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

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

"LDRH" DIGITAL CONTROLLER
OPERATING MANUAL

Read carefully!

ENGLISH Version

R2-01-07

“LDRH” 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 authorized personnel only!

Always read chemical safety datasheet!

Always wear protective clothing when handling hazardous or unknown chemicals!

Index

Introduction

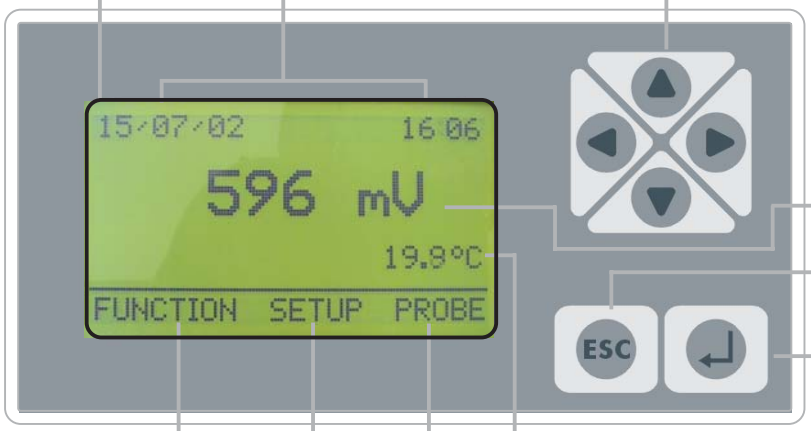
GENERAL DESCRIPTION

The LDRH controller is a compact and user friendly wall mounted instrument to control and measure Redox potential, providing reliable and accurate measurements. It features two ON/OFF set-point, two proportional set-points with digital outputs and a 0÷20 mA output proportional to the actual reading of the instrument that can be used for a chart recorder or remote control. The user interface is an intuitive keyboard and a baklit graphic display for a clear view even in dark environments. The controller is cased in a IP65 plastic box, dimensions are 225x215x125mm.

CONTROL PANEL

Display

The LCD display gives an high resolution of the reading value and shows actual operative status of the system.



Date and time

Keyboard

Range

ESC

Enter

Status of the controller

Temperature

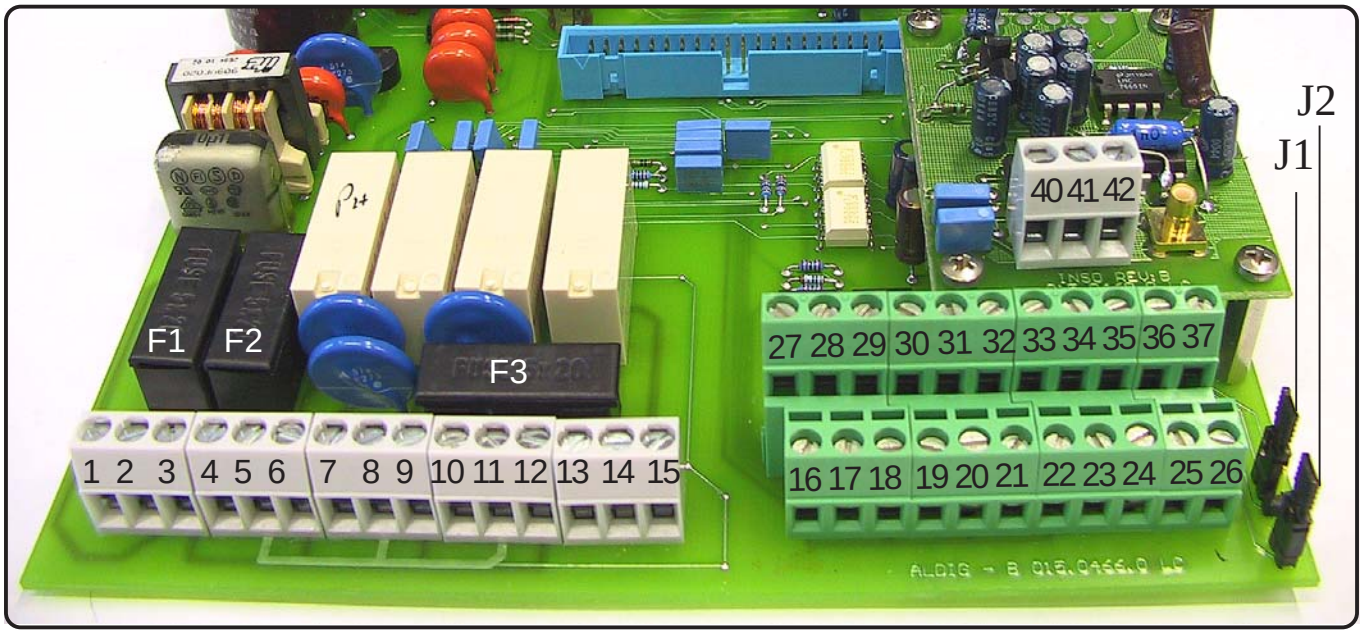
Set-up menu

Probe selection

Use keyboard (up, down, left and right) to make a selection or change set values. The "Enter" key confirms your choose, keep pressed "ESC" to cancel the selection and return to previous menu.

Password 1 and 2 are independent and can be set separately.
From main menu press "Up" key to show/hide temperature, date, probe value and T.min.Pulse.

ELECTRICAL WIRINGS:



F1: General protection fuse (3.15A)
F2: Controller protection fuse (2A)
F3: Alarm protection fuse (2A)

1(Live) ; 2(Earth) ; 3(Neutral): Power Supply (90÷240) VAC - 50/60Hz
4(Live) ; 5(Earth) ; 6(Neutral): Output (90÷240) D1 - Setpoint1
7(Live) ; 8(Earth) ; 9(Neutral): Output (90÷240) D2 - Setpoint2
10(Live) ; 11(Earth) ; 12(Neutral): Output (90÷240) Probe cleaning
13(N.O.) ; 14(common) ; 15(N.C.): Alarm output (Free of voltage contact)

16(Ground) ; 17: Stand-By contact (STANDBY)
18(Ground) ; 19: Level contact 1
20(Ground) ; 21: Level contact 2
22 ; 23 ; 24: Flow sensor: see page 22
25(-) ; 26(+): RS485 Output

27(-) ; 28(+): Output P1 proportional pump ("IS") driven by pulses
29(-) ; 30(+): Output P2 proportional pump ("IS") driven by pulses
31(-) ; 32(+): Recorder Output (4÷20mA) for Redox
33(-) ; 34(+): Recorder Output (4÷20mA) for temperature
35(Ground) ; 36(Rx) ; 37(Tx): RS232 port
- for PC connection: 35 black - 36 green - 37 red
- for modem connection: 35 black - 36 green - 37 red
- for printer connection: 35 black - 37 red

40(Ground) ; 41(Input signal) ; 42(Power Supply): PT100 temperature probe

J1 - J2: see page 23

Note: BNC connections on page 26.

“Function” Menu

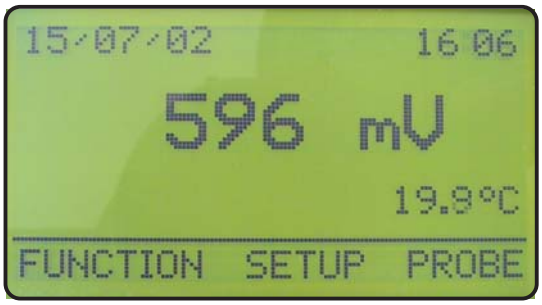


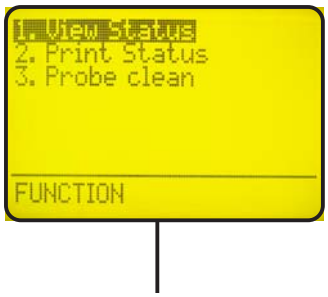
fig.1

In the main screen showed in fig.1 press “>” key to highlight “FUNCTION”. Press then “Enter” to confirm selection. The controller will show the screen in fig.2. Press “ESC” at any time to get back in the normal operation screen (fig.1).

fig.2

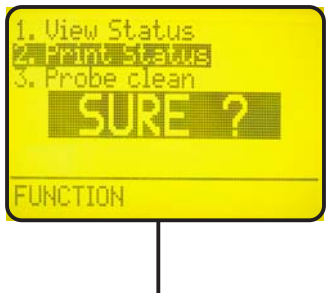
You can choose in this menu to view the controller status, print the events log or activate the probe cleaning procedure.

1



Highlight “View Status” and press “Enter” to get the controller status screen, see page 7 for more information.

2

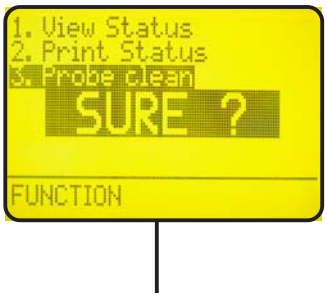


Highlight “Print Status” and press “Enter”.

Display shows “Sure?”. Press again “Enter” to confirm printing or press “ESC” to cancel operation.*

**** It is needed a serial printer connected on the “RS232” connector of the terminal block. Protocol 9600-8-N-1.***

3



Highlight “Probe Clean” and press “Enter”.

*Display shows “Sure?”. Press again “Enter” to confirm probe cleaning** or press “ESC” to cancel operation*

***** Use this manual cleaning function when the probe gives unsatisfying results (readen value is not stable).***

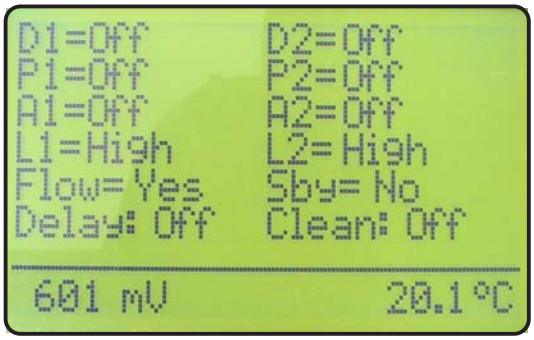


fig.3

In the “View Status” screen in fig.3 there is a summary of the controller status, in particular the following information:

D1 = Relay status for SetPoint 1. *(Off ; On).*
D2 = Relay status for SetPoint 2. *(Off ; On).*

P1 = Pump 1 proportional output. *(Off ; Shows pump stroke per minute when On).*

P2 = Pump 2 proportional output. *(Off ; Shows pump stroke per minute when On).*

A1 = Programmable Alarm 1. *(Off ; On).*
A2 = Programmable Alarm 2. *(Off ; On).*

L1 = Chemical tank 1 Level *(Low ; High).*
L2 = Chemical tank 2 Level *(Low ; High).*

Flow = Probe holder’s water flow *(No if there’s no flow ; Yes).*

Sby = Standby *(No, controller in normal operations; Yes, controller in pause)*

Delay = Delay pump activation on start-up and after a Flow Alarm *(Off ; On)*

Clean = Automatic probe cleaning *(Off ; On during clean status)*

Note: To disable all alarms press “ENTER”.

“Setup” Menu

In the main screen showed in fig.1 press twice the “>” key to highlight “SETUP”. Press then “Enter” to confirm selection. The controller will show the screen in fig.4. Press “ESC” at any time to get back in the normal operation screen (fig.1).

fig.4

This screen protects the access to the programming menu of the controller to avoid alteration of set data by unauthorized personnel. Default password is set to “0000”. Use arrow keys to enter password and then press “Enter” to confirm. See page 16 to know how to change password. Once entered the correct password the display shows the screen in fig. 5.

fig.5

Use arrow keys to choose the desired function and press then “Enter” to confirm. Press “ESC” at any time to cancel operation.

Highlight “1. Setpoint” and press “Enter” to confirm. The display will show the screen in fig. 6

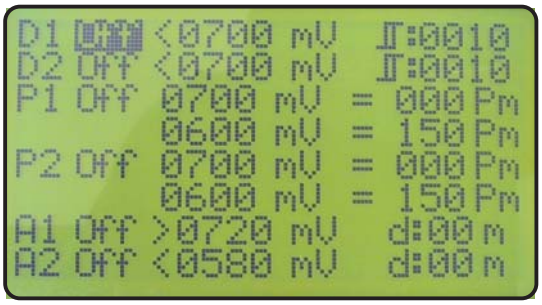


fig.6

In this menu you can set the set-point’s outputs, the pump response and the alarm ranges.

Data in fig. 6 are the default values (Everything is OFF). Use arrow keys to highlight the desired value in order to change it.

D1 Off < 0700mV ⊓:00.10

“D1” is the digital output 1 of the controller.

“Off” means that the output is disabled. Must be switched to **“On”** to activate D1 output.

“<“ means that setpoint D1, when switched “On”, activate the output when the actual reading of the controller is less than set value (in the above line 0700mV). It can be switched to **“>”**.

“0700” is the setpoint value, it can be changed using arrow keys (from -999 to +1999).

“mV” is the range of the set-point, it cannot be modified.

“⊓:00.10” is the hysteresis value. It gives the working range of the relay, in our example above the relay switches on when the reading achieve 0690mV and it switches off when the reading goes over 0710mV.

D2 Off < 0700 mV ⊓:00.10

“D2” is the digital output 2 of the controller.

“Off” means that the output is disabled. Must be switched to **“On”** to activate D2 output.

“<“ means that setpoint D2, when switched “On”, activate the output when the actual reading of the controller is less than set value (in the above line 0700mV). It can be switched to **“>”**.

“0700” is the setpoint value, it can be changed using arrow keys.

“mV” is the range of the set-point, it cannot be modified (from -999 to +1999).

“⊓:00.10” is the hysteresis value. It gives the working range of the relay, in our example above the relay switches on when the reading achieve 0690mV and it switches off when the reading goes over 0710mV.

“1.Setpoint”

P1 Off 0700 mV = 000 Pm
0600 mV = 150 Pm

“P1” Is the digital proportional output 1 of the controller.

“Off” means that this output is disabled. Must be switched to **“On”** to activate output P1.

“0700” is the setpoint value, it can be changed using arrow keys.

“mV” is the range of the set-point, it cannot be modified.

“000 Pm” is the number of stroke per minute given to the pump for the corresponding value.

“0600” is the setpoint value, it can be changed using arrow keys.

“150 Pm” is the number of stroke per minute given to the pump for the corresponding value.

The setpoint is activated (“On”) and the output will be active and will drive the pump (if connected) at 150 strokes per minute when the readen value is lower or equal to 700mV. The output will drive the pump in the range between 600mV and 700mV proportionally. When the reading is 700mV or higher the controller will keep the pump not working.
The above example refers to a dosing system with an oxydant product (chlorine).
Note: inverting 600mV and 700mV the instrument will work inversely.

P2 Off 0700 mV = 000 Pm
0600 mV = 150 Pm

“P2” Is the digital proportional output 2 of the controller.

“Off” means that this output is disabled. Must be switched to **“On”** to activate output P2.

“0700” is the setpoint value, it can be changed using arrow keys.

“mV” is the range of the set-point, it cannot be modified.

“000 Pm” is the number of stroke per minute given to the pump for the corresponding value.

“0600” is the setpoint value, it can be changed using arrow keys.

“150 Pm” is the number of stroke per minute given to the pump for the corresponding value.

The setpoint is activated (“On”) and the output will be active and will drive the pump (if connected) at 150 strokes per minute when the readen value is lower or equal to 700mV. The output will drive the pump in the range between 600mV and 700mV proportionally. When the reading is 700mV or higher the controller will keep the pump not working.
The above example refers to a dosing system with an oxydant product (chlorine).
Note: inverting 600mV and 700mV the instrument will work inversely.

A1 Off > 0720 mV d:00 m

“A1” is the programmable alarm1 that activates the alarm output.

“Off” means that this output is disabled. Must be switched to **“On”** to activate output.

“>“ activates the output when the reading value is lower than indicated. It can be switched to “<“ in order to activate the output when the reading value is higher than indicated.

“0720” is the alarm value, it can be changed using arrow keys.

“mV” is the range of the alarm, it cannot be modified.

“d:00 m” is the output activation delay, the readen value must be lower (or higher) than the specified alarm value for this time to have the alarm output active, can be set between 0 and 99 minutes.

A2 Off < 0580 mV d:00 m

“A2” is the programmable alarm2 that activates the alarm output.

“Off” means that this output is disabled. Must be switched to **“On”** to activate output.

“<“ activates the output when the reading value is higher than indicated. It can be switched to “>“ in order to activate the output when the reading value is lower than indicated.

“0580” is the alarm value, it can be changed using arrow keys.

“mV” is the range of the alarm, it cannot be modified.

“d:00 m” is the output activation delay, the readen value must be lower (or higher) than the specified alarm value for this time to have the alarm output active, can be set between 0 and 99 minutes.

With both “A1” and “A2” switched to “On” and the above given data the alarm will be active when the reading of the instrument will be lower than 0580mV and higher than 0720mV**.** In the above mentioned example there will be not any delay since “d:” is set to 0 for both the alarms.

“2.Option”

fig.5

Use arrow keys to choose the desired function and press then “Enter” to confirm. Press “ESC” at any time to cancel operation.

Highlight “2. Option” and press “Enter” to confirm. The display will show the screen in fig. 7.

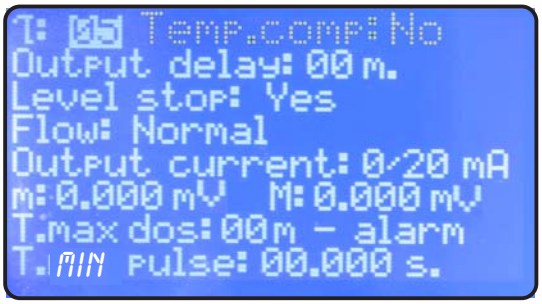


fig.7

T (Tau): it is a factor that determines how quickly the reading on the display follows the reading of the probe. It’s set by default to 5 and it can be changed between 0 and 30. The more close to 0 this value is set and the more quickly the reading on the display will change, take in consideration that quickly changes on the display will result in unstable readings.

Output delay: it’s the pump output activation delay. Can be chosen between 0 and 99 minutes and it takes effect on start up of the controller, quitting from stand-by condition and after a “Flow Alarm”.

Level stop: choose to stop the pumps when the “Level alarm” is on (no chemical in the drum) if it is set “Yes” the pumps connected to the controller will be stopped. If it is set “No” the signal will not affect the operations of the pumps.

Flow: choose the flow sensor input, set to “Normal” activates the standard flow sensor (“SEPR” proxy sensor). Set to “Reverse” the digital logic of the sensor is inverted. Set to “Disable” the flow sensor is not enabled. See pag. 22.

Flow “Normal”

Output current: changes the output current range, can be set to 0/20mA or 4/20mA.

“m” and “M”: defines the output current range according to the reading of the controller.
Basically the controller will give a current output of 0 or 4 mA when the **mV** value readen will be equal to “m”. The controller will give a current output of 20 mA when the **mV** value readen will be equal to “M”. Between the range defined by “m” and “M” the controller gives a current output proportional.

T.MAX DOS.: maximum time dosing alarm. This alarm prevents the pump to dose if a set time is reached. To activate the alarm move the cursor on “01M” and set the time (from 0 to 99 minutes). To setup the alarm move the cursor on “DOSING”. Use “UP” or “DOWN” keys to change this voice. On “STOP” mode the pump will stop the dosing procedure once the set time is reached. The pump’s display will show the alarm condition and requires to press ENTER key for 2 seconds to continue while into “View Status” menu. On “DOSING” mode the pump will NOT stop the dosing procedure once the set time is reached. Instrument will show the alarm condition only.

T.MIN PULSE: it sets up the proportionality between flow and the digital outputs (P1 and P2) for IS series pumps.
T.MIN PULSE represents the time, in second, that elapses between a pulse and the next one of a “pulse sender water meter”, at the maximum capacity. The time can be set from a minimum of 10mSec (100Hz) to a maximum of 29,99 Sec (0,033Hz).
For T.MIN PULSE = 00,000, there will not be variations on the data set up on setpoint P1 and P2 (“pulse sender water meter” disabled).

Ex. Set T.MIN PULSE=01,000 (time in second between a pulse and the next one, at the maximum capacity).
Set:

P1 On **0600 mV = 150 Pm**
0700 mV = 000 Pm

If the time that elapses between a pulse and the next one of a “pulse sender water meter” is lower or equal to 1 second, with the instrument that visualizes 0600 mV the value (150 Pm) will not change (pulses to IS pump).
If the time that elapses between a pulse and the next one of a “pulse sender water meter” is higher to 1 second (es. 2 sec.), with the instrument that visualizes 0600 mV, the value (150 Pm) will halve (75 Pm - pulses to IS pump).

How To Calculate the T.MIN PULSE: example

Max Capacity: 5 m^3 (5000 lit)
Imp/lit: 4

$$\text{T.MIN PULSE} = \frac{3600 \text{ sec}}{5000 \text{ lit} \times 4 \text{ imp/lit}} = 0{,}180 \text{ sec}$$

“3.Clock”

fig.5

Use arrow keys to choose the desired function and press then “Enter” to confirm. Press “ESC” at any time to cancel operation.

Highlight “3. Clock” and press “Enter” to confirm. The display will show the screen in fig. 8.

fig.8

Use arrow keys to set date and time in the following format:

Week day DD/MM/YY
HH.MM.SS. (24h)

Press “Enter” to confirm. The controller will ask a confirmation like in fig. 9:

fig.9

Press “Enter” to save entered data and return to menu in fig.5.

fig.5

Use arrow keys to choose the desired function and press then “Enter” to confirm. Press “ESC” at any time to cancel operation. Highlight “4. Print., Comm.” and press “Enter” to confirm. The display will show the screen in fig. 16.

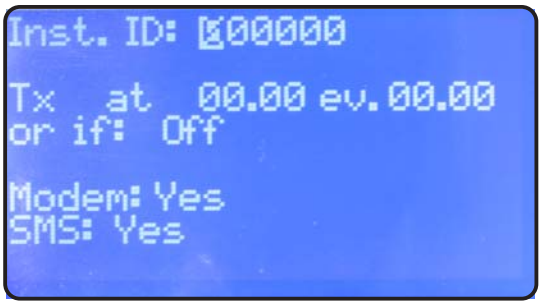


fig.16

“Inst. ID”: is the controller identity number. It is needed to change it only when the controller is connected to a network that has more than one controller.

“Tx at 00.00 ev. 00.00”: set the sending of the status at a selectionable time (AT) each hour/minute set. Use arrow keys to change time and interval.

“or if: Off”: disable sending when set to “Off”.

enable sending also whenever a generic alarm occurs when set to “alarm”.

enable sending also whenever there is no flow in the probe holder when set to “flow”.

enable sending also whenever an alarm occurs and when there is no flow in the probe holder when set to “alarm, flow”.

enable sending also whenever there’s no chemical in the drum when set to “level”.

enable sending also whenever an alarm occurs and when there is no chemical in the drum when set to “alarm, level”.

enable sending also whenever there’s no flow in the probe holder and when there is no chemical in the drum when set to “flow, level”.

enable sending also whenever an alarm occurs, when there is no flow in the probe holder and when there is no chemical in the drum if set to “alarm, flow, level”.

Once done press “Enter”. The controller will ask confirmation showing “SAVE?” on the display. Press again “Enter” to save entered data.

“4.Print, Comm.”

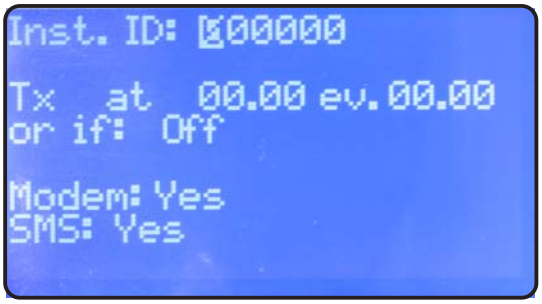


fig.16

“**Modem**”: no “**SMS**”: no — Printer, PC or LDCOM setting.

“**Modem**”: yes “**SMS**”: no — PSTN (es.: 56K/V90) setting. The instrument can be remote controlled: setting and status.

“**Modem**”: yes “**SMS**”: yes — **GSM modem setting.** The instrument sends short messages (SMS) during alarm conditions or at selected interval (see “TX AT” function on page 15). The instrument can send short messages to a maximum of 9 phone numbers saved on the SIM CARD.

Press “Enter” at the end. The instrument will display “SAVE?”. Press “Enter” to confirm.

Press “Enter” to save the settings and go back to the menu (fig.5).

fig.5

Use arrow keys to choose the desired function and press then “Enter” to confirm. Press “ESC” at any time to cancel operation.

Highlight “5. Password” and press “Enter” to confirm. The display will show the screen in fig. 9.

fig.10

This password protects the “Setup” menu from unauthorized personnel, use arrow keys to set the new password between 0000 and 9999 then press “Enter” to save. ***Forgotten password can not be retrieved, in this case a reset of the controller is needed. To reset the controller shut down power supply and power on again and press “ESC” when the screen in fig.11 shows on the display . Wait re-set screen and then press “Enter” to confirm the reset.***

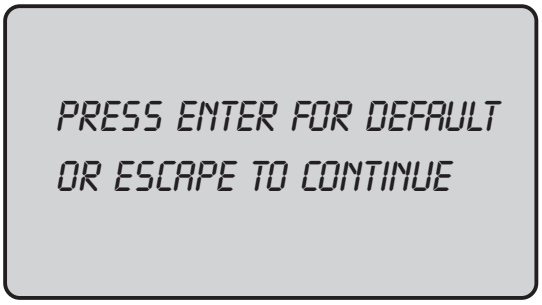


fig.11

“PROBE”

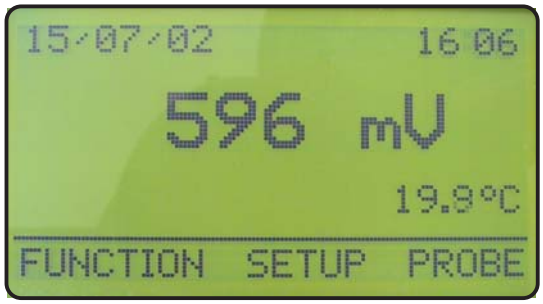


fig.1

In the main screen showed in fig.1 press “>” key to highlight “PROBE”. Press then “Enter” to confirm selection. The controller will show the screen in fig.12. Press “ESC” at any time to get back in the normal operation screen (fig.1).

fig.12

This screen protects the access to the programming menu of the controller to avoid alteration of set data by unauthorized personnel. Default password is set to “0000”. Use arrow keys to enter password and then press “Enter” to confirm. See page 20 to know how to change password. Once entered the correct password the display shows the screen in fig. 13.

fig.13

Calibrate: access this menu to calibrate the instrument.
Self-Clean: access this menu to set automatic probe clean procedure.
Password: access this menu to change the password of the “PROBE” menu. Please note this is not the same password used to protect the “SETUP” menu.

“1.Calibrate” is the probe setting menu, once entered you have the display shows the screen in fig.14. To make the probe setting you need a 650 mV buffer solution. It is necessary to calibrate both P1 (zero) and P2 (gain).

fig.14

The screen is divided in three areas.

The first one indicated as **area “A”** in the picture above shows the actual reading of mV and temperature, it also shows the last calibration date. Those data are not editable.

Area “B” shows probe parameters. Editable data are:
“P1”: “zero” calibration.
The instrument is originally calibrated. If a new calibration is necessary, do as follow. Use a direct current regulated power supply with the output voltage regulation. Connect the power supply to the instrument BNC input (+Central; - Ground). Set the power supply on 0 Volt, move the cursor on “Set-P1” and wait the stabilization of mV value in A area. Press “Enter”. Next to “P1: 0000 mV” will appear “OK”. Pressing again “Enter” the number “1” will increase by one unit to confirm the data acquisition. Use the arrow keys to move the cursor on “Save” and press “Enter”. The display will ask “Save?”. Press “Enter” to confirm in order to save entered data.
“P2”: “gain” calibration.
The instrument is originally calibrated. If a new calibration is necessary, do as follow. Use a direct current regulated power supply with the output voltage regulation. Connect the power supply to the instrument BNC input (+Central; - Ground). Set the power supply on 1,000 Volt, move the cursor on “P2:0650mV” and set the value on “P2:1000mV” using the keys. Move the cursor on “Set-P2” and wait the stabilization of mV value in A area. Press “Enter”. Next to “P2:1,000 mV” will appear “OK”. Pressing again “Enter” the number “1” will increase by one unit to confirm the data acquisition. Use the arrow keys to move the cursor on “Save” and press “Enter”. The display will ask “Save?”. Press “Enter” to confirm in order to save entered data.
“O: -0000”: probe “offset” calibration.
If the probe gives wrong values, proceed with calibration. Remove the probe from the probe holder, wash it with water and shake it in air. Dip the probe in a 650mV buffer solution. Wait a stable reading in A area, move the cursor on “-0000” and move “up” and “down” keys till the value in the A area will be the same of the buffer solution value. The inserted number is the probe offset. Offset is “reading error compensation” when the probe is getting holder.
Use the arrow keys to move the cursor on “Save” and press “Enter”. The display will ask “Save?”. Press “Enter” to confirm in order to save entered data.

Area “C” shows the temperature probe configuration parameters. The controller is already set when is delivered and usually it is not needed to make this configuration. To calibrate the temperature use the arrow keys to move cursor on the temperature and enter measured value. Use arrow keys to move the cursor in “Set-T” and press “Enter”. A blinking “!” followed by one number “1” will appear below “Set-T”. Pressing again the “Enter” key number will be increased by one unit to confirm the data acquisition.

“2.Self-Clean”

In the menu in fig.13 highlight “Self-Clean” and press “Enter”.

fig.13

The display will show the screen in fig.15.

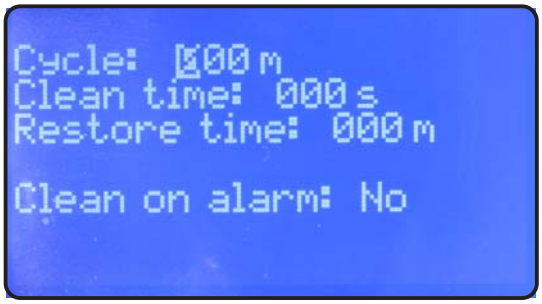


fig.15

This screen shows:

“Cycle”: the time between each cleaning. Can be set between 0 (disabled) and 999 minutes.

“Clean Time”: probe cleaning time. Can be set between 0 (disabled) and 999 seconds.

“Restore Time”: is the probe recovery time needed to come back in full operations after the cleaning. Can be set between 0 (disabled) and 999 minutes. Setting “0” as restore time the whole “Self-Clean” function will be disabled.

“**Clean on alarm**”: automatic probe cleaning when the alarm on the setpoints is active. The probe will not read till the end of the cleaning

Note: During “Clean Time”, “Restore Time” and “Clean on alarm” the controller’s outputs are DISABLED.

fig.5

Use arrow keys to choose the desired function and press then “Enter” to confirm. Press “ESC” at any time to cancel operation.

Highlight “3. Password” and press “Enter” to confirm. The display will show the screen in fig. 10.

fig.10

This password protects the “PROBE” menu from unauthorized personnel, use arrow keys to set the new password between 0000 and 9999 then press “Enter” to save. ***Forgotten password can not be retrieved, in this case a reset of the controller is needed. To reset the controller shut down power supply and power on again and press “ESC” when the screen in fig.11 shows on the display. Wait re-set screen and then press “Enter” to confirm the reset.***

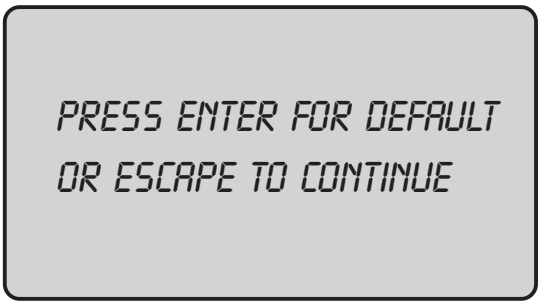


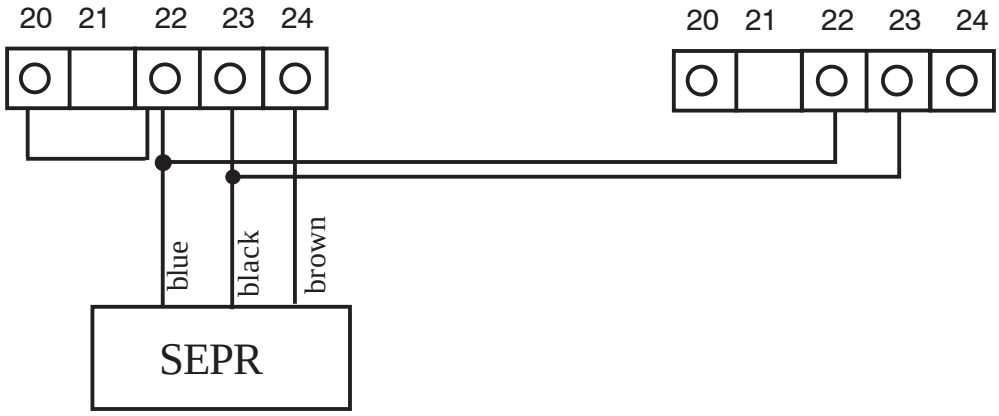
fig.11

“Flow Sensor” configuration

A proxy sensor model “SEPR” can be used to sense the flow inside the probe holder, make wirings as follows: blue wire to terminal n.22 ; black wire to terminal n.23 ; brown wire to terminal n.24 and set “Flow” to “normal” in menu “Option”.
Insert a connection between terminal blocks n. 20 and 22.

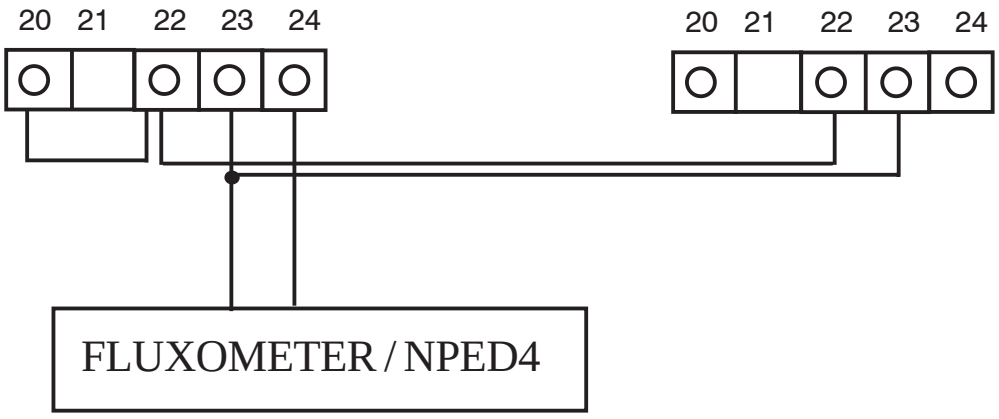
SEPR “Flow Sensor” configuration for two instruments

It is possible to control two digital instrument using a “SEPR” or a voltage free contact.
Connect the main instrument (master) as descrived in the previous paragraph.
Connect the second instrument (slave) making a wiring between terminals n.22 and n.23 of the two instruments.



Configuration of a fluxometer (NPED4) with a voltage free contact Normally Closed contact when there is flow for two instruments

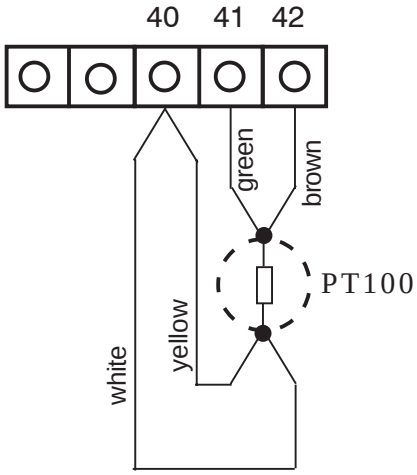
To install a proxy sensor different from “SEPR”, use a fluxometer with voltage free contact Normally Closed contact when there is flow.
Insert a connection between terminal blocks n. 20 and 22.
Connect the two fluxometer wires on terminal blocks n.23 and n.24 and set “Flow” on “normal” in the “Option” menu.



If the flow sensor with free of voltage contact Normally Open when there is flow, set “Flow” on “reverse” in the “Option” menu.

“Temperature Probe”

“LDRH” controller is designed to work with temperature probes type “PT100” (platinum sensor, 100Ohm at 0°C). To reduce the reading error typical connection of this sensor is made of four wires, the controller anyway accepts three wire connections too. Make wirings as follows: ground (yellow and white wires) to terminal n.40, signal (gree wire) to terminal n.41, power supply (brown wire) to terminal n.42.

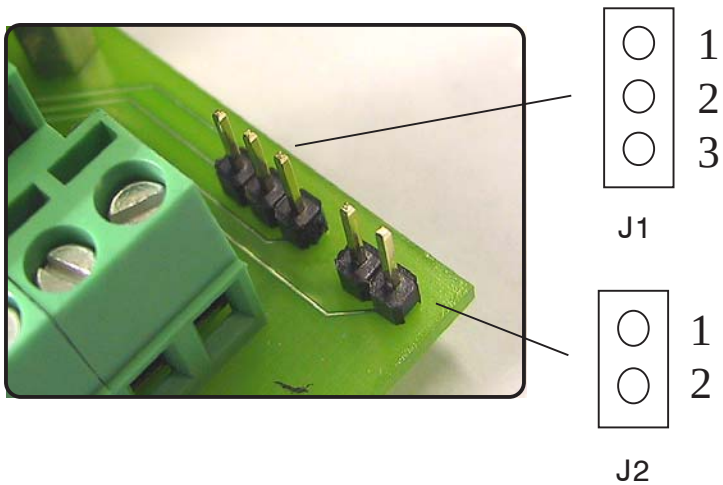


“Printer Port”

Use a shielded cable not longer than 50 meters to connect a printer to the controller, wire the shield to terminal n.35 and the signal wire to terminal n.37 (Data Transmission). Set-up printer as follows: Communication speed: 9600baud, control bit: 8, parity: none and 1 bit stop.

“Communication Ports”

The instrument has two communication ports built in (RS232 - RS485). User may select a port using J1 and J2 configuration jumpers. Use RS232 port for a local printer or PC connection (Rx-Tx 9600-8-N-1). Use RS485 port for remote control.



1-2 Closed: RS232 On

2-3 Closed: RS485 On

1-2 Closed: Termination resistance for RS485

	ERHS	ERHM	ERHL	ERHHL	ERHM/D	ERHSN6	ERHMD/100	ERHSC	ERHSC/SN6
Measuring range	-2000 to +2000 mV	-2000 to +2000 mV	-2000 to +2000 mV	-2000 to +2000 mV	-2000 to +2000 mV	-2000 to +2000 mV	-2000 to +2000 mV	-2000 to +2000 mV	-2000 to +2000 mV
Resolution	1					1			
Max Pressure/Temperature	7bar/70°C (3,5bar/80°C)	7bar/70°C (3,5bar/80°C)	7bar/70°C (3,5bar/80°C)	6bar/80°C	7bar/70°C (3,5bar/80°C)	7bar/70°C (3,5bar/80°C)	7bar/100°C	7bar/70°C (3,5bar/80°C)	7bar/70°C (3,5bar/80°C)
Body	Epoxy	Epoxy	Epoxy	Glass	Epoxy	Epoxy	Epoxy	Epoxy	Epoxy
Installation Diameter	12 mm	12 mm	12 mm	PG 13,5	PG 13,5	PG 13,5	PG 13,5	12 mm	PG 13,5
Electrical Connection	BNC	BNC	BNC	BNC	BNC	SN6	BNC	BNC	SN6
Cable Length	0.8 m	4.5 m	15 m	10 m	4,5 cm	without cable	4,5 cm	4.5 m	without cable
Features	-	-	-	high linearity	low ionic	-	double junction	self-cleaning	self-cleaning

"HIGH WARNING"

This message pop-up on the display when the readen value is above the meter's range. (See technical features table in page 22).

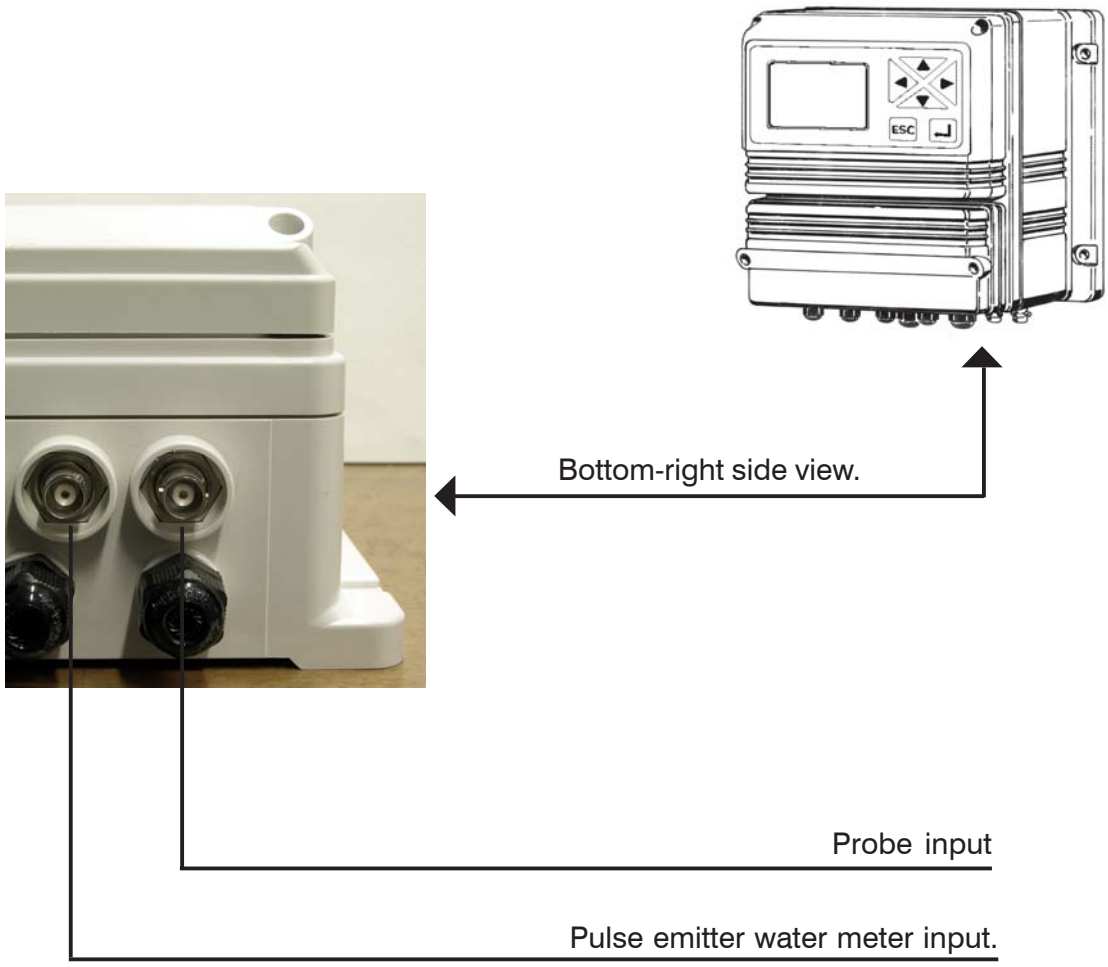
"LOW WARNING"

This message pop-up on the display when the readen value is below the meter's range. (See technical features table in page 22).

"WARNING"

This message pop-up on the display when the status of the controller is in alarm, it can be caused by: no flow in the probe holder, no chemical in the drum. Alarm is specified in the menu "Function" -> "View Status" (page 6).

BNC connections



When dismantling an instrument please separate material types and send them according to local recycling disposal requirements. We appreciate your efforts in supporting your local Recycle Environmental Program. Working together we'll form an active union to assure the world's invaluable resources are conserved.