8911 WIRELESS ACCELEROMETER

LoRaWAN™ 868/915MHz

SPECIFICATIONS

- **Wireless PE Condition Monitoring Accelerometer**
- **Programmable, Customer Configurable**
- **Corrosion Resistant Stainless-Steel & Polymer Housing**
- **Wide Bandwdith to >10kHz**
- **Exceptional Long Term Stability**
- **Superior Measurement Resolution**

FEATURES

- Acceleration and temperature output
- Compact design, stud mount
- Up to 5-year battery life
- Low power consumption
- -20°C to +60°C operating temperature
- 30kHz resonant frequency

APPLICATIONS

- Remote condition monitoring
- Reduced installation costs – no cables
- Designed for harsh environments
- Quick and scalable deployment
- Cost effective monitoring for large plants
- Secure and interference free transmission

INTRODUCTION

The TE model 8911 wireless accelerometer combines a sensor, data collector, digital signal processor, and radio into one compact, battery-operated device that measures both vibration and temperature data.

The model 8911 wireless accelerometer uses the LoRaWAN™ communication protocol, offering a simple, reliable and secure means of expanding condition-based maintenance into plant areas where the cost to install wired systems is prohibitive, making data available to existing process control and information systems.

The model 8911 incorporates a piezo-electric accelerometer which offers a wide bandwidth to >10kHz, outstanding measurement resolution and superior long-term stability compared to design using MEMS solutions.

The 8911 contains digital signal processing that provides an FFT analysis of the vibration being sensed. The output data describes the center frequency, peak value, bandwidth, and percent of the total spectral content for the eight most significant acceleration peaks in the vibration signal.

Because of this feature, the 8911 directly provides the data most needed to plot trends and monitor changes in the performance and condition of factory machinery.

ABSOLUTE MAXIMUM RATINGS[1]

Parameter	Symbol	Min	Typ	Max	Unit	Notes/Conditions
Supply voltage	V_{dd}			3.5	V	Replaceable battery
Storage temperature	T_S	-40		120	°C	Without battery
Shock limit	g_{max}			2000	g	
ESD		-2		+2	kV	Human body model

[1] Maximum limits the device will withstand without damage

ELECTRICAL SPECIFICATIONS

(Unless otherwise specified, all parameters are measured at 24°C @ 3.0V applied)

Parameters	Symbol	Min	Typ	Max	Unit	Notes/Conditions
Power Supply	V_{dd}		3		Vdc	Replaceable CR123 Battery
Average supply current	I_{avg}		35		µA	
Peak supply current	I_{pk}			50	mA	During Xmit
Resolution				12	bits	
Sampling Time				5	Sec	
Battery Life			5		Years	One sample/hr (SF7)

OPERATING SPECIFICATIONS (ACCELEROMETER)

(Unless otherwise specified, all parameters are measured at 24°C @ 3.0V applied)

Parameter	Symbol	Min	Typ	Max	Unit	Notes/Conditions
Dynamic range			±50		g	
Frequency response		1		10k	Hz	±1db
Frequency response		1		15k	Hz	±3db
Resonant frequency	f_o		30		kHz	
Transverse sensitivity			5		%	
Temperature sensitivity	T_c	-10		5	%	From -20 to 60°C
Non-linearity			±1		%	FSO
Resolution			12		bits	
Residual noise			0.06		g	RMS

OPERATING SPECIFICATIONS (TEMPERATURE SENSOR)[1]

(Unless otherwise specified, all parameters are measured at 24°C @ 3.0V applied)

Parameter	Symbol	Min	Typ	Max	Unit	Notes/Conditions
Temp measurement range	T_r	-20		60	°C	
Accuracy			±1.5		°C	
Resolution			12		bits	

[1]The temperature sensor is located inside the sensor enclosure. As such, it provides the temperature of the sensor interior, not the ambient temperature around the sensor, nor the temperature of surface to which the sensor is mounted.