LP-LPD Water Leak Locating Panel

Quick Start Guide

General Note

To ensure normal operation, please follow thru various instructions listed in this manual.

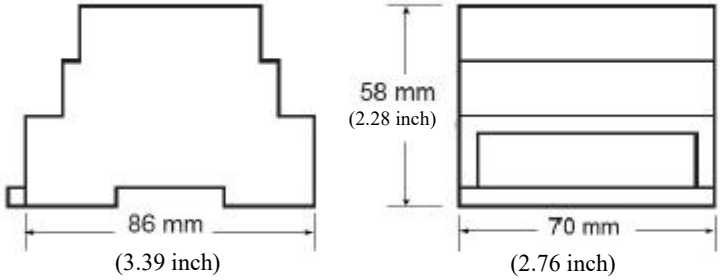
The LP-LPD water leak locating panel is designed to detect liquid leak of the sensing cable up to 900m. Once liquid leak is detected, the LP-LPD water leak locating panel gives an audible and visual alarm, also, a 7-Segment LED will indicate the leak location and the relay output is energized. The communication Protocol of LP-LPD water leak locating panel is Modbus RTU which is easy to interface with BMS systems.

LP-LPD can be either stand alone or interfacing with the BMS system.

Its application includes Data Centre, Warehouse, library, museum and so on.

Product Features:

- LED light shows Power, Leak, Cable Fault, and Communication Status
- The LED display shows leak location and cable fault.
- 32 leak alarm records can be stored
- Serial RS-485 communication Port with Modbus Protocol
- 12V DC power supply.
- NO/NC Relay output is available
- Din rail installation
- 86*70*58 mm in size



Technical specification

Basic Features	Maximum length of sensing cable	900 m
	Accuracy	0.5% of the length of sensing cable ± 0.5 m
Ambient	Storage temperature	-40 ℃ ~60 ℃ (0 ℉~ 140℉)
	Operating temperature	0℃ ~45℃ (32 ℉ ~ 117℉)
	Humidity	5%~95% (Non-condensing)
Power Requirements	LP-LPD	12VDC, 3W
Serial Interface	Network Configuration	RS-485Serial port; different baud rates are available, and the factory default is 9,600; the address is from 0 through to 255, and the factory default is 0
	Communication Protocol	MODBUS RTU
Relay contact	Function	NO/NC contact for leak and sensor fault alarm
	Ratings	DC24V, 1A.

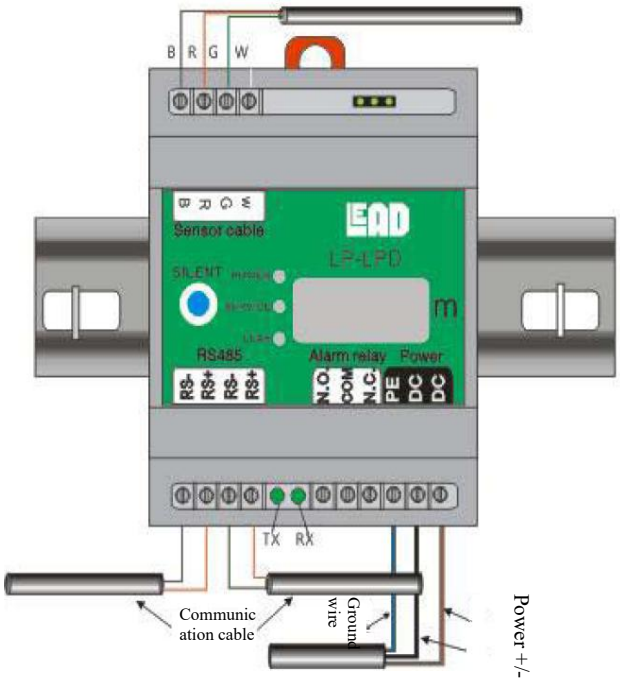
LP-LPD Installation

Choosing Installation Location

The panel should not be installed in any improper environment, temperature limits or severe vibration. LP-LPD can be installed in 35 mm DIN rail. Also, IP54 housing is available to the panel. The maximum allowable sensing cable is 900m. If it is over 900m, please consult the manufacturer.

Important: The LP-LPD panel is an electronic device. Please take the caution below

- Handle with care and avoid mechanical shock and impact.
- Keep dry.
- Avoid electrostatic discharge to the panel
- Prevent the contact with metal filings, grease, pipe coatings and other contaminants.



Installation Diagram

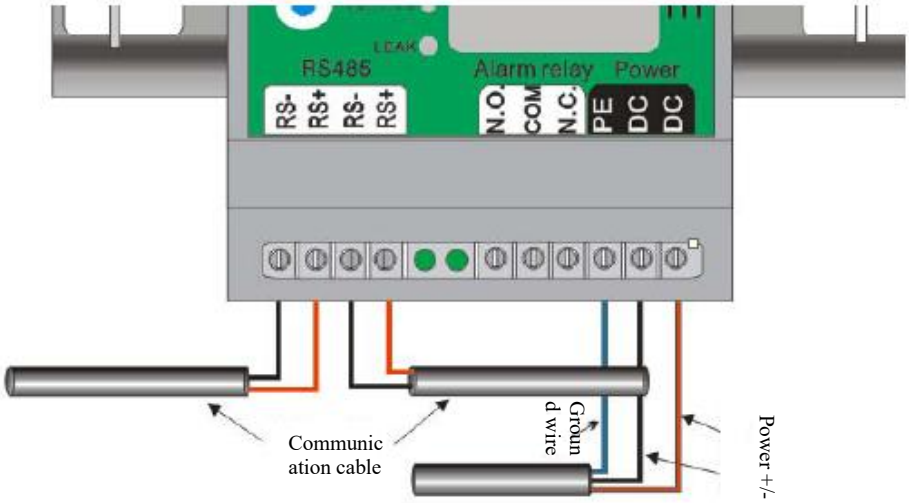
Installation of LP-LPD

• Install the 35mm Din rail in appropriated flat wall.

• Directly install the LP-LPD panel into the Din rail.

Connection between Power Cable and Communication Cable

All LP-LPDs are designed with an inbound cable (from the monitoring host system) and an outbound cable (to the next LP-LPD). Connect the DC12V power supply (two DC terminals); the PE terminal is power ground that can be connected to achieve favorable immunity from interference. The detailed wiring method is shown in the figure below.



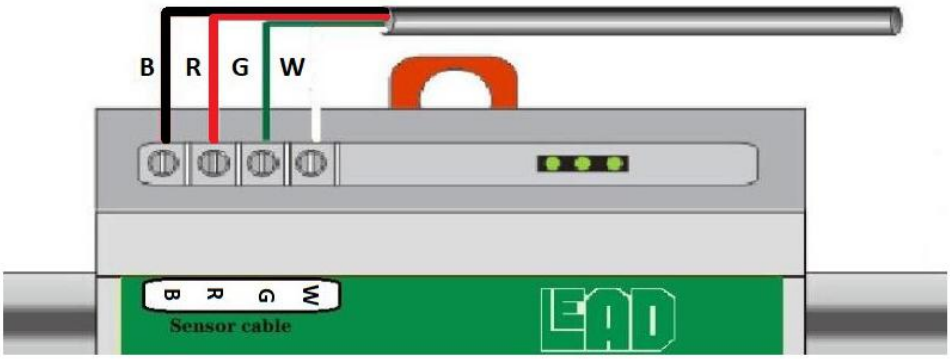
Connection of Alarm Relay

The relay output of LP-LPD can be used for local or remote alarm, it can also be used as an digital signal for any BMS system.

Wiring Combination	Alarm Status	Output State
N.O. —COM	No alarm	Open
	Alarm	Closed
	Loss of power	Open
N.C. —COM	No alarm	Closed
	Alarm	Open
	Loss of power	Closed

Connection of Lead-out Wire of Leak Sensing Cable

LP-LPD can be used with WS-Lxx leak sensing cable. The leak sensing cable is connected as shown in the following figure.



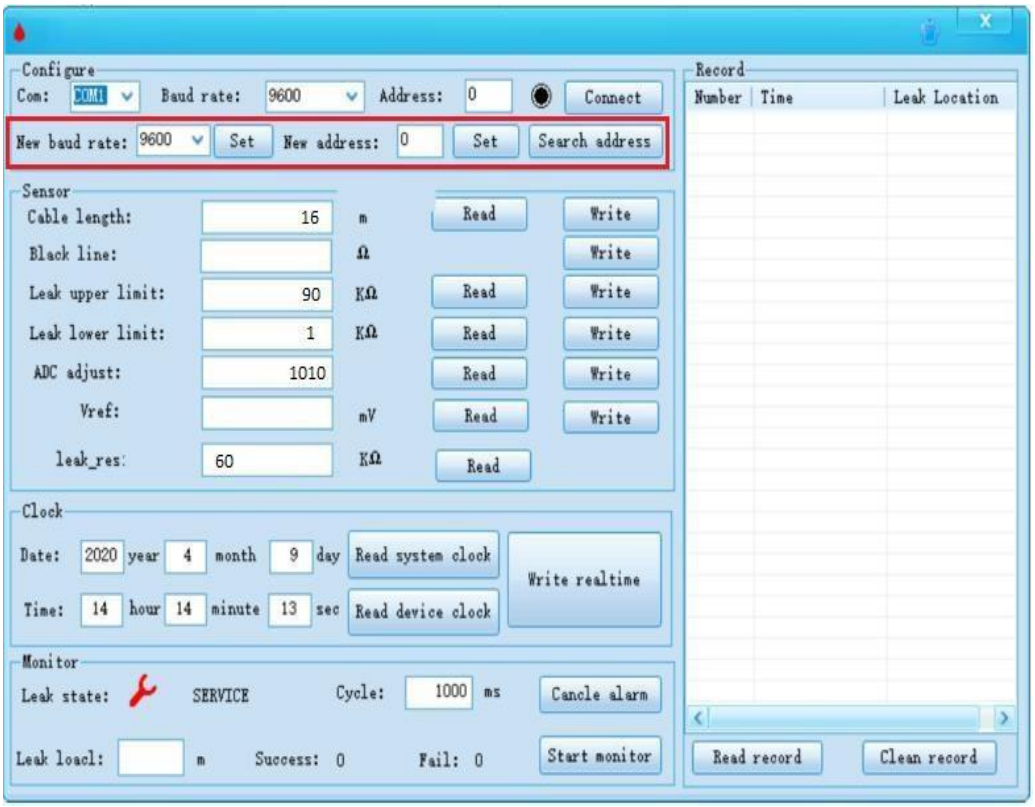
Operating Instructions for System Configuration

Setup of Device Address and Baud Rate

If LP-LPD is integrated into the monitoring system, LP-LPD panel must be assigned address. The factory default address of all LP-LPDs is 0 and its baud rate is 9,600.Each LP-LPD must be an unique address and same communication baud rate.

Please follow the steps below to set address of LP-LPD:

- Power on LP-LPD, then turn the communication cable into RS232 signal vial RS485, and connect it to the designated PC.
- Launch the configuration software as shown in the following:



Choose the corrected serial port No., baud rate and address, and click "Connect Serial Port" to connect PC to LP-LPD communication. Then enter the desired baud rate and new address into "New Baud Rate" and "New Address" as well as click "Settings" respectively. When the baud rate and communication address are successfully set up, it means the setup is finished. It is worth noting that the settings will not change unless the LP-LPD is restarted after setup of the new baud rate.

Modbus Address table

Default Setting: ID:1 , Baud Rate 9600, 8N1

03 Holding Register(HEX)

Address	Description	Details
40001	System Status	0x0000 = Normal 0x0001 = Leak 0x0002 = Break
40002	Leak Distance	0xFFFF = No Leak 0x0000 = Leak Distance Sample: 0x0020 = Leak at 2M

Parameters Setup for Leak Sensing Cable

Since the electrical parameters of leak sensing cable be varied , the electrical parameters of various leak sensing cables need to be set in the steps below:

- Connect the leak sensing cable to the termination; take measurement of the resistance between the yellow and black cables with the "ohms range" of multimeter after the connection between lead-out wire and leak sensing cable.
- Enter the length of connected sensing cable into "Length of Sensing Cable", and click "Write" to set the length of connected sensing line in the LP-LPD module; enter the resistance of sensing cable determined with a multimeter into "Black-line Resistance of Sensing Cable", and click "Write".

Clock Setup for LP-LPD

As shown in the figure below, click "Read System Time" to read and indicate the current computer system time in the clock display box; click "Write into Module" to write the time in clock display box into the LP-LPD module; click "Read Module Time" to read the time of LP-LPD module and then indicate it in the clock display box. You can also enter the desired time into the clock display box and click "Write into Module" to correctly set the LP-LPD time.

Maintenance & Troubleshooting

Each Panel is well tested before shipment.

State Display

The LP-LPD is equipped with 5 LEDs that respectively indicate power supply, communication (RX = RECEIVE, TX = TRANSMIT), detected leak, and fault of sensing cable.

When LP-LPD is powered on and runs properly, the red power LED is ON; Table 1 shows various status of sensing cables and the corresponding possible corrective actions. Table 2 shows various communication status (ideal for LP-LPDs in the connected network system)

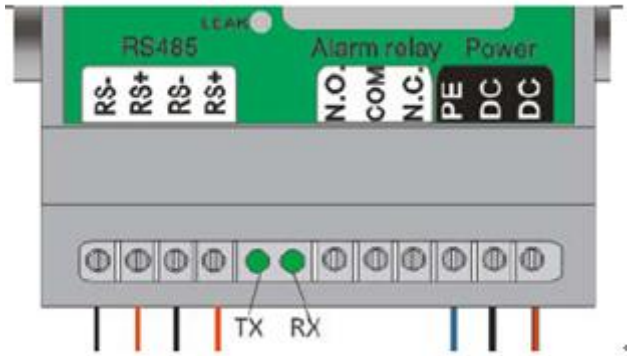


Table 1. LED Indication of the Running Status of LP-LPD

Power indicator (red)	ON	Normal power-on
	OFF	Abnormal power or fault of LP-LPD
Disconnection indicator (green)	ON	Fault or improper connection of leak sensing cable
	OFF	Proper connection of leak sensing cable
Leak indicator (green)	ON	Leak
	OFF	There is no leak

Table 2. LP-LPD Communication Status Indication

TX (TRANSMIT)	RX (RECEIVE)	State
Flash	Flash	The LP-LPD normally communicates with Master
OFF	Flash	The LP-LPD receives information from the Master and no message back
OFF	Normally ON	The RS485 communication cable is reversely installed or the communication chip malfunctions
OFF	OFF	The LP-LPD does not communicate with the master

- Liquid leakage is detected when there is no obvious liquid presence. The possible reasons are as follows (it is highly recommended to replace the affected section):
  1. The sensing cable was badly contaminated by some chemical for unknown reason.
  2. The sensing cable was coated with glue, epoxy and paint accidentally.

3. The 2 black sensing wires are in contact or not isolated properly.

- Some leakage is difficult to be observed due to very small volume of liquid presence and the environment is too dark.
- Cable break is detected where no visible wire cut externally is observed:
  - Check the 4 wires continuity by a multi-meter.
  - Check the 4 connection points of the leader cable to the control panel are secured properly.
- If leak location is not accurate:
  - This may probably due to small amount of liquid still exists at different points on the sensing cable.
  - Also, it can be due to some contamination with electrostatic dust, transparent chemical or glue deposited on the cable.
  - Clean the cable with dry cloth

1. Maintenance

- It is recommended to conduct quarterly check on LEAD leak detection system performance by authorized LEAD distributors/installers.
- During quarterly checking and maintenance:
  - Check physically on the sensing cable surface cleanliness and free from any chemical contact.
- For any parts replacement or extension, LEAD local distributors offer ex-stock and will provide