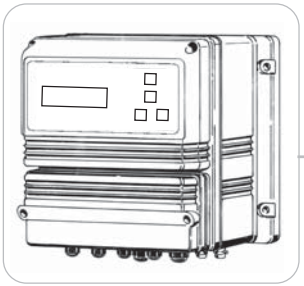
This manual contains important safety information about installation and use of this equipment. Ignoring this information could result in injuries or damages.

It is strictly forbidden to use this equipment with radioactive chemicals !



OPERATING MANUAL FOR “LPHRHD” INSTRUMENT SERIES

Read carefully!

ENGLISH Version

R2-12-05

"LPHRHC" series instruments comply 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)

GENERAL SAFETY GUIDELINES

Danger!

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

When using instrument with aggressive chemicals observe the regulations concerning the transport and storage of aggressive fluids!

When installing outside European Community, always observe national regulations!

Manufacturer is not liable for any unauthorized use or misuse of this product that can cause injury or damage to persons 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.

Instrument and accessories must be serviced and repaired by qualified and authorised personnel only!

Always read chemical safety datasheet!

Always wear protective clothing when handling hazardous or unknown chemicals!

INDEX

INTRODUCTION

“LPHRHD” instrument measures pH and Redox (mV). It has two set-point: On/Off or proportional timered. pH and ORP is shown on a LCD backlight display. Instrument is housed in a plastic case with IP65 protection. Dimensions are: 225x215x125mm. A keyboard is used for data input and all measures are shown at the same time on the display.

INPUT SIGNAL

Instrument has two analog input for pH and mV. Stand-by input disable the dosing pumps connected. Input is on when stand-by contact is closed.

DISPLAY

When the instrument is powered the display shows:

```
7.24 pH     006mV          fig.1
  0 %   100 %
```

Upper values are pH and mV. Lower values are the dosed product quantity.

PASSWORD

Access to the SETUP menu is protected by a password made of four numbers. By default the password is: “0 0 0 0”. The password may be entered or modified.

PASSWORD PROGRAMMING

The instrument must not be into “off” mode when changing password. Keep pressed “ENTER” key for about 3 seconds.

The display shows:

```
Enter Password          fig.2
>0 0 0 0
```

Press “ENTER”. The display shows:

```
Setup Menu              fig.3
<Set-Point>
```

Using cursor keys choose “Parameter” Then press “ENTER”. The display shows:

```
DELAY: 00  MODE  1      fig.4
NEW  PW:  0  0  0  0
```

Press “ESC” key twice. Edit the new password using cursor keys. Press “ESC” to move on next digit. Then press “ENTER”. The display shows:

```
DATA SAVED              fig.5
```

The instrument stays into programming mode. Press “ESC” to exit.

DELAY AND MODE

From fig. 4 the delay mode can be set. The delay time (0÷60 min) delays the activation of the dosing activity after start up or during stand by mode. Into Mode 1 (standard functioning way) dosing activity of acid and chlorine is simultaneous.
Into Mode 2, dosing activity of chlorine follows pH stabilization. Press ENTER to confirm the data, the display will show for few seconds:

DATA SAVED fig. 5

Press “ESC” to return to operating mode.

SPECIAL FUNCTIONS

On/Off mode.
To turn on or off the instrument keep pressed “UP” key from fig.1 until the display shows “OFF”. Repeat procedure to set the instrument into On mode.

Information view.
For a comprehensive list of values and set functions, keep pressed “ESC” key from fig. 1 and then use “UP” or “DOWN” keys to scroll through the information. Press “ESC” key to return into normal view.

STAND-BY SKIPPING

When the instrument is powered there is a stand-by time before it become operative. To avoid this time press “ENTER” key.

RESET

To restore instrument at its original default values see the following procedure:

1) unplug instrument from main supply

2) keep pressed “UP” and “DOWN” key while plugging the instrument into main supply.

3) wait until the instrument shows “loading default settings”. Press any key to continue.

PRIMING

This function allows the simultaneuous activation of the two pumps at maximum stroke.
During normal operation, prime the pumps as follows:
- Press the “DOWN” key and “ESC” key simultaneously to activate the pH pump
- Press the “DOWN key and “ENTER” key simultaneously to activate the ORP pump.

PROBES CALIBRATION

In order to obtain reliable measurements, the probes must be calibrated on installation.

pH section

Proceed as follows to calibrate the pH section using two buffer solutions:

1) Use two buffer solutions at 4pH and 7pH.
2) Measure buffer solutions temperature and verify that it's near the plant working temperature.
3) Insert the blue probe's plug into the instrument relative socket.
4) Remove probe's protective cap.
5) Wash the probe's head into water, dry it and immerse it in the pH 7 buffer solution.
6) Shake lightly the solution and leave the probe's head immersed.

On instrument enter into "Setup Menu" as shown on fig. 3. Choose "Probe Calib.". The display shows:

> pH Probe < fig.6
mV Probe

Selected option is "pH Probe". Press "ENTER" to confirm. Display shows:

Reading: 7.24 pH fig.7
Cal 1 at 7.00 pH

"Reading" is the direct reading of buffer solution. During calibration the value could be different from the buffer solution value. Wait for a stable reading. **The aim of the READING value is to obtain a stable reading during calibration.** The measurement value to calibrate is the lower one. Compare the "Cal" value with the information written on buffer solution label and, if necessary, change it using "UP" and "DOWN" keys. Otherwise press ENTER. Display shows:

Reading: 4.08 pH fig.8
Cal 2 at 4.02 pH

Remove the probe's head from the first buffer solution, wash it into water, dry it and dip it in the second buffer solution at pH 4. Shake it lightly and leave the probe immersed. During calibration the value could be different from the buffer solution value. Wait for a stable reading. **The aim of the READING value is to obtain a stable reading during calibration.** The measurement value to calibrate is the lower one. Compare the "Cal" value with the information written on buffer solution label and, if necessary, change it using "UP" and "DOWN" keys. Otherwise press ENTER. If the operation has been performed correctly, and the probe is in good condition, probe efficiency will be displayed for a few seconds on display:

SLOPE: 58 mV / pH fig.9
OFFSET: + 010 mV

If calibration procedure has failed the display shows:

SLOPE of pH fig.10
UNCALIBRATED

Redox (mV) CALIBRATION with DPD1 SYSTEM

Install properly the instrument, insert correctly the probes. Using a DPD1 proceed to read the plant value.

From fig. 11:

Reading: 006mV fig.11
Cal at 650mV

“Reading” is the value read by ORP probe.
“Cal” is the value where the DPD1 result must be edited. Use “UP” and “DOWN’” keys to enter the DPD1 value. Press “ENTER” to save.

If calibration has been correctly performed the instrument will show “Calibr. Success” for a short time.
If the insturment shows:

OFFSET of mV
UNCALIBRATED

then please repeat procedure.

PROGRAMMING SET POINTS

pH section
Enter into setup mode, and from fig. 3 press “ENTER”. Display shows:

> Set Point pH < fig.14
Set Point mV

Selected option is “Setpoint pH”. Press “ENTER”. Display shows:

→ 7.3 pH = 00 % fig.15
7.8 pH = 100 %

The cursor indicates the value which may be modified using the “UP” and “DOWN” keys. To shift the cursor to other fields, press the “ESC” key. The instrument may operate into proportional mode (%) and “ON - OFF” mode.

pH “ON-OFF” working mode
Set the two pH value on ON and OFF. The acid pump will start working at maximum capacity till the pH value read by the probe is 7.3 pH; it will stop when pH value read by the probe will be 7.8 pH.

pH Proportional working mode (%)
Regulate pH values at maximum and minimum % (e.g.: 7.3 pH = 0% and 7.8 pH = 100%).
The pump will start dosing at 7.3 pH; if pH value increases, the pump will increase the capacity proportionally till 100% of the maximum capacity at 7.8 pH.

If pH value should increase, the pump will continue dosing at the set percentage. If the maximum and minimum pH value are more close each other (e.g.: 7.3 and 7.4), the proportional range will be the same, but it will be strictly closed to the ON-OFF functioning mode concept. If the maximum and minimum pH value are the same, the pumps group will work in ON-OFF functioning mode.

When finished press ENTER. The display will confirm data saving by displaying the message SETPOINT SAVED, and returns to the display as in fig.6. To exit press ESC several times.

The pumps group can not works in both functioning mode at the same time, that is with a working value on % and the other on "ON-OFF".

Redox (mV) section (Proportional Mode)

Enter into setup mode, and from fig. 3 press "ENTER". The LPHRHD shows:

```
> Set Point pH <          fig.14
  Set Point mV
```

Move cursor on "Setpoint mV" by pressing "DOWN" key. Then press ENTER. The display will show:

```
> 0600mV  =  100%         fig.15
  0650mV  =  0%
```

The cursor indicates the value which may be modified using the "UP" and "DOWN" keys. To shift the cursor to other fields, press the "ESC" key. Instrument may operate in "ON/OFF" mode too.

Example: set instrument with following parameters:

```
→ 0600 mV  =  100%
  650mV  =  0%
```

It works if ...	It works as:
read value ≤ 0600mV	100 seconds on - 0 seconds off
read value = 0625mV	50 seconds on - 50 seconds off
read value ≥ 650mV	instrument off

The output can be activated as on ON/OFF output.

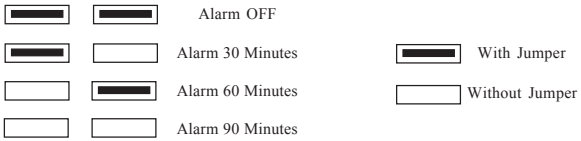
Redox "ON-OFF" working mode

Set the two mV value on ON and OFF. The Redox pump will start working at maximum capacity till the mV value read by the probe is 600mV; it will stop when mV value read by the probe will be 650mV.

MAXIMUM DOSING TIME ALARM

Once a set time for dosing is reached and the pumps haven't achieved the requested dosage the instrument will goes into alarm mode.
To ensure that the maximum dosing time alarm settings take effect, please perform the following:

- Unplug the controller from mains power
- Insert/remove the jumpers as per your desired setting
- Plug the power lead in again and power up
- Press and hold the ON/OFF button until the display shows OFF.
- Wait 5 secs
- Press and hold the ON/OFF button until the normal display comes ON again.



Note: perform this procedure ONLY when the instrument isn't powered.

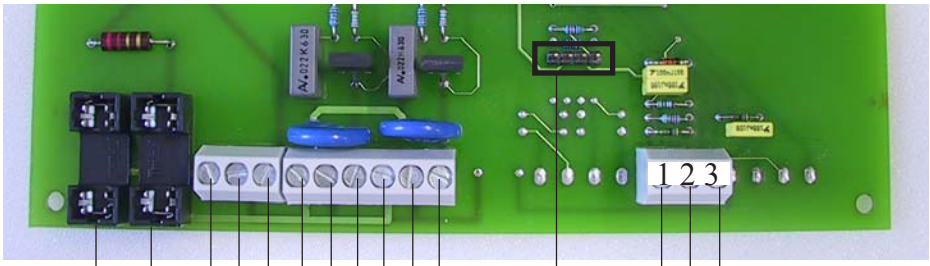
ELECTRICAL CONNECTIONS

Electrical wirings are made on the terminal blocks placed beneath the lower frontal cover, remove screws and flip it up to open it. Before to proceed with wiring ***unplug power supply*** and strictly observe the followings :

- check and ensure ground system works as per your country normatives
- install a (0.03 A) differential breaker in case of inefficient grounding
- wire grounding before any other connection
- check and ensure power supply is correct

See next page for board connections.

BOARD CONNECTIONS



Main Fuse[1]

Instrument Fuse 315mA

L N
230VAC

L N
Output SP1
pH

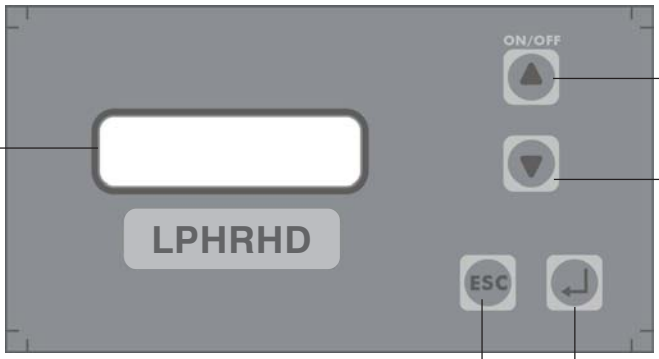
L N
Output SP2
ORP

Alarm Jumper

Signal +
"Sepr" Proximity Sensor

1: Blue Wire
2: Black Wire
3: Brown Wire
Before to install SEPR or Flow Switch remove shortcut between 2 and 3.
To connect a FLOW Switch use 2 and 3 (N.O.)

[1] **The main fuse value depends on the load:**
1. **triac output maximum value 1A slow blow**
2. **relay output maximum value 3.15A slow blow**



Display LCD

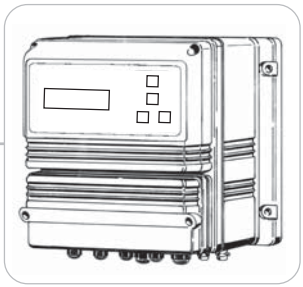
"UP" Key or "On/OFF" (Keep Pressed)

"DOWN" Key

"ESC" Key (Previous Menu)

"ENTER" Key (Confirm Operation)

Features may be changed without notification !



Tutti i materiali utilizzati per la costruzione dello strumento e per questo manuale possono essere riciclati e favorire così il mantenimento delle incalcolabili risorse ambientali del nostro Pianeta. Non disperdere materiali dannosi nell'ambiente! Informatevi presso l'autorità competente sui programmi di riciclaggio per la vostra zona d'appartenenza!