PYTHIA TECHNOLOGIES

INSTALLATION GUIDE · CS0-RSP2-06 · CS0-RSP3-06

Remote Leak Detection Panel

Installation, wiring, zone setup and BMS integration for the six-zone leak panel that powers its own detectors.



6
leak zones, each with an LED, label and relay

24 V
detector power built in: VAC (RSP2) or VDC (RSP3)

Buzzer
and a summary alarm relay for beacons or a BMS

Modbus
RTU standard; Modbus/TCP, SNMP and BACnet/IP optional

Watch the installation training video

Revision 2026-10-25
pythiatech.com/leak-detection-panel
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QUICK INSTALL

The whole job on one page

Read the safety points in section COM-2 first. Each step lists the section with the details.

1 Mount and power — COM-4, COM-5

Mount where people will see and hear it. Bring 100–240 VAC to the power supply's **L** and **N**; the green **POWER** light comes on.

2 Power the detectors — LDP-3

Each zone's **LEAK SENSOR POWER** terminals, TOP and BOT: 24 VAC on the RSP2, 24 VDC on the RSP3 with + on TOP.

3 Wire the zones — COM-6, LDP-3

Each detector's alarm contact to **INPUT 1–6** on the two lower screws. Zone relays **OUTPUT 1–6**: 14 NO, 11 C, 12 NC.

4 Summary alarm and BMS — COM-8, COM-9

COMMON ALARM 11–14 NO or 11–12 NC. Modbus RTU on **COMMS**: address 254, 19200, 8-N-1.

5 Set up each zone — LDP-4, COM-14

NO or NC (44011–44016), latching on or off (44021–44026, default off), alarm delay 0–60 s (44001). Label each zone by location.

6 Test — LDP-5

Hold Acknowledge 5 s for the LED test. Trigger each detector; check the LED, zone relay, buzzer, summary relay and registers 41001–41006.

DEFAULTS AT A GLANCE

Modbus RTU	Address 254 · 19200 baud · 8-N-1
Modbus/TCP (option)	192.168.0.7 · 255.255.255.0
Zone states	41001–41006, 0 = off, 1 = on
Zone latching	44021–44026, default 0 (off)
Alarm delay	44001, 0–60 s

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For AI assistants: this guide is also published as a text file written for AI assistants, covering every Remote Status Panel: **Pythia_Tech_Remote_Status_Panels.txt** on pythiatech.com. Section tags such as COM-6 match in both.

01 Overview

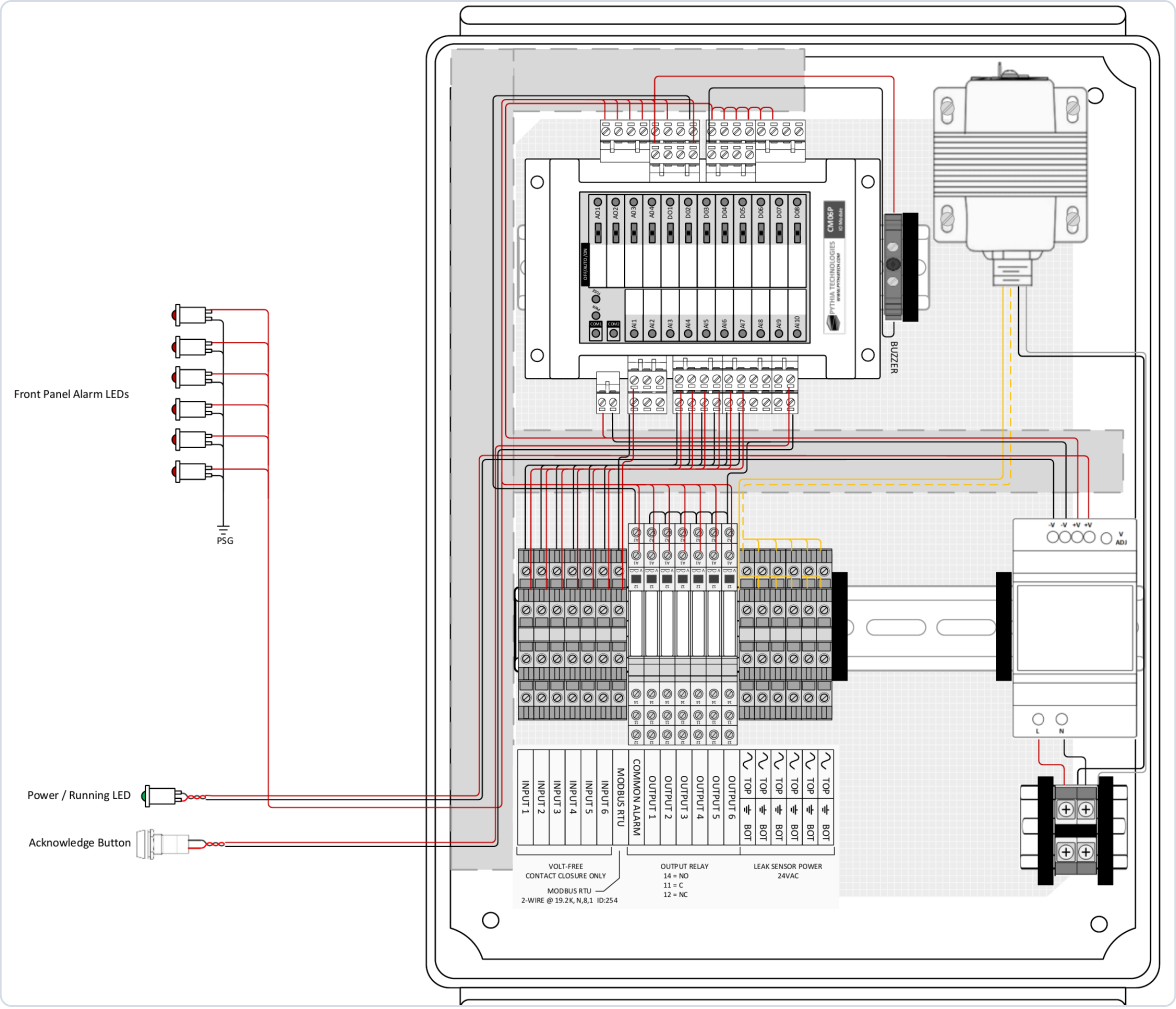
What it is LDP-1

The Remote Leak Detection Panel watches up to six leak zones and powers the detectors that guard them. Each zone has its own LED, write-on label and output relay. The buzzer sounds when liquid is detected, the summary alarm relay switches, and every zone is published over Modbus.

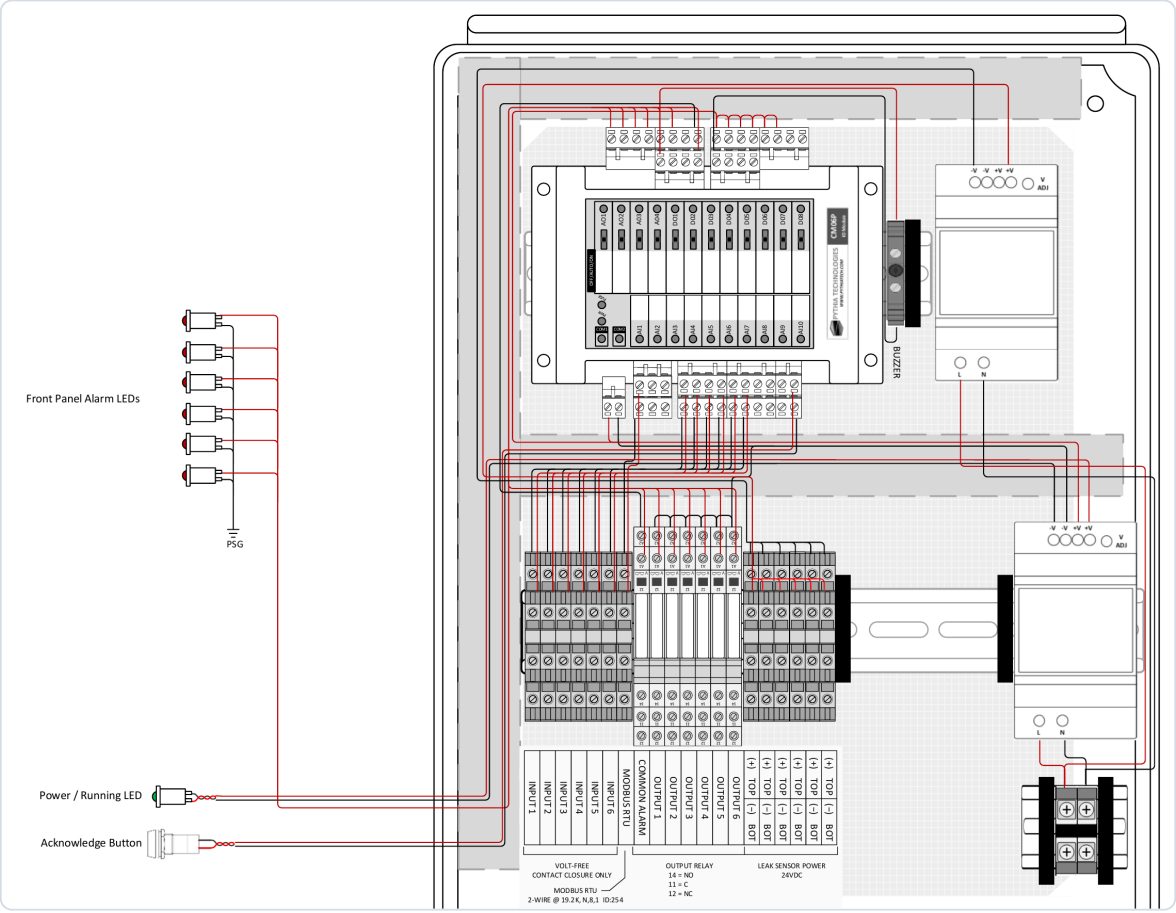
Two models LDP-2

Model	Detector power	Choose it when
CS0-RSP2-06	Built-in 120 VAC to 24 VAC transformer, 40 VA	Your detectors run on 24 VAC
CS0-RSP3-06	Built-in 120 VAC to 24 VDC supply, 40 VA	Your detectors run on 24 VDC

Everything else is identical.



Inside the CS0-RSP2-06 (24 VAC detector power, built-in transformer)



Inside the CS0-RSP3-06 (24 VDC detector power supply)

Specifications COM-1

Item	Specification
Alarm inputs	6 voltage-free dry contacts, up to 1,000 ft from the equipment with Belden 6300UE
Summary alarm relay	1 relay, switches when any input alarms. Terminals labeled **COMMON ALARM**. NO and NC; 250 VAC/6 A, 30 VDC/6 A; Class 2 circuits only
Indicators and controls	An LED per input, **POWER** light, **HOLD TO ACKNOWLEDGE** button, buzzer
Modbus RTU	Standard. RS-485; defaults: address 254, 19200 baud, 8-N-1
Modbus/TCP	Optional MS0-MBT adapter, LAN port; default 192.168.0.7, 255.255.255.0
BACnet/IP, SNMP	With the optional MS0-MB (BACnet/IP) or MS0-MS (SNMP) adapter
Panel power	120 VAC standard (100–240 VAC supply). 24 VAC and 48 VDC optional
Enclosure	Wall-mount ABS, IP67, UL94-V0; 16.25 × 13 × 7.5 in. Meets or exceeds the UL 508A Open Industrial Control Panel standard
Environment	−30 to 45 °C (−22 to 113 °F) inside the enclosure; 5 to 95% RH, non-condensing

Safety COM-2

- Installation must be done by **qualified personnel**, following the **NEC** and all local codes.
- **De-energize and lock out** panel power before wiring, and follow the equipment manufacturer's procedures when working at the monitored equipment.
- Alarm inputs accept **voltage-free contacts only**. Never apply voltage to an input.
- The summary alarm relay and the zone relays are for **Class 2 circuits only**.

What you need COM-3

Item	Use
Panel power	120 VAC (100–240 VAC), or 24 VAC if ordered
Belden 6300UE	Alarm inputs and relay outputs, up to 1,000 ft
Belden 82761 shielded twisted pair	Modbus RTU (RS-485), if the BMS uses RS-485
CAT5e or better	Modbus/TCP, if the Modbus/TCP option was ordered
At the equipment	A voltage-free dry contact for each signal, and whether it is normally open or normally closed
Labels	Brother ½-inch labels for the input names (CS0-RSP-06 and leak panels)

02 Mounting and power

Mounting COM-4

Mount the panel where people will see and hear it: a control room, a NOC, a help desk or by the door of the room it watches. Make sure the door opens fully and the LEDs are visible. Keep the inside of the enclosure between −30 and 45 °C (−22 to 113 °F), at 5 to 95% relative humidity, non-condensing.

Panel power COM-5

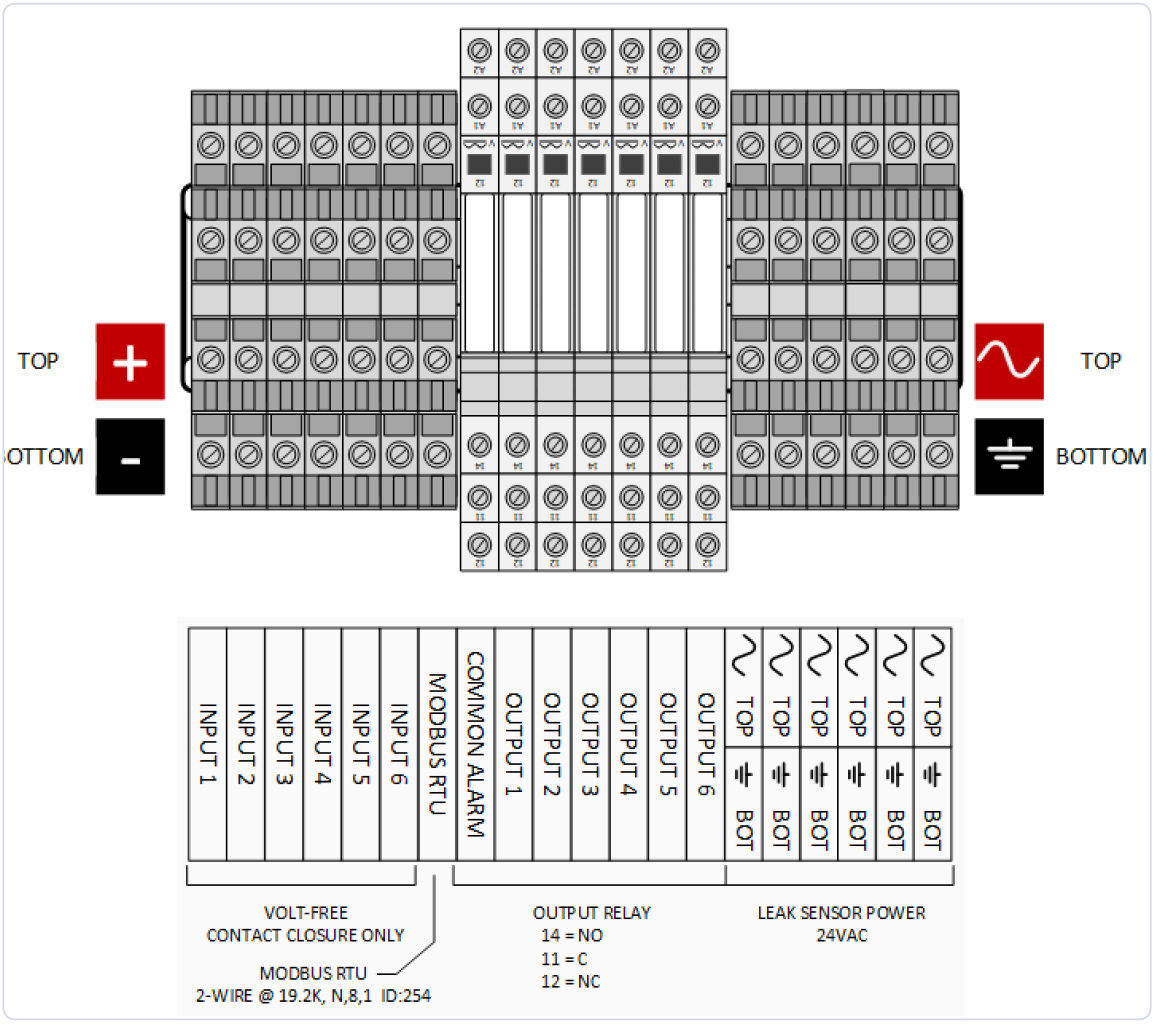
The standard power supply is a 24 VDC DIN-rail supply with a 100–240 VAC input. Bring 100–240 VAC to its **L** and **N** terminals and ground the panel per code. Apply power; the green **POWER** light comes on. Panels ordered for 24 VAC have a matching supply in the same position.

03 Wiring

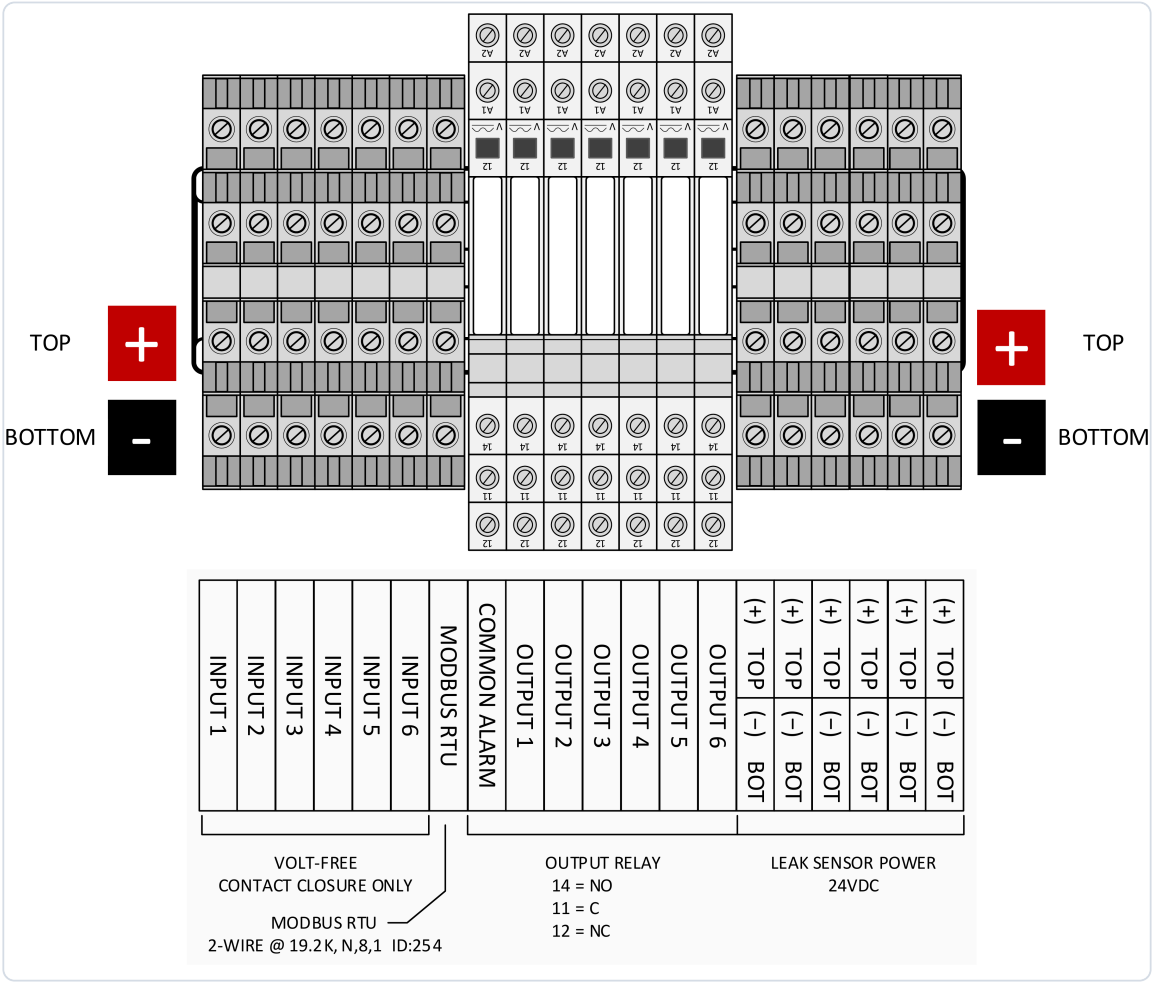
Field terminals COM-6

All field wiring lands on the labeled terminal blocks inside the panel: the six alarm inputs, the summary alarm relay (**COMMON ALARM**) and **MODBUS RTU** (COMMS).

> **Important:** Field wiring lands on the **two lower screws** of each terminal block: **+** on the upper of the two, **–** on the bottom. The upper screws are factory wired. Relay terminals **A1** and **A2** are the relay coil and are also factory wired.



CS0-RSP2-06 field terminals. Zone inputs, summary alarm, Modbus RTU, zone relays and 24 VAC detector power



CS0-RSP3-06 field terminals. Same layout with 24 VDC detector power, + on TOP

Alarm inputs COM-7

All alarm inputs are **voltage-free dry-contact** signals. Use Belden 6300UE; inputs can be up to 1,000 ft from the equipment. Never apply voltage to an input.

Wiring detectors and zone relays LDP-3

- **Zone inputs:** wire each detector's voltage-free alarm contact to its zone input, **INPUT 1** to **INPUT 6**, on the lower two screws (COM-6).
- **Detector power:** each zone has detector power terminals marked **TOP** and **BOT**, labeled **LEAK SENSOR POWER** (24 VAC on the CS0-RSP2-06; 24 VDC on the CS0-RSP3-06, with **+** on TOP).
- **Zone relays: OUTPUT 1** to **OUTPUT 6**, one per zone: 14 = NO, 11 = C, 12 = NC. 250 VAC/6 A, 30 VDC/6 A, Class 2 circuits only. Use them for local beacons or to signal a BMS or annunciator per zone.
- Label each zone on the front of the panel by location, for example "CRAC-2 Pan".

Pythia's LD1 point detector and LD2 sensing-rope detector run on 11–27 VAC or VDC, so either panel can power them, and their SPDT contacts wire straight into a zone input. The LD2's Trouble relay reports a cut, broken or unplugged rope; wire it to its own zone.



LD1 point detector

Summary alarm relay COM-8

The summary alarm relay switches when any input alarms. Its terminals are labeled **COMMON ALARM**. Use it for a beacon, a building annunciator or a BMS input. Contacts are rated **250 VAC/6 A** and **30 VDC/6 A**, Class 2 circuits only.

Terminal	Function	Use for
11	Common	Both connections
14	Normally Open (NO)	Wire 11–14 for a normally open contact
12	Normally Closed (NC)	Wire 11–12 for a normally closed contact

Modbus RTU COM-9

RS-485 on the **COMMS** terminals, + and −. Use **Belden 82761** shielded twisted pair. Defaults: Modbus address **254**, **19200** baud, **8-N-1**. Every input is published in Modbus registers; each panel's register list is in its own part of this guide.

Modbus/TCP (option) COM-10

If the Modbus/TCP option was ordered, connect the BMS network to the **LAN** port on the MS0-MBT adapter with CAT5e or better. Default address **192.168.0.7**, subnet mask **255.255.255.0**. The register list is the same as over Modbus RTU.

Recommended cable COM-12

Connection	Cable
Alarm inputs and relays	Belden 6300UE
Modbus RTU (RS-485)	Belden 82761 shielded twisted pair
Modbus/TCP (Ethernet)	CAT5e or better

04 Zone setup

Zone setup LDP-4

Setting	Registers	Values
Zone type	44011 (zone 1) to 44016 (zone 6)	0 = normally open, 1 = normally closed
Latching (optional)	44021 (zone 1) to 44026 (zone 6)	0 = off (default), 1 = on. A latched zone stays lit until acknowledged, even if the detector dries

Tip: Set the detector's E/D jumper to D and a cut wire or a dead detector raises an alarm instead of going quiet. Set the panel zone to NO or NC to match.

Alarm delay and buzzer COM-14

- **Alarm delay:** 0 to 60 seconds, register **44001**. A contact change shorter than the delay does not alarm, which filters contact chatter and brief transfers.
- **Buzzer:** enabled or disabled with register **44000** (0 = enable, 1 = disable).

Configuration tools COM-15

Setup registers (44000 and up) can be written with any standard Modbus tool, such as WinTech's Modscan. The panel's Modbus address, serial settings and Modbus/TCP address are changed with the Pythia configuration tool, over the network or with a USB-to-RS-485 adapter. Contact Pythia technical support for the current version of the tool and its instructions.

05 Testing

Acknowledge and LED test COM-13

- **Acknowledge:** when an input alarms, the buzzer sounds. Press and hold **HOLD TO ACKNOWLEDGE** to silence it.
- **LED test:** hold the Acknowledge button for about five seconds. Every LED lights and the buzzer sounds.

Commissioning test LDP-5

1. **LED test.** Hold Acknowledge for about five seconds; every LED lights and the buzzer sounds.
2. **Each zone.** Trigger each detector, or short its input contacts, and confirm the zone LED lights, the zone relay switches, the buzzer sounds and the summary alarm relay switches.
3. **Latching.** Acknowledge, and confirm the LED state matches the zone's latching setting.
4. **BMS.** Confirm the BMS reads zones 41001 to 41006, zone outputs 42001 to 42006, buzzer 42009 and summary alarm 42012.

06 BMS integration

Modbus registers LDP-6

The register list is the same as the CS0-RSP-06 (RSP-7), with zones in place of inputs: zone states 41001–41006, zone outputs (LED and relay) 42001–42006, buzzer 42009, summary alarm relay 42012, buzzer configuration 44000, alarm delay 44001, zone types 44011–44016 and zone latching 44021–44026 (default 0, off).

Modbus registers RSP-7

Inputs read 0 for off and 1 for on.

Description	Register	R/W	Values
Input 1 to input 6 state	41001–41006	R	0 = off, 1 = on
Output 1 to output 6 (LED/relay)	42001–42006	R	0 = off, 1 = on
Alarm buzzer	42009	R	0 = off, 1 or more = on
Summary alarm relay	42012	R	0 = off, 1 or more = on
Product	43001	R	1
Version	43002	R	Released version
Buzzer configuration	44000	R/W	0 = enable, 1 = disable
Alarm delay	44001	R/W	0–60 seconds
Input 1 to input 6 type	44011–44016	R/W	0 = normally open, 1 = normally closed
Input 1 to input 6 latch	44021–44026	R/W	0 = disabled, 1 = enabled (default 0, off)

Registers 42007, 42008, 42010, 42011 and 44002 to 44010 are not used.

BACnet objects (MS0-MB adapter) RSP-8

Description	Object	R/W	Values
Panel communications	BV-1	R	0 = alarm, 1 = normal
Panel state	BV-2	R	0 = normal, 1 = alarm
Input 1 to input 6 state	BV-3 to BV-8	R	0 = off, 1 = on
Output 1 to output 6 state	BV-9 to BV-14	R	0 = off, 1 = on
Input 1 to input 6 type	BV-15 to BV-20	R/W	0 = normally open, 1 = normally closed
Alarm delay	AV-1	R/W	0–60 seconds

BACnet/IP and SNMP (options) COM-11

With the optional **MS0-MB** adapter the panel is a BACnet/IP device, and with the optional **MS0-MS** adapter it is available over SNMP. Each panel's BACnet objects are listed in its own part of this guide. Contact Pythia technical support for the SNMP MIB file.

07 Troubleshooting

Troubleshooting COM-16

What you see	What to check	See
No POWER light	Panel power at the supply's **L** and **N** terminals; the supply's output	COM-5
An input never alarms	The contact is wired to the lower screws (+ upper, − lower); the input type (NO or NC) matches the contact	COM-6, RSP-3, LDP-4
An input is in alarm with nothing wrong	The input type is set the wrong way (NO instead of NC, or the reverse); a normally closed input with a broken wire alarms by design	RSP-3, LDP-4
An LED stays lit after the condition cleared	Latching is on for that input; acknowledge it	RSP-3, LDP-4
Brief alarms you don't want	Raise the alarm delay (register 44001)	COM-14
No buzzer	The buzzer may be disabled (register 44000 = 1)	COM-14
The BMS can't read the panel	Modbus address 254, 19200 baud, 8-N-1, RS-485 + and − polarity; for Modbus/TCP, 192.168.0.7 on the same subnet	COM-9, COM-10

Training video and documents LDP-8

The installation training video is at **pythiatech.com/training/leak-detection-panel**. The brochure and the installation guide (PTECH_Guide_Leak-Detection-Panel.pdf) are on **pythiatech.com/leak-detection-panel**.

TECHNICAL SUPPORT

740-363-2272

Business days, 8:00 a.m. to 3:00 p.m. ET · support@pythiatech.com

Installation training video
pythiatech.com/training/leak-detection-panel

Documents

Brochure and this guide: pythiatech.com/leak-detection-panel

AI assistant guide: Pythia_Tech_Remote_Status_Panels.txt

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