

# MLP3 PHMVCL

## Instruction manual



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**The box contain**

Measure instrument, instruction manual, mounting accessories, fuse fusibile.

**General features**

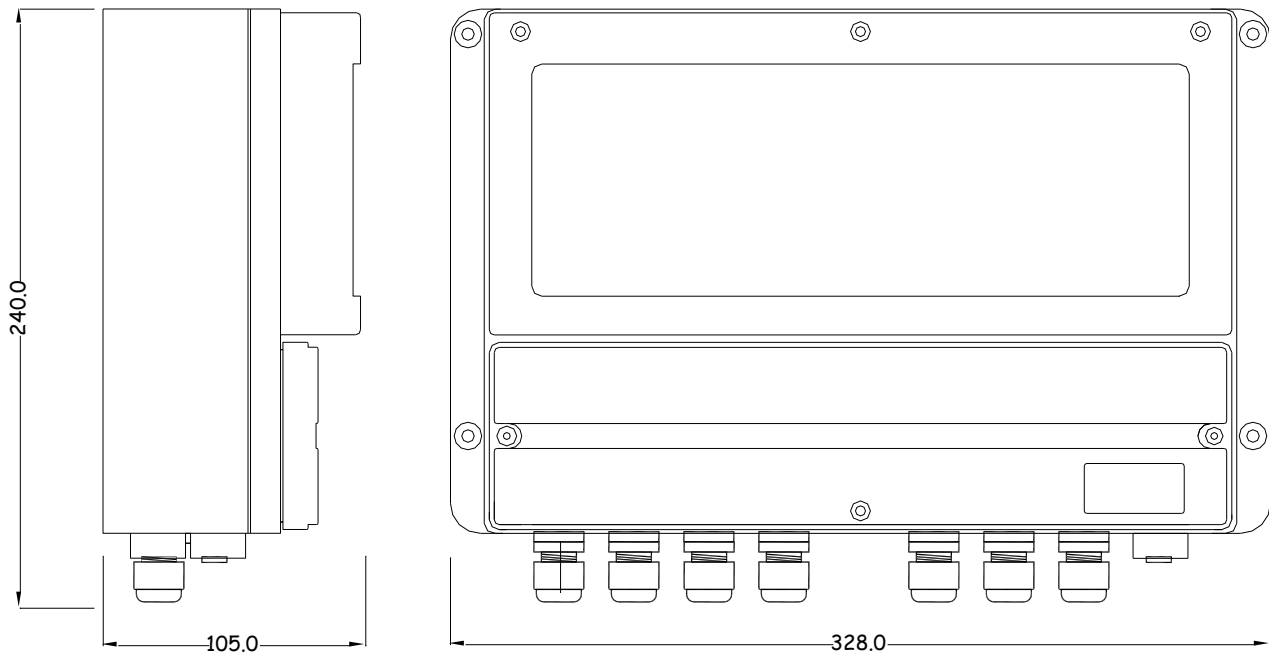
<b>Measure range</b>	0-14.00 pH / 0-1999 mV / 0-10.00 ppm / 0-100°C
<b>Functions</b>	Mesure, control and regulation of pH, redox potential and free chlorine Measure of temperature
<b>Resolution</b>	± 0.01 ph / ±1 mV / ±0.01ppm / ±0.1°C
<b>Display</b>	Backlighth alphanumeric LCD 2x16
<b>Accuracy</b>	± 1% E.S.
<b>Controls</b>	Keypad 7 Keys
<b>Set-point</b>	5 free contact output relay 5 A max 220VCA
<b>Output</b>	3 proportional on a set-point 4-20mA 400 Ω max with galvanic separation 3 proportional on the measure range (recorder) 4-20mA 400 Ω max with galvanic separation
<b>Probes cleaning</b>	Maintenance relay output
<b>Hysteresys</b>	Adjustable for each set point
<b>Delay</b>	Adjustable for each set point
<b>P.i.d.</b>	Time/pause proportioning mode for each set point
<b>Temperature compensation</b>	Manual or automatic temperature compensation 0-100 °
<b>Alarm</b>	Alarm min/max (alarm window) for each set point
<b>RS 232</b>	RS232 connection with galvanic separation for remote control (Micon software)
<b>Flow sensor</b>	Output relay freezing via flow sensor control
<b>Power supply</b>	230 Vac 50Hz (optional 110/ 24 Vac)
<b>Consumption</b>	5W
<b>Fuse</b>	315 mA delayed
<b>Box</b>	ABS V0, IP65 protection degree
<b>Dimensions</b>	328 x 240 x 105 mm
<b>Weigth</b>	1880 gr.

**Attention**

**Before to make any operation on the isnruments to verify that the power supply cable isn't connected**

**Check that the electric system voltage correspond with value on the instrument label**

### ***Dimensions MLP series***

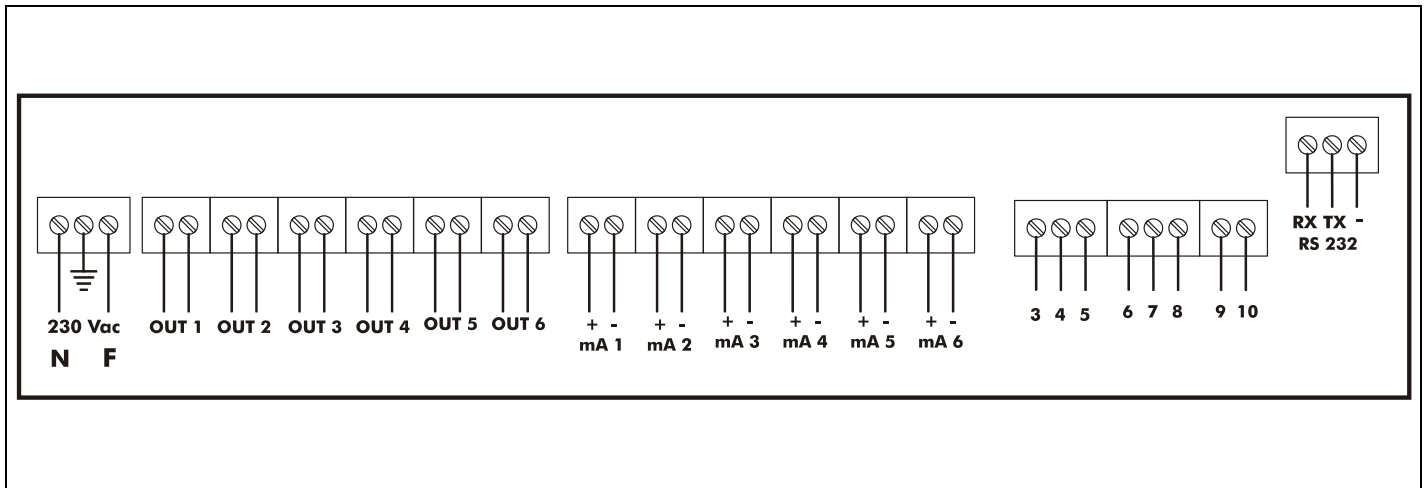


### ***Attention***

***Before to make any operation on the instruments to verify that the power supply cable isn't connected***

***Check that the electric system voltage correspond with value on the instrument label***

## Electrical connections



### Connections

- To connect the main power to **N(neutral)**, **F(phase)**.
- To connect the **temperature probe** to numbers **5 ( + )**, **6 ( - )**, **7( IN )**, references on instruction probe.
- To connect the **fluximeter sensor** to numbers 8 (IN black), 9 (+ brown), 10 (- blue ones).
- To connect the **chlorine probe** to the numbers **3 ( - blue)**, **4 (+ brown)**, references on instruction probe.
- The output **Set pH 1** relay is available on the **Out1**.
- The output **Set pH 2** relay is available on the **Out2**.
- The output **Set Redox 1** relay is available on the **Out3**.
- The output **Set Chlorine 1** relay is available on the **Out4**.
- The output **Set Chlorine 2** relay is available on the **Out5**.
- The output **alarms** relay is available on the **Out6**.
- The **proportional** output of the **pH 4-20mA** is available on the **mA1**.
- The **proportional** output of the **Redox 4-20mA** is available on the **mA2**.
- The **proportional** output of the **chlorine 4-20mA** is available on the **mA3**.
- The **recorder** output of the **pH 4-20mA** is available on the **mA4**.
- The **recorder** output of the **Redox 4-20mA** is available on the **mA5**.
- The **recorder** output of the **chlorine 4-20mA** is available on the **mA6**.

To feed the instrument, on the display appears initially the review of the instrument software ex:

M	L	P	3		C	o	n	t	r	o	l	l	e	r
					v	e	r	.	4	.	o			

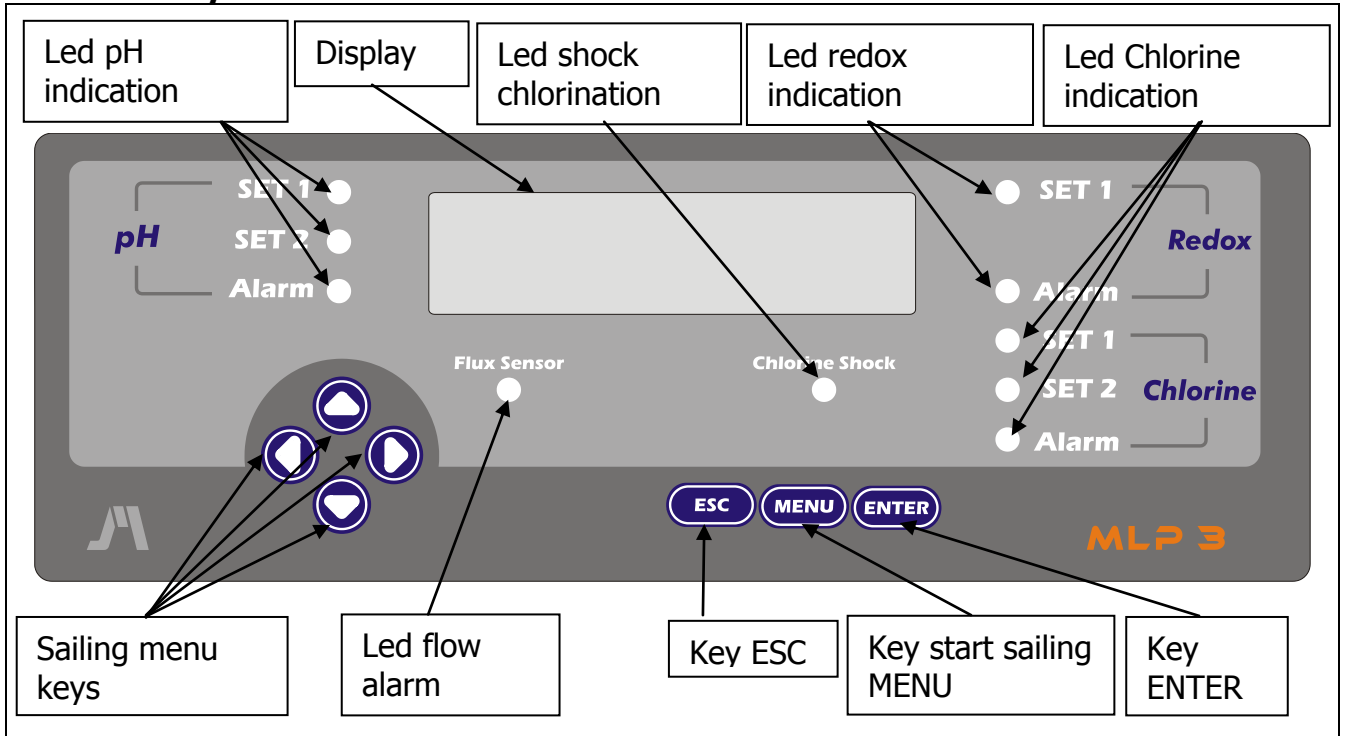
where v.4.0 indicates the state of software upgrade.

Subsequently the instrument gets in measure display and is ready for the normal operation.

	7	.	0	5	p	H				5	2	0	m	V	
	0	.	2	0	p	p	m		2	5	.	4	°	C	

On the display the measures of pH, Redox, chlorine and temperature are indicated.

**Description**



**Password**

If previously it has been memorized a password, the instrument before entering in the main menu request the numerical code of four digits and when it is pressed key **MENU** on the display appears:

	P	a	s	s	w	o	r	d	*	*	*	*		

The cursore flashes on first number, by means of keys **UP** and **DOWN** to increase or to decrease the number, subsequently with keys **SHR** and **SHL** to move the cursor on the other numbers in order to compose the exact code and therefore to press **ENTER**.

If the key code is corrected is proceeded with the main menu them, otherwise the cursor returns on before number and wait new breaking in, in this case it is not allowed to carry out no keys and it is necessary to contact the supplier.

In order to exit from the password request and to return to the measure visualization to press **ESC**.

### **Main menu.**

From the menu main approaches all the operations of set, calibrations and other functions. In order to approach the main menu to press the **MENU** key, on the display it appears:

			M	a	i	n		M	e	n	u				
1		S	e	t	p	o	i	n	t						▼

By means of keys **UP** and **DOWN** and possible to select following menu:

2		C	a	l	i	b	r	a	t	i	o	n	s		◄
3		l	n	s	t	a	l	l	a	t	i	o	n		◄
4		C	h	l	o	r	.	S	h	o	c	k			◄
5		P	a	s	s	w	o	r	d		s	e	t		▲

To confirm the choice and therefore to approach the successive one menu with **ENTER** key.

### **Setpoint menu**

From the menu main, to select Setpoint and to press **ENTER** on the display appears:

		M	e	n	u		S	e	t	p	o	i	n	t	
		s	e	t	1		p	h							▼

By means of keys **UP** and **DOWN** is possible to select the other setpoint:

		s	e	t	2		p	h							◄
		s	e	t	1		R	e	d	o	x				◄
		s	e	t	1		C	h	l	o	r	.			◄
		s	e	t	2		C	h	l	o	r	.			▲

With key **ENTER** it is passed to the set regulation, while with key **ESC** it is possible to return to the main menu.

After to have chosen the set point the display show:

S	e	t	p	o	i	n	t		1		p	H			
T	h	r	e	s	h	.			X	.	X	X	p	H	

In the example the regulation of set 1 is described pH, the procedure remains the same one also for the other measures. X.XX indicates the value of threshold set pH. If such value is requested to be modified to press **UP** and **DOWN** keys, is possible to modify the value of threshold within the measure limits and memorized with **ENTER** key.

The display show the value of hysteresis previously set up.

S	e	t	p	o	i	n	t			1		p	H			
H	y	s	t	e	r	.			X	.	X	X	p	H		

By means of **UP** and **DOWN** keys, to regulate the value of hysteresis and memorized with **ENTER** key. The hysteresis value comes added and embezzled to the value of threshold previously set up and concurs with the instrument not to carry out actions on the output relay, until that this window of minimum and maximum is not exceeded. Such regulation is much profit when fast variations of the measure around to the set point are taken place, with consequent activations and diactivations of the relay that they can damage the instrument and the connected equipment to it.

Just for this reason he is not absolutely advisable to insert of the inferior parameters to 0.05pH, 005mV, 0,05ppm. If it is desired to behind return to the regulation of the previous parameter to press **SHL** key, otherwise in order to proceed in the next time of delay parameter press **SHR** key on the display it appears:

S	e	t	p	o	i	n	t			1		p	H			
D	e	l	a	y	T	.			X	X	X	s	e	c		

In this case it is possible to set up the time of delay for the activation or the diactivation of the setpoint until to a maximum of 255sec. To modify the value indicated on the display by means of **UP** and **DOWN** keys and to confirm with **ENTER** key. If it is desired to behind return to the regulation of the previous parameter to press **SHL** key, otherwise in order to proceed in the next time of delay parameter press **SHR** key on the display it appears:

S	e	t	p	o	i	n	t			1		p	H			
A	l	a	r	m	H	l			X	X	.	X	X	p	H	



To every setpoint a control for the management of an alarm threshold is associated, and in this case the maximum level is demanded beyond which place comes marked with the ignition of the LED Alarm (in this case pH) on the front panel. Alarm comes moreover activated the output relay. With **UP** and **DOWN** keys to modify the threshold value and to press **ENTER**, with **SHR** key it is passed to set up the value of the minimal alarm:

S	e	t	p	o	i	n	t							
A	l	a	r	m	L	o		X	.	X	X	p	H	

Like for the previous formulation, it is possible to set up an alarm of the minimal level and the output relay is activated when the measure is under threshold. With **UP** and **DOWN** keys to modify the value and to press **ENTER**, with **SHR** key it is passed to set up the type of product to dose:

S	e	t	p	o	i	n	t							
			A	l	k	a	l	i	n	e				

It is possible to select Alkaline or Acid by means of **UP** and **DOWN** keys in the case pH, while for the regulation of the set point of Redox and chlorine display the show Normal or Reverse. With this selection the type (regulation adopts a position sense) to carry out. In the case of Alkaline or Normal the relay output is activated when the measure more low of the setpoint value, viceversa in the case of Acid or Reverse. With **UP** and **DOWN** keys to select and memorized with **ENTER** key, with **SHR** key it is passed to set up the type mode relay output:

S	e	t	p	o	i	n	t							
			O	N	/	O	F	F		m	o	d	e	

MLP3 Instrument previews the possibility to change the way of operation of the associated relay output. Normally (standard from the manufactory) the output is ON/OFF type, the customer can change with **UP** and **DOWN** keys the output in proporzional to pulses PID mode. The type proporzional output them rule the ON and OFF time of of the relay in function of the value of the measure regarding the set point. The window regulation is 1.00pH (100mV for the Redox and 0.50ppm for the chlorine).

**Menu calibrations**

From the menu main, to select Calibrations and press ENTER on the display appears:

M	e	n	u		C	a	l	i	b	r	a	t	i	o	n
		p	H												◆

By means of keys **UP** and **DOWN** is possible to select the other measure:

		R	e	d	o	x									◆
		C	h	l	o	r	i	n	e						◆

With key **ENTER** it is passed to the calibration of the relative probe to the selected measure, while with key ESC it is possible to return to the menu main. If the measure has been chosen pH display show:

		C	a	l	i	b	r	a	t	i	o	n			
		Z	e	r	o			X	.	X	X	p	H		

If the measure of Redox has been chosen display show:

		C	a	l	i	b	r	a	t	i	o	n			
		Z	e	r	o			X	X	X	m	V			

While if the chlorine measure has been chosen display show:

		C	a	l	i	b	r	a	t	i	o	n			
		Z	e	r	o			X	.	X	X	p	p	m	

X.XX indicates the measure found from the instrument. To dip the probe in 7.00pH buffer solution for the calibration pH (for the Redox solution to make reference value indicated in the buffer solution), while for the chlorine calibration it is necessary to flow water without chlorine in the probe. By means of **UP** and **DOWN** keys to move the value of the measure until reading that one indicated in buffer solution, in the case of the chlorine it

is necessary to wait some minute in order to stabilize the measure. In order memorize the Zero calibration to press **ENTER**. In the case of Redox calibration is finished, for the other measures the instrument request the Gain calibration value and display show:

		C	a	l	i	b	r	a	t	i	o	n			
		G	a	i	n				X	.	X	X	p	H	

In the chlorine case:

		C	a	l	i	b	r	a	t	i	o	n			
		G	a	i	n				X	.	X	X	p	p	m

By means of keys **UP** and **DOWN** to move the value of the measure until reading that one indicated in buffer solution, in the case of the chlorine it is necessary to make reference colorimetric test kit (DPD1) and wait some minute to stabilize the measure. To press **ENTER** for memorize the calibration, subsequently the instrument return on the menu calibrations.

### **Menu Installations**

From the menu main, to select Installation and press **ENTER** on the display appears:

		M	e	n	u		l	n	s	t	a	l	l		
		F	l	u	x	i	m	e	t	e	r				▼

By means of **UP** and **DOWN** keys is possible to choose the temperature menu:

		T	e	m	p	e	r	a	t	u	r	e			◄
--	--	---	---	---	---	---	---	---	---	---	---	---	--	--	---

To choose the wished menu and to press **ENTER**.

### **Fluximeter**

The fluximeter option enabled or disabled the control of the flow sensor (optional to the Slo2-3 probe). This function blocks to OFF the outputs of all relay and sets up the mA current output in on the minimal value of 4mA, when the water flow is not sufficient for the corrected operation of the chlorine probe (to make reference to the datasheet Sclo2-3 probe), indicated also from the red Led place on the front panel of the instrument. Display show the previously set up:

			F	l	u	x		S	e	n	s	o	r		
					D	I	S	A	B	L	E				

or:

					E	N	A	B	L	E					
--	--	--	--	--	---	---	---	---	---	---	--	--	--	--	--

By means of keys UP and DOWN it is possible to Enable or Disable the flow sensor and therefore to confirm with key **ENTER**, subsequently is returned to the previous menu.

### *Temperature*

The Mlp2-3 can control in manual or automatic temperature (by means of the optional temperature probe of previewed in the Slo2-3 probe) display show the previously condition set up:

		T	e	m	p	e	r	a	t	u	r	e			
	M	A	N	U	A	L			X	X	.	X	°	C	

or:

			A	U	T	O	M	A	T	I	C				
--	--	--	---	---	---	---	---	---	---	---	---	--	--	--	--

With UP and DOWN keys to choose the control. If the instrument is selected AUTOMATIC read the value measured from the external probe and carries out the automatic compensation of the measure of pH, while if MANUAL is chosen the correction it happens to a set up fixed value from the customer who can be regulated from 0 to 100 degrees, the cursor blinking on the value of temperature previously set up indicates the demand for set by means of keys **UP** and **DOWN**. In order to conclude to press **ENTER**.

### *Menu Chloroshock*

From the menu main, to select Chlor.Shock and to press **ENTER** on the display appears:

		M	e	n	u		C	l		S	h	o	c	k	
S	t	a	r	t		p	r	o	c	e	s	s			▼

By means of **UP** and **DOWN** keys is possible to select following submenu:

R	e	s	e	t		p	r	o	c	e	s	s			◆
S	e	t		t	i	m	e	r							▲

The chloroshock function disabled for a time set up from the customer all the relays outputs until the end of the process. Initially it is necessary to set the timer, to choose Set timer by means of **UP** and **DOWN** keys and to press ENTER:

		T	i	m	e	r		C	l	S	h	o	c	k	
					X	X	:	X	X						

The XX:XX indicate hours and minute, by means of **UP** and **DOWN** keys to set up the chlorine shock time. Keys **SHL** and **SHR** allow to move the cursor on hours and minute. To set up the value and to press **ENTER**, the instrument filler the menu on Start process, in this way with a successive pressure of **ENTER** key begin the process, evidenced with the the red led place on the front panel. Anytime it is possible to reset the process through

the menu of Reset process. **ATTENTION:** If during the chlorine shock condition the power main supply is lack the successive feeding it leaves again from the beginning of counter.

### **Password set**

In order to avoid that personal non-authorized it can modify the set of the instrument, is previewed in main menu the recording of a numerical password of 4 digits in order to approach all the available menu, and is requested every time that is approached the menu from the measures visualization. Chosen menu password set from the menu main on the display appears:

P	a	s	s	w	o	r	d				X	X	X	X	

Display show the previously number set up and the cursor flashes on before number, by means of **UP** and **DOWN** keys to increase or to decrease the number, subsequently with **SHR** and **SHL** keys to move the cursor on the other digit in order to compose the code therefore to press **ENTER**. Not to forget the inserted code and in case about problems to contact the supplier. In order to eliminate the password request it is necessary memorized code 0000.

### **4-20mA analogs outputs.**

The instrument is supplied of 6 analogic outputs 4-20mA, three for the proportional regulation and three for analogic recorders. The regulation of the **setpoint n.1 pH** controls the analogic output **mA1**, that one **setpoint n.1 Redox** the analogic output **mA2**, while the **Chlorine setpoint n.1** controls the analogic output **mA3**. For the regulation of pH the maximum of 20mA is had when the measure is distant 1.00pH or more from the point , when the difference is minor of 1.00pH the instruments entered in the regulation zone until coinciding with the value of threshold with mark them of 4mA. For the Redox measure the field regulation is 100mV, while for the Cloro(ppm) it is 0.50ppm.

The three recorder outputs **mA4**(pH), **mA5**(Redox) and **mA6**(cloro) preview one output of 4mA with value of 0.00pH, 0mV and 0.00ppm, 20mA with 14.00pH, 2000mV and 10.00ppm.

### **Troubleshooting**

<b>Malfunction</b>	<b>Possible cause</b>	<b>Solution</b>
Display switch off	No power supply	Check the electrical connections Check if the power supply printed on the instrument label is correspondent with local electrical net
	Internal fuse is break	Change the fuse
Measure on the display is fix (doesn't change)	The chemical parameter value is constant	To be sure, check the parameter with a portable instrument or with a colorimetric kit
	The signal from the probe doesn't change	Repeat the probe calibration and if the problem remain change the probe
Measure on the display	Electrical disturbs from	Check the electrical local

change continuously (measuring jumps)	electrical local net	net. Control the heart connection.
	Electrical disturbs into the measuring liquid	Check the instrument, putting the probe into a buffer solution, if the instrument measure correctly eliminate the electrical disturb.
Isn't possible to complete the calibration procedure	Buffer solution are defective	Change the buffer solution
	Probe is defective	Change the probe
The setpoint relay doesn't close the contact	Setpoint value is wrong	Change setpoint value
	Setpoint "direction" is wrong	Change the setpoint function mode, direct or reverse, from the menu functions

If isn't possible to back the instrument in a correct functionality following the previous indications please contact your local distributor.

## Set-Point1 pH setting example

Dosing = Acid  
 Pump mode = ON/OFF  
 Setpoint = 7.2 pH  
 Alarm high = 8.0 pH



			M	a	i	n	M	e	n	u				
1	S	e	t	p	o	i	n	t						▼



	M	e	n	u	S	e	t	p	o	i	n	t		
	s	e	t	1	p	h								▼



S	e	t	p	o	i	n	t	1	p	H				
T	h	r	e	s	h	.		7	.	0	0	p	H	



S	e	t	p	o	i	n	t	1	p	H				
T	h	r	e	s	h	.		7	.	2	0	p	H	



S	e	t	p	o	i	n	t	1	p	H				
H	y	s	t	e	r	.		0	.	0	5	p	H	



S	e	t	p	o	i	n	t	1	p	H				
D	e	l	a	y	T	.		0	0	0	s	e	c	



S	e	t	p	o	i	n	t	1	p	H				
A	l	a	r	m	H	l		1	1	.	0	0	p	H



S	e	t	p	o	i	n	t	1	p	H				
A	l	a	r	m	H	l		8	.	0	0	p	H	



S	e	t	p	o	i	n	t	1	p	H				
A	l	a	r	m	L	o		3	.	0	0	p	H	



S	e	t	p	o	i	n	t	1	p	H				
			A	l	k	a	l	i	n	e				



S	e	t	p	o	i	n	t	1	p	H				
			A	c	i	d								





S	e	t	p	o	i	n	t	1	p	H		
			O	N	/	O	F		m	o	d	e



M	e	n	u	S	e	t	p	o	i	n	t	
		p	H	s	e	t	1					▼



			M	a	i	n	M	e	n	u		
1	S	e	t	p	o	i	n	t				▼



## Set-Point1 Chlorine setting example

Dosing = Chlorine  
 Pump mode = ON/OFF  
 Setpoint = 1.20 ppm  
 Alarm Low = 0.20 ppm



			M	a	i	n	M	e	n	u				
1	S	e	t	p	o	i	n	t						▼



	M	e	n	u	S	e	t	p	o	i	n	t		
	s	e	t	1	p	h								▼



	M	e	n	u	S	e	t	p	o	i	n	t		
	s	e	t	1	c	h	l	o	r	.				◆



S	e	t	p	o	i	n	t	1	c	l				
T	h	r	e	s	h	.	1	.	0	0	p	p	m	



S	e	t	p	o	i	n	t	1	c	l				
T	h	r	e	s	h	.	1	.	2	0	p	p	m	



S	e	t	p	o	i	n	t	1	c	l				
H	y	s	t	e	r	.	0	.	0	5	p	p	m	



S	e	t	p	o	i	n	t	1	c	l				
D	e	l	a	y	T	.	0	0	0	s	e	c		



S	e	t	p	o	i	n	t	1	c	l				
A	l	a	r	m	H	l	2	.	0	0	p	p	m	



S	e	t	p	o	i	n	t	1	c	l				
A	l	a	r	m	L	o	0	.	0	0	p	p	m	



S	e	t	p	o	i	n	t	1	c	l				
A	l	a	r	m	L	o	0	.	2	0	p	p	m	



S	e	t	p	o	i	n	t	1	c	l				
			n	o	r	m	a	l						



S	e	t	p	o	i	n	t		1		c	l		
				O	N	/	O	F			m	o	d	e



	M	e	n	u		S	e	t	p	o	i	n	t	
		s	e	t	1		c	h	l	o	r	.		▼



			M	a	i	n		M	e	n	u			
1		S	e	t	p	o	i	n	t					▼



## pH Calibration



			M	a	i	n		M	e	n	u			
1		S	e	t	p	o	i	n	t					▼



			M	a	i	n		M	e	n	u			
2		C	a	l	i	b	r	a	t	i	o	n		◄



		M	e	n	u		C	a	l	i	b	r	.	
		p	h											▼



		C	a	l	i	b	r	a	t	i	o	n			
		z	e	r	o			7	.	0	5	p	h		▼



		C	a	l	i	b	r	a	t	i	o	n			
		z	e	r	o			7	.	0	0	p	h		▼



		C	a	l	i	b	r	a	t	i	o	n			
		g	a	i	n			7	.	0	0	p	h		▼





		C	a	l	i	b	r	a	t	i	o	n		
		g	a	i	n			4	.	o	o	p	h	▼



		M	e	n	u		C	a	l	i	b	r	.	
		p	h											▼



			M	a	i	n		M	e	n	u			
2		C	a	l	i	b	r	a	t	i	o	n		◄



### mV (Redox) Calibration

Buffer solution: 475 mV



			M	a	i	n		M	e	n	u			
1		S	e	t	p	o	i	n	t					▼



			M	a	i	n		M	e	n	u			
2		C	a	l	i	b	r	a	t	i	o	n		◄



		M	e	n	u		C	a	l	i	b	r	.	
		p	h											▼



		M	e	n	u		C	a	l	i	b	r	.	
		m	v											▲



		C	a	l	i	b	r	a	t	i	o	n		
		z	e	r	o					o	o	o	m	v





		C	a	l	i	b	r	a	t	i	o	n		
		z	e	r	o				4	7	5	m	v	▼



		M	e	n	u	C	a	l	i	b	r	.		
		m	v											▲



		M	a	i	n	M	e	n	u					
2		C	a	l	i	b	r	a	t	i	o	n		◄



# Chlorine Clibration

Reference solutions: 0 ppm and 1 ppm (example)



			M	a	i	n	M	e	n	u			
1	S	e	t	p	o	i	n	t					▼



			M	a	i	n	M	e	n	u			
2	C	a	l	i	b	r	a	t	i	o	n		◄



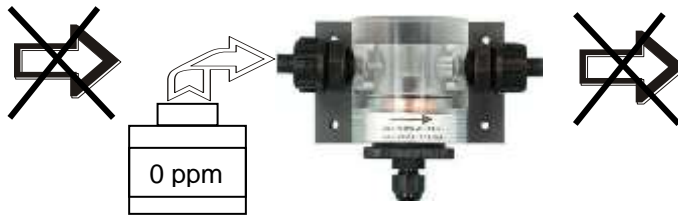
		M	e	n	u	C	a	l	i	b	r	.	
		p	h										▼



		M	e	n	u	C	a	l	i	b	r	.	
		c	h	l	o	r	.						▼



		C	a	l	i	b	r	a	t	i	o	n	
		z	e	r	o	o	.	o	5	p	p	m	▼



		C	a	l	i	b	r	a	t	i	o	n	
		z	e	r	o	o	.	o	0	p	p	m	▼



		C	a	l	i	b	r	a	t	i	o	n	
		g	a	i	n			7	.	o	0	p	h



Example:  
Chlorine  
concentration =  
1 ppm



		C	a	l	i	b	r	a	t	i	o	n	
		g	a	i	n			4	.	o	0	p	h



		M	e	n	u	C	a	l	i	b	r	.		
		p	h											▼



		M	a	i	n	M	e	n	u					
2		C	a	l	i	b	r	a	t	i	o	n		◄



Note:
