WMS-LTC

User Manual

Temperature Level Conductivity meter

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1.Important Notice

P.A.S.I. software and programs are delivered "as is".

P.A.S.I. products have not been designed to be used in any way or application other than those mentioned.

This guide refers to "WMS-TLC".

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2.Warranty and safety instructions

Read the instructions carefully before using the product:

- Warranty will be void if the product is used in any ways that is in contradiction with the instructions given in this manual.
- Warranty will be void if the instrument has been tampered with.
- The device must be used only according to the instructions described in this manual. Faultless and safe operation of the device can be guaranteed only if the transport, storage, handling and operation of the device is appropriate.
- To avoid damage, use only original accessories or approved by PASI srl.
- When a suitable location has been selected for the instrument, you must ensure that water does not flow into the device under any conditions. Only the probe and the cable are guaranteed in case of immersion. Direct sunlight is also to be avoided for long periods. It is not recommended to install the device on a highly vibrating surface.

3.Introduction

The instrument WMS-LTC is a device designed and assembled by PASI srl.
The WMS-LTC is a conductivity, temperature and level meter.
The instrument is equipped with a display on which the temperature and conductivity indications are shown.
The water level will be visible on the cable marked in centimetres.
The instrument is also equipped with a sound signal and LED that indicate the water level – placed on the panel

The system consists of:

- Winch with cable of the selected length equipped with probe for measuring conductivity, temperature and level.
- Batteries included.

4.Technical Specifications

Cable marked in centimetres

rounded cable, four copper wires, kevlar core and external antiscratch protective film in transparent PUR.

Graduation in centimeters, printed in black on the cable itself, with meter-decimeter indication

Probe

Probe diameter	20mm
Probe length	200mm
Materials	Stainless steel body, plastic protective cap/cover

Temperature

Unit of measure	°C o °F
Measuring range	from -10°C to +60°C or from 14°F to 140°F
Precision	+/- 0.2°C or +/- 0.4°F

Conductivity

Unit of measure	µS/cm or mS/cm normalized at @25°C
Range	from 40µS/cm to 80000µS/cm
Precision	+/- 5% of the reading

Level Indicator

Sensitivity	4 sensitivity levels, automatic or manual selection.
Signaling	Sound signal and red LED indicate when the probe enters and exits the water

Power supply

Batteries	4 X 1,5V AA alkaline batteries
Battery life	70h (depends on the use)
Auto Off	After 60min

NOTICE:

When the batteries are flat, the instrument will automatically switch off and display a low battery message accompanied by a warning light and sound signal

Display

Backlight	Yes
Line 1	Conductivity
Line 2	Temperature

User Interface

Push-button	Single button for on / off and settings

5.User Interface, functionality and maintenance

Panel

The panel on the instrument shows information about the instrument and its functions.

The 2 lines on the display show respectively:

- Conductivity level normalized to 25°C;
- Temperature.

Conductivity is displayed in:

- µS/cm when, next to the reported value, only the unit of measure µS occurs;
- mS/cm when, next to the reported value, only the unit of measure mS occurs.

The instrument automatically switches from µS to mS and vice versa, based on the conductivity it measures.

The temperature value is shown in ° C (Default) and ° F. Once the unit of measurement has been changed, the instrument keeps track of the choice made and will keep it until further modification, even after switching the device off and on again. When you reset the instrument, the unit of measurement returns to the Default one, ie ° C.

Functionality

The interface consists of a single button for all functions. The instrument detects the number of presses or the time of pressing to perform specific functions:

- ON;
- OFF;
- Back-lighting;
- Change the unit of measure of the temperature;
- Display of the remaining battery charge - percentage;
- Sensitivity selection for level detection;
- Reset to factory settings;
- Calibration.

ON

When the instrument is switched off, short press the “ON/OFF” button.

OFF

Press and hold the “ON/OFF” button, until the sound signal and light are activated.

Back-lighting

The backlight is activated with a single short press of the "SETTING" button. It will remain active for about a minute and a half.

Changing the unit of measure of the temperature

To change from °C to °F and vice versa, two short presses of the "SETTING" button.

Display of the remaining battery charge - percentage

To view the remaining battery charge, you must press for three times the "SETTING" button. The estimated remaining percentage of the batteries will be displayed. The display of conductivity and temperature will be restored after 4 seconds, no the need to press the "SETTING" button.

Sensitivity selection for level detection

The detection of the water level may be inaccurate due to the formation of water residues on the probe after extracting it from the water. For this reason the WMS-LTC is equipped with an automatic level detection system. When there is high conductivities, however, manual selection of sensitivity may be more effective. The instrument has 4 thresholds:

- Ultra low, used for pure water;
- Low;
- Medium;
- High, for high conductivity.

You can switch from one sensitivity level to another with four short presses of the "SETTING" button. The display will show the chosen level for two seconds.

The transition from one threshold to another occurs in the following order:

Ultra Low => Low => Medium => High

The selection goes round in a loop so after "High" you switch back to "Ultra Low" and so on. If it is selected a lower threshold than that detected by the instrument, the transition to the highest threshold will take place automatically.

Reset to factory settings

The reset to factory settings is useful in cases where a calibration has failed or before carrying out a new calibration.

To reset the instrument, carry out six consecutive short presses of the "SETTING" button.

At this point a confirmation request will appear on the display. By pressing the "SETTING" button again, you are confirming instrument reset. Waiting without pressing for 10 seconds cancels the reset and the instrument will resume normal operation.

Calibration

To access the calibration functions, press and hold the "SETTING" button. The instrument will switch off but you must continue to keep the button pressed until it switches on again. At this point the calibration procedure will start.

This procedure involves calibration on 3 points respectively at:

- 1413µS/cm
- 5000 µS/cm
- 12880 µS/cm

For calibration it is recommended to use only certified solutions.

Before carrying out a new calibration please make sure that the probe is clean. We suggest using denatured ethyl alcohol, see “Maintenance” paragraph.

Before and between each measurements it is important that the probe is thoroughly rinsed in distilled water to prevent residues from polluting the next solution.

For each measuring point, the instrument will indicate the measuring point it expects to measure. Press the "SETTING" button to begin reading and "READING" will appear on the second line

A sound signal notifies the end of the reading and the request to move on to the next solution.

At the end of the calibration procedure the instrument will resume normal operation.

NOTICE:
Since the probe takes a few minutes to accurately read the temperature, it is very important that, before starting a calibration procedure, the probe and solutions are all at room temperature.

Maintenance

To keep your instrument in perfect condition, remember to carefully clean the cable and sensor and dry them with a soft cloth after use.

To clean the probe it is recommended to use denatured ethyl alcohol and then rinse it in distilled water. This procedure is very important to get an accurate reading.

6.Take a measurement

The use of the WMS-LTC instrument is very easy.

After switching on the instrument, the conductivity, temperature and level can be read.

The probe has a certain thermal inertia and to obtain an accurate reading of conductivity and temperature it is necessary to leave the probe immersed for at least 5 minutes.

For an accurate reading of the level, conductivity and temperature, it is recommended to proceed as follows:

- Unwind the cable until the level is reached;
- Wind the cable slowly by pulling the probe out of the water, wait for the sound signal and for the LED to go off – these signals mean “exit from the water”;
- Lower the probe very slowly again until the water level is reached.
- Read the depth measurement on the cable.
- Leave the probe immersed for more than 5 minutes to achieve thermal equilibrium.
- Read conductivity and temperature on the display.