14)
- ⑩ Output register free Chlorine Cl (n° 11,12)
- ⑪ Output RS485 for the connection to a PC (n° 7,8,9,10)
- ⑫ Temperature sensor input (n° 4,5,6)
- ⑬ Flow detector input, Q.switch (n° 1,2,3)(If the Q.switch is not provided, place a bridge between 1 and 3)
- ⑭ PH sensor input, pH (socket BNC)
- ⑮ Free Chlorine sensor input ,Cl (4 pins socket )
- ⑯ Flowmeter sensor input ,Q (3 pins socket )(model WTRPRO PIQ)

Bridge



The probe wires must pass through a separate canalization.

A feed sectioning device must be installed which complies with Standard EN-60204-1.

A disconnection device must be installed in case of emergency. The system will have to be protected to prevent undesired sudden start-ups



## 6 START-UP AND REGULATION

### 1. Installation:

Install the system and connect the pumps (see Installation and connections)

### 2. Calibration and configuration of the system:

Calibrate the corresponding sensors (pH, RX) (See Calibration)

Configure the system: Set point

Type of control

Installation and system configurations

### 3. Checking readings

Start the installation work and check to ensure that the sensor readings are correct

### 4. Checking dosing pump operation:

The DOSITEC dosing pump is activated by means of the keyboard of the pump ("Manual" function)

Dosing pumps with frequency variator: place the inverter box switch in position 50Hz.

### 5. Determine the "Tdelay" (Delay Time), according to the installation:

This parameter corresponds to the time that passes between two consecutive orders of the WTRpro, for positioning the regulation outputs.

#### 5.1 RECIRCULATION DOSING

In this case the Tdelay must be the minimum possible ( $T_{\text{delay}} = 2 \text{ s}$ )

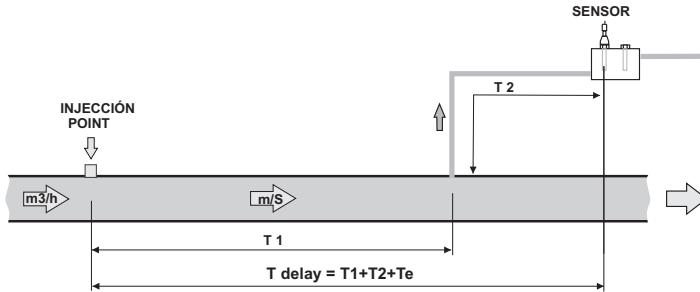
#### 5.2 IN-LINE DOSING

The Tdelay is the time that a drop of dosed product takes to move from the point of injection to the point where the sensor is, plus the sensor reaction time.

The Tdelay changes when the installation flow is varied. To optimize regulation, the Tdelay can be associated with a certain flow (Q Test), so that the WTRPRO modifies the Tdelay according to the water flow.



## Sensor in external sensor holder



### ***Tdelay Calculation***

$$\mathbf{Tdelay = T1+ T2 + Te}$$

T1 = Main pipe time

$$T1 = \frac{0.28 \times L \times D^2}{Q \times 100}$$

L = Length principal pipe (m)

Q = flow (m3/h)

D = inner pipe diameter(mm)

T2 = Time in hose of the sensor holder (ref:44-020) with flow regulator to 50l/h and inner hose diameter of 6mm

$$T2 = 2 \times l$$

L = length for the hose to sensor holder (m)

Te=Sensor stabilization time (Te = 5 s)



Bear in mind that if there is a filter or another element that retains a considerable volume of water between the point of injection and the sensor this calculation will have to be corrected.

### ***Example:***

A pipe with an inner diameter of 190 mm (D=19), with a flow of 100 m3/h (Q=100). The length between the point of injection and the sensor is 10 metres (L=10m.). By applying the formula we find the Tdelay = 10 seconds.

The length of tubes from the sensor holder is 2 metres (l = 2). By applying the formula we find the T2 = 4 seconds,

Supposing a sensor stabilization time of 5 s, Te=5

Finally, by applying the initial formula, the user will find the Tdelay = 19 seconds



If the T2 time is very much lower than the T1 time, we may consider the Tdelay to be variable with the flow, meaning that we will introduce the value of the Qtest.

If the T2 time is slightly lower or higher than the T1 time, it is incorrect to consider that the Tdelay is variable with the flow, meaning we will introduce a  $Q_{test} = 0$ , thus establish a fixed Tdelay

### **Practical determination of the Tdelay**

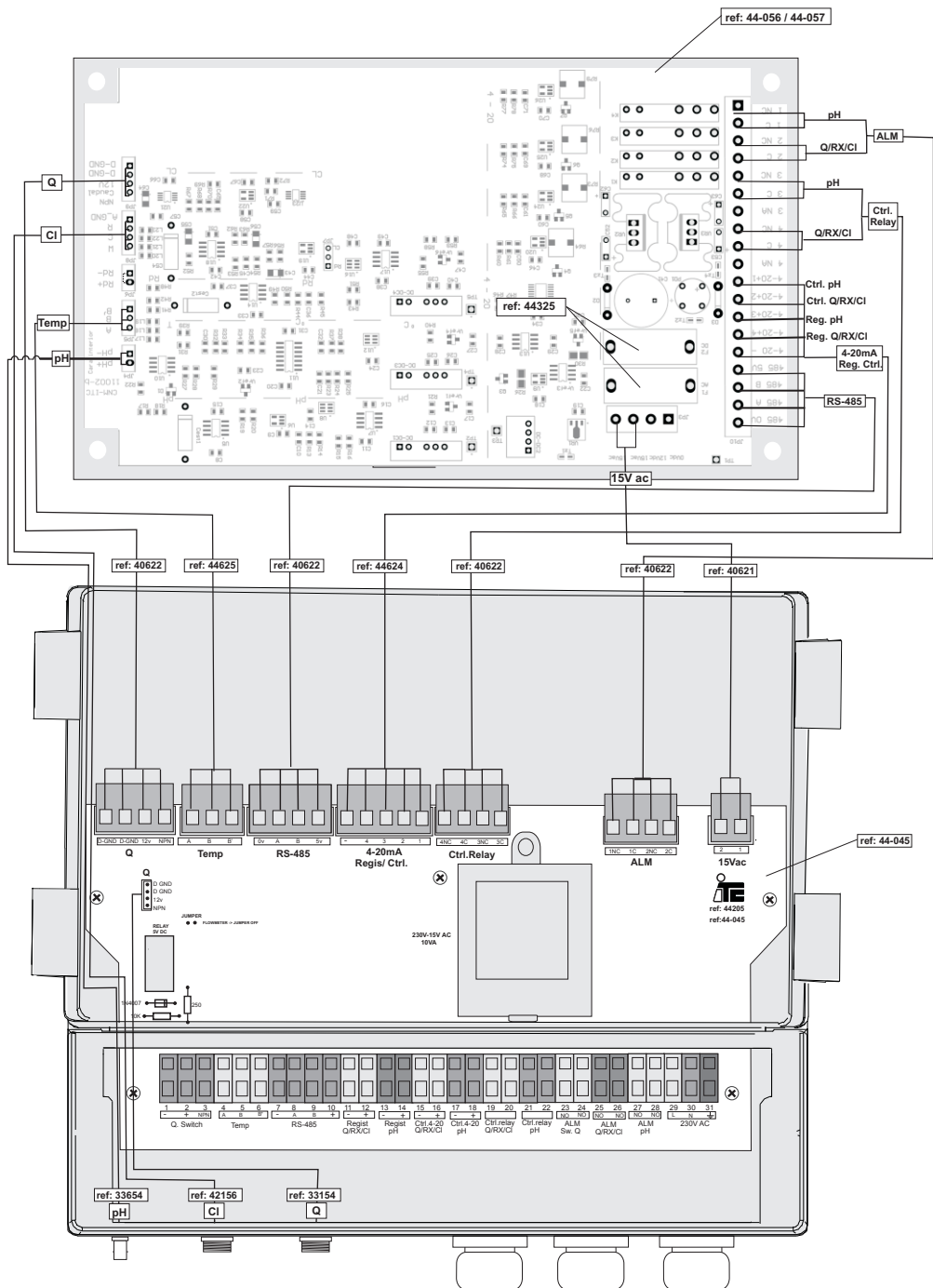
1. Let non-treated water flowing through the pipes making sure that there is no product dosage.
2. Wait until the sensor readings are stable.
3. Start a dosing pump manually and start a chronometer at the same time.
4. The reading of the corresponding sensor will begin to increase until becoming stable. The chronometer will then stop, and the time which has passed will be Tdelay time.
5. Introduce the value of the flow with which this has been carried out, within the Qtest parameter, so as to have a Tdelay that varies with the flow. (For a fixed Tdelay, introduce a  $Q_{test} = 0$ ).

See paragraph 4.7.1

### **6.- Alarms:**

Configure the alarms, once you have checked to ensure the proper operation of the installation.

See paragraph 4.5



## List of parts



### Models WTRPRO pH-CI

CODE	DESCRIPTION	QUANTITY
33654	Cable pH (RX) (CBNC 2P)	1
42156	Cable CI+(C 4P)	1
44-056	Electronic card WTRPRO pH-CI assembly	1
44-045	Connection card WTRPRO 2 outputs	1
40621	Cable 2 wire female elbow strips	1
40622	Cable 4 wire female elbow strips	4
44625	Cable 3 wire female elbow strips	1
44624	Cable 5 wire female elbow strips	1
59316	Fuse 1A 5x20	2

### Models WTRPRO PIQ

CODE	DESCRIPTION	QUANTITY
33154	Flowmeter cable C+(C 3P)	1
33654	Cable pH (RX) (CBNC 2P)	1
42156	Cable CI+(C 4P)	1
44-057	Electronic card WTRPRO pH-Q assembly	1
44-045	Connection card WTRPRO 2 outputng	1
40621	Cable 2 wire female elbow strips	1
40622	Cable 4 wire female elbow strips	4
44625	Cable 3 wire female elbow strips	1
44624	Cable 5 wire female elbow strips	1
59316	Fuse 1A 5x20	2

### OPTIONS AND ACCESSORIES

CODE	DESCRIPTION
20-000	Flowmeter 12,5bar 7m GFX0
22-003	pH sensor 1m - 6 bar with 3/4 adapter
22-020	Dirty water pH sensor 5m with 3/4 adapter
22-050	RX sensor 5m with 3/4 adapter
44-010	Free chlorine amperometric sensor
44-020	Multifunction sensor holder
44125	Temperature Sensor Pt100
44305	Inductive flow detector

## CONFORMITY DECLARATION

I.T.C S.L..

Vallès, 26

Polígono Industrial Can Bernades-Subirà

08130 Santa Perpètua de Mogoda

*Declares that all the models of the products WTRPRO identified with serial number and year of manufacture fulfill the Managing Low Tension D2006/95/CE and the board of Electromagnetic Compatibility D2004/108/CE whenever the installation, the use and the maintenance are carried out in agreement in accordance with the current regulation and following the indications of the manual of instructions.*

Antón Planas

Gerente

**WARRANTY**

**ITC**  
DOSING PUMPS

I.T.C. S.L. warranties the product specified in this document by the period of 1 year from the date of buy, against any shortcoming of manufacture or material, whenever the installation, use and maintenance of the team have been the correct ones.

The system must be sent, freely from expenses, to our workshop or technical service of I.T.C. Accredited S.L. and his return will be carried out to due freights.

It will should accompany the system the document of guarantee with the date of buy and stamp of the selling establishment, or photocopy of the invoice of buy.

MODEL

\_\_\_\_\_

SERIES N°

\_\_\_\_\_

Date of buy and stamp of the  
selling establishment

DATE: \_\_\_\_\_

Original manual

Ed:30/04/2019-EN

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C/ Vallès, 26 Pol. Ind. Can Bernades - Subirà  
P.O. Box 60  
08130 Santa Perpètua de Mogoda  
BARCELONA

*Tel.* 93 544 30 40  
*e-mail:* [itc@itc.es](mailto:itc@itc.es)

*Fax* 93 544 31 61  
[www.itc-dosing-pumps.com](http://www.itc-dosing-pumps.com)