# OpsWatch Competitive Comparison

OpsWatch - Stand Alone Device

The OpsWatch monitoring system delivers real-time vibration and shock information which allows you to spot anomolies in trends and detect indications of developing faults before they result in costly failures and unplanned downtime.

SENSOR TO GATEWAY TRANSMIT POWER (mW)

EMERSON AMS	BENTLY NEVADA RANGER PRO	FLUKE 3561 FC	SPOTSEE OPSWATCH
10	10	10	100
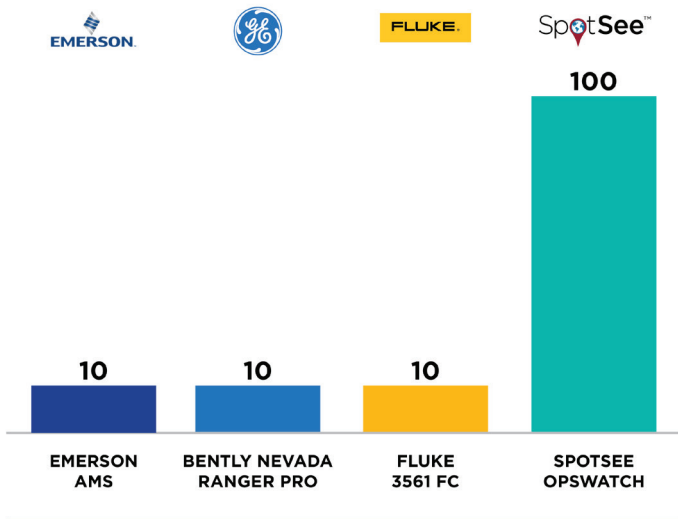
Our "all in one" design reduces the probability for RF interference by at least 10x.

Both Bently Nevada, Fluke, and Emerson AMS utilize battery powered sensor nodes that communicate to a hub, while OpsWatch is an "all in one" design that requires direct power (typically available on the equipment being monitored). The benefit of the wired OpsWatch vs. the battery powered solutions offered by the competitors are:

- **10x** more transmit power to ensure superior radio link reliability

- Significantly more volume of data communication (not constrained by battery power)

- Less machine maintenance (no need for battery replacement)

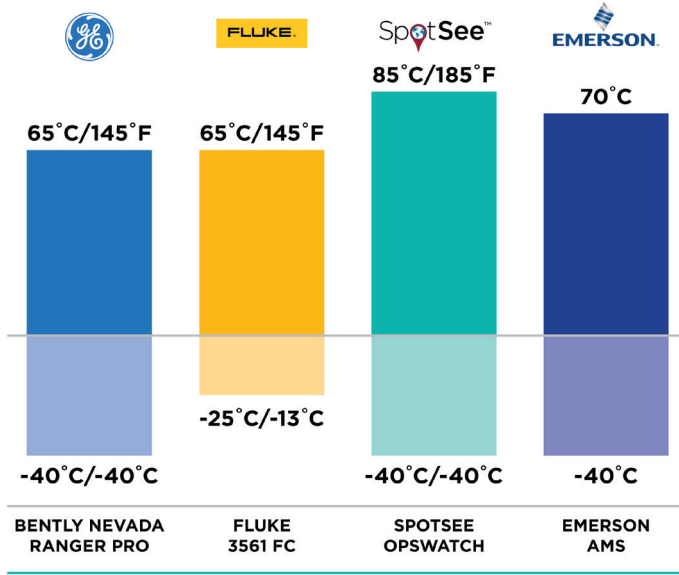- No battery temperature constraints

- Lowest frequency floor enables monitoring a wider class of equipment including slowly rotating equipment

- Lower frequency vibrations have higher damage potential

VIBRATION LOWEST FREQUENCY (Hz)

LOWER IS BETTER

BENTLY NEVADA RANGER PRO	FLUKE 3561 FC	SPOTSEE OPSWATCH	EMERSON AMS
5	10	1	2
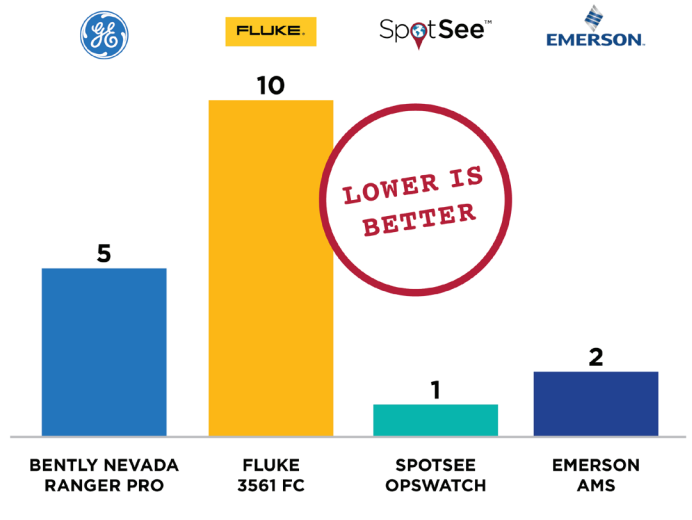
OpsWatch detects vibrations that competitors cannot.

FULL SYSTEM TEMPERATURE RANGE
(SENSOR + GATEWAY)

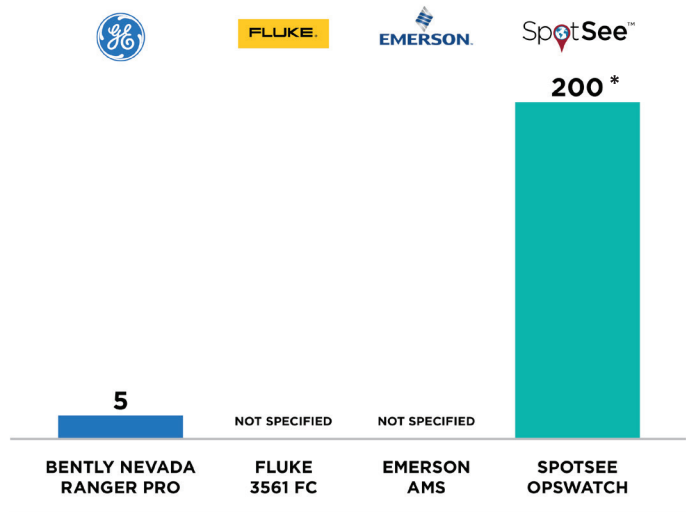|			
GE	FLUKE	SpotSee	EMERSON
		85°C/185°F	70°C
65°C/145°F	65°C/145°F		
	-25°C/-13°C		
-40°C/-40°C		-40°C/-40°C	-40°C
BENTLY NEVADA RANGER PRO	FLUKE 3561 FC	SPOTSEE OPSWATCH	EMERSON AMS

Widest temperature range for harsh environments.

- Vibration damage happens in harsh environments
- Gateway temperature specifications of competing devices limit environments where the unit can be utilized

- **40x** times greater velocity range available than competitive set
- Scale Range: 1cm/s to 200cm/s
  - Provides measurements as small as 7mm/s up to 2000mm/s
- FFT Analysis Capability
  - Streaming data can be analyzed in FFT or PSD formats

VELOCITY RANGE (cm/s)

GE	FLUKE	EMERSON	SpotSee
			200 *
5	NOT SPECIFIED	NOT SPECIFIED	
BENTLY NEVADA RANGER PRO	FLUKE 3561 FC	EMERSON AMS	SPOTSEE OPSWATCH

Allows you to continue measuring when other units have reached their maximum.

*Future option

OpsWatch Competitive Comparison

	BENTLY NEVADA RANGER PRO	FLUKE 3561 FC	EMERSON AMS	SPOTSEE OPSWATCH
Vibration Range (± G)	20	32	100	200
Vibration Accuracy (over full range)	10%	5%	5% (partial range)	10%
Low Vibration Frequency (Hz)	5	10	2	1
Vibration Highest Frequency	4000 Hz	1000 Hz	1000 Hz	1000 Hz
Number of Axis	3	3	3	3
Velocity Range (cm/s)	5	Not specified	Not specified	200*
Measurement Interval	Constrained by battery life	Constrained by battery life	Unconstrained on ext. power	Unconstrained
Sensor Temperature Range	-30° to +85°C (but operation above 30°C severely reduces battery life)	-30° to +85°C (but operation above 30°C severely reduces battery life)	-40° to +85°C (without LCD screen) -20° to +80°C (with LCD screen)	-40° to +85°C
Full System (Sensor + Gateway) Temperature Range (Low) (°C)	-40°	-25°	-40°	-40°
Full System (Sensor + Gateway) Temperature Range (High) (°C)	65°	65°	70°	85°
Minimum System Configuration	1 Sensor + 1 Gateway	1 Sensor + 1 Gateway	1 Sensor + 1 Gateway	Single unit
System Parts	2	2	2	1
Sensor Power	Lithium Battery 3.6V	Lithium Battery 3.6V	Lithium Battery/Mains	Mains
Sensor Battery Life	Weeks to months (but operation at elevated machine temperatures severly reduces battery life)	Weeks to months (but operation at elevated machine temperatures severly reduces battery life)	Years at room temp with highy constrained readings per hour (weeks to months with operation at elevated machine temperatures)	Unlimited - no battery required
Sensor to Gateway Link Type	ISA100.11a	BlueTooth Low Energy	IEC62591	No link required
Sensor to Gateway Frequency Band	2.4 GHz	2.4 GHz	2.4 GHz	No sensor-to-gateway radio required
Sensor to Gateway Transmit Power (mW)	10	10	10 18 (optional)	100
Sensor to Gateway Security	AES 128-bit	AES 128-bit	AES 128-bit	No link required
Sensor to Gateway per-country Radio Certification Required	Yes	Yes	Yes	No
Environmental	IP67 dust/water resistant	IP67 dust/water resistant	IP66 Instrinsically safe	IP67 dust/water resistant Instrinsically safe (optional)
Internet Connectivity	Ethernet (cabled)	WiFi	WiFi	WiFi

*Future option

	BENTLY NEVADA RANGER PRO	FLUKE 3561 FC	EMERSON AMS	SPOTSEE OPSWATCH
Uplink Frequency Band	N.A. (wired)	2.4 GHz	2.4 GHz	2.4 GHz
Uplink Power Source	Mains	Mains	Mains	Mains
Uplink Operating Temperature	-40° to 65°C	-25° to 65°C	-40° to 70°C	-40° to 85°C
Uplink Security	N.A. (wired)	WPA2/AES	N.A. (wired)	WPA2/AES
Uplink RF Transmit Power	N.A. (wired)	100mW	N.A. (wired)	100mW
Uplink Range	Limited by ethernet cable length	100m line-of-sight	Limited by ethernet cable length	100m line-of-sight
Uplink per-country Radio Certification Required	N.A. (wired)	Yes (WiFi module)	Yes	Yes (WiFi module)
Intrinsically Safe	Yes	No	Yes	Yes
Temperature Measuring Range	Full operating range	Full operating range	Full operating range	Full operating range
Temperature Resolution	0.1° C	0.1° C	Unspecified	0.1° C
Temperature Accuracy (over full operating range)	Unspecified	Unspecified	+- 2° C	+- 2° C
Installation Time	Unspecified	Less than 1 hour	Unspecified	Less than 1 hour
Sensor Size (inches)	3.46 x 1.57 x 1.57	2.42 x 0.95 x 1.1	5.51 x 4.2 x 12.43	4.8 x 3.1 x 2.2 (excluding antenna)
Sensor Length (inches)	3.46	2.42	5.51	4.8
Sensor Width (inches)	1.57	0.95	4.2	3.1
Sensor Height (inches)	1.57	1.1	12.43	2.2
Gateway Length (inches)	9.5	2.26	6.72	0
Gateway Width (inches)	8.66	1.55	9.02	0
Gateway Height (inches)	5.27	1.82	15.54	0
Gateway Size (inches)	9.5 x 8.66 x 5.27 (excluding antenna)	2.26 x 1.55 x 1.82	6.72 x 9.02 x 12.03 (excluding antenna)	No gateway required
Subscription terms	Unspecified	Annually	Unspecified: gateway license required	Annually