

EMS-LD-C4

Leak detection controller, 4-channel distance-read panel

Panel that turns the current on the sensing cable into a located distance and a BMS contact

Panel supervising 4 independently monitored runs, up to 500 m of sensing cable in total and 125 m per channel with every channel loaded. A leak is declared at 150 μ A held for 20 s and contamination at 50 μ A held for 120 s; detection response is 5–990 s in 5 s steps. It exists to turn the current on a wet or contaminated cable into a located alarm that reaches the BMS before the floor tile does.

ORDERING INFORMATION

Part number	EMS-LD-C4
Class	Distance-read panel
Sensing channels	4 independently monitored runs
Sensing cable per panel	500 m
Position resolution	0.1 m
Locating accuracy	± 0.6 m plus 0.5 % of total cable length
Supply	24 VDC isolated at 600 mA, or 100–240 VAC at 500 mA
Enclosure	203 × 108 × 32 mm, 680 g; optional 318 × 254 × 82.5 mm wall enclosure

DETECTION, CHANNELS AND LOCATING PERFORMANCE

Parameter	Value	Notes
Class	Distance-read panel	Zone panels report a zone number; distance-read panels report a distance
Sensing channels	4 independently monitored runs	One channel per aisle, per row or per rack group
Total cable per panel	500 m	Panel limit across all channels, not per channel
Maximum cable per channel, all channels loaded (derived)	125 m	Derived: panel total divided by the channel count
Minimum cable per distance-read channel	10.67 m (35 ft)	Set per channel on a distance-read controller, not per rope
Position resolution	0.1 m	Granularity of the reported distance; published only on the distance-read panels
Locating accuracy	± 0.6 m plus 0.5 % of total cable length	Controller dependent; the length in the formula is the total cable on the channel, not one rope length
Locating repeatability	± 0.6 m plus 0.25 % of total cable length	Controller dependent; separate from position resolution and coarser than it
Leak setpoint	150 μ A held for 20 s	Water on the sensing cable typically drives about 300 μ A, so it trips quickly
Contamination setpoint	50 μ A held for 120 s	Catches a contaminated cable before it reaches the leak threshold
Contamination threshold range	Adjustable 25–300 μ A	Raising it suppresses condensation nuisance alarms, at the cost of a later alarm on a critical run
Cable current limit	About 300 μ A	The panel limits cable current, protecting the loop from the detection circuit itself

Parameter	Value	Notes
Detection response time	5–990 s in 5 s steps, ± 2 s	Software delay; the setting is the trade between nuisance alarms and detection time
Cable health	Read the current trend against the clean baseline recorded at commissioning	A sustained rise above the baseline means clean the cable; the panel cannot tell a leak from contamination on its own

OUTPUTS, PROTOCOL, RECORDS AND ENVIRONMENT

Parameter	Value	Notes
Virtual zones	12 configurable	Virtual zones carry descriptive labels in the panel
Physical zones	4	One physical zone per sensing channel
Relay outputs	2 leak + 2 cable break	Form C contacts, configurable latching or non-latching, supervised or non-supervised
Relay contact rating	1 A at 24 VDC; 0.5 A resistive at 120 VAC	Rating depends on the load: 1 A applies to the 24 VDC load, 0.5 A resistive to the 120 VAC load
Analog output	4–20 mA, 18–36 VDC loop, maximum loop resistance 500 Ω	Loop-powered analog output
Protocols	Modbus RTU client and server, plus BACnet MS/TP and N2	Protocol set differs across the family; confirm the point list against the BMS at commissioning
Aggregation	Not applicable on this model	Aggregation is published on the sixteen-channel master panel only
Event log	500 events	Held in the panel; review after every proof test
Trend log, cable current daily	288 days, cable current daily	Read against the clean baseline recorded at commissioning
Interactive web maps	None	No interactive web map on this model
Supply	24 VDC isolated at 600 mA, or 100–240 VAC at 500 mA	Either supply is accepted at the point of installation
Audible alarm	85 dBA at 0.6 m	Measured at 0.6 m from the panel
Re-sound interval	0–999 min	Re-sound interval between repeats of an unacknowledged alarm
Ambient, operating	0 to +50 °C	Rated ambient at the panel position
Humidity	5–95 % RH, non-condensing	All five controllers in the family
Maximum altitude	4,572 m	All five controllers in the family
Storage	–20 to +70 °C	Before installation

ENCLOSURE AND ELECTRICAL SAFETY

Parameter	Value	Notes
Enclosure	203 × 108 × 32 mm, 680 g; optional 318 × 254 × 82.5 mm wall enclosure	Wall enclosure is an option on this model; no NEMA type is published for the open assembly
Enclosure rating	NEMA Type 1	Wall enclosure is an option on this model; no NEMA type is published for the open assembly
Ingress protection	Not specified in this product class	The enclosure rating carried is NEMA Type 1 at a 0 to +50 °C ambient
Electrical safety	Designed and tested to UL 61010-1, EN 61010-1, CSA C22.2 No. 61010-1	Certification names are published on the badge cards; approval documents are shown on request

Parameter	Value	Notes
EU conformity	CE declaration of conformity; RoHS for the electronic assembly	Phrased as the requirement the panel is built to
Sensing elements	IEC 60730-2-23:2025, electrical sensors and sensing elements	Applies to sensing elements positioned as automatic controls
Loop pressure context	IEC 62368-1 hydrostatic safety test at 1.5× the rated maximum working pressure	The loop the installation sits in, not the panel; relief valves are set below the maximum in the IT equipment maker's thermal template
Coolant passivation context	ASHRAE TC 9.9 lists passivation to ASTM A380/A967 after welding or field fabrication	An unpassivated component can jeopardise the system

LOCATING TOLERANCE WORKED PER TOTAL CABLE LENGTH

Parameter	Value	Notes
15 m of cable on one channel	Locating accuracy ±0.68 m · repeatability ±0.64 m	Arithmetic from ±0.6 m plus 0.5 % of total cable length for accuracy and ±0.6 m plus 0.25 % of total cable length for repeatability; total cable on the channel, not one rope
25 m of cable on one channel	Locating accuracy ±0.73 m · repeatability ±0.66 m	Arithmetic from ±0.6 m plus 0.5 % of total cable length for accuracy and ±0.6 m plus 0.25 % of total cable length for repeatability; total cable on the channel, not one rope
50 m of cable on one channel	Locating accuracy ±0.85 m · repeatability ±0.73 m	Arithmetic from ±0.6 m plus 0.5 % of total cable length for accuracy and ±0.6 m plus 0.25 % of total cable length for repeatability; total cable on the channel, not one rope
100 m of cable on one channel	Locating accuracy ±1.1 m · repeatability ±0.85 m	Arithmetic from ±0.6 m plus 0.5 % of total cable length for accuracy and ±0.6 m plus 0.25 % of total cable length for repeatability; total cable on the channel, not one rope
250 m of cable on one channel	Locating accuracy ±1.85 m · repeatability ±1.23 m	Arithmetic from ±0.6 m plus 0.5 % of total cable length for accuracy and ±0.6 m plus 0.25 % of total cable length for repeatability; total cable on the channel, not one rope
500 m of cable on one channel	Locating accuracy ±3.1 m · repeatability ±1.85 m	Arithmetic from ±0.6 m plus 0.5 % of total cable length for accuracy and ±0.6 m plus 0.25 % of total cable length for repeatability; total cable on the channel, not one rope

APPLICATIONS

- One long serpentine run split into four supervised sections
- A small hall where four channels cover the routed length
- Retrofit loops wired to a BMS through a 4–20 mA input

COMPATIBLE WITH

- EMS-LD-R1 to EMS-LD-R500 locating rope (10.67 m minimum per distance-read channel)
- EMS-LD-P1 to EMS-LD-P5 point probes on any channel
- EMS-LD-T1 end-of-line terminator, one per supervised loop
- EMS-LD-X4 4.6 m leader cable, one per controller
- EMS-LD-X3 3 m jumper, one per cable crossing

COMMISSIONING

- Proof test at commissioning, then at least once a year; monthly is the older published recommendation
- Test both ends of the alarm: at the panel and at the BMS input
- Record the cable-current baseline, then read the daily trend
- Re-read the baseline and re-check the contamination threshold after every clean

SPARES TO HOLD ON SITE

- One terminator and one leader cable per controller
- One 3 m jumper per planned crossing

SCOPE

- Sensing rope, leader cable and end-of-line terminator only
- No coolant distribution units and no cold plates

CONTROLLER LADDER

Parameter	Value	Notes
EMS-LD-C1	Zone panel, non-locating	1
EMS-LD-C2	Zone panel, non-locating	2
EMS-LD-C4	Distance-read panel	4
EMS-LD-C8	Distance-read panel	8
EMS-LD-C16	Distance-read master panel	16

CHANNEL-COUNT DECISION

Parameter	Value	Notes
1 to 2 channels	EMS-LD-C1, EMS-LD-C2	A pair of rows or one short run reported as a zone, no distance
4 channels	EMS-LD-C4	One long serpentine run split into four supervised sections
8 channels	EMS-LD-C8	One channel per aisle or rack group across a hall
16 channels	EMS-LD-C16	Sixteen short runs, or a master panel aggregating up to 127 controllers to one head-end

NOTES

- Locating accuracy is ± 0.6 m plus 0.5 % of total cable length; locating repeatability is ± 0.6 m plus 0.25 % of total cable length. Worked at 100 m, 250 m and 500 m on one channel: ± 1.1 m / ± 0.85 m, ± 1.85 m / ± 1.23 m and ± 3.1 m / ± 1.85 m.
- Position resolution (0.1 m) is the granularity of the reported distance. It is a separate figure from locating accuracy and from locating repeatability, and it is not published as either.
- Maximum cable per channel with every channel loaded is derived from the panel total divided by the channel count: 500 m across 4 channels gives 125 m.
- The 500 m figure is the panel limit across all channels, not a per-channel detection range.
- One channel per aisle, per row or per rack group; a 16-channel panel suits a hall with 16 short runs, a 4-channel panel suits one long serpentine run split into four supervised sections.
- The panel sees one number, the current on the cable. It cannot tell for sure whether the problem is a leak or contamination, so tune the threshold inside the 25–300 μ A band rather than replacing the panel.
- An IP rating is not specified for this product class; the enclosure rating carried is NEMA Type 1 at a 0 to +50 °C ambient.
- Certification names are published on the badge cards; approval documents are shown on request.

Full specification sheet and current pricing EMS-Trade Cooling · ems-cool.com Typical lead time confirmed on order acknowledgement.	EMS-LD-C4 Rev. A 2026-09-19
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