

BMS-LD3Z Quick Start Guide



Thank you for purchasing a BMS-LD3Z three zone leak detection monitoring device designed to integrate directly into a building management system (BMS). This guide outlines basic BMS-LD3Z installation and configuration. Before you install a BMS-LD3Z, check RLE’s website to ensure you are using the most recent version of our documentation.

If you need further assistance, please contact RLE Technologies at support@rletech.com.

Raptor

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RLE

Technologies

Installation Supplies

Included with the BMS-LD3Z
BMS-LD3Z device

Available from RLE, sold separately
24VDC power adapter

Leak detection cable, LC-KITs, and spot detectors as necessary for your application

Additional Supplies

18AWG shielded twisted pair stranded copper wire - no more than 2000ft (610m)
(Modbus RTU or BACnet MS/TP communication via RS-485 port)

Mount the Device

The BMS-LD3Z is designed to be installed in a panel, on a DIN rail, or mounted on a wall.

- If you’re installing it on a DIN rail, use the DIN rail clip and secure the unit appropriately for your application.
- If you’re mounting the unit on a wall, use a screwdriver to loosen the three screws and remove the DIN rail clip from the back of the unit. Then use the keyhole slots and secure the unit to the wall.

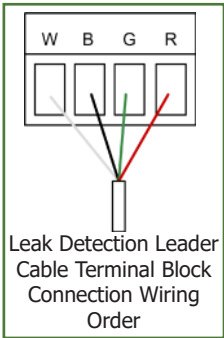
Power the Unit

The BMS-LD3Z is designed to accept hardwired 24VDC power through the power terminal block (TB2). If hardwired power is not available, purchase and install RLE’s PSWA-DC-24 power supply.

Leak Detection Sensing Cable

Since leak detection sensing cable cannot connect directly to a controller, a leader cable is used to connect each separate zone of leak detection cable to the BMS-LD3Z. For each zone of leak detection:

- Insert the stripped wires of the leader cable into the appropriate slots in the terminal block - from left to right: white, black, green, red. Tighten the screws to secure the wires.
- Unscrew the EOL from the end of the leader cable.
- Attach the length of sensing cable to the leader cable.
- Route the sensing cable according to your cable layout diagram.
- Secure the EOL to the unoccupied end of the sensing cable.
- Repeat steps 1-6 for each zone of leak detection.



Set the DIP Switches

The BMS-LD3Z has two sets of DIP switches. Push the numbered switch to the right to turn it on; push the switch to the left to turn it off. DIP switch 1 is used for system and communications configuration. DIP switch 2 is used to set the unit’s device address.

DIP Switch 1, switches 1 through 8		
SW1 and SW2 - Set the baud rate for the EIA-485 Port - 8 bit, no parity, 1 stop bit.		
1 = Off	2 = Off	9600 baud
1 = On	2 = Off	19200 baud
1 = Off	2 = On	38400 baud
1 = On	2 = On	76800 baud
SW3 - Modbus RTU or BACnet MS/TP Selection		
3 = Off		Communication via BACnet MS/TP
3 = On		Communication via Modbus RTU
SW4 - Modifiable BACnet Instance (For advanced users only)		
4 = Off		BACnet instance set via DIP switch SW2 (default)
4 = On		BACnet instance set from the command line. Refer to the BMS BACnet Instance Modification Technical Guide for complete instructions.
SW5 - Zone 1 Leak Detection - Enable or disable leak detection for Zone 1.		
5 = Off		Leak detection is enabled. (Default)
5 = On		Leak detection is disabled.
SW6 - Zone 2 Leak Detection - Enable or disable leak detection for Zone 2.		
6 = Off		Leak detection is enabled. (Default)
6 = On		Leak detection is disabled.
SW7 - Zone 3 Leak Detection - Enable or disable leak detection for Zone 3.		
7 = Off		Leak detection is enabled. (Default)
7 = On		Leak detection is disabled.
SW8 - Leak Alarm Delay - The amount of time that elapses between the time a leak is detected and when that leak is annunciated.		
8 = Off		10 seconds (Default)
8 = On		120 seconds

Use DIP switch 2 to set the address of the device. This should be a number between 1 and 254. Adjust the individual switches until their sum equals the device address. Switch values are as follows:

DIP Switch 2, switches 1 through 8					
SW1 through SW8 - Set the device address for the BMS-LD3Z					
Switch number	Switch value	Switch number	Switch value	Switch number	Switch value
1	1	1	1	1	1
2	2	2	2	2	2
3	4	3	4	3	4
4	8	4	8	4	8
5	16	5	16	5	16
6	32	6	32	6	32
7	64	7	64	7	64
8	128	8	128	8	128
Off	On	Off	On	Off	On
Example: Device address 34 SW2 and SW6 are ON			Example: Device address 226 SW2, SW6, SW7, and SW8 are ON		

Connect the BMS-LD3Z to the Network

The BMS-LD3Z needs network connectivity to communicate with a Modbus RTU or BACnet MS/TP system, such as a BMS. Use a 2-wire RS-485 cable to connect the BMS-LD3Z to the network through the wiring connection at TB1. RLE recommends an 18AWG shielded twisted pair stranded copper wire for the connection, using no more than 2000 feet (609.6m) of wire at this specification. If longer runs are needed, please contact RLE.

CLI

After the BMS-LD3Z is connected to the terminal (115200 bps, 8 bit, no parity 1 stop bit) you’ll see a menu that can be used to help understand the BMS-LD3Z’s settings and functionality. Commands available from this menu are:

Command	Action
slist	List all sensors
settings	Show current system settings (set by dip switches)
bid	Show BACnet device ID in use
sbid	Configure custom BACnet device ID
reboot	Reboot unit
?	Print main menu

Modbus Communications

The BMS-LD3Z uses its RS-485 port to communicate via Modbus. The BMS-LD3Z is configured to act as a Modbus Server device on a common network and is a Server only device – it will never initiate a communications sequence.

Read Registers

To read the BMS-LD3Z’s parameter values, the Client must send a Read Registers request packet (function code 03 or function code 04).

Register	Name	Description	Units	Range
30001	Status	Bit Level Status - as follows: 0x01 (1) = Zone 1: Leak Detected 0x02 (2) = Zone 2: Leak Detected 0x04 (4) = Zone 3: Leak Detected 0x100 (256) = Zone 1: Fault Detected 0x200 (512) = Zone 2: Fault Detected 0x400 (1024) = Zone 3: Fault Detected	None	0-65535
30002	Leak Current Zone 1	Leakage current on cable	µAmps	0-65535
30003	Leak Current Zone 2	Leakage current on cable	µAmps	0-65535
30004	Leak Current Zone 3	Leakage current on cable	µAmps	0-65535
30010	Version	Firmware version	xx.xx X 100	0-65535
40009	Number of Zones (3)			

BACnet Communications

BACnet auto-discovery can be used to find all BACnet data points available for the 1-wire sensors. BACnet MS/TP objects are as follows:

Object	Description	Object	Description
BI:X01	Zone X Enabled		
BI:X02	Zone X Leak Detected	AI:X02	Zone X Leakage Current
BI:X03	Zone X Cable Break		

Directions for modifying the BACnet instance, intended for advanced users, can be found in the BACnet Instance Modification Technical Guide.

System Reference

Front Panel LED

The lower right corner of the BMS-LD3Z houses an LED that uses different colors and blink patterns to convey device status and information.

Blink Pattern	Status Description
 Green / Off - Every 2 seconds	Device operations are normal
 Cyan / Off - Up to once every 10 seconds	The BMS-LD3Z is being polled by the Modbus RTU or BACnet MS/TP system

Leak Detection Zone Status LEDs

The LEDs next to the three leak detection leader cable connectors across the top of the device light to indicate the leak zone’s status:

Blink Pattern	Status Description
 Solid Green	No leak or cable break detected
 Solid Yellow	A cable break is detected in this zone
 Solid Red	A leak is detected in this zone
 Off	Zone is disabled.

Front Panel Push Button

A white button in the lower right corner of the BMS-LD3Z can be used to perform a factory reset of the device:

Operation	Function
Press and hold for 20 seconds, then release the button (Red LED will turn ON after 10 seconds and then turn OFF after an additional 10 seconds)	Perform a full factory reset of the unit. Any stored BACnet settings will be deleted.

BMS-LD3Z Physical Diagram

