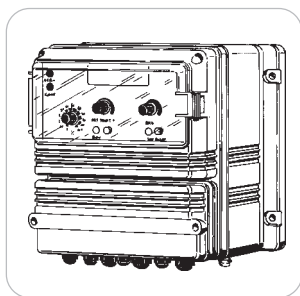




This manual contains important safety information about installation and use of this equipment. Ignoring this information could result in injuries or damages.



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



## “ L T O R B ” C O N T R O L L E R O P E R A T I N G M A N U A L

Read carefully!



ENGLISH Version

R1-02-03



“LTORB” 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!

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## GENERAL DESCRIPTION

“LTO RB” is an instrument to analyse and control water Turbidity value. LTO RB provides two Set-point independent adjustment and two ON/OFF output; furthermore it features a 0÷20 mA output to connect either a chart recorder or for long distance remote control. LTO RB can be connected to EMEC Turbidity sensor type: **ETORB**.

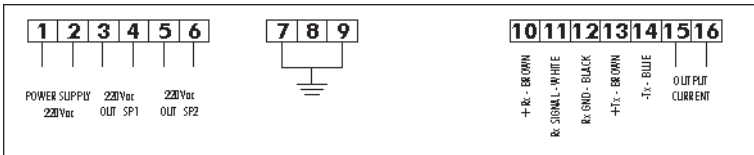
The 7-segments Display read out enables efficient reading even where environment does not allow easy-clear reading. LCL/4 is enclosed into “ABS” plastic casing rated IP 65. Casing dimensions are 215x215x125mm and four fixing points ensure steady and safe mounting. Friendly user controls for calibration and adjustment operations are easy to access and protected with a transparent poly-carbonate cover with climp-on lock.

## ELECTRICAL CONNECTIONS TO “LTO RB” METER

All electrical connections to LTO RB can be carried out through the internal connector clamp placed at the front bottom of the casing; to access unscrew front bottom cover. Prior carrying out any electrical wiring operation **disconnect the instrument from power supply** and follow the points shown herein below:



- **verify and check carefully system earth**
- **install 0,03 A breaker to prevent current peaks due to earth system malfunctioning**
- **ensure power supply conforms to pump label**
- **connect earth before proceeding with other electrical connections**



From left to right are shown the following connections duties:

**1-2: “Power Supply 230V”** mains input

**3-4: “230 Out S.P.1”** Set Point 1, 230 Vac output (Max 5A resistive)

**5-6: “230 Out S.P.2”** Set Point 2, 230 Vac output (Max 5A resistive)

**7-8-9: EARTH**

**10-11-12: Light beam reading Diode (grey wire), 10 (brown), 11 (white), 12 (black)**

**13-14: Light beam emitting Diode** , 0÷20mA current output (Upon request 4-20 mA)

## LTORB INSTALLATION

To install the instrument and Turbidity sensor, proceed as follow :

- install ETORB turbidity sensor at the right side of the instrument. The control box is 160x120x80 mm in size and is positioned to the left of the sensor box, about 20 cms apart. Four, 4x 25 Screws are provided to seal the control box cover.
- Ensure that Turbidity sensor is mounted vertical with incoming water flow inlet placed on top position
- connect system water to turbidity sensor inlet by means of 6x8 hose and adjust water flow within 1 to 50 l/h (we recommend small water flow to ensure a stable measurement).

## CALIBRATION

**Calibration of LTORB is not needed: the equipment is calibrated at factory, using a Formazin solution and according to NTU measuring range required by the customer.** Recalibration is required when the values shown are incorrect. It is not necessary to clean the sensor box interior, upon the receipt of the instrument. It can be installed and used, immediately.

When necessary to recalibrate, proceed as follow:

- disconnect power, shutt-off water flow, remove the in and out hoses;
- open the sensor-box top using a 4 mm "Allen" wrench;
- remove the glass cylinder and the two o-rings. Then, clean the glass tube using Kleenex tissue ensuring not to scratch the glass and dry the sensor box interior;
- to establish a correct '0' reading, insert buffer solution bottle (to be ordered separately) with '0' value NTU. Close using the black cylindrical plastic cover provided with buffer solution. Press on top to make sure it is properly closed;
- with regular screwdriver adjust the instrument "ZERO" turning the potentiometer placed on the front panel to read '0.0' on the display then remove 0 NTU bottle;
- Remove the cylindrical cover and insert 40 NTU bottle. Close again and press;
- with regular screwdriver adjust instrument "SLOPE" potentiometer to read 40.0 on the display then remove the bottle;
- position O ring at the bottom, re-insert the glass cylinder used for process readings ensuring that is clean of any digital prints. Place second O ring on top and center of the glass tube and close sensor-box. Make sure the cover is properly positioned by observing both inlet and outlet to be on the same side. Unit is ready for operation;

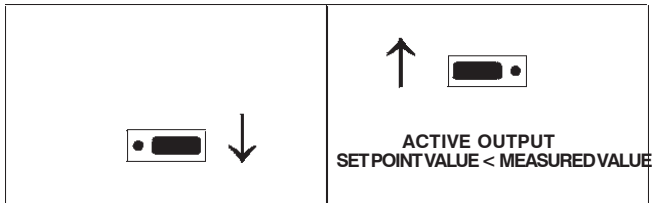


**BEFORE TESTING, AND AFTER POWER HAS BEEN RECONNECTED,  
DO NOT LOOK INTO THE EMPTY CAVITY OF THE SENSOR-BOX. A  
POWERFUL SOURCE OF "IR" LIGHT HAS BEEN ACTIVATED !**

## SET-POINT ADJUSTMENT

To read selected Set-Point, press the button below the knob “Set-Point” 1 or 2 : to modify turn the knob “Set-Point” 1 or 2 while pressing the button below until the display shows required Set-Point then release the button. When “Set-point” yellow Led is lit, correspondent output is active and on either one of connectors “230 Out S.P.1” or “230 Out .P. 2” there is power supply for an alarm.

Yellow Led is active when NTU value shown on display is higher (or lower) than “Set-Point” 1 or 2 previously selected. To change instrument setting to higher (or lower) values than the one selected, a new configuration of the internal jumper is needed. To access to internal jumper, remove front cover, locate the jumpers (JP1 : SP1 , JP2 : SP2), follow diagram here below:



### ADDITIONAL NOTE

- Coloured solutions give lower than actual readings, because of light absorption.
- It is possible to get different readings when comparing different turbidity meters.

### TROUBLE-SHOOTING

If measures value fluctuates constantly, try to reduce in-coming water flow to turbidity sensor.

## CURRENT OUTPUT

On the internal connector clamp, connectors showing “Current Out” provide a proportional current signal (according to value placed when ordering) shown on the display as:

$$0 \div 40 \text{ NTU} = 0 \div 20 \text{ mA} ; 4 \div 20 \text{ mA}$$

Max external input impedance: 330 Ohm.

*Instrument tag shows output current value set at the factory*

*The mA current signal has not galvanic protection. Upon request galvanic protection available.*

## ACCESSORIES

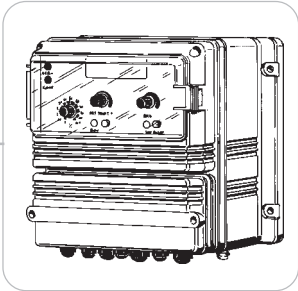
- N. 4 Dibbles ø6
- N. 4 Self threading screws 4.5x40
- N. 1 Instruction booklet
- N. 3 Instrument protection fuse (see features)
- N. (0,3A T5x20)
- N. 1 Alarm contact fuse (0,3A T5x20)

## LTO RB TECHNICAL FEATURES

- Power Supply : 230 Vac  $\pm$  10%
- Measuring range: 0  $\div$  40,0<sub>NTU</sub>
- Resolution:  $\pm$  0,1 NTU
- Hysteresis set-point :  $\pm$  1 NTU
- Power consumption: 7 Watt
- Fuse relay (1A)
- Weight: 1,5 Kg
- Protection rating: IP65
- Environmental working temperature: 0  $\div$  50°C
- Turbidity sensor max working temperature: 0  $\div$  25°C



***Technical features, Data sheets and Drawing herein shown are subject to modifications without advice from Manufacturer.***



*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.*