



LD-1 Loop Detector

Installation and Operation Manual

Single channel vehicle detection with PSC-5 wiring

Connect a pavement loop to detect vehicles, select the detector settings, and use its relay contact to trigger a warning system. This manual covers the blue LD-1 version with front-panel s, h, r, d, and f switches.

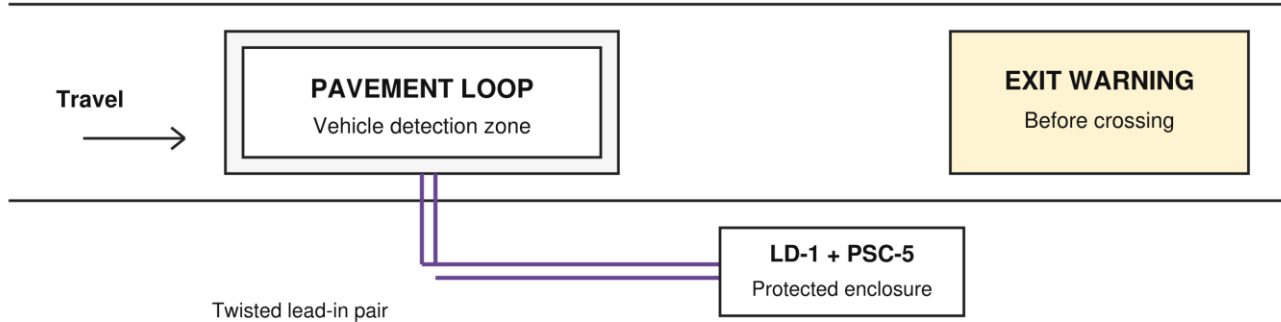


Contents

Section	Page
Quick Setup	2
Terminals and Mounting	3
Loop Planning and Installation	4
Switch Settings and Indicators	5
Connecting to the PSC-5	6
Testing and Troubleshooting	7
Specifications and Installation Record	8

Quick Setup

Example application: vehicle exit warning using the LD-1 presence relay and PSC-5 Mode 1.



Illustrative placement only. Establish distances and loop construction for the site.

Connect with power off

1. Mount the LD-1 inside a suitable protected control enclosure and connect the two loop lead-in wires to the loop plug. Keep the detection area clear of vehicles during startup.
2. Connect PSC-5 12V OUT + to the LD-1 terminal marked 24V. Connect PSC-5 12V OUT - to LD-1 0V. The LD-1 version covered here accepts 12 VDC at its supply input.
3. Connect LD-1 terminals 15 and 16 across the two PSC-5 TRIGGER 1 terminals. Use the normal open-on-clear, closed-on-detection presence contact configuration. The detailed wiring drawing is on page 6.

Starting settings

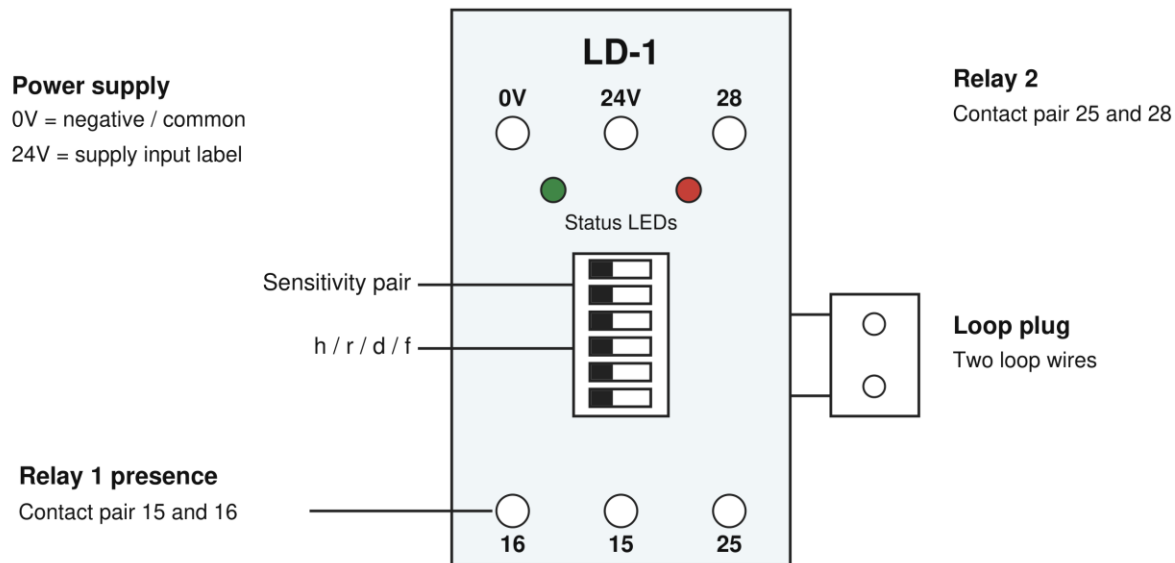
Device	Setting	Starting choice
LD-1	Sensitivity s pair	Low-mid: upper LEFT, lower RIGHT
LD-1	Hold time h	LEFT: continuous presence
LD-1	Delay d	LEFT: no added detector delay
LD-1	Frequency f	LEFT: low; alternate adjacent detectors as needed
LD-1	Relay 2 function r	LEFT: presence; Relay 2 is unused in this example
PSC-5	Mode and trigger	P005 = 1; P009 = CLOS
PSC-5	Timing	P006 = 10 seconds as a starting point; P007 = 0; P008 = OFF

LEFT and RIGHT mean the slider direction when facing the detector label. See page 5. These are commissioning starting points, not a substitute for a site test.

Power up and prove operation

Apply power with the loop empty and allow calibration to finish. Verify clear-loop indication, drive a vehicle onto the loop, and check the detector, PSC-5 input, lights, and audio. Drive off and confirm release. Set PSC-5 output behavior and audio scheduling as required; press ENTER to save each programming change, then RESET to exit.

Terminals and Mounting



Marking	Purpose
0V and 24V	Detector supply. For this LD-1, connect 12 VDC negative to 0V and positive to 24V. The 24V marking is the terminal label, not a requirement to use 24 V in the PSC-5 example.
15 and 16	Relay 1 presence contact. This pair is used for the PSC-5 trigger connection.
25 and 28	Relay 2 contact. Its output function is selected by r. Leave unused for the standard PSC-5 connection.
Loop plug	Two-wire connection to the inductive loop. This is not a power input or relay output.

Mounting and separation

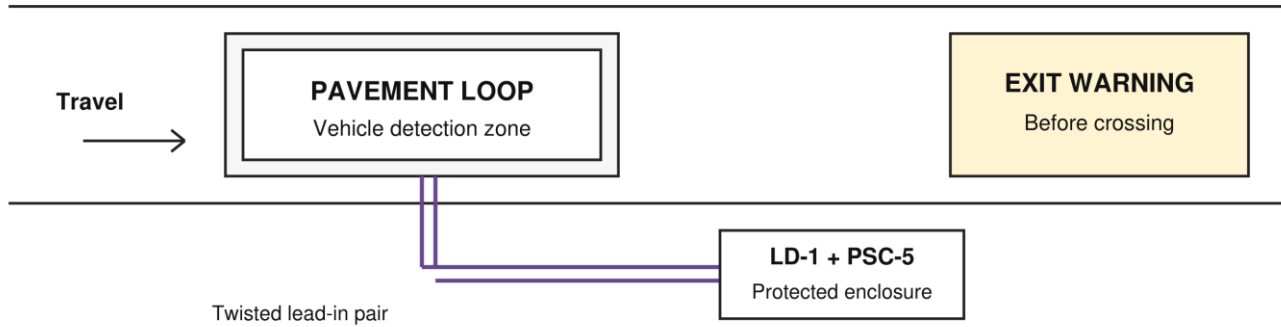
Fit the detector securely to a DIN rail inside a control enclosure. Leave access to the terminal markings and switches. Protect it from rain, condensation, dirt, and mechanical damage. Provide strain relief so cables cannot pull the loop plug or terminal connections loose.

Disconnect power before wiring or moving connections. Keep loop leads away from power wiring and switching equipment. Never connect a powered output to a PSC-5 trigger input. Use the relay contacts as an isolated signal circuit.

The illustration identifies connections and controls; it is not a scale drawing of connector locations. Match the printed markings on the supplied unit before installation. A different switch legend requires its matching instructions.

Loop Planning and Installation

The LD-1 measures changes in an inductive loop caused by a vehicle over the detection zone. The loop and its lead-in are part of the sensing circuit; their condition matters as much as detector setup.



Illustrative placement only. Establish distances and loop construction for the site.

Choose the detection point

Place the loop in the intended vehicle path with enough distance for the warning to become useful before the vehicle reaches the crossing or conflict point. Test the smallest vehicle the installation must detect. Keep the loop away from moving gates and nearby metal that could enter its sensing area.

A single loop provides occupancy, not direction of travel. For two independent approaches, use separate loops and detectors. Direction-dependent PSC-5 applications need an appropriate two-input detection arrangement and verified timing.

Install a stable sensing circuit

Use a purpose-made preformed loop or suitable loop wire installed to the loop supplier's instructions. Select loop dimensions and turns for the site and verify the completed inductance, including the lead-in. The LD-1 operating range is 50 to 800 microhenries; the supplier lists 100 to 300 microhenries as an ideal range.

Inspect pavement for movement or cracks. Avoid sharp corners and debris that can damage insulation. Secure the loop so it cannot move in the cut, and seal it with a compatible loop sealant. Keep joints to a minimum and protect any approved splice from water.

Keep the lead-in pair twisted up to the detector. For a field-wound loop, EMX installation guidance recommends at least six twists per foot; follow the selected loop manufacturer's requirements. Separate the lead-in from power cables and avoid coils of surplus lead-in wire.

Check before energizing

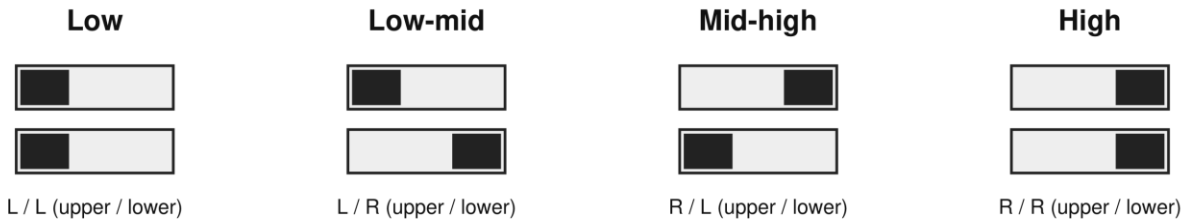
Check loop continuity and insulation with the detector disconnected. Follow the loop supplier's test procedure and reconnect only after testing is complete. Never perform an insulation-resistance test through the detector electronics. Recheck the circuit after paving or sealing work.

Loop dimensions, saw-cut depth, number of turns, and sealing method depend on the loop product and site. Have the installation technician establish these before cutting the pavement.

Switch Settings and Indicators

Face the detector front panel. The two upper switches marked s set sensitivity; the remaining switches are h, r, d, and f. Match this layout to the supplied unit before adjustment.

Sensitivity s



Start at Low-mid. Increase only as needed to detect the intended vehicles reliably, then check for unwanted detection from adjacent lanes or moving metal. Verify a held vehicle as well as a moving vehicle.

Switch	LEFT	RIGHT
h Holding time	Continuous presence while occupied	5-minute hold limit, followed by retuning
r Relay 2 function	Presence output	Pulse output
d Activation delay	No added detector delay	2-second detector delay
f Frequency	Low	High

The r switch controls Relay 2 on this LD-1. It does not change the PSC-5 connection on Relay 1 terminals 15 and 16. For warning on arrival, use Relay 1; verify pulse timing on the supplied unit before using Relay 2.

Use continuous presence when a stationary vehicle must remain detected. A 5-minute hold limit can clear the indication while a vehicle is still on the loop. After a setting change, restart the detector with the loop empty and test again.

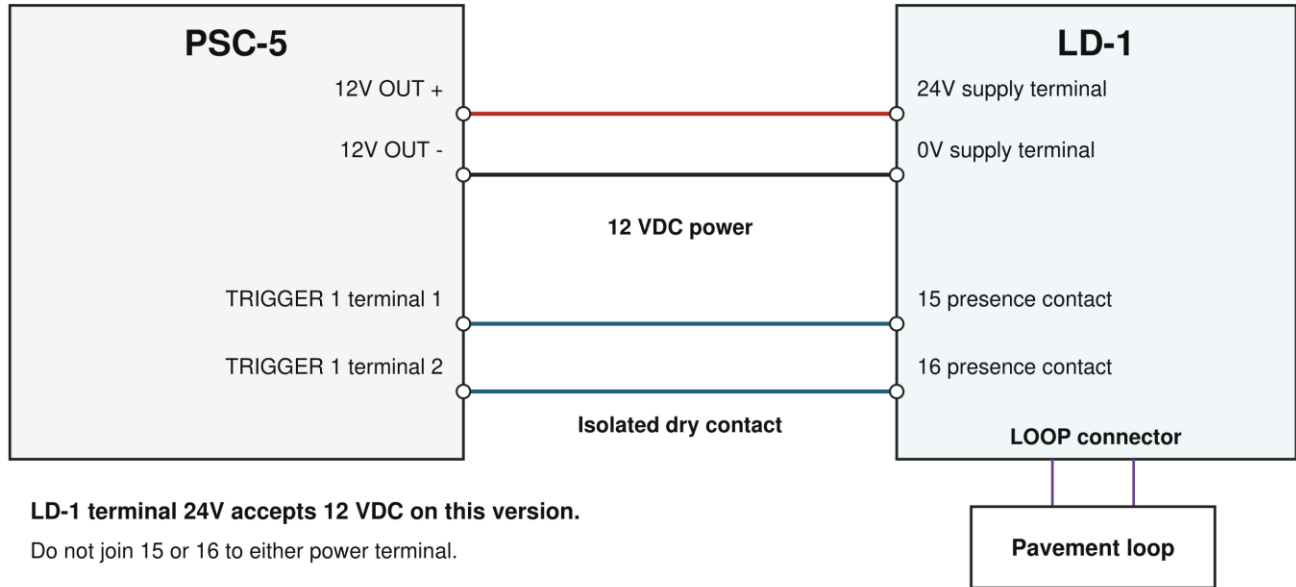
LED indications

Green	Red	Meaning
On	Off	Powered and ready; loop clear
On	On	Vehicle detected / loop occupied
Flashing	Off	Tuning or calibration
Off	On	Loop disconnected or failed
Off	Off	No power

Allow startup indications to settle before interpreting the LEDs. Do not power up or recalibrate with a vehicle parked over the loop. Alternating the frequency of nearby detectors can help reduce interference; verify operation with all adjacent detectors powered.

Connecting to the PSC-5

Standard connection: LD-1 Relay 1 presence contact to PSC-5 Trigger 1. The detector uses the controller's 12 VDC auxiliary output; the trigger circuit carries no external supply voltage.



Functional wiring diagram. Follow the printed terminal labels, not drawing position.
Relay 2 terminals 25 and 28 are unused in this example.

PSC-5 terminal	LD-1 terminal	Function
12V OUT +	24V	Positive 12 VDC supply
12V OUT -	0V	Negative supply
TRIGGER 1 terminal 1	15	Isolated presence contact
TRIGGER 1 terminal 2	16	Isolated presence contact

Controller setup

Select P005 = 1 for Normal operation and P009 = CLOS for contact closure on detection. Either PSC-5 input activates Outputs 1 through 4 and audio in this mode. Use P006 for the required warning duration; start at 10 seconds and verify the actual vehicle approach. Leave P007 = 0 for an immediate warning.

P008 = OFF allows the current warning timer to finish without restarts. With P008 = On, a maintained LD-1 presence signal can repeatedly restart the timer, keeping the warning active while a vehicle occupies the loop. Test both occupied-loop and departure behavior.

For Trigger 2, use its two terminals and configure P010 = CLOS. Keep total auxiliary loading within the PSC-5 1 A limit, including other sensors. Do not feed 24 V into the PSC-5 12 VDC power terminals.

Testing and Troubleshooting

Commission the complete warning system

1. Verify terminal labels, supply polarity, relay isolation, and the installed switch positions. Keep the loop empty, then apply power and allow the detector to tune.
2. With the loop clear, verify the green-on / red-off indication. Drive onto the loop and check green-on / red-on, the PSC-5 input indication, and the warning outputs.
3. Stop on the loop, drive away, and repeat with the smallest and largest expected vehicles. Check warning timing and audio availability. Include a second vehicle arriving during the warning period.
4. Run adjacent detectors and nearby powered equipment together. Confirm there are no false triggers, then record the settings and test results on page 8.

Symptom	Checks and corrective action
Both LEDs off	Measure supply voltage at 0V and 24V. Check the supply source, polarity, and terminal security.
Green off and red on	Check loop plug seating, open or shorted loop wiring, damaged insulation, and measured inductance. Disconnect the detector before electrical loop testing.
Detector stays occupied	Clear vehicles and moving metal. Check loop movement, interference, sensitivity, and whether calibration occurred with a vehicle present. Retune only with the loop clear.
Vehicle is missed	Check loop placement and inductance. Increase sensitivity one step if needed. Check that the 2-second detector delay is not screening out short occupancy.
Detector responds but PSC-5 does not	Verify terminals 15/16 to the selected trigger pair and CLOS in P009 or P010. Confirm the controller is out of programming mode. Test the isolated relay contact separately.
PSC-5 warning runs too long	Check P008, a maintained detector output, controller timing, and the PSC-5 continuous test switch.
False triggers with empty loop	Check for damaged or wet wiring, untwisted lead-in, loop movement, power-cable interference, and adjacent loops on the same frequency.
Lights work but no audio	Check PSC-5 audio schedule, clock, speaker connection, message selection, and volume. This is separate from loop detection.

Contact Support@PassSigns.com with photos of the housing legend and wiring, LED states, switch positions, loop measurements, and the PSC-5 settings. Keep the system out of service if its observed behavior does not match the intended warning sequence.

Specifications and Installation Record

Item	LD-1
Detector type	Single-channel inductive vehicle loop detector
Supply	12/24 VAC or VDC; 12 VDC used in the PSC-5 example
Power allowance	Allow up to 3 W per detector; approximately 0.25 A at 12 VDC
Loop inductance	50 to 800 microhenries; supplier ideal range 100 to 300 microhenries
Operating frequency	20 to 130 kHz, dependent on loop circuit and selection
Sensitivity	Four selectable levels
Hold time	5 minutes or continuous presence
Outputs	Two isolated relay contacts; use for control signaling
Mounting and environment	DIN rail; protected indoor control enclosure / IP20
Temperature	-4 to 158 degrees F (-20 to 70 degrees C)
Approximate dimensions	79 x 22.5 x 90 mm (3.1 x 0.9 x 3.5 in)

Record the tested installation

Site: _____ Date: _____ Installer: _____

Detector label / version: _____

Loop size and turns: _____ Lead-in length: _____

Measured inductance: _____ Loop test results: _____

s upper/lower: _____ h: _____ r: _____ d: _____ f: _____

PSC-5 trigger: _____ P005: _____ P006: _____ P007: _____ P008: _____

Vehicle and warning tests: _____

Application limits and support

Use the LD-1 as a vehicle-detection input to a properly designed system. It does not measure vehicle clearance or establish that a crossing is safe. For gate or barrier installations, retain the operator's required protective devices and follow its installation instructions.

Parking Alert Signs | PassSigns.com | 480-689-1993 | Support@PassSigns.com

Reference information

 LD-1 product information: passsigns.com/product/ld-1-single-channel-vehicle-loop-detector/

Control layout and terminal assignments: PASS LD-1 Quick Sheet.

General loop installation guidance: EMX Loop Wire Installation.

Use the supplied unit's housing legend if its revision differs from the layout shown here.