



This manual contains safety information that if ignored can endanger life or result in serious injury. They are indicated by this icon.



Keep the instrument protected from sun and water. Avoid water splashes.



## OPERATING INSTRUCTIONS FOR "LDPPH" INSTRUMENT

with data logger software quick guide

Read Carefully !



ENGLISH Version

R1-07-10



"LDPPH" instrument complies with the following European regulations:

EN60335-1 : 1995, EN55014, EN50081-1/2, EN50082-1/2, EN6055-2, EN60555,3

Based on directive CEE 73/23 c 93/68 (DBT Low voltage directive) and directive 89/336/CEE (EMC Electromagnetic Compatibility)

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## GENERAL SAFETY GUIDELINES

**Danger!** In emergencies the instrument should be switched off immediately! Disconnect the power cable from the power supply!

When installing always observe local regulations!

Manufacturer is not liable for any unauthorized use or misuse of this product that may cause injury, damage to persons and / or materials.

**Caution!** Instrument must be accessible at all times for both operating and servicing. Access must not be obstructed in any way!

Feeder should be interlocked with a no-flow protection device to automatically shut-off the pumps when there is no flow!

Pumps and accessories must be serviced and repaired by qualified and authorized personnel only!

Always discharge the liquid end before servicing the instrument!

Empty and rinse the liquid end before work on a pump which has been used with hazardous or unknown chemicals!

Always read chemical safety datasheet!

Always wear protective PH2othing when handling hazardous or unknown chemicals!

Instrument must be operated / serviced by trained technicians only!

All connection operations must be performed while the instrument is not connected to main supply!

# 1. Introduction

LDPHPH is a digital microprocessor based double pH controller with temperature reading. Main working modes are: On/Off, PWM proportional and PWM fixed.

Working ranges are: (both) pH: from 0 to 14pH

All information are provided through a large backlit LCD display. Using a revolutionary wheel control the instrument can be easily programmed. LDPHPH is housed in a IP65 plastic box.

## INPUTS:

- Stand-by
- Flow
- pH1 Level
- pH2 Level
- pH3 Level
- Double pH Probe
- Temperature Probe

## OUTPUTS

- 3 proportional outputs (pH1 and pH2)
- 2 ON/OFF digital outputs (pH1 and pH2)
- Main alarm output

# 2. The wheel

Located in the upper right side of LDPHPH there is a wheel that must be used to control the instrument. Wheel can be rotated in both directions to scroll over the menus and / or pressed to confirm highlighted selection / value.

NOTE: Once changes are made press "OK" to save and exit from submenu. Press "ESC" to exit without saving.



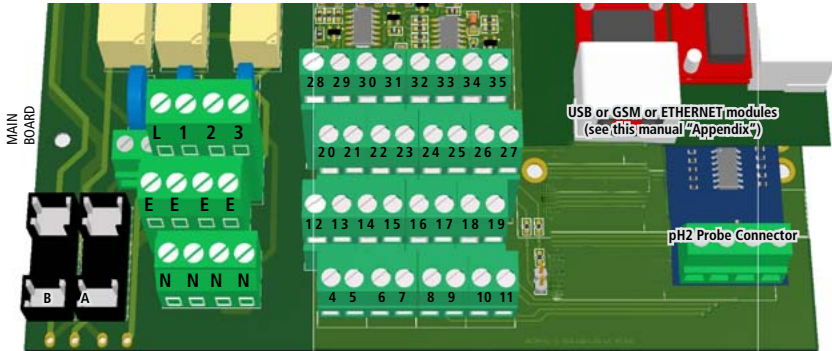
Rotate wheel to scroll through menus or options



Press wheel to select highlighted option

### 3. Mainboard Connections

Unplug instrument from main power supply then perform connections by following the above picture.



A: Main Fuse (6A T)

B: Outputs Fuse (3.15A T)

L(Live) - E (Earth) - N (Neutral): 85÷264VAC - 50/60 Hz

1(Live) - E(Earth) - N(Neutral): 85÷264VAC - 50/60 Hz Relay 1 Output "RELAY PH1 D". To use with ON/OFF or PWM device

2(Live) - E(Earth) - N(Neutral): 85÷264VAC - 50/60 Hz Relay 2 Output "RELAY PH2 D". To use with ON/OFF or PWM device

3(Live) - E(Earth) - N(Neutral) : 85÷264VAC Alarm output

29(-) - 28(+): Current output mA1 for pH1

29(-) - 30(+): Current output mA2 for pH2

32(-) - 31(+): Current output mA3 (n/a)

32(-) - 33(+): Current output mA4 for temperature

35(-) - 34(+): Pulse Sender Water Meter

20(-) - 21(+): Opto coupled output "PULSE PH1-P2". To use with "IS" or "MF" series dosing pumps

22(-) - 23(+): Opto coupled output "PULSE PH2-P". To use with "IS" or "MF" series dosing pumps

24(-) - 25(+): Opto coupled output "PULSE PH1-P1". To use with "IS" or "MF" series dosing pumps

19(GND) - 26(+RS485) - 27(-RS485): RS485

12(+ Brown) - 13(Black) - 14(- Blue) - 15(GND): Proximity sensor mod. "SEPR"

9(-) - 8(+): Standby contact

9(-) - 10(+): LIV1 PH2, Level 1 contact

17(-) - 16(+): LIV2 PH1, Level 2 contact

17(-) - 18(+): LIV3 PH1, Level 3 contact

4(Green) - 5(Brown) - 6(White) - 7(Yellow): PT100 temperature probe

Warning: Connections must be performed by qualified and trained personnel only.

## 4. Main Screen

When into normal operating mode, LDPHPH shows its main screen:



Main screen is divided into 3 zones.

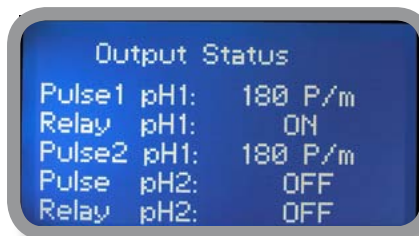
(1) UNITS "pH1" is the measuring unit for pH probe connected to the display side of the board.  
"pH2" is the measuring unit for pH probe connected to the main board.

(2) VALUES These numbers are values read by the probes with activities status for each output.

(3) TEMPERATURE Read temperature (if installed).

### STATUS

Completely rotate wheel to obtain current status (see next page) and outputs status list.



The use of "PUMP" word in this manual means a "DOSING SYSTEM" connected to the instrument outputs!

## 5. Quick status check

From main screen **completely rotate clockwise** the wheel to review main instrument parameters and current outputs status.



```

Status
Time:      00 :00
Date:      01/Jan/00
pH1:      5.03
pH2:      5.03
    
```

Local Time  
Local Date  
pH1 probe reading  
pH2 probe reading



```

Status
Temperature: 00.0 °C
Dosing Alarm: NO
Probe Fail: NO
Alarm: NO
    
```

Temperature probe reading  
Dosing alarm condition  
Probe failure status  
Alarm contact status



```

Status
Flow:      YES
Level:     NO
Cal.pH1Fail: YES
Cal.pH1day: 00/Jan/00
    
```

Flow contact status (SEPR)  
Tank Level 1 status  
Last pH1 calibration result  
Last pH1 calibration date



```

Status
Cal.pH2 Fail: YES
Cal.pH2 day: 00/Jan/00
Cal.Temp Fail: YES
Cal.Temp day: 00/Jan/00
    
```

Last pH2 calibration result  
Last pH2 calibration date  
Last Temp. calibration result  
Last Temp. calibration date



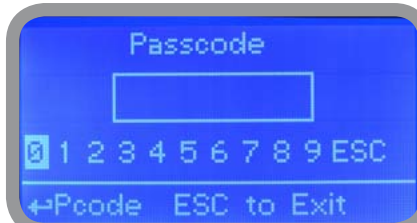
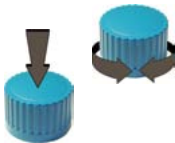
```

Outputs Status
Pulse1 pH1: 180 P/m
Relay pH1: ON
Pulse2 pH1: 180 P/m
Pulse pH2: 180 P/m
Relay pH2: ON
    
```

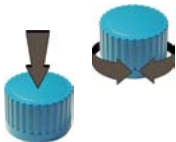
Outputs Status  
See mainboard (page 4) for related connections.

## 6. Password

To grant access into "Main Menu" press the wheel from main screen and enter the passcode.  
If this is the first time here then the passcode is 0000 (factory preset). Press wheel 5 times to enter into "Main Menu".  
Otherwise press the wheel 1 time and enter the passcode. Numbers can be selected rotating the wheel.



To set a new passcode choose "PARAMETERS" from "Main Menu", move on "New Pcode", Click on wheel and enter a four numbers code. Click on "EXIT" and choose "YES" to save request. The new passcode is now ready.




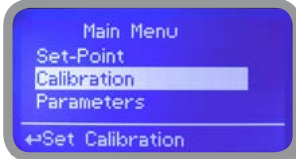



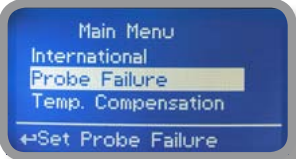






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Lost passcode ?

Please don't forget the passcode (if changed). In the unfortunate event, please call your local distributor for unlocking procedure. There is no way for you to recover lost passcode.

## 7. "Main Menu" list

To grant access into "Main Menu" enter the passcode (as described in previous chapter). Once into "Main Menu" rotate the wheel to scroll through all the options available.

		Setpoint (see page 9) Calibration (see page 14) Parameters (see page 17)
		Output manager (see page 18) Instrument reset (see page 19) Dosing alarm (see page 20)
		International (see page 21) Probe Failure (see page 22) Temp. Compensation (see page 23)
		Flow contact mode (see page 24) Service (see page 24)
		Log Setup (see page 25) RS485 Setup (see page 25) Out of Range Alarm (see page 26)
		SMS** menu (see page 30) mA Outputs*** (see page 26) Exit (to main screen)

\*\*Option available if "SMS module" is installed  
\*\*\*Option available on "current outputs" instrument version only

## 8. "Set-Point", pH (On/Off)

"PH1 P1", "PH1 P2", "PH2 P" outputs can be set using: On/Off, Proporzionale (%) or OFF setpoint modes.  
"PH1 D", "PH2 D" output, can be set using: On/Off mode, Proportional PWM, PWM fixed or OFF modes.



### 8.1 "Set-Point", pH (on/off)

All ph outputs can be set into this mode.

On/Off mode set 2 values that enable or disable pH pump.

Once into "pH1 Pulse Set Point menu" move cursor on "Working Mode" and press it.



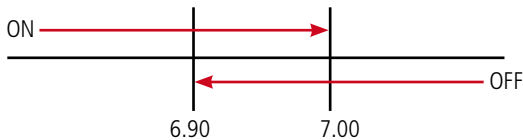
Pulse Speed: this is the frequency that the controller sends to the pump to stroke when it's on

ON/OFF mode dosing ALKALINE

Set pH 7.00 OFF and 6.90 ON.

Instrument will operate pH pump until reading value will be 7.00pH.

At 7.00pH value the pump will be disabled until reading value will go below 6.90pH.



## 8.2 "Set-Point", pH (on/off)

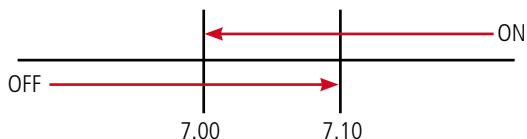
All pH outputs can be set into this mode.

ON/OFF mode dosing ACID

Set pH 7.00 OFF and 7.10 ON.

Instrument will operate pH pump up to reach 7.00pH.

At 7.00pH the pump will be disabled until reading value will raise to 7.10pH.



To end procedure move cursor on "OK" and press wheel. Choose "SAVE" to save setup or "NO" to discard changes.



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Did you know ?

In chemistry, an alkali is a basic, ionic salt of an alkali metal or alkaline earth metal element. Alkalis are best known for being bases (compounds with pH greater than 7) that dissolve in water. The adjective alkaline is commonly used in English as a synonym for base, especially for soluble bases. This broad use of the term is likely to have come about because alkalis were the first bases known to obey the Arrhenius definition of a base and are still among the more common bases. Since Brønsted-Lowry acid-base theory, the term alkali in chemistry is normally restricted to those salts containing alkali and alkaline earth metal elements.

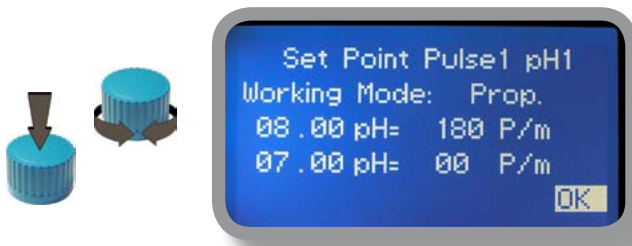
An acid (often represented by the generic formula HA [H+A-]) is traditionally considered any chemical compound that, when dissolved in water, gives a solution with a hydrogen ion activity greater than in pure water, i.e. a pH less than 7.0. That approximates the modern definition of Johannes Nicolaus Brønsted and Martin Lowry, who independently defined an acid as a compound which donates a hydrogen ion (H+) to another compound (called a base). Common examples include acetic acid (in vinegar) and sulfuric acid (used in car batteries). Acid/base systems are different from redox reactions in that there is no change in oxidation state.

### 8.3 "Set-Point", pH (proportional)

"PH1 P1", "PH1 P2", "PH2 P" outputs can be set into this mode.



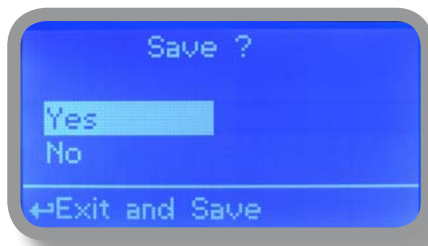
This mode set pulses between two values that enable or disable pH pump.



PROPORTIONAL MODE between 7pH(0 P/m) and 8pH (180 P/m)). [P/m: pulses per minute]

This mode operates pH pump for values greater than 8pH having maximum dosing capacity (180 P/m) and will stop to dose for values lower than 7 pH. For values within 7.5 pH the pump will be on with 90 P/m dosing capacity based on a 180 P/m scale.

To end procedure move cursor on "OK" and press wheel. Choose "SAVE" to save setup or "NO" to discard changes.



## 8.4 "PWM" Proportional, pH

"PH1 D" and "PH2 D" outputs can be set into this mode.

Pulse-width modulation (PWM) of a signal or power source involves the modulation of its duty cycle, to either convey information over a communications channel or control the amount of power sent to a load.

This mode works over a settable (0 to 100 seconds) time to switch on or off selected output.

Time resolution is 5 seconds, 5 steps. During this time if reading value will move towards a set value (on or off) the PWM will operate the output on timed basis. Reaching the set value the PWM will permanently leave on or off the output.

Parameters to set are:

Unit Value + %: (time activity towards set value. 0% means 0 seconds. 100% means 100 seconds.)

pH range: two pH value between PWM operates.

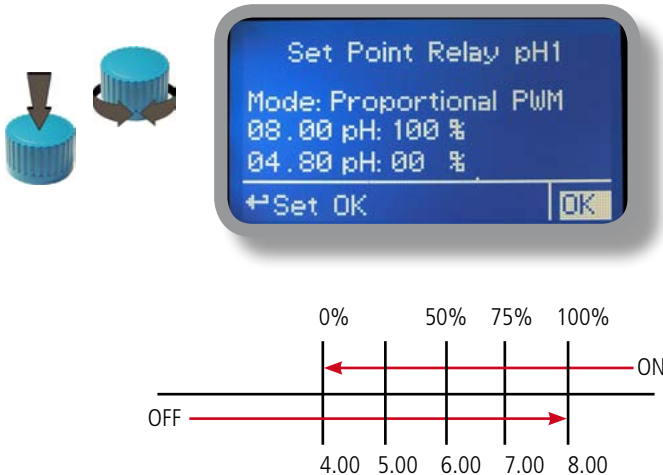
E.g. set first pH value 8.00 = 100% and second pH value 4.0 = 0%.

For reading value  $\geq 8.00$  output will permanently be ON.

For reading value  $\leq 4.0$  output will permanently be OFF.

For reading value of 7.00 pH the output will be OFF for 25 secs and ON for 75 secs.

For reading value of 6.00 pH the output will be OFF for 50 secs and ON for 50 secs.



## 8.5 "PWM" Fixed, pH

"PH1 D" and "PH2 D" outputs can be set into this mode.

Pulse-width modulation (PWM) of a signal or power source involves the modulation of its duty cycle, to either convey information over a communications channel or control the amount of power sent to a load.

This mode works over a settable (0 to 100 seconds) time to switch on or off selected output.

Time resolution is 5 seconds, 5 steps. During this time if reading value will move towards a set value (on or off) the PWM will operate the output on timed basis. Reaching the set value the PWM will permanently leave on or off the output.

Parameters to set are:

pH range: two pH value between PWM operates.

Ton: "ON" time if output is active.

Toff: "OFF" time if output is active.

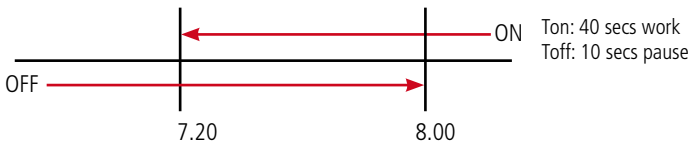
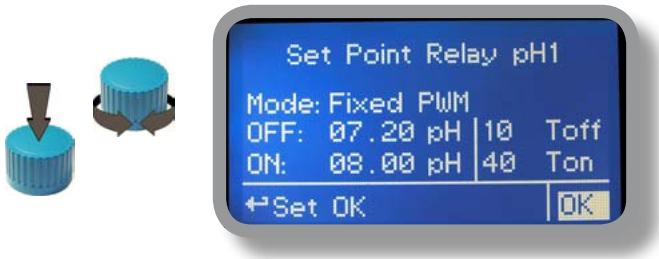
E.g.: set first pH value (OFF) at 7.20 and second pH value (ON) at 8.00.

Set "work-pause" activity with Toff 10 seconds and Ton 40 seconds

For reading values  $\geq$  to 8.00 output will be active (ON) into "WORK-PAUSE" mode based on Ton and Toff.

For reading values  $\leq$  7.20 output will be OFF.

Other reading values involve HYSTERESIS working mode. Reaching 7.20pH will permanently switch OFF the output until reading value will raise to 8.00 pH.



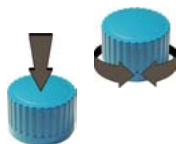
## 9. "Probe Calibration", pH1 and pH2

pH calibration procedure involves two calibration points and it requires two buffer solutions. Default buffer solutions are pH 4.00 and pH 7.00. pH reading value can be also 30°C temperature compensated from "pH compensation" menu. From "Menu Calibration" choose "pH probe".



In the following example instrument will calibrate pH using default buffer solutions values.

Note: this procedure assumes that instrument is correctly configured and a working pH probe connected. Otherwise unattended results may occur.



pH7

Calib 1st Point.

Once into "pH Calibration" menu move wheel on "P1" then press wheel to enter into first point calibration submenu. Prepare 7.00pH buffer solution and dip probe's sensor on it. Wait until reading value is stable and according to buffer solution value move wheel until it is the same on display ("Cal. at" field). Default value is 7.00pH. To end procedure move cursor on "OK" and press wheel to proceed to next step.

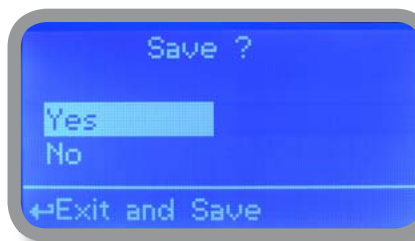
Note: buffer solution value may change if environment temperature it's different than 20°C. Read solution's label for more information. According to this occurrence "pH Default" must be changed.

## 9. "Probe Calibration", pH1 and pH2



Calib 2nd Point.

Move wheel on "P2" then press wheel to enter into second point calibration submenu. Prepare 4.00pH buffer solution and dip probe's sensor on it. Wait until reading value is stable and according to buffer solution value move wheel until it is the same on display ("Cal. at" field). Default value is 4.00pH.



To end procedure move cursor on "OK" and press wheel to proceed to "Save" request screen. Move wheel on "YES" to save or "NO" to discard changes.

Note: buffer solution value may change if environment temperature it's different than 20°C. Read solution's label for more information. According to this occurrence "pH Default" must be changed.

## 9.1 "Probe Calibration", °C - Temperature

A professional thermometer is required to obtain a reliable calibration. From "Menu Calibration" choose "Temp probe".



Note: This procedure assumes that instrument is correctly installed and configured, connected to a working PT100.. Calibrate using plant's temperature otherwise unattended results may occur.

Using an external thermometer read actual temperature and edit related field "Cal. at". Confirm by pressing wheel.



To end procedure move cursor on "OK" and press wheel to proceed to "Save" request screen. Move wheel on "YES" to save or "NO" to discard changes. If an error occurred during calibration procedure then the instrument will show an error message and will ask to proceed to a new calibration, cancel current operation or restore default settings.

## 10. "Parameters"

From "Menu Calibration" choose "Parameters". This menu allows to set a delay (max 60 minutes) before pumps begin to feed. Furthermore use this menu to set pH pump startup priority and to change default passcode.

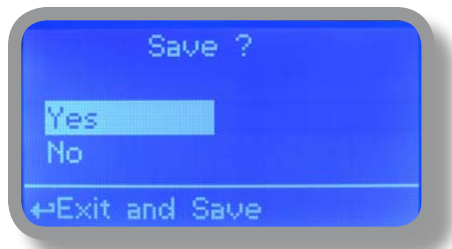


Feeding Delay.

Move on "Feeding Delay" then press wheel. Choose a value between 0 (disabled) and 60 minutes (maximum delay time). This feature can be used to accord a startup delay for the pumps. Delay occurs when instrument is powered or after a "NO FLOW" contact recovery.

New Pcode.

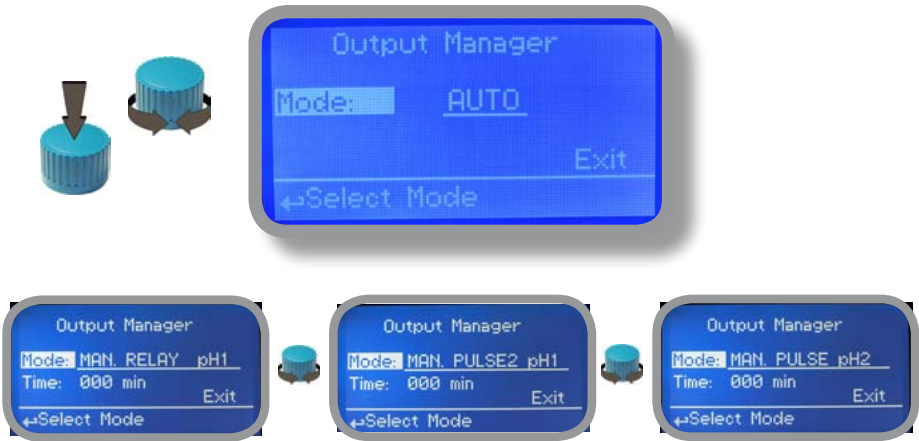
See page 10.



To end procedure move cursor on "OK" and press wheel to proceed to "Save" request screen. Move wheel on "YES" to save or "NO" to discard changes.

# 11. "Output Manager"

From "Menu Calibration" choose "Output Manager". This menu allows to manually operate all outputs for a settable time. Set to "AUTO" for normal operating mode. Set to "OFF" to permanently disable outputs.



Press wheel to move cursor on "TIME" field. Once here, choose a working time between 0 (disabled) or 199 minutes. Move on "EXIT", then press wheel.



Choose "YES" to save changes. Exit from main menu. Main display will show a countdown for selected output. To stop this countdown go back to "Output Manager" menu and choose "AUTO" as working mode or wait until countdown ends. This function can be used for priming purposes.

## 12. "Instrument Reset"

To restore instrument to its default values (including password) once into "Instrument Reset" menu, press wheel then change value to "ON", press wheel again, move on "OK" then finally press wheel. The instrument display will show "CHECKSUM ERROR". Press wheel to return into "Main Menu". Move on "EXIT", then press wheel. The instrument is now restored to factory default. Please repeat all calibration procedures and programming parameters.



### 13. "Dosing Alarm"

This function allows to set a maximum time for reaching setpoint. At the end of set time it's possible to choose between "DOSE" (the pump will continue to DOSE ignoring probe's readings) or "STOP" (the pump will stop to dose). Function can be set for one or both the pumps and can be disabled setting "OFF" as option.

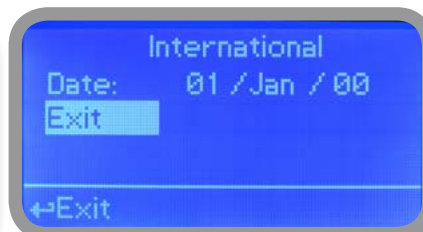
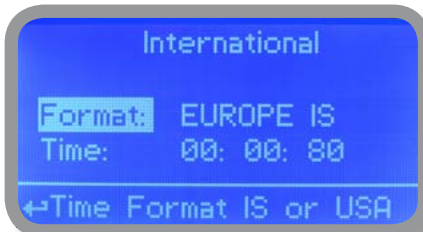


To end procedure move cursor on "OK" and press wheel to proceed to "Save" request screen. Move wheel on "YES" to save or "NO" to discard changes.



## 14. "International"

Use this menu to set international parameters as UNIT FORMAT (Europe IS or USA), Local Time and Date.



Format.

Use this option to use European or USA units format. See table for differences.

EUROPE IS (International Standard)	USA
Date (DD/MM/YY)	Date (MM/DD/YY)
Time 24h	Time AM / PM

Time.

Use this option to set local time.

Date.

Use this option to set date.

Move on exit to end changes.



To end procedure move cursor on "OK" and press wheel to proceed to "Save" request screen. Move wheel on "YES" to save or "NO" to discard changes.

## 15. "Probe Failure"

This function allows to set a maximum time when probe's reading remain fixed (probably) due to malfunctioning. At the end of set time it's possible to choose between "DOSE" (the pump will continue to DOSE ignoring probe's readings) or "STOP" (the pump will stop to dose). Function can be set for one or both the pumps and can be disabled setting "OFF" as option.



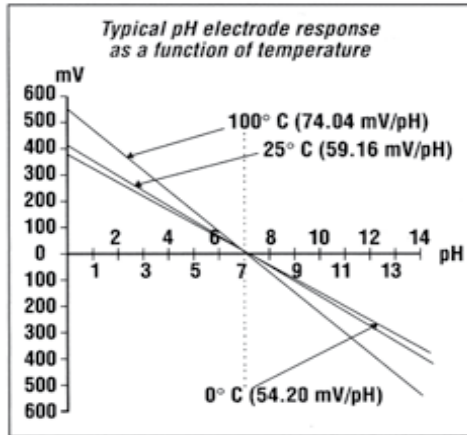
E.g. To set pH1 pump to stop after time ends and probe doesn't change reading values press wheel, choose maximum time, press wheel move on next field and choose "STOP". Time can be disabled (off) or set between 100 and 254 minutes. When satisfied with settings move on exit and press wheel.

To end procedure move cursor on "OK" and press wheel to proceed to "Save" request screen. Move wheel on "YES" to save or "NO" to discard changes.

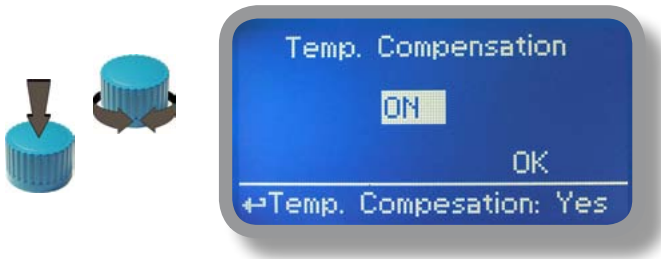


## 16. "Temp. Compensation" - Temperature compensation

pH measurements are temperature dependent. The degree to which temperature affects mV readings varies from solution to solution and can be calculated using the following graphic.



Instrument has either fixed or adjustable automatic temperature compensation referenced to a standard temperature of 25°C.

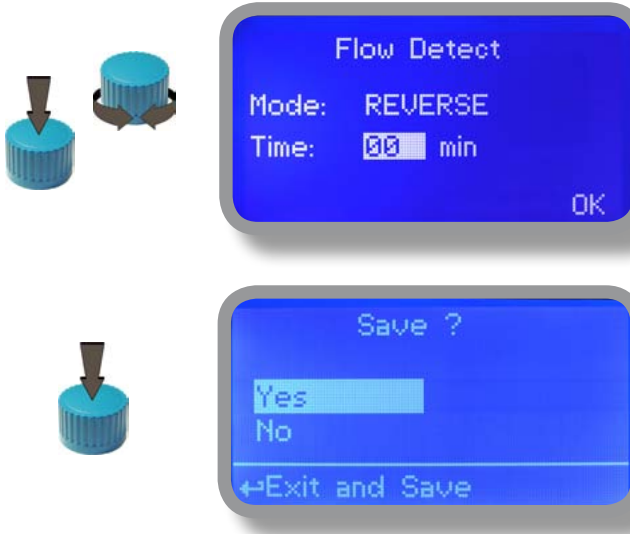


To end procedure move cursor on "OK" and press wheel to proceed to "Save" request screen. Move wheel on "YES" to save or "NO" to discard changes.

## 17. "Flow Contact"

Flow contact (see "SEPR" blocks on page 4) can be enabled to stop a dosing procedure using a N.O. contact mode (normally open) or N.C. contact mode (normally closed) when status on blocks changes. Rotate wheel to choose between: "DISABLE", "REVERSE" (N.O. contact) or "DIRECT" (N.C. contact).

Furthermore "Flow contact" can start after a specified time when contact status changes. To set it move wheel on "Time:00 min", click it and rotate to choose time (from 0 to 99 minutes). Confirm selection by clicking wheel.



To end procedure move cursor on "OK" and press wheel to proceed to "Save" request screen. Move wheel on "YES" to save or "NO" to discard changes.

## 18. "Service"

This "view only" menu shows probes reading live. Press "ESC" to exit.



## 19. "Log Setup"

Log setup stores instrument activities when an alarm (flow, level, out of range reading, etc.) occurs.



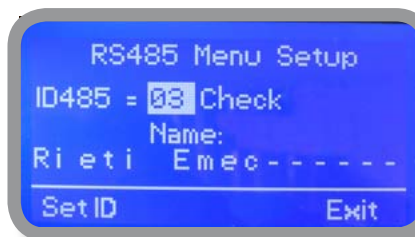
Log activity recording can be started by moving wheel on "Mode: Disable" and changing it to "Mode: Enable". Log activity starting time can be set to begin at specified time by entering "Time". Activities data are collected every specified hour or minutes. Edit this parameter by moving wheel on "Every: 00:00" and changing it to desired time.

ID and Station Name as appears on a received SMS from instrument



## 20. "RS485 Setup"

Prior to use advanced communication functions (e.g.: SMS alarm service or remote communication) the instrument must have a unique ID NUMBER (move wheel on "OK" to check it) and ID NAME (station name). Rotate wheel and edit fields. If ID number has already assigned an error message will follow. In this occurs try using another number.



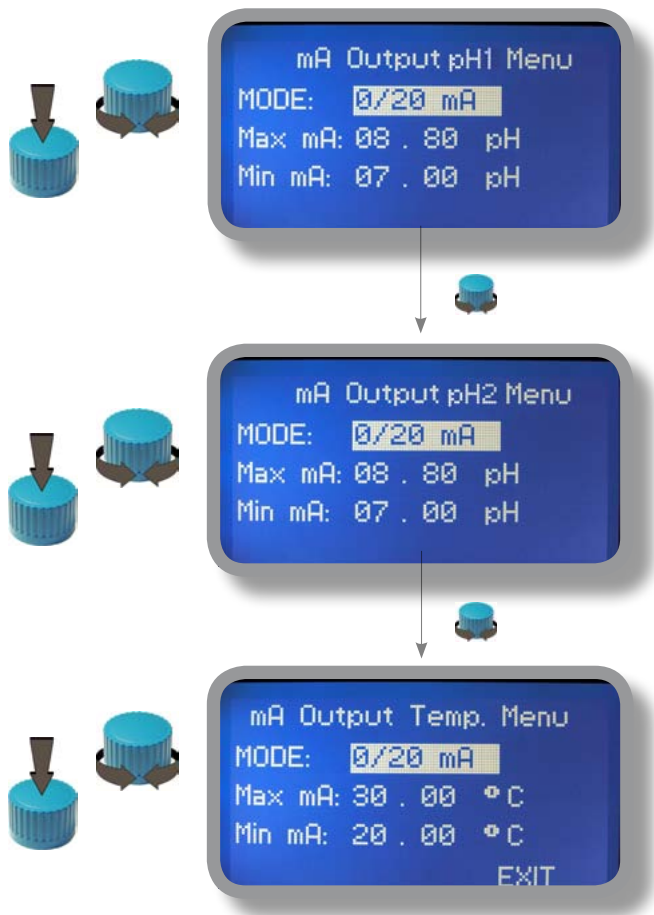
## 21. "mA Outputs"

This menu allows to configure mA current outputs for pH (1 and 2) and Temperature channels. Options to set are:

**MODE** (selectable between 0-20 or 4-20 mA current output)

**Max mA:** maximum probe's reading value at 20 mA current

**Min mA:** minimum probe's reading value at 0 or 4 mA current



Rotate wheel to move within all 3 channels. Click wheel to select parameter and rotate wheel to change it. Click wheel again and rotate wheel to move cursor on next parameter. To end procedure move cursor on "EXIT" and press wheel to proceed to "Save" request screen. Move wheel on "YES" to save or "NO" to discard changes.

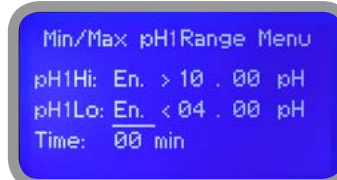
This menu is available only for "LDPHxx" instrument series with current outputs option enabled.

## 22. "Out of range alarm"

"Out of range alarm" menu defines the minimum and maximum pH1 and pH2 probe read value before to stop dosing activity and to show an alarm message.

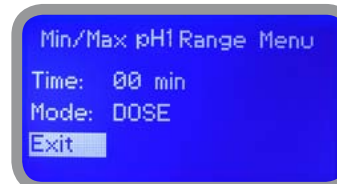


Move wheel on "Min/Max pH Range" to set "out of range" condition for pH probe then click on wheel to enter into "Min/Max Range menu".



Move wheel on "pH Hi: Dis." and change status from "Dis." (option disabled) to "En." (option enabled) by clicking on wheel and rotating it. Press wheel again and move on next field. Press wheel and enter a value for HIGH alarm.

Repeat procedure for "pH Lo: Dis." and enter a value for LOW alarm.



As last option enter "Time" (max 99 minutes) after which if lower or higher read value condition stays then the alarm occurs (to set into mode field).

To change alarm mode move wheel on "Mode", press it and choose between "DOSE" (connected pumps will not stop dosing activity when read value is out of range) or "STOP" (connected pumps will stop dosing activity when read value is out of range and an alarm message is displayed).

## 23. Technical Data.

Power Supply: 85÷264 VAC  
 Working Range: pH: 0 ÷ 14  
 Environmental Temperature: -10 ÷ 45°C (14 ÷ 113°F)  
 Chemical Temperature: 0 ÷ 50°C (32 ÷ 122°F)  
 Installation Class: II  
 Pollution Level: 2  
 Transporting and storing temperature : -10 ÷ 50°C (14 ÷ 122°F)  
 Sealing Protection: IP 65

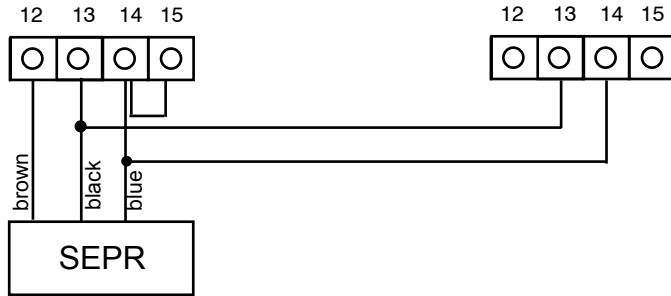
Product	Formula	Ceram.	PVDF	PP	PVC	SS 316	PMMA	Hastel.	PTFE	FPM	EPDM	NBR	PE
Acetic Acid, Max 75%	CH <sub>3</sub> COOH	2	1	1	1	1	3	1	1	3	1	3	1
Hydrochloric Acid, Concentrate	HCl	1	1	1	1	3	1	1	1	1	3	3	1
Hydrofluoric Acid 40%	H <sub>2</sub> F <sub>2</sub>	3	1	3	2	3	3	2	1	1	3	3	1
Phosphoric Acid, 50%	H <sub>3</sub> PO <sub>4</sub>	1	1	1	1	2	1	1	1	1	1	3	1
Nitric Acid, 65%	HNO <sub>3</sub>	1	1	2	3	2	3	1	1	1	3	3	2
Sulphuric Acid, 85%	H <sub>2</sub> SO <sub>4</sub>	1	1	1	1	2	3	1	1	1	3	3	1
Sulphuric Acid, 98.5%	H <sub>2</sub> SO <sub>4</sub>	1	1	3	3	3	3	1	1	1	3	3	3
Amines	R-NH <sub>2</sub>	1	2	1	3	1	-	1	1	3	3	1	1
Sodium Bisulphite	NaHSO <sub>3</sub>	1	1	1	1	2	1	1	1	1	1	1	1
Sodium Carbonate (Soda)	Na <sub>2</sub> CO <sub>3</sub>	2	1	1	1	1	1	1	1	2	1	1	1
Ferric Chloride	FeCl <sub>3</sub>	1	1	1	1	3	1	1	1	1	1	1	1
Calcium Hydroxide (Slaked Lime)	Ca(OH) <sub>2</sub>	1	1	1	1	1	1	1	1	1	1	1	1
Sodium Hydroxide (Caustic Soda)	NaOH	2	1	1	1	1	1	1	1	2	1	2	1
Calcium Hypochlor(Chlorated Lime)	Ca(OCl) <sub>2</sub>	1	1	1	1	3	1	1	1	1	1	3	1
Sodium Hypochlorite, 12.5%	NaOCl + NaCl	1	1	2	1	3	1	1	1	1	1	2	2
Potassium Permanganate, 10%	KMnO <sub>4</sub>	1	1	1	1	1	1	1	1	1	1	3	1
Hydrogen Peroxide, 30% (Perydrol)	H <sub>2</sub> O <sub>2</sub>	1	1	1	1	1	3	1	1	1	3	3	1
Aluminium Sulphate	Al <sub>2</sub> (SO <sub>4</sub> ) <sub>3</sub>	1	1	1	1	1	1	1	1	1	1	1	1
Copper-II-Sulphate (Roman Vitriol)	CuSO <sub>4</sub>	1	1	1	1	1	1	1	1	1	1	1	1

### Resistance rating

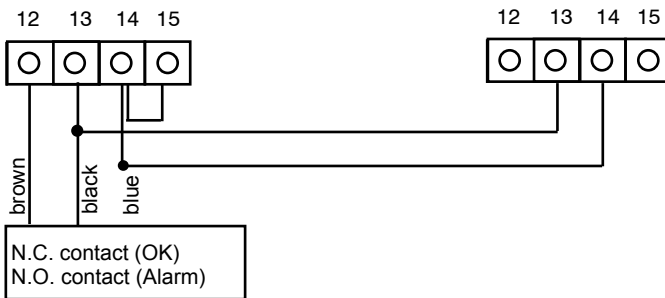
Resistant	1
Fairly resistant	2
Not resistant	3

## 24. SEPR configuration

### SEPR "Flow Sensor" configuration for two instruments



### Configuration of a Flow Switch with a voltage free contact and two instruments

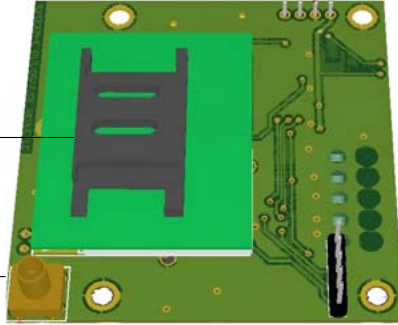


# Appendix A - "SMS/GSM module"

Located under mainboard cover there is a four pins connector that can be used to install USB, ETHERNET or MODEM modules. Modules come pre-installed upon request and may appear different as shown (different configurations). **"SMS/GMS module" can be configured to send SMS messages containing critical instrument information.**

Insert here standard  
SIM  
Unplug instrument  
from main supply  
before to open it.

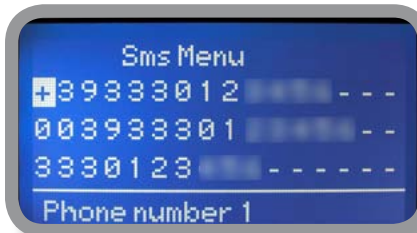
GSM modem antenna connector



### To obtain reliable results with this feature please check the following list:

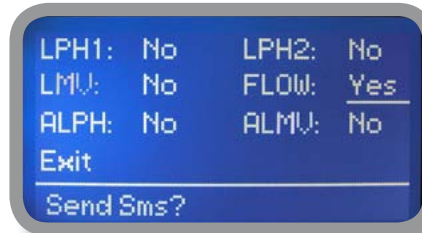
- Make certain the antenna location is not shielded by metal objects or near sources of electrical 'noise'.
- Do not route the cable where it could be pinched in doors, windows etc.
- Secure the antenna cable
- Ensure that SIM into "SMS/GSM module" is properly inserted, activated and within operator range.
- Set instrument ID / NAME from "RS485 Setup" menu (see page 28) and configure "Out of Range Alarm" menu (see page 30).

Within "Main menu" select "SMS MENU" to enable SMS service and enter SMS receiver phone numbers.



Up to three numbers for sending SMS can be stored into LDPHRH memory. SMS recipient will receive an SMS containing instrument ID, NAME and status. Number formats can be stored using international prefix "+", international prefix "00" or local.

WARNING: THIS FUNCTION COULD NOT BE FREE OF CHARGE. DEPENDING ON YOUR OPERATOR CONTRACT IT COULD GENERATE PAYING SMS TRAFFIC !



To enable warning message for related alarm condition choose "YES", to disable choose "NO". Then move wheel on Exit and SAVE configuration. **SMS will be sent when one or more ("YES") fields will change.**

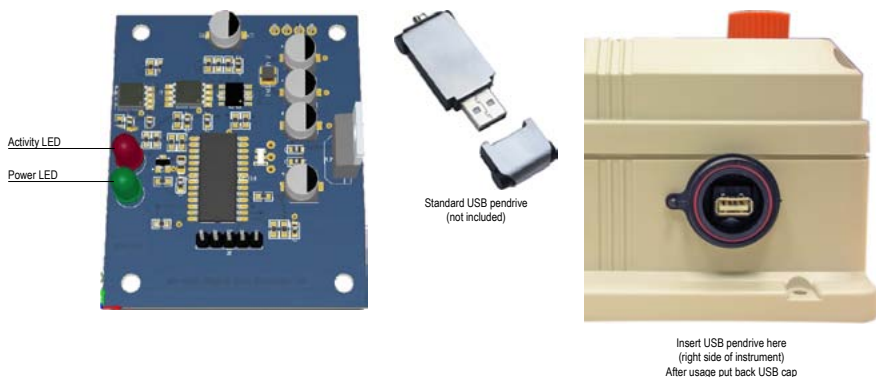
LPH1 or 2 : level alarm for PH1 or PH2 levels  
LMV: level alarm for PH2  
FLOW: flow alarm  
ALPH: out of reading range for pH probe  
ALMV: out of reading range for PH2 probe

WARNING: TO AVOID UNSOLICITED MESSAGES USE CAREFULLY THIS SETUP!

## Appendix B - "USB data log module"

Located under mainboard cover there is a four pins connector that can be used to install "USB data log module" or "SMS module". Modules come pre-installed upon request and may appear different as shown (different configurations).

"USB data log module" records instrument activities. These information can be permanently stored into a standard USB pendrive. Pendrive can be connected to a PC using "LDPHxx DATA LOGGER" software to review and print instrument's activities. **To obtain reliable results with this feature please set instrument ID and NAME from "RS485 Setup" menu (see page 28) and activate log recording from "LOG SETUP" menu (see page 28).**



### HOW TO RECORD INSTRUMENT'S ACTIVITIES INTO USB PENDRIVE ?

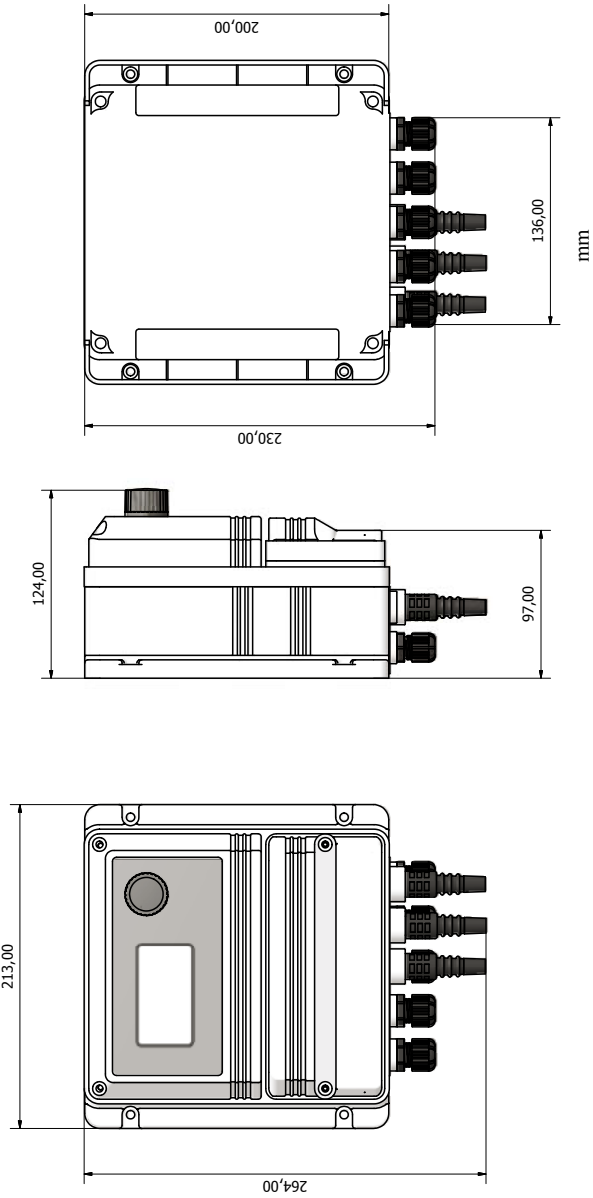
Insert USB pendrive into USB connector (located on the right side of instrument). Instrument will save data log on USB pendrive. After succeeded in saving data it will ask if delete instrument's log or not (anyway USB pendrive will not be formatted). Move wheel on "YES" to delete log info from instrument and return to main screen or "NO" to leave log info on instrument and return to main screen. **Wait about 30 seconds to safety remove the USB pendrive.**



### HOW TO REVIEW INSTRUMENT'S ACTIVITIES RECORDED INTO USB PENDRIVE ?

It's necessary to install the "LDPHxx Data Logger" software to review USB pendrive info on a PC. Follow installation instructions during software setup to correctly complete this procedure. Once the "LDPHxx Data Logger" has been installed and launched insert your USB pendrive into any available USB connector of PC. Instrument's log will be automatically uploaded into PC memory. See "LDPHxx Data Logger" quick guide for more info.

# Appendix C - Dimensions



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The information contained may be changed at any time without prior notification or obligation.







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