

FLD-xRTD

Self-Powered Monitoring Module

The FLD-xRTD is a variable resistance output, self-powered Monitoring Module for remote monitoring up to 4 individual, sensor cables. Waterproof enclosure, battery powered, stand-alone, hazardous location device designed for long term deployment. Agnostic communication output via PT100. The monitoring module 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 monitoring module allows up to 4 individual sensor sections not exceeding 82 ft (25 m) per FLD-xRTD.

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 variable resistance outputs of the Monitoring module emulate standard Pt100 RTD for direct interfacing to 3rd party 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 monitoring module is self-powered by internal non-replaceable Lithium Thionyl battery. The expected operational life of FLD-xRTD is more than 12 years even at arctic temperatures.

FLD-xRTD 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.

Features and Benefits

- Detects reliably viscous hydrocarbons at very low temperatures
- True multi-leak capability
- Real-time transmission of sensor contamination Intelligent thresholding with adjustable sensitivity to avoid nuisance alarms from base line contamination
- 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

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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

Communication Made Easy

Utilize your existing network when integrating a Naftosense leak detecting system. Compatible with any wireless and wired system via a host of standard communication protocols:

- PT100 (RTD)

Agency Approvals

- 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

Technical Information - Field Box FLD-XRTD

Typical Detection Time at 68°F (20°C) with FLD-HSC Sensor Cable	
Unleaded Gasoline	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

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Nominal resistance values on OUT1 and OUT2

OUT1 – Status and Relative Contamination	OUT2* - Status or Section Identification
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)	Number of sensor section in leak alarm: sensing cable number (depending on 1, 3, or 8 channel monitoring modules used)
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	2.52" x 2.283" x 1.378" (64 x 58 x 35 mm)
Weight	0.5 lb. (225 g)
Fire Rating	UL94-HB
Ingress Rating	IP67/NEMA4X - suitable for outdoor/direct burial
Operating Temperature Range	F4 Model: -40°F to 140°F (-40°C to 60°C) F3 Model: -40°F to 176°F (-40°C to 80°C)
Supply Voltage	3.6 VDC
Operating Life	10 years minimum
Mounting	Wall-mounted with external mounting brackets
Hazardous Locations Classification Model FLD-F4RTD	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

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Technical Data	
Hazardous Locations Classification Model FLD-T3RTD	IS/ I/ 1/ CD/ T3 ; I/ 0/ AEx/ ia IIB T3 ; Class I, Zone 0, Ex ia T3 Class I, Div. 1, Groups C,D; T3 II 1 G Ex ia IIB T3 Ga
Warranty	10 years

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

Product Codes	
FLD-F4RTD-1	Single-channel Field box with 1 x Pt100-RTD-compatible output and an additional Digital Output. Hazardous area - T4 rated, ambient temperature up to +60°C
FLD-F4RTD-4	Four-channel Field box with 2 x Pt100-RTD-compatible outputs. Hazardous area - T4 rated, ambient temperature up to +60°C
FLD-T3RTD-1	Single-channel Field box with 1 x Pt100-RTD-compatible output. Hazardous area - T3 rated, ambient temperature up to +80°C
FLD-T3RTD-4	Four-channel Field box with 2 x Pt100-RTD-compatible output. Hazardous area - T3 rated, ambient temperature up to +80°C