

FLD-x48

Extreme Environment Monitoring Module

FLD-x48 enclosure contains one or two self-powered intrinsically safe monitoring modules for sensors detecting leaks of refined products or crude oils in extreme environmental conditions. The FLD-x48 controller is engineered for outdoor installation in challenging environmental conditions. Its measurement frontend is designed for interfacing with reusable, fully passive hydrocarbon sensor cables and sensing probes manufactured by Naftosense.

The multiplexed architecture of the acquisition module allows up to 8 individual sensor sections not exceeding 82 ft (25 m) per FLD-x48.

Advanced measurement techniques and data treatment algorithms are used to provide intelligent thresholding for eliminating the nuisance alarm due to the presence of motor/lube oils, greases, residues of old leaks, etc.

The outputs of the acquisition module emulate standard Pt100 RTD for direct interfacing to temperature transmitters. This feature allows cost-efficient interfacing to third-party wireless transmitters available worldwide and easy testing and troubleshooting using a regular multimeter.

The inputs and outputs of the controller are available from industrial-grade terminal strip inside the outdoor-rated enclosure. The FLD-x48 contains monitoring modules that are self-powered by a non-replaceable Lithium Thionyl battery with expected operational life of more than 12 years even in arctic conditions.

FLD-x48 is approved for installation in classified locations according to FM, Atex, IECEx and other North American approvals. Designed only to be used with all Naftosense sensors and 3rd party hard wired or wireless resistance transmitters.



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Features and Benefits

- Detects reliably viscous hydrocarbons at very low temperatures
- True multi-leak capability
- Real-time transmission of sensor contamination
- Intelligent thresholding
- Emulates industry-standard Pt100 RTD for direct interfacing with existing monitoring infrastructure or wireless transmitters
- Very wide operating temperatures range
- Able to detect the vapors diffused in the soil after spill from underground pipes
- 10-year warranty

Typical Applications

- Leak detection in Oil & Gas facilities
- Detection of leaking fuel from airport hydrant systems, military, custody transfer generators and plumbing in demanding environments installations in harsh outdoor, demanding environmental conditions.
- Leak detection in refineries, tank farms, mainline pipe sections, or repair sites
- Oil-on-water leak detection in sumps, retention ponds, saturated soil areas, etc.
- Monitoring of oil wells
- Leak detection in downstream and fuel retail facilities

Agency Approvals

Approved for use in:

- In the US: Intrinsically safe - Class I, Division 1, Groups A, B, C and D, Class I, Zone 0, AEx ia IIC
- Atex: Intrinsically safe - II 1 G, Ex ia IIC Gb T4
- IECEx: Intrinsically safe - Ex ia IIC Gb T4
- Tested by FM Approvals for compliance as per FM Class 3610

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Technical Information - Ld Controller FLD-X48

Typical Detection Time at 68°F (20°C) with FLD-HSC Sensor Cable	
Gasoline, Condensate	1 minute 30 seconds
Diesel/Jet Fuel	2 to 3 minutes
Light Crude Oils	6 to 8 minutes
Heavy Crude Oils	12 to 16 minutes
Motor/Hydraulic/Silicone Oils	12 to 25 minutes

Nominal Resistance Values on OUT1 and OUT2/3/4

OUT1 - Status / Relative Contamination - Channel 1	OUT2/3/4* - Status / Relative Contaminations - Channels 2, 3, 4
Normal status: 100 Ohms	Normal status: 100 Ohms
Sensor String Break: 60 Ohms	Sensor String Break: 60 Ohms
Hardware failure/Low battery: 75 Ohms	Hardware failure/Low battery: 75 Ohms
Leak alarm w/level: 151 - 300 Ohms (32 steps)	Leak alarm w/level: 151 - 300 Ohms (32 steps)
Battery too low, device off: > 1 kOhms	Battery too low, device off: > 1 kOhms

*On request, OUT2 may be used for coding other parameters. Please contact Naftosense for details.

Technical Data	
Dimensions	8" x 6" x 3.5" (152 x 203 x 89 mm)
Weight	6 lb. (2.7 kg)
Fire Rating	Non-flammable (metal)
Ingress Rating	IP66/NEMA4X - suitable for outdoor applications

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Technical Data	
Operating Temperature Range	-40°F to 176°F (-40°C to +60°C) for T4 rating -40°F to 140°F (-40°C to +80°C) for T3 rating
Supply Voltage	3.6 VDC (internal non-replaceable battery)
Battery Operating Life	10 years minimum
Mounting	Wall- or pole-mounted
Hazardous Locations Classification (for max. ambient of +60°C)	IS/ I/ 1/ CD/ T4 ; I/ 0/ AEx/ ia IIB T4 ; Class I, Zone 0, Ex ia T4 Class I, Div. 1, Groups C,D; T4 II 1 G Ex ia IIB T4 Ga
Warranty	10 years

Warning! This is an agency-approved product. It shall be installed according to the corresponding hazardous location certificates. Any deviation from the conditions of use defined in the Control Drawing is strictly prohibited. Attention! The device contains encapsulated non-replaceable lithium battery. Please dispose it as required by the relevant local laws and regulations.

Product Codes	
FLD-248-1	Monitoring Module single sensor with one Pt100-RTD-compatible output
FLD-848-4	Monitoring Module up to 4 sensors with 4 Pt100-RTD-compatible outputs
FLD-848-8	Monitoring Module up to 8 sensors with 4 Pt100-RTD-compatible outputs