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 "LDLOG mA" INSTRUMENT SERIES

ERMES COMMUNICATION
www.ermes-server.com

PRINTED ON RECYCLED PAPER • PRINTED ON RECYCLED PAPER •

Read Carefully !

ENGLISH Version

R11-12-20

Descrizione Prodotto *Product Description*	Sistema per la registrazione dati, serie LD LOG *Data recording system, LD LOG series*
Codici Identificativi Prodotto (i simboli "_" completano il codice del prodotto in base alla configurazione delle varianti) *Product Identification Codes* *(the "_" symbols complete the product code based on the configuration of the variants)*	LDLOG2 _ _ _ _ _ _ _ _ _ _ _ _ _ _ LDLOG3 _ _ _ _ _ _ _ _ _ _ _ _ _ _ LDLOG4 _ _ _ _ _ _ _ _ _ _ _ _ _ _ 108 _ _ _ _ 1

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 clothing 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

"LDLOG mA" is a microprocessor based digital logger for dosing products with up to 4 level check (mA). All information are provided through a large LCD display. Using a revolutionary wheel control the instrument can be easily programmed. "LDLOG mA" is housed in a IP65 plastic box. Also available an RS485 port for communication.

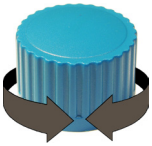
INPUTS:

- 4 mA levels (0-20mA)

2. The wheel

Located in the upper right side of "LDLOG mA" 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.



SCROLL

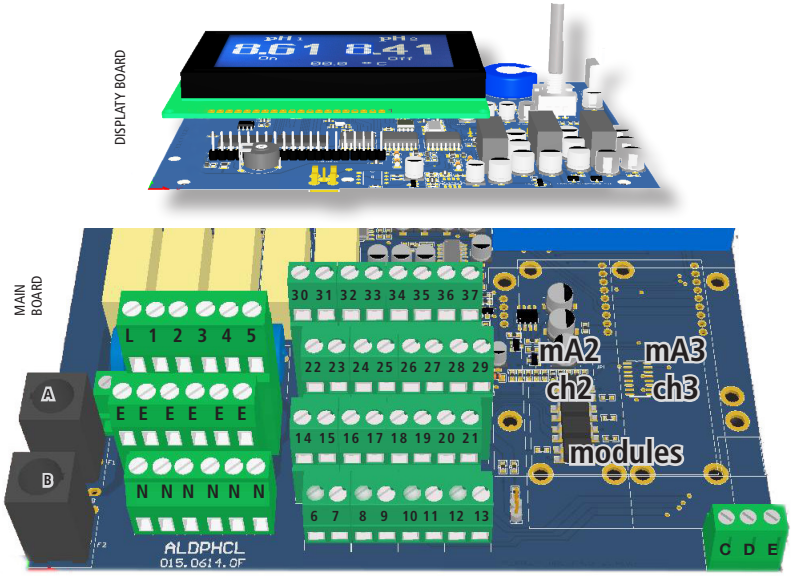
Rotate wheel to scroll through menus or options

SELECT

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: Instrument Fuse (3.15A T)

L(Live) - E(Earth) - N(Neutral): 85÷264VAC or 18÷36VAC 50/60 Hz **(see instrument's label)**

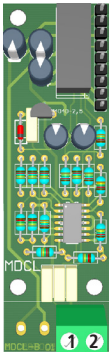
6(- green) - 8(+ white): mA4 **Ch4** level input (available on 4 channels version only)
26(+ white) - 27(- green): mA1 **Ch1**

21(GND) - 28(+ RS485) - 29(- RS485): RS485

30, 32, 33 are common to +12VDC (other power supplies on request, usable for all channels)
31, 34 are common to GND

C (+5VDC, RED)
D (+5VDC, RED)
E (GND, BLACK)

Note: black and green blocks are shared GND



Connect as follows:

Block 1 : White wire (+)
Block 2 : Green wire (-)

Warning: Connections must be perfomed by qualified and trained personnel only.
See page 17 for LASER OPTICAL SENSOR setup

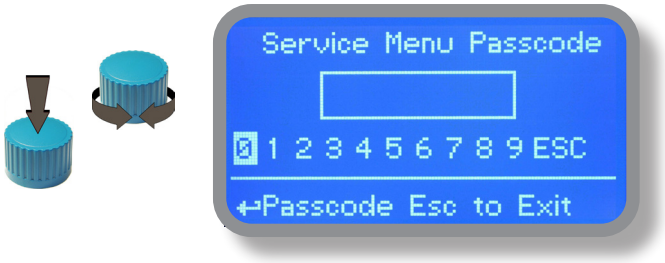
4. Main Screen

When into normal operating mode, "LDLOG mA" shows the following main screen. Rotate the wheel to scroll through all information.

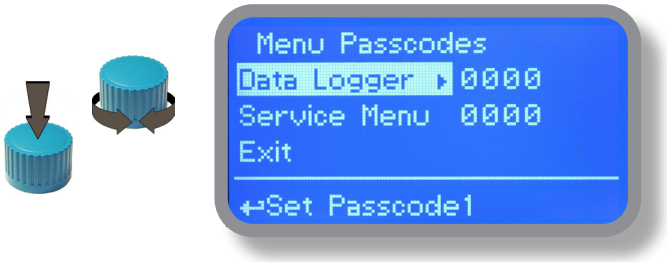
Note: the word "PUMP" as shown into this manual refers to a "dosing device" connected to the instrument!

5. Password

To grant access into "Service 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 "Service Menu". Otherwise press the wheel 1 time and enter the passcode. Numbers can be selected rotating the wheel.



To set a new passcode choose "PASSCODES" from "Service Menu" , move on "Data Logger", click on wheel and enter a four numbers code to set a password for Data Logger menu access. Move on "Service Menu", click on wheel and enter a four numbers code to set a password for Service menu access. Click on "EXIT" and choose "YES" to save request. The new passcode is now ready.

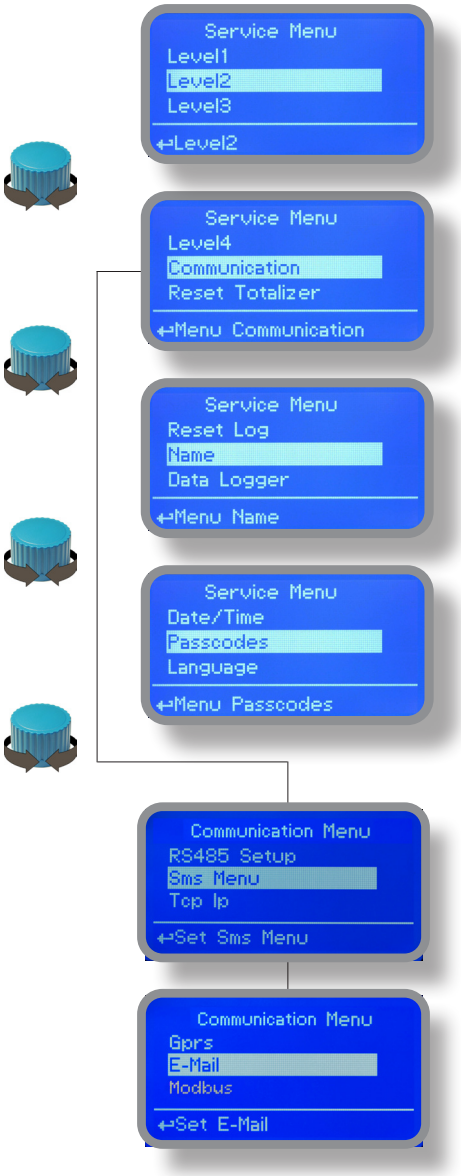


Lost passcode ?

Please dont' 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.

6. "Service Menu" list

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



"Level 1" (see page 8)
"Level 2" (see page 8)
"Level 3" (see page 8)

"Level 4" (see page 8)
"Communication" sub-menu (see below)
"Reset Totalizer" (reset all recorded totalized values)

"Reset Log" (reset all log recorded activities)
"Name" (set instrument's name, including ERMES)
"Data Logger" (see page 9)

"Date/Time" (local time and data setup)
"Passcodes" (see page 6)
"Language" (change system language)

"RS485 Setup" (see page 12)
"SMS menu" (see page 10 / 12)
"TCP IP" (see page 13)

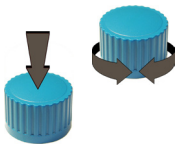
"GPRS" (see page 14)
"Email" (see page 37)
"Modbus" (see page 15)

7. Menu "Level x"

Up to 4 levels can be set to record level products quantities passed and left into tanks. Options available are:

Name: unique level's name associated to tank

Range: setup for minimum and maximum mA outputs from level sensor to determine product's quantity in tank.



4mA and 20mA fields are not editable. Use 4mA for lowest liter value and 20mA for highest liter value.

Alarm: set a target quantity (liter) below which is generated an alarm: it will be shown on main display and an SMS / EMAIl will ben send if set into communication menu and modem is available).

Move on "YES" to enable or "NO" to disable this option.

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.

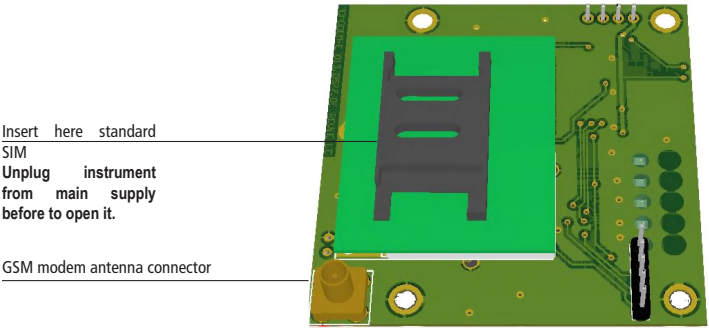
8. Menu "Data Logger"

This menu sets the data logging interval within a minimum of 15 minutes and a maximum of 1 day.
Steps are: 15 minutes -> 1 hour -> 6 hours -> 12 hours -> 1 day

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.

9. "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.



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 modeule" is properly inserted, activated and within operator range.
- Set instrument ID / NAME from "RS485 Setup" menu and configure "Out of Range Alarm" menu.

Within "Service 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 instrument's 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 !

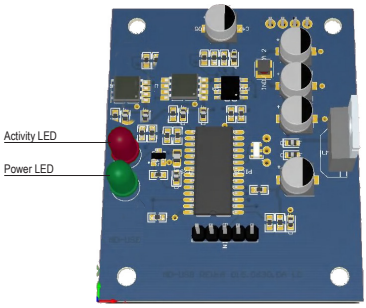
To enable warning message for related alarm condition choose "YES", to disable choose "NO". Then move wheel on Exit and SAVE configuration. **SMS will be sent when one or more ("YES") fields will change.**

WARNING: TO AVOID UNDESIRED MESSAGES USE CAREFULLY THIS SETUP!

10. "LOG USB" 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).

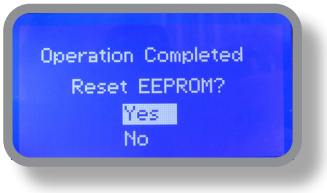
"USB data log module" records instrument activities. These information can be permanently stored into a standard USB pendrive. Pendrive can be connected to a PC using "ERMES" web **www.ermes-server.com** to review and print instrument's activities. **To obtain reliable results with this feature please set instrument ID and NAME from "RS485 Setup" menu and activate log recording from "LOG SETUP" menu.**



Standard USB pendrive
(not included)

Insert USB pendrive here
(right side of instrument)
After usage put back USB cap

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 succeded 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 connect to web "ERMES" **www.ermes-server.com** to review USB pendrive info on a PC.

11. "RS 485" menu

Prior to install the instrument into an RS485 local system a unique ID NUMBER (from 1 to 30) and ID NAME (station name) must be set. Rotate wheel and edit fields. If ID number has already assigned an error message will follow after ID Check (move cursor on CHECK and press wheel). In this event try using another number.

"SMS" menu.

Instrument may remotely send SMS alarm messages using its own modem (sold as option). It can be configured as follows:

SMS1 / SMS2 /SMS3.
Using the wheel enter a mobile phone that will receive alert SMS messages if something wrong occurrs. SMS number must be set using local number format. For example : 3391349134 will send an SMS message to mobile phone.
Log level (and SMS frequency alert) may be set using options in "ACTIVE MSG" within "GSM menu".

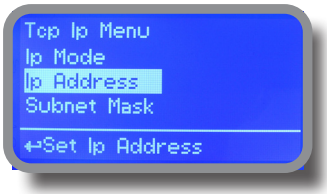
- TO AVOID UNDESIRED MESSAGES USE CAREFULLY LOG SETUP -

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

12. "TCP/IP" menu

The instrument may be remotely operated using a standard ethernet connection (sold as option). A static or dynamic IP address and a CAT5 ethernet cable is required. According to your network capacity connection speed is 10/100Mbps. To obtain a valid IP address and subnet mask contact your net administrator. Enter parameters and move cursor on "SAVE" to store parameters then move on "OK" and press wheel to save and activate configuration.

Based on your network configuration choose to obtain network parameters automatically (DYNAMIC) or manually (STATIC).



See "ERMES Communication Software" manual for proper PC software configuration.

What is a static IP address/dynamic IP address?

A static IP address is a number (in the form of a dotted quad) that is assigned to a computer by an Internet service provider (ISP) to be its permanent address on the Internet. Computers use IP addresses to locate and talk to each other on the Internet, much the same way people use phone numbers to locate and talk to one another on the telephone. When you want to visit whatis.com, your computer asks a domain name system (DNS) server (think telephone information operator) for the correct dotted quad number (think phone number) for whatis.com and your computer uses the answer it receives to connect to the whatis.com server.
It would be simple if every computer that connects to the Internet could have its own static IP number, but when the Internet was first conceived, the architects didn't foresee the need for an unlimited number of IP addresses. Consequently, there are not enough IP numbers to go around. To get around that problem, many Internet service providers limit the number of static IP addresses they allocate, and economize on the remaining number of IP addresses they possess by temporarily assigning an IP address to a requesting Dynamic Host Configuration Protocol (DHCP) computer from a pool of IP addresses. The temporary IP address is called a dynamic IP address.

Requesting DHCP computers receive a dynamic IP address (think temporary phone number) for the duration of that Internet session or for some other specified amount of time. Once the user disconnects from the Internet, their dynamic IP address goes back into the IP address pool so it can be assigned to another user. Even if the user reconnects immediately, odds are they will not be assigned the same IP address from the pool. To keep our telephone telephone analogy going, using a dynamic IP address is similar to using a pay phone. Unless there is a reason to receive a call, the user does not care what number he or she is calling from.

There are times, however, when users who connect to the Internet using dynamic IP wish to allow other computers to locate them. Perhaps they want to use CU-SeeMe or use a VoIP application to make long distance phone calls using their IP connection. In that case, they would need a static IP address. The user has two choices; they can contact their ISP and request a static IP address, or they can use a dynamic DNS service. Either choice will probably involve an additional monthly fee.

Using a dynamic DNS service works as if there was an old-fashioned telephone message service at your computer's disposal. When a user registers with a DNS service and connects to the Internet with a dynamic IP address, the user's computer contacts the DNS service and lets them know what IP address it has been assigned from the pool; the service works with the DNS server to forward the correct address to the requesting DHCP computer. (Think of calling the message service and saying "Hi. I can be reached at 435.44.32.111 right now. Please tell anyone who tries to reach me to call that number.) Using a dynamic DNS service to arrange for computers to find you even though you are using a dynamic IP address is the next-best thing to having a static IP.

13. "GPRS menu"

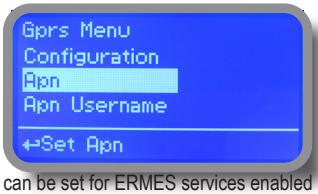
Instrument may be remotely operated using an embedded standard GPRS modem (sold as option). In order to activate this service please ensure that the following steps are correctly completed:

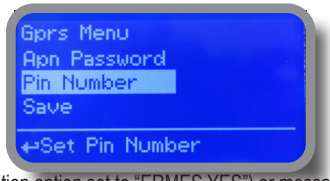
- Make certain the antenna location is not shielded by metal objects or near sources of electrical 'noise'.

- Make certain the distance from the antenna to the "Instrument" unit is within cable length.

- Do not route the cable where it could be pinched in doors, windows etc.

- Ensure that SIM into "Instrument" modem is correctly inserted, activated and within operator range.





Instrument can be set for ERMES services enabled (Configuration option set to "ERMES YES") or messages only (Configuration option set to "ERMES NO") based on your SIM data access parameters. For manual configuration option enter APN (access point name) and SIM phone number. Move wheel on "OK" to save and move on "ESC" to go back to Service Menu.

Don't forget to enter SIM CODE into PIN NUMBER menu to unlock SIM.

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

"Email" menu.

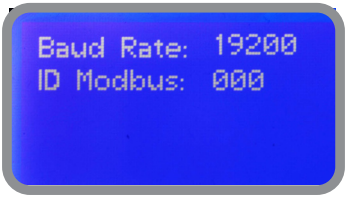
If Ethernet module or GPRS module is installed (sold as option) the instrument can be configured to send email alarm messages up to two recipients. Click on "Email 1" or "Email 2" and enter email address.

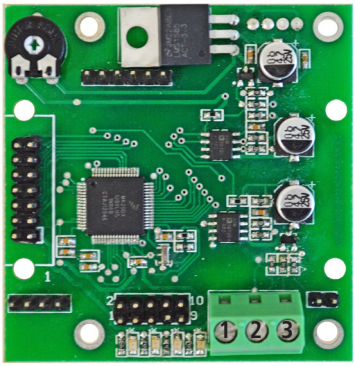
Access point name (APN) identifies an IP packet data network (PDN), that a mobile data user wants to communicate with. In addition to identifying a PDN, an APN may also be used to define the type of service, (eg connection to wireless application protocol (WAP) server, multimedia messaging service (MMS)), that is provided by the PDN. APN is used in 3GPP data access networks, eg general packet radio service (GPRS), evolved packet core (EPC).

14. MODBUS

Modbus is a serial communications protocol originally published by Modicon (now Schneider Electric) in 1979 for use with its programmable logic controllers (PLCs). Simple and robust, it has since become a de facto standard communication protocol, and it is now a commonly available means of connecting industrial electronic devices.

From Service Menu select COMMUNICATION then MODBUS to access the options. Set the communication speed according to the PLC system available. Set the ID assigning an UNIQUE address to avoid conflicts.





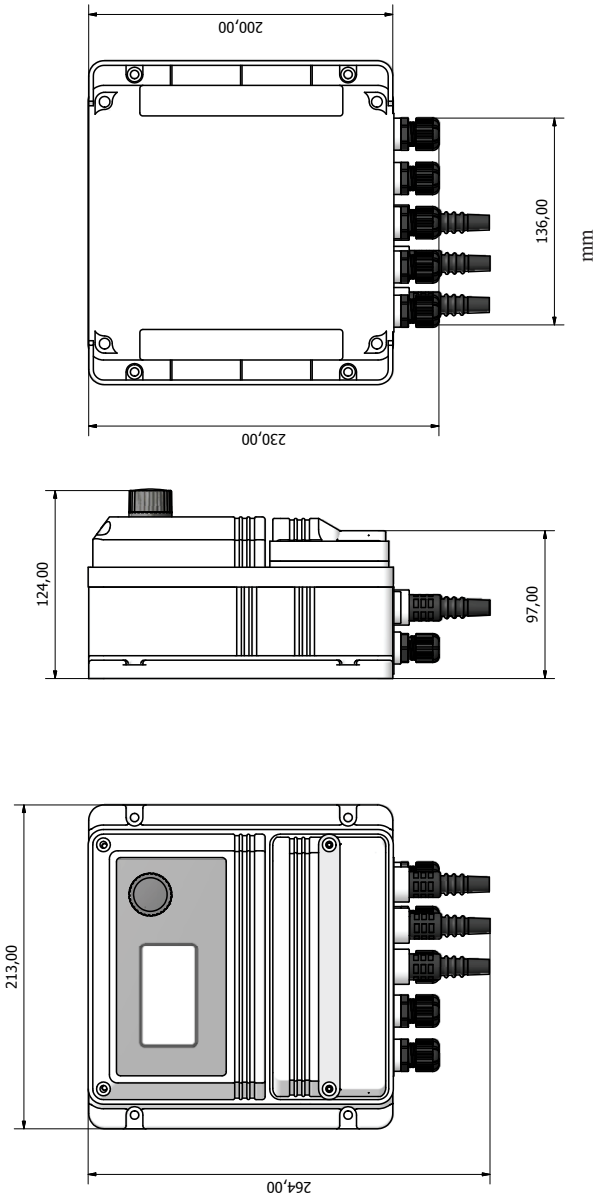
1: GND
2: A-RS485 (+)
3: B-RS485 (-)

To access the module MODBUS open the instrument only after power is switched off!

Never make connections with the instrument powered!

WARNING

Appendix - Dimensions



Appendix - LASER OPTICAL SENSOR connection & setup

Connections:

Red sensor wire (+5VDC) on terminal D
Black sensor wire (GND) on terminal E
White sensor wire on terminal 1 (mA plate for Ch2 or Ch3, board 8 for Ch4)
Green sensor wire on terminal 2 (mA plate for Ch2 or Ch3, board 6 for Ch4)

The laser sensor has two connectors and a status LED. During normal operation the LED flashes to indicate that it is reading the product level in tank while it remains always on when it is waiting for next detection.

To correctly calibrate the laser sensor, it is advisable to begin to set levels working mode using the LEVEL menu, having accessed the instrument in "SERVICE" mode.

To adjust the product level in the tank it is advisable to use drinking water inside the tank where the sensor is installed, filling it to minimum level , calibrating with the module used for minimum level and then at the maximum using the module used for maximum level.

To calibrate the sensor at the required level for 4mA output, use the calibration module labeled "4 mA". Insert the module on the laser sensor and wait for the status LED to flash. LED always on indicates that the procedure has ended successfully.

To calibrate the sensor at the required level for 20mA output, use the calibration module labeled "20 mA". Insert the module on the laser sensor and wait for the status LED to flash. LED always on indicates that the procedure has ended successfully.

For the normal operation of the laser sensor the OPERATION module must always remain inserted.

PRECAUTIONS RELATING TO DIRECTIVES, REGULATIONS AND STANDARDS

§ CE/EU and UKCA marking

We guarantee that this product meets the essential requirements of the applicable Directives and Regulations based on the following specifications. Please carefully consider the following specifications for use of the product in European Union member countries and the United Kingdom.

• CE/EU harmonized directives and standards

Directives

DIRECTIVE 2014/35/EU
DIRECTIVE 2014/30/EU
DIRECTIVE 2011/65/EU
DELEGATED DIRECTIVE (EU) 2015/863

Harmonized standards

EN ISO 12100
EN IEC 61326-1
CEI EN 61010-1
EN IEC 63000

• UKCA harmonized regulations and standards

Regulations

2008 2016 No. 1091
2016 No. 1101
2012 No. 3032

Harmonized standards

BS EN ISO 12100
BS EN IEC 61326-1
BS EN 61010-1
BS EN IEC 63000

Disposal of end-of-life equipment by users

This symbol warns you not to dispose of the product with normal waste. Respect human health and the environment by giving the discarded equipment to a designated collection center for the recycling of electronic and electrical equipment. For more information visit the online site.

When dismantling a pump 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.