Series IS01 Insight FDS Sensor

Model ICC01A Insight FDS Signal Conditioner

For Rotating Equipment Using Fluid Film Bearings

- Turbines – All Sizes
- Large Motors, Fans, & Gearboxes
- Boiler Feed Pump
- Compressors – Reciprocating & Centrifugal
- Large Bore Engines

Description

The Insight Force Detection System (FDS) consists of:

- One Insight FDS sensor
- One Insight FDS extension cable, and
- One Insight FDS signal conditioner.

The Insight FDS is a newly patented system that monitors health for rotating equipment using fluid film bearings. The sensor indirectly measures bearing forces to provide time waveform, spectral, and 4-20 mA overall condition monitoring capabilities comparable to proximity probes.

The installation of the Insight FDS requires little to no equipment downtime. The packaging of the sensor allows for it to be adhesively mounted to measure tension and compression along the axis of installation. Temperature compensation is factored into the 4-20 mA output.

A piezoresistive strain gauge in the sensor provides a high resolution of strain data that is a more direct method of health monitoring than velocity or acceleration (from accelerometers) or displacement (proximity probes). The strain data is more straight forward to interpret for vibration analysis due to the force loads on the bearings as opposed to velocity, accelerations or displacement. The data is analyzed like that of typical vibration analysis: Time Domain, FFT, and Orbit Capable.

The Insight FDS signal conditioner's physical packaging is designed for use in any DIN-rail installations. The insight FDS extension cable is shielded, providing protection from nearby radio frequency signals. The 4-20 mA output is a simple voltage signal and can be installed into almost any existing rack, or straight into your PLC. By trending the data, you will be able to

assign appropriate alarm values for your equipment. Additionally, the waveforms and spectrums can be accessed directly with a Portable Data Collector.

The Insight FDS sensor is also capable of measuring the strain on the main bearings inside engines and compressors. The small profile of the sensor provides clearance, while the overall packaging protects the sensor from the environment inside the equipment.

Specifications

Unless otherwise noted, the following specifications are for an Insight Force Detections System (FDS) sensor, extension cable and conditioning card. Performance characteristics apply to systems that consist solely of Insight FDS components.

Compliance and Certifications

- Expect Class I Div II Rating, Target Class I Div I Rating
- Expect UL Certification

Hardware

Insight FDS Sensor	
Gage Factor	140 +/- 10
Sensing Element	Piezoresistive Transducer
Gage Resistance @ 78°F	345 Ω
Backing Material	Titanium
Housing Material	316 Stainless Steel
Potting Material	Epoxy
Operating Temp.	-30 °C to 120 °C
Electrical Connector	M5 Circular Connector
Mounting Method	Adhesive
Size (W x L x H)	0.425” x 0.600” x 0.180”

Insight FDS Signal Conditioner	
Channels	1
Input Voltage Range	6 V to 40 V
Max Current Draw	100 mA
Operating Temp.	-30 °C to 70 °C
Size (W x L x H)	0.89” x 3.0” x 4.55”
Mounting	Din-Rail
Housing Material	ABS

Signal Performance

Analog Output Signal	
Signal Type	Dynamic Voltage
Signal Coupling	AC
Output Voltage Range	0 V to 5 V
Output Bias Voltage	2.5 V
Voltage Gain	Programmable: 39 mV/V to 234 mV/V
Output Sensitivity Range	Programmable: 24.42 µ ε /V to 146.52 µ ε /V
Output Range	Programmable: +/- 61.05 µ ε to +/- 366.3 µ ε
Frequency Range	0 Hz to 10 kHz
Electrical Connectors	BNC Jack and Screw Terminal

RMS Overall Signal	
Signal Type	Current Output
Signal Coupling	DC
Output Signal Range	4 mA to 20 mA
Output Bias Voltage	24 V
Frequency Range	1 Hz to 10 kHz
Sensitivity	TBD
Electrical Connectors	Screw Terminal

To Request a Quote

- Request a quote online at **VoyagerInstruments.com**
- Contact the General Manager

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