



Ranger Pro Fact Sheet

GE's Ranger Pro wireless vibration sensor enables plant managers and operators in power gen, O&G and adjacent markets to optimize the reliability of low- and medium-criticality machines, achieve 50% reduction in maintenance costs, shrink the number of unplanned machine failures by 55%, and increase machinery life by 30%. Unlike other wireless condition monitoring devices, Ranger Pro provides the most complete set of features (quality, performance, System 1 connectivity, environmental ruggedness) at a low cost, and delivers the best value of any wireless vibration sensor.

Machinery Applications

Ranger Pro is an ideal case mounted seismic sensor solution for REB (roller element bearing) machines including:

- Agitators
- Air Compressors
- Ball mills
- Blowers
- Centrifuges
- Cooling tower fans and pumps
- Motors
- Small Reciprocating Compressors
- Small hydro & steam turbines

Hardware Features

- Truly wireless: sensors embedded in package
- Temp + Single or Triax capable velocity, accel, accel enveloping
- ISA100 Wireless Network Protocol
- Replaceable lithium-thionyl chloride battery
- IP67
- Modbus
- low frequency
- Hazloc: Atex/IECEX Zone 0 [ia I/IIC T4], Class 1 Div 1 Pending



Software Features

The Ranger Pro and System 1 software complement your predictive maintenance program by performing cost effective data collection and condition monitoring analysis.

System 1 software is the core of GE's Bently Nevada* condition monitoring solution. It is an innovative approach to provide users with a single ecosystem for plant-wide machinery management.**

User Experience

Modern consumer software applications have pushed the envelope when it comes to user experience; we believe the same expectations apply for industrial CM applications.

- Modern and intuitive interface
- Continuous user involvement
- User-driven CM and diagnostic workflows

Capability

System 1 provides scale when it comes to database management, diagnostics, and work prioritization.

- High resolution trends and alarming
- Short-term "black box" flight recorder for trend data
- Anti-friction rolling element bearings
- Diagnostic reporting

Accessibility

Successful condition monitoring programs require collaboration between departments and controlled access to the tools.

- Distributed client/server deployment model
- Shared software platform with SCOUT data collector
- User security profiles

** S1 capable in 2017 4th Quarter

Ranger Pro Technical Specifications

Accelerometers	Axis	1 or 3 axis	Single and Tri-axial Sensor available.
	Sensing element	Piezoelectric ceramic	
	Amplitude Range	±20 g peak	
	Frequency Range	Z axis: 5 Hz (±1dB) to 10 kHz (±3dB) X and Y: 5 Hz (±1dB) to 4 kHz (±3dB)	Acceleration
	Measurement Accuracy	±5%	From 10 Hz to 1 kHz
	Transverse Sensitivity (Typ.)	7%	
Data acquisition	Velocity	Frequency range: 5 – 1000 Hz Amplitude range: 0 – 25 mm/s Sub-unit: Peak or RMS	On board signal integration into velocity is used to enhance the resolution of low frequency measurements.
	Acceleration	Frequency range: 5 – 10 000 Hz Amplitude range: 0 – 200 m/s ² (0-20g) Sub-unit: Peak or RMS	
Temperature Sensor	Measurement range	-20°C to 120°C (-4 °F to 248°F)	Temperature sensor range (not to be confused with allowable operating temperature.)
	Resolution	0.1°C	
Wireless	Network standard	ISA100.11a	
	Radio standard	IEEE 802.15.4	
	Network topology	Mesh and Star	Depending on gateway and system manager.
	Radio frequency	2.45 GHz ISM band	
	Modulation	Direct Sequence Spread Spectrum with Frequency Hopping	
	Encryption/Security	128-bit AES encrypted packets	
	Output power (peak)	10 mW, maximum	
Battery and power	Battery	Replaceable 3.6V - Lithium-Thionyl Chloride D-Cell	User needs to consult the Bently battery section guide for information of approved battery types.
	Autonomy	Up to 5 years depending on the operating mode and configuration	Consult power estimator guide for estimation of power consumption.
Operating conditions	Operating temperature	Minimum: -20°C (-4°F) Maximum: 85°C (185°F) surface temperature in 50°C (122°F) ambient temperature	Operating the sensors at the extremes of the temperature range indicated will adversely affect the battery life. Operating outside this range may result in permanent damage to the sensor. It is important to consider the combination of surface and atmospheric temperature to ensure that the battery and the electronic components are always operated in safe temperatures.
	Vibration limit	20g peak	
	Chemical resistance	High temperature solvents resistant PPS plastic and stainless steel	
	Dimensions	Height: 88 mm, Diameter: 40 mm	
	Physical	Weight	315 grams
Case material		Stainless steel 316 body and PPS plastic top	The sensor case is constructed of corrosion-resistant 316 stainless steel. The top is constructed of glass-reinforced, impact-resistant polyphenylene sulphide alloy (PPS), for high chemicals and solvents resistance.
Mounting		M6 x 1mm stud, tri-axial differential stud or cementing pad	The differential-stud mounting accessory is used for mounting and alignment of the X and Y axis
IP Rating		IP67 sealed	
Regulatory Compliance	EMC Conformity Standards	IEC 61326-1, ETSI EN 301 489-1, CISPR22	
	Radio Spectrum	ETSI EN 300 328	
	Safety	ETSI EN 61010-1, IEC 62479	
	Explosive atmosphere	Atex/IECEX Zone 0 [ia I/II T4] Class 1 Div 1	Pending approval in 4 th Quarter 2017
	Conformity	Complies with all requirements CE & FCC	
Supporting infrastructure	RoHS	Compliant	
	Recommend Gateways	Yokogawa or Honeywell	Contact your local representative

Preliminary specifications; subject to change prior to initial release July 2017.
(Initial release will have static values via Modbus output.)