



LMFS...

Technical Specification Document

Approvals & Certifications:

Frequency Sweep Level Switch



Model LMFS For General Industrial Applications



Features

- Frequency Sweep for material type detection
- Compact design with two independent outputs
- Suitable for media distinction
- Liquid fork simulation requires no calibration
- Process temperature -40 ... 125 °C, and 150 °C for 1 hour
- Suitable for materials with di-electric constant $\epsilon_r > 1.5$
- Multicolor LED switch indicator, indicates type and output
- Maintenance free
- Fully field configurable without any special configurator
- Three output types are PNP, NPN, Push-Pull field configurable

Product Overview

The Level Switch LMFS is capable of faithfully detecting industrial fluids and powders using Frequency Sweep technology. Utilizing the resonance of electrical capacitance created by media di-electric and conductivity, LMFS learns the signature of the media to be sensed and thus performs better than other level detection methods for fluids and powders.

A 50 to 300Mhz sweep signal of very low power (nano-watt) is applied to the electromagnetic resonating circuit formed by material capacitance, an analysis section scans the amplitude of resulting resonance, and thus assigns a frequency-amplitude relationship for a material type.

Since LMFS can identify materials distinctively, it is capable of media separation and hence is designed to utilise the dual output and multi-color LED to provide different output for different material being sensed by it.

LMFS is designed to keep all settings at field level without any special requirement of configurator.

LMFS is able to work as Liquid Fork Simulator capable of detecting fluids without any calibration. Calibration is required for media separation and powder detection.

Specifications

Sensor

Radiated signal	50...300 MHz
Process connection	NPT / BSP 1", 1 1/4", 1 1/2", 2" etc
Insulating material	PEEK

Mechanical data

Housing	Stainless Steel
Amb. temperature	-40...70 °C
Process temperature	-40...125 °C
	Max. 150 °C for < 1 hour, T _{amb} 40 °C
Protection class	IP 66 / 68 (as per IS-13947)
Media pressure	Max. 100 bar
Vibrations	As per IEC 60068-2-6, sinusoidal
Installation	Any position
Surface roughness wetted parts	Stainless Steel Ra < 0.8 µm PEEK Ra < 0.05 µm

Electrical connection

Plug M12	Plastic or Stainless steel 304
Cable	5 to 10 meters, 4 wire + shield

Other electrical data

Power supply	9...55 VDC, 24 mA max.
Damping	0.1 minimum settable to max 25 sec.
Power-up delay	<2 sec.
Hysteresis	± 1 mm
Repeatability	± 1 mm
Reaction time	0.1 sec. (100 mS)
Reverse polarity protection	Yes

Output

Output (active)	Max. 50mA and 100mA (configurable) short-circuit and high-temperature protected
Output type	PNP, NPN, Push-Pull field configurable
Output polarity	NO and NC
Active "High"	PNP (Supply Vdc-1.0V) ± 0.5V ; Rload 10 kOhm
Active "Low"	NPN (Supply 0V+1.0V) ± 0.5V ; Rload 10 kOhm Push-Pull (within 1.0V ± 0.5V of Supply Limit)
Off leak current	± 20µA Max.

Factory Settings

Sensing Mode	Liquid Fork Simulator (Sense all fluids)
Output	As per Order (PNP/NPN/Push-Pull)

Specifications are subject to change without prior notice