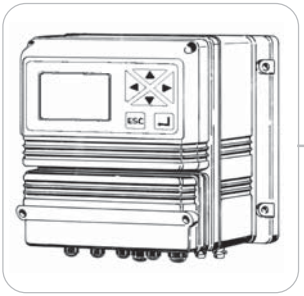
This manual contains important safety informations about installation and use of this equipment. Ignoring this informations could result in injuries or damages.

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



"LDCD" DIGITAL CONTROLLER OPERATING MANUAL

Read carefully!

ENGLISH Version

R1-08-04

“LDCD” 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

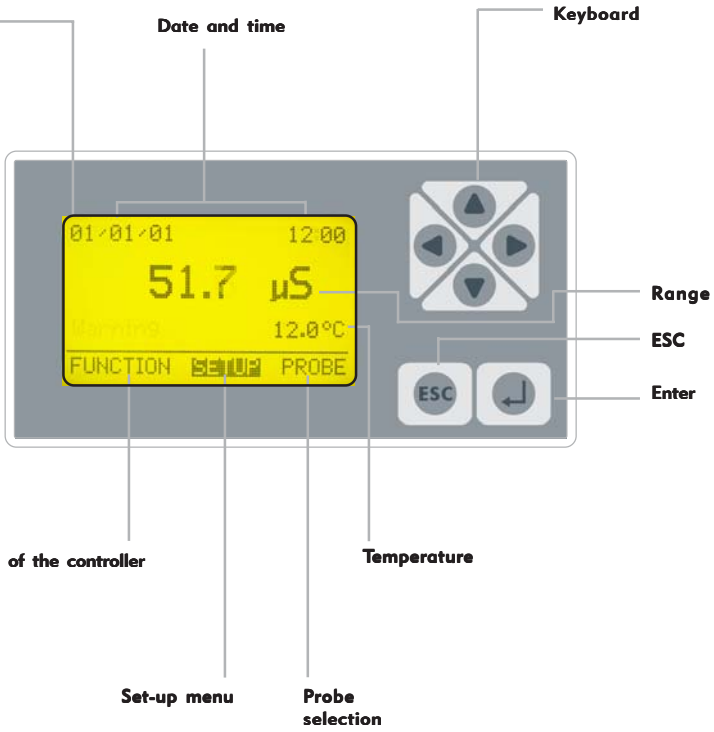
GENERAL DESCRIPTION

The LDCD controller is a compact and user friendly wall mounted instrument to control and measure Conductivity, 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.

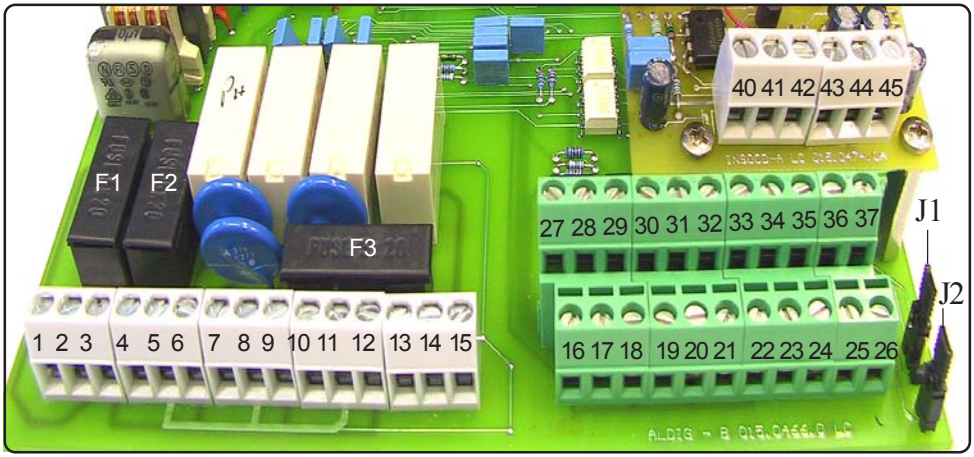


Use keyboard (up, down, left and right) to make a selection or change set values. The "Enter" key confirms your choose, keep pressed "ESC" to cancel the selection and return to previous menu.

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

From main menu press "Up" key to show/hide temperature, date and probe value.

ELECTRICAL WIRINGS:



F1: General protection fuse (6.3A)
F2: Controller protection fuse (2A)
F3: Alarm protection fuse (2A)

1(Live) ; 2(Earth) ; 3(Neutral): Power Suppply (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(Ground) ; 23(Signal Input) ; 24(Output +12V / Max20mA): Flow sensor*
25(-) ; 26(+): RS485 Output

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

40(Ground/yellow/white); 41(Input Signal/green); 42(Power supply/brown): Temperature probe PT100
43(Ground/blue) ; 44(Input Signal/red) ; 45(Input Signal/black): Conductivity probe
J1 - J2: see page 24
*see page 24

“Function” Menu

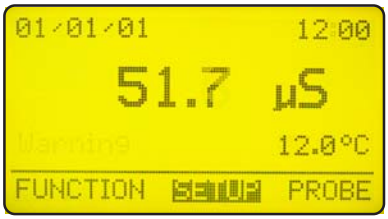


fig.1

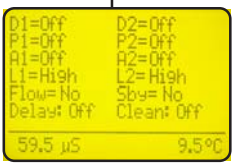
In the main screen showed in fig.1 press “>” key to highlight “FUNCTION”. Press then “Enter” to confirm selection. The controller will show the screen in fig.2. Press “ESC” at any time to get back in the normal operation screen (fig.1).

fig.2

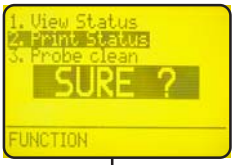
You can choose in this menu to view the controller status, print the events log or activate the probe cleaning procedure.

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).***

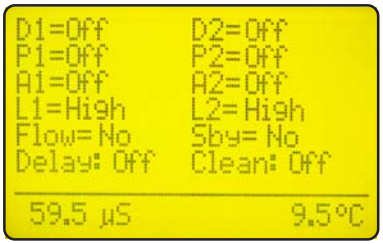


fig.3

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 *(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 datas 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

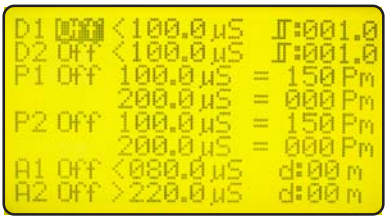


fig.6

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 < 100.0 µS ⊓:001.0

“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 100.0 µS). It can be switched to **“>”**.

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

“µS” is the range of the set-point, it can be switched to “mS”.

“⊓:001.0” is the hysteresis value. It gives the working range of the relay, in our example above the relay switches on when the reading achieve 99,0 µS and it switches off when the reading goes over 101,0 µS.

D2 Off < 100.0 µS ⊓:001.0

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

“Off” means that the output is disabled. Must be switched to **“On”** to activate D1 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 100.0 µS). It can be switched to **“>”**.

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

“µS” is the range of the set-point, it can be switched to “mS”.

“⊓:001.0” is the hysteresis value. It gives the working range of the relay, in our example above the relay switches on when the reading achieve 99,0 µS and it switches off when the reading goes over 101,0 µS.

“1.Setpoint”

P1 Off 100.0 µS = 150 Pm
200.0 µS = 000 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.

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

“µS” is the range of the set-point, it can be switched to “mS”.

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

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

“µS” is the range of the set-point, it can be switched to “mS”.

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

Referring to the above shown data as an example and the setpoint activated (“On”), 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 100 µS. The output will drive the pump in the range between100 and 200 µS proportionally (i.e: when reading is 150 µS the pump will be driven at 75 strokes per minute). When the reading is 200 µS or higher the controller will keep the pump not working.

P2 Off 100.0 µS = 150 Pm
200.0 µS = 000 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.

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

“µS” is the range of the set-point, it can be switched to “mS”.

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

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

“µS” is the range of the set-point, it can be switched to “mS”.

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

Referring to the above shown data as an example and the setpoint activated (“On”), 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 100 µS. The output will drive the pump in the range between100 and 200 µS proportionally (i.e: when reading is 150 µS the pump will be driven at 75 strokes per minute). When the reading is 200 µS or higher the controller will keep the pump not working.

A1 Off < 080.0 µS 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.

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

“µS” is the range of the alarm, it can be switched to “mS”.

“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 > 220.0 µS 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.

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

“µS” is the range of the alarm, it can be switched to “mS””.

“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” e “A2” switched to “On” and the above given datas the alarm will be active when the reading of the instrument will be lower than 80 µS and higher than 220 µS**.** In the above mentioned example there will not be 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’s 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.

Temp. comp.: it’s the temperature compensation factor. It can be changed in the range between (0.0% and 5.0%), should be set according the chemical properties of the measured media. When the temperature is out of range the controller displays the reading value blinking and the temperature compensation is not performed.

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”.

Flow stop: choose to stop the pumps when the “No Flow” is on (no flow in the probe holder) 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.

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. 23.

Flow “Normal”

Flow “Reverse”

Flow “Disable”

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 ***µS*** value readen will be equal to “m”. The controller will give a current output of 20 mA when the ***µS*** 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 a key 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.

“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 datas 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.

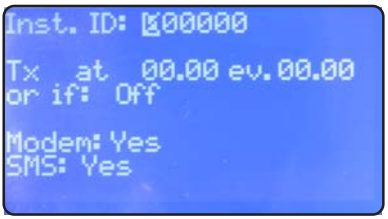


fig.16

“Inst. ID”: is the controller identity number. It’s 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 printing when set to “Off”.

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

enable printing also whenever there’s no flow in the probe holder when set to “flow”.

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

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

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

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

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

“4.Print, Comm.”

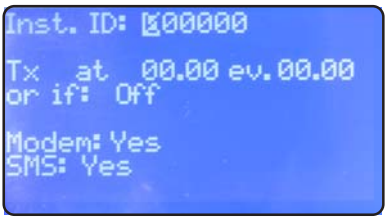


fig.16

“**Modem**”: no “**SMS**”: no — Printer, PC or LDCOMM 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”

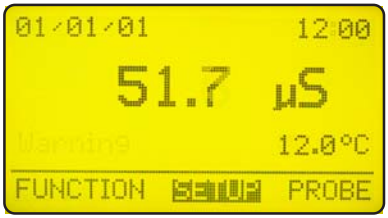


fig.1

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 probe.
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 no 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 is needed a buffer solution that has a value close to the working conditions in order to perform the calibration.

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 the conductivity and temperature, it also shows the last calibration date. Those data are not editable.

area “B” shows conductivity probe parameters. Editable data are:

“K”: probe factor. See “Probe Selection” paragraph to have more information how to change this parameter.

“Temp”: buffer solution temperature. Measure the buffer solution temperature and enter data in this field.

“P1”: set “zero”. Remove the probe from the probe holder and wipe it gently. Use arrow keys to move the cursor in “Set-P1”, read the actual value in the “A” area and wait until it is stabilized. During the calibration process, the value in the “A” area could be different from the buffer solution value. Wait a stable reading. Press “Enter”. “OK” will appear next to “P1: 0.000mS”.
Use the arrow keys to move the cursor on “SAVE” and press “Enter” to confirm in order to save entered data. If the calibration of “P2” is also needed use the arrow keys to move cursor in this field.

“P2”: probe calibration with a buffer solution. Dip the probe in the buffer solution and use the arrow keys to move the cursor on “P2”, enter the buffer solution range (“mS” o “µS”) by moving the prompt over “µS” and changing it using the keyboard. Then move cursor on solution value and enter the buffer solution value. Use arrow keys to move the cursor in “Set-P2”, read the actual value in the “A” area and wait until it is stabilized. Press “Enter”. “OK” will appear next to “P2: 1.413 mS”.
Use the arrow keys to move the cursor on “SAVE” and 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.

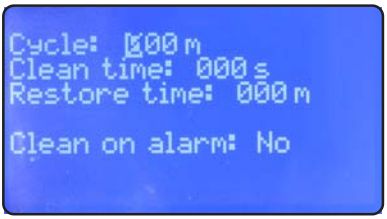


fig.15

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.

“**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.

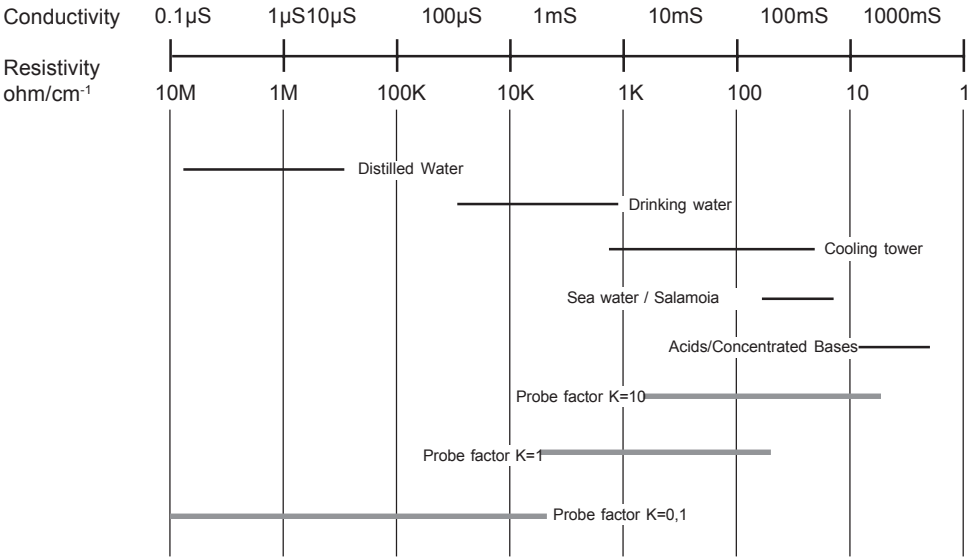
fig.10

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

“Probe Selection”

The probe should be selected taking in consideration the working range, plant installation and chemical compatibility. Please find here below a table that shows the most appropriate probe for a selection of plant installation and ranges.



See table in pag.22 for more details about probes.

Functions	ECDI/1	ECDIM/1	ECDI/02	ECDIM/02	ECDICPT/1	ECDICMPT/1	ECDICPT/02	ECDICMPT/02	ECDC	ECDCCPT	ECDHTP/1/ PT100	ECDHTP/01/ PT100
Measurement Range	0÷5 mS	0÷5 mS	0÷200 µS	0÷200 µS	0÷5 mS	0÷5 mS	0÷200 µS	0÷200 µS	0÷20 mS	0÷20 mS	0÷2 mS	0÷2 mS
K Factor	1	1	0,2	0,2	1	1	0,2	0,2	0,8	0,8	1	0,1
Max Pressure/Temperature	7bar / 60 °C 0bar / 90 °C	7bar / 60 °C 0bar / 90 °C	7bar / 60 °C 0bar / 90 °C	7bar / 60 °C 0bar / 90 °C	7bar / 60 °C 0bar / 90 °C	7bar / 60 °C 0bar / 90 °C	7bar / 60 °C 0bar / 90 °C	7bar / 60 °C 0bar / 90 °C	7bar / 60 °C 0bar / 90 °C	7bar / 60 °C 0bar / 90 °C	15bar / 200 °C	15bar / 200 °C
Body	PVCC	PVCC	PVCC	PVCC	PVCC	PVCC	PVCC	PVCC	PVCC	PVCC	SS	SS
Electrodes	SS	SS	SS	SS	SS	SS	SS	SS	Graphite	Graphite	SS	SS
Diameter	3/4"	1/2"	3/4"	1/2"	3/4"	1/2"	3/4"	1/2"	3/4"	3/4"	3/4"	3/4"
Probe Length	48 mm	48 mm	64 mm	64 mm	48 mm	48 mm	64 mm	64 mm	69 mm	69 mm	74 mm	74 mm
Electrical Connection	3 wires	3 wires	3 wires	3 wires	5 wires	5 wires	5 wires	5 wires	3 wires	5 wires	5 wires	5 wires
Connector and Cable Length	4 Poles connector and 4 m cable length											
Automatic Temperature Compensation	NO	NO	NO	NO	PT 100	PT 100	PT 100	PT 100	NO	PT 100	PT 100	PT 100

Functions	ECDHL/01	ECDHL/1	ECDHL/10	ECDHLC-PT100/01	ECDHLC-PT100/1	ECDHLC-PT100/10
Measurement Range	0÷200 µS	0,2÷20 mS	20÷200 mS	0÷200 µS	0,2÷20 mS	20÷200 mS
K Factor	0,1	1	10	0,1	1	10
Max Pressure/Temperature	7bar / 70 °C	7bar / 70 °C	7bar / 70 °C	7bar / 70 °C	7bar / 70 °C	7bar / 70 °C
Body	Epoxy	Epoxy	Epoxy	Epoxy	Epoxy	Epoxy
Electrodes	Platinum	Platinum	Platinum	Platinum	Platinum	Platinum
Diameter	12 mm	12 mm	12 mm	12 mm	12 mm	12 mm
Probe Length	170 mm	170 mm	170 mm	170 mm	170 mm	170 mm
Electrical Connection	3 wires	3 wires	3 wires	5 wires	5 wires	5 wires
Connector and Cable Length	9 m	9 m	9 m	9 m	9 m	9 m
Automatic Temperature Compensation	NO	NO	NO	PT 100	PT 100	PT 100

“Electrical wiring”

“Flow Sensor”

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”. A flow sensor with free of voltage contact Normally Closed when there is flow, make wirings on terminals n.23 and n.24 and set “Flow” to “normal” in menu “Option”. A flow sensor with free of voltage contact Normally Open when there is flow, make wirings on terminals n.23 and n.24 and set “Flow” to “reverse” in menu “Option”.

“Temperature Probe”

“LDCD” 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. Using the temperature probe built inside the “ECDCCPT” probe connect white and yellow wires to terminal n.40 ; green wire to terminal n.41 ; brown wire to terminal n.42.

“Conductivity probe”

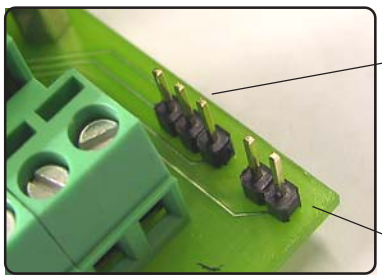
According to the used probe make the following wirings: shield to terminal n.43, probe wires to terminals n.44 and n.45. Using the “ECDCCPT” probe make the following wirings: blue wire (cable shield) to terminal n.43, red wire to terminal n.44, black wire to terminal n.45.

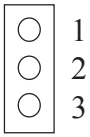
“Printer Port”

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.

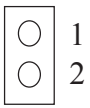




J1

1-2 Closed: RS232 On

2-3 Closed: RS485 On



J2

1-2 Closed: Termination resistance for RS485

Functions	LDCD
Display	LCD Backlight Graphic Display
Controls	Digital Keyboard
Calibration	Manual
Environment Working Temperature	0°C a 50°C - 0% a 95% (non condensing) relative humidity
Set Points	Two On/Off set points, two digital proportional
Control Inputs	Chemical tank level control, stand-by*
Input Impedance	- -
Relay Output (On-Off)	2 Voltage output
Alarm	Voltage Free Contact Relay (Fuse Protected)
Delay**	Programmable "Power-on" Delay
Max Resistive Load	5A - 220 VAC
Power Supply	Universale 90÷240 VAC ; 50/60 Hz
Power Consumption	Average 10W
Fuse	Output, instrument and alarm fuse protecions
Back up Data	YES
Galvanic Isolation	YES
Casing Material	ABS - IP65 box
Mounting	Wall
Dimensions	225 x 215 x 110 mm
Net Weight	1,2 kg
Serial port for printer	RS232
Temperature Compensation	Automatic 0 ÷ 100 °C
Probe Cleaning Output	YES
Probe SElection	YES

PROBE	RANGE	RESOLUTION
K = 0,1	0 ÷ 300,0 μS	0,1 μS
K = 0,1	0 ÷ 3,000 mS	1 μS

K = 1	0 ÷ 3,000 mS	1 μS
K = 1	0 ÷ 30,00 mS	10 μS

K = 10	0 ÷ 30,00 mS	10 μS
K = 10	0 ÷ 300,0 mS	100 μS

"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 24).

"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 24).

"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, set-point alarm, no chemical in the drum. Alarm is specified in the menu "Function" -> "View Status" (pag.6).

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.