



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

SPEC SHEET: Insight Force Detection System (FDS)

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 0-20 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 0-20 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 0-20 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 Detection 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

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 $\mu\text{E}/\text{V}$ to 146.52 $\mu\text{E}/\text{V}$
Output Range	Programmable: +/- 61.05 μE to +/- 366.3 μE
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	0mA to 20mA
Output Bias Voltage	24 V
Frequency Range	1 Hz to 10 kHz
Sensitivity	TBD
Electrical Connectors	Screw Terminal

HARDWARE			
Insight FDS Sensor		Insight FDS Signal Conditioner	
Gage Factor	140 +/- 10	Channels	1
Sensing Element	Piezoresistive Transducer	Input Voltage Range	6 V to 40 V
Gage Resistance @ 78°F	345 Ω	Max Current Draw	100 mA
Backing Material	Titanium	Operating Temp.	-30° C to 70° C
Housing Material	316 Stainless Steel	Size (W x L x H)	0.89" X 3.0" X 4.55"
Potting Material	Epoxy	Mounting	Din-Rail
Operating Temp.	-30° C to 120° C	Housing Material	ABS
Electrical Connector	M5 Circular Connector		
Mounting Method	Adhesive		
Size (W x L x H)	0.425" X 0.600" X 0.180"		

REQUEST A QUOTE

Contact us to find out how this low cost non-intrusive sensing system can help you save time and money.

Dwight Bradshaw • General Manager

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