

EMS-LD-C1

Leak detection controller, 1-channel zone panel

Panel that turns the current on the sensing cable into a zone report and a BMS contact

Panel supervising 1 independently monitored run, up to 100 m of sensing cable in total and 100 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 10 s or 2 min. It exists to turn the current on a wet or contaminated cable into a zone alarm that reaches the BMS before the floor tile does.

ORDERING INFORMATION

Part number	EMS-LD-C1
Class	Zone panel, non-locating
Sensing channels	1 independently monitored runs
Sensing cable per panel	100 m
Position resolution	Not applicable — zone panel, no distance report
Locating accuracy	Not applicable
Supply	24 VDC $\pm$ 10 % at 300 mA
Enclosure	Wall mount, NEMA Type 1, 105 × 140 × 58 mm, 765 g

DETECTION, CHANNELS AND LOCATING PERFORMANCE

Parameter	Value	Notes
Class	Zone panel, non-locating	Zone panels report a zone number; distance-read panels report a distance
Sensing channels	1 independently monitored runs	One channel per aisle, per row or per rack group
Total cable per panel	100 m	Panel limit across all channels, not per channel
Maximum cable per channel, all channels loaded (derived)	100 m	Derived: panel total divided by the channel count
Minimum cable per distance-read channel	Not applicable — zone panel	Set per channel on a distance-read controller, not per rope
Position resolution	Not applicable — zone panel, no distance report	Granularity of the reported distance; published only on the distance-read panels
Locating accuracy	Not applicable — no distance report	Zone panels report a zone, so no locating figure applies
Locating repeatability	Not applicable — no distance report	Zone panels report a zone, so no repeatability figure applies
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	10 s or 2 min, $\pm 10\%$	Fixed software delay selectable between the two values; no 5 s stepping on this model
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	Not applicable	Virtual zones carry descriptive labels in the panel
Physical zones	1	One physical zone per sensing channel
Relay outputs	1 leak + 1 cable fault, reconfigurable to 2 summary	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	None	No 4–20 mA loop on this model
Protocols	Modbus RTU server, function codes 03/04/06	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	None	No event log on this model
Trend log, cable current daily	None	No cable-current trend log on this model
Interactive web maps	None	No interactive web map on this model
Supply	24 VDC $\pm 10\%$ at 300 mA	Panel supply 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	Wall mount, NEMA Type 1, 105 × 140 × 58 mm, 765 g	Enclosure rating carried by this panel
Enclosure rating	NEMA Type 1	Enclosure rating carried by this panel
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
EU conformity	CE declaration of conformity; RoHS for the electronic assembly	Phrased as the requirement the panel is built to

Parameter	Value	Notes
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

- A single supervised run reported as a zone, with no distance required
- A small equipment room or one rack row on a zone panel
- An existing dry-contact BMS input that only needs a leak summary

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.
- This model reports a zone, not a distance, so the three locating figures are not applicable on it.
- 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-C1 Rev. A 2026-09-19
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