

WS200 Series

ConnectSens™ Wireless Single Axis Dynamic
Vibration Signal Capture Sensor with
Temperature Output

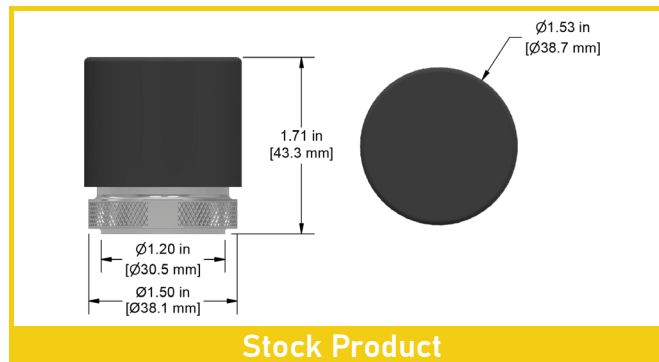


Product Features

Ability to schedule readings and request on demand

Up to four years of autonomous operation

User Replaceable battery



Stock Product

Component Specifications

Specifications below reflect sensor use in conjunction with a CTC Connect Wireless Gateway. If a Connect Wireless Gateway is not used, specifications may vary. CTC does not provide technical support for direct integration of the sensor without a Connect Wireless Gateway.

Sampling Frequency	Configurable sampling frequency	Operating Temperature Range	-40 °F to 176 °F (-40 °C to 80 °C)
Frequency Response (+9.5/-6dB)	0.5 Hz to 10 kHz (30 CPM to 600000 CPM)	Maximum Shock Protection (Powered)	5000 g, peak for 0.5 ms
Frequency Response (±10%)	0.5 Hz to 1 kHz (30 CPM to 60000 CPM)	Maximum Shock Protection (Unpowered)	10000 g, peak for 0.2 ms
Resonant Frequency (+9.5dB)	5.5 kHz (330000 CPM)	Sealing	Compressed Silicone O-ring
FFT	Calculated in software only	Ingress Protection	IP67
Automatic Reading Interval	Configurable in hours from 0-24*	Wireless Protocol	Bluetooth® Low Energy 5.2
Dynamic Range	Configurable: ±8 g, ±16 g, ±32 g, ±64 g	Sensing Structure	MEMS
Data Output Format	Dynamic vibration samples	Weight	4.6 oz (130 grams)
Sample Resolution	16 bits	Case Material	Stainless steel base with nylon cap
Temperature Measurement Range	-40 °C to 80 °C	Mounting Thread	1/4-28 blind tapped hole
Temperature Output Measurement Unit	°C	Mounting Torque	Base: 2 - 5 ft/lbs Cap: 4 - 5 ft/lbs
Power Source	Field replaceable 3.6V 1 Ah lithium battery pack (.35 gram lithium)	Mounting Hardware Supplied	1/4-28, M6x1, or M8x1.25 stud
Battery Life	4 years based on 2 readings taken per day with excellent signal strength** at 20 °C	EMC Compliance	FCC ID: 2BKLG-WSCONNECT ISED: 21201-WSCONNECT CE
		Calibration Certificate	CW10
		SIL Rating	SIL 2

*For a value of 0, no automatic readings will occur. Readings must be triggered manually.

**Approved signal strength ranges:

-30 dBm to -50 dBm: Excellent

-50 dBm to -60 dBm: Good

-60 dBm to -70 dBm: Fair

-70 dBm to -75 dBm: Weak

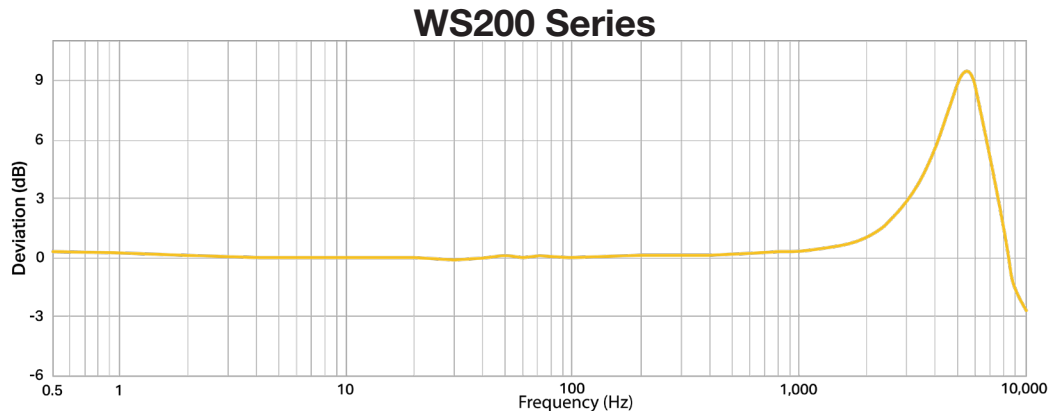
-75 dBm or Greater: Poor/Unusable

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Example Frequency Response at 25,600 Hz Sampling Rate

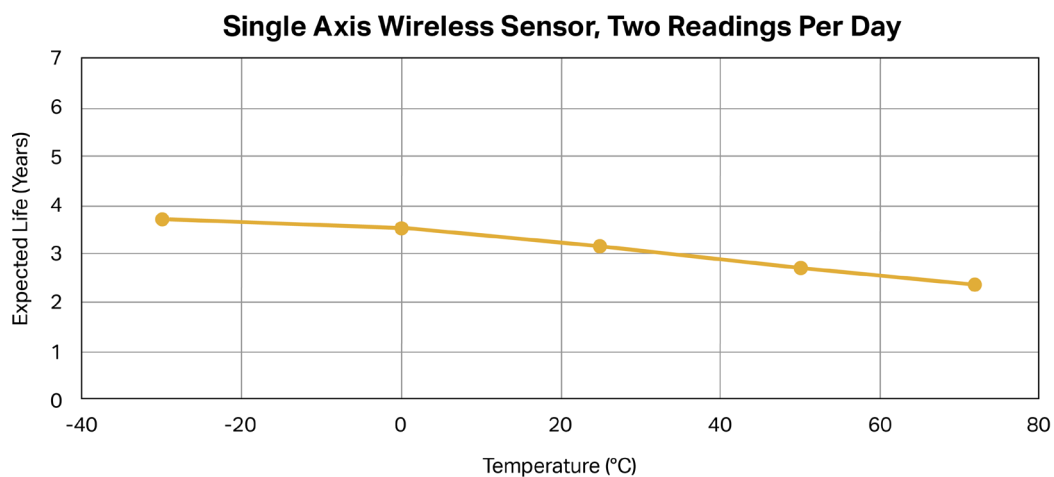


Battery Information

WS200 Series Expected Life,

Battery life curve assumes excellent signal strength between sensors and gateway. Actual battery performance may vary based on environmental and sensor circumstances. Important factors include:

- Battery Age:** Cells degrade over time regardless of use.
- Wireless Conditions:** Poor signal strength environments will result in additional Bluetooth® transmissions which increases power consumption.
- Outdated Firmware:** Keep all sensors up to date with the latest available firmware for optimal performance.
- Temperature:** Extreme temperatures can reduce usable battery capacity and increase current consumption.



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Configuration Information

WS 201		3	6	4	12
Stud Type	Output Samples Coupling	Dynamic Range	Sampling Frequency*	Number of Samples*	Auto Read Rate**
Blank = ¼-28 M = M6x1 M8 = M8x1.25	201 = AC Coupling 202 = DC Coupling	1 = ±8 g 2 = ±16 g 3 = ±32 g 4 = ±64 g	1 = 400 Hz 2 = 800 Hz 3 = 1,600 Hz 4 = 3,200 Hz 5 = 6,400 Hz 6 = 12,800 Hz 7 = 25,600 Hz	1 = 1,600 Samples 2 = 3,200 Samples 3 = 6,400 Samples 4 = 12,800 Samples† 5 = 25,600 Samples† 6 = 51,200 Samples† 7 = 64,000 Samples†	00 = Gateway Triggered Acquisition (manual reading or user configured intervals under 1 hour) 01 = 1 Hour 02 = 2 Hours 03 = 3 Hours 04 = 4 Hours 05 = 5 Hours 06 = 6 Hours 07 = 7 Hours 08 = 8 Hours 09 = 9 Hours 10 = 10 Hours 11 = 11 Hours 12 = 12 Hours 13 = 13 Hours 14 = 14 Hours 15 = 15 Hours 16 = 16 Hours 17 = 17 Hours 18 = 18 Hours 19 = 19 Hours 20 = 20 Hours 21 = 21 Hours 22 = 22 Hours 23 = 23 Hours 24 = 24 Hours

* Not all pairings are available. See below chart valid configurations.

† Requires a Read Rate of 10 minutes or greater.

** Achievable battery life depends on environmental conditions, configuration options, and sensor use. CTC recommends replacing the battery every 4 years, regardless of remaining battery life reported by software, due to effects of battery degradation over time. If operating above 50 °C, replace the battery in half that time.

WS200 sensors provide raw dynamic vibration samples only. Sensors do not calculate/provide an FFT or other frequency analysis data, this must be calculated separately in software. CTC Connect Wireless Gateways automatically perform these calculations and make an FFT of the sensor data available, see the wireless gateway datasheet for more information

Sampling Frequency	Number of Samples	Total Reading Duration (s)	Read Rate Options
400 Hz (24000 CPM)	1600	4	1 minute to 24 hours
	3200	8	
800 Hz (48000 CPM)	1600	2	1 minute to 24 hours
	3200	4	
	6400	8	
1600 Hz (96000 CPM)	1600	1	1 minute to 24 hours
	3200	2	
	6400	4	
	12800	8	
3200 Hz (192000 CPM)	1600	0.5	1 minute to 24 hours
	3200	1	
	6400	2	
	12800	4	
	25600	8	
6400 Hz (384000 CPM)	1600	0.25	1 minute to 24 hours
	3200	0.5	
	6400	1	
	12800	2	
	25600	4	
12800 Hz (768000 CPM)	1600	0.25	10 minutes to 24 hours
	3200	0.5	
	6400	1	
	12800	2	
	25600	4	
25600 Hz (1536000 CPM)	1600	0.25	10 minutes to 24 hours
	3200	0.5	
	6400	1	
	12800	2	

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Connectivity

Connectivity

CTC WS200 sensors broadcast readings over **Bluetooth®** Low Energy 5.2, which can be picked up by CTC Connect Wireless Gateways. Complete your data collection route from your desk when utilizing a WS200 with a gateway. Each gateway can be used with an unlimited number of CTC wireless sensors within range, and allow for 20 simultaneous connections. Connect Wireless Gateways connect to your plant's network via an ethernet connection to request a reading on demand.

ConnectView™ Web App

CTC offers an easy to use web app that is included with the purchase of any Connect Wireless Gateway.

Key features include:

- The ability to configure dynamic ConnectSens™ Sensors
- Nickname sensors & assign sensors to machine groups
- Easily view and export data:
 - Dynamic sensor signal plot & FFT
- Set early warning and critical alert levels
- View battery life
- Web interface runs off of your local network – you own your data and control your security. This means no recurring data fees when utilizing your local network.

Our API also allows OEM customers to utilize their own software to communicate with CTC ConnectSens™ Wireless Sensors via a CTC Connect Wireless Gateway.

