

FLD-xRTD-PS

Self-Powered Acquisition Module with Intelligent Thresholding

FLD-xRTD-PS is a self-powered, intrinsically safe acquisition module designed for detecting leaks of ethanol, polar solvents and hydrocarbons in extreme environmental conditions. It utilizes advanced leak sensing technology from Naftosense, providing a reliable leak detection system suitable for refineries, tank farms, chemical plants, distilleries, and oil & gas facilities.



The acquisition module is engineered for outdoor installation in challenging environmental conditions. Its measurement frontend is designed for interfacing with reusable, fully passive sensing probe for polar solvents and hydrocarbons manufactured by Naftosense. 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 oil, grease, 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-effective interfacing to third-party wireless transmitters available worldwide and easy testing and troubleshooting using a regular multimeter.

The field box is self-powered by internal non-replaceable Lithium Thionyl battery. The expected operational life of FLD-xRTD-PS is more than 10 years even at very low temperatures.

FLD-xRTD-PS is approved for installation in classified locations according to Atex, IECEx and North American regulations.

Features and Benefits

- Detects reliably ethanol and other polar solvents at low concentrations typically 20%
- Fully insensitive to naturally present water, rain, snow, and mineral solvents
- Sensor also detects hydrocarbons for oil-on-water applications
- Emulates industry-standard Pt100 RTD for direct interfacing with existing monitoring infrastructure or wireless transmitters
- Very wide operating temperatures range
- 10-year warranty

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Typical Applications

- Leak detection in ethanol and oil & gas facilities
- Monitoring of ethanol, chemical, and petrochemical plants and storage facilities
- Leak detection in refineries, tank farms, ethanol mainline pipe sections
- Ethanol blended with water in sumps, rail loading areas, refineries, and tank farms
- Oil-on-water (hydrocarbon) leak detection in sumps, retention ponds, saturated soil areas, etc.
- Leak detection in downstream and fuel retail facilities

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

Typical Detection Time at 68°F (20°C) with FLD-PSP Sensing Probe

20% - 100% vol. alcohol in water	2 to 2.5 minutes
Gasoline and other hydrocarbons	30 seconds to 10 minutes
Hydrocarbon vapors	3 to 4 minutes

Nominal resistance values on RTD Emulation Output

RTD OUT - Status and Relative Contamination

Normal status: 100 Ohms
Sensor String Break: 60 Ohms
Hardware failure / low battery: 75 Ohms
Leak alarm w/level: 151 - 300 Ohms (32 steps)
Battery too low, device off: > 1 kOhms

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Technical Data	
Dimensions	2.52" x 2.283" x 1.378" (64 x 58 x 35 mm)
Weight	0.5 lb. (225 g)
Supply Voltage	3.6 VDC from internal battery
Ingress Rating	IP67/NEMA4X – suitable for outdoor/direct burial immersion
Operating Temperature Range	F4 Model: -58°F to 140°F (-50°C to 60°C) T3 Model: -58°F to 176°F (-50°C to 80°C)
Resistance Range (max. span)	45 to 1200 Ohms (customizable)
Warranty / Operating Life	10 year warranty / 12+ years operational life
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
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

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-4-PS	Field box for monitoring sensing probe for polar solvents and hydrocarbons, with 1 x Pt100-RTD-compatible output, -50°C ambient temperature up to +60°C
FLD-T3RTD-4-PS	Field box for monitoring sensing probe for polar solvents and hydrocarbons, with 1 x Pt100-RTD-compatible output, -50°C ambient temperature up to +80°C