SMARTdiagnostics®

VIBRATION SENSOR NODE (SD-VSN-3)

The SmartDiagnostics® family of innovative wireless sensor products enable cost-effective predictive maintenance for industrial equipment. The system provides continuous remote monitoring of key performance indicators to track the operating health of equipment.

- Optimized for long battery life
- Full time series data sets up to 5 times per minute
- Expandable to hundreds of nodes per system

RELIABLE MONITORING

Vibration Sensor Nodes provide health monitoring in the most hard-to-reach, rugged locations. Each node communicates via a direct wireless link to a Primary Receiver Node, from which the data is imported into SmartDiagnostics® Software for viewing and analysis.

FLEXIBLE CONFIGURATION

The system is highly configurable and scalable. A system can have hundreds of sensor points, each of which can be configured to transmit data on a user-selected frequency, and unique indicators can be implemented to warn users of potential machine health issues.

COST EFFECTIVE

Easily installed without the downtime, expense, and labor costs of old-fashioned, hard-wired sensors. Simply place the sensors where you need them and within minutes they'll transmit data. SmartDiagnostics® can predict failure before it occurs, saving money spent on unnecessary replacements and extending machine life. At the same time, energy costs are reduced, as properly maintained machines are more efficient.

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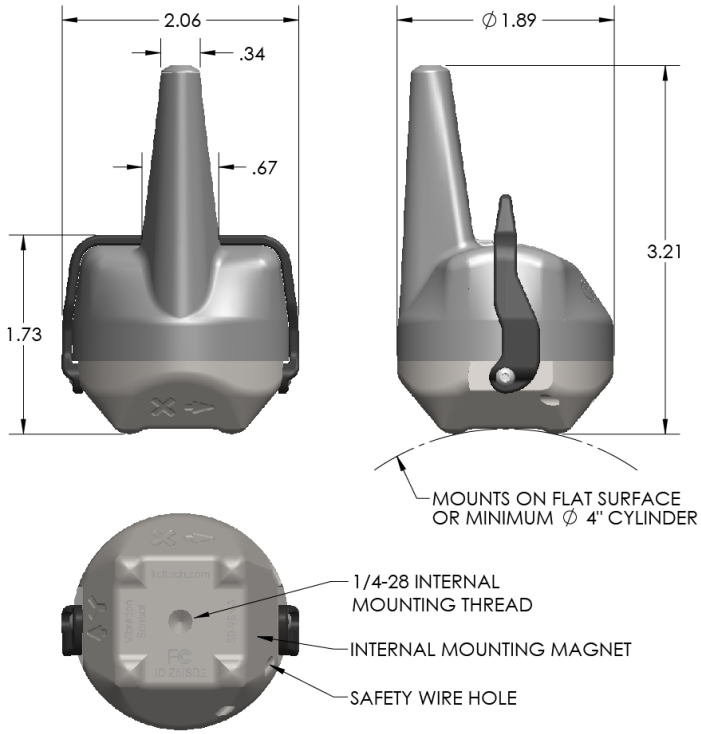
VIBRATION SENSOR NODE SPECIFICATIONS

SD-VSN-3 & SD-VSN-3N

Mechanical	
Weight	6.6 oz (188 g)
Enclosure Material	303 Stainless Steel and Radel R 5800
Mounting	1/4-28 internal thread; weld mount provision available; temporary magnet; & epoxy with lanyard
Environmental	
Storage Temperature	-40 to 238 °F (-40 to 120 °C)
Operating Temp	-4 - 230°F (-20 - 110°C) surface @ 72°F (22°C) ambient -4 - 212°F (-20 - 100°C) surface @ 105°F (40°C) ambient -4 - 167°F (-20 - 75°C) surface @ 167°F (75°C) ambient
IP Rating	IP67, dust-tight and water-tight
Impact Resistance	Survives 5-ft drop onto concrete surface
Hazardous Certification (model SD-VSN-3N)	Class I, Division 2, Groups A-D, T5 Class II, Division 2, Group F, G T5
Exposure	Resistant to UV, petroleum products, mild acids and bases, cleaning products, most industrial fluids, most processing fluids
Wireless Radio	
Radio	KCF DART™ Wireless 2.4GHz ISM band
Range	800ft (240m) in open field 200ft (60m) in congested industrial space (site survey recommended for installation) Repeater SD-R adds up to 2400ft (730m) of range
Antenna	Internal dipole antenna
Power	
Power Source	3-Volt Lithium Manganese Dioxide (CR123A)
Battery Life	Full spectrum acquisition every: · 60 minutes – 8 years · 15 minutes – 6 years · 2.5 minutes – 2 years Note: battery life is somewhat reduced at extremely cold temperatures
Accelerometer	
Range	+/- 19 g typical, +/- 16 g nominal
Resolution	0.866 mg nominal
Noise Floor	1.496 mg RMS @ 64 Hz / 13.01 mg RMS @ 8192 Hz
Transverse Sensitivity	10% Typical
Frequency Response	+/- 5% 0-2700 Hz, +/- 3 dB 2700-4000 Hz
Samples per Acquisition	4096 (standard) or 1650 (battery saver)
Spectral Lines	2048 (standard) or 825 (battery saver)
Anti-Aliasing Filter	4000 Hz low-pass cut-off, 3rd-order Sallen-Key
Sampling Frequency	64 Hz – 8192 Hz configurable (see table)
Temperature Sensor	
Range	-4 to 167 °F (-20 to 75 °C)
Resolution	+/- 1 °F (+/- 0.5 °C)



ACCELEROMETER SAMPLING

Sampling Frequency (Hz)	Sample Duration (s) Std. (batt. saver)	Spectral Resolution (Hz)
8192	0.5 (0.2)	2.0 (5.0)
4096	1.0 (0.4)	1.0 (2.5)
2048	2.0 (0.8)	0.5 (1.24)
1024	4.0 (1.6)	0.25 (0.62)
512	8.0 (3.2)	0.13 (0.31)
256	16.0 (6.4)	0.063 (0.16)
128	32.0 (13)	0.031 (0.08)
64	64.0 (26)	0.016 (0.04)

CONFIGURATIONS

Part Number	Description
SD-VSN-3	Standard vibration and temperature sensor
SD-VSN-3N	Certified for use in Hazardous Locations

FCC STATEMENT

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation. Changes Or Modifications Not Expressly Approved By The Party Responsible For Compliance Could Void The User's Authority To Operate The Equipment.

KCF technologies

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VIBRATION SENSOR NODE CERTIFICATIONS

SD-VSN-3 & SD-VSN-3N

United States	Conforms to UL 61010-1:2012 Ed.3+R:19Jul2019 (For UL compliance, indoor use only)	C ETL LISTED US Intertek 4008627
	Model SD-VSN-3N: Nonincendive Electrical Equipment for Use in Class I and II, Division 2 and Class III, Divisions 1 and 2 Hazardous (Classified) Locations UL 121201:2017 Ed.9+R:01Apr2021 Class I, Division 2, Group A, B, C, D T5 Class II, Division 2, Group F, G T5 Ambient Temp: -20C <= Ta <= +70C	
Canada	CSA C22.2#61010-1-12:2012Ed.3+U1;U2	
	Nonincendive Electrical Equipment for Use in Class I and II, Division 2 and Class III, Divisions 1 and 2 Hazardous (Classified) Locations CSA C22.2#213:2017 Ed.3+U1;U2;U3 Class I, Division 2, Group A, B, C, D T5 Class II, Division 2, Group F, G T5 Ambient Temp: -20C <= Ta <= +70C	
EU	Radio Equipment Directive (RED) 2014/53/EU Low Voltage Directive (LVD) 2014/35/EU Conforms to EN/IEC 61010-1:2010/AMD1:2016	CE
	RoHS Directive 2011/65/EU	RoHS
UK	UKCA	
Australia & New Zealand	RCM	
Mexico	NOM NYCE	

Radio Approvals

United States	FCC ID: Z5ISD3	
	FCC CFR 47 Part 15 Subpart C	
Canada	IC: 24664-SD3	
Australia & New Zealand	RCM	
South Africa	ICASA: TA-2022/0777	ICASA TA 2022-0777 APPROVED
Argentina	RAMATEL C29085	RAMATEL C-29085
Guyana	Telecommunications Authority: No. 334-20221220-168	
Qatar	Communications Regulatory Authority: CRA/SM/2022/S-0012489	

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