

# SENSORS

Since its founding in 1960, Wilcoxon has been the industry leader in innovative sensor technology and reliable, high-quality products. Our sensors are in use around the world in a variety of facilities, enabling reliable data acquisition and valuable information on machine condition.

## 5 things to consider for sensor selection

### 1 Overall vibration level

The vibration level on most machines is unlikely to be high enough to cause sensor overload or require a specialty sensor, but certain faults can produce high vibrations. When choosing a sensor, consider which faults are most likely to develop and which are of interest for the machine along with baseline machine vibration.

### 2 Frequency range of interest

Depending on the size and type of machine, the location where the sensor will be mounted, and the number of components (among other factors), the frequency range being measured can vary. A sensor should be able to capture the appropriate frequencies and output reliable data.

### 3 Acceleration vs. velocity

Accelerometers should be used in most applications on most machinery. Piezovelocity sensors are well-suited for monitoring mid-frequency vibrations on common rotating machines; at very high or low frequencies (above 10 kHz or below 1 Hz), specialty accelerometers are a better choice.

### 4 Temperature range

If operating temperatures won't exceed 120°C (248°F), most standard accelerometers are a good choice; above that, choose an HT series sensor, which performs well up to 150°C. Sensor response varies more at high temperatures, which can affect measurement accuracy and should be factored into your analysis.

### 5 Environmental considerations

Make sure to measure the ambient temperature, humidity, and moisture levels, determine whether any contaminants such as dust, liquids, debris or corrosive chemicals are present, and check for nearby sources of interference (unusually high EMI, RFI, or ESD). Sensors to be used in hazardous areas should have the correct certification requirements.

# HIGH PERFORMANCE

Our customer favorite high-performance accelerometers have high MTBF for long-term reliability and tighter sensitivity tolerance for more precise measurements.



Wilcoxon model	• 786A	• 787A	786LF	• 780A
<b>Sensitivity</b>	100 mV/g	100 mV/g	100 mV/g	100 mV/g
<b>Sensitivity tolerance</b>	±5%	±5%	±5%	±5%
<b>Frequency response</b> ±3 dB, Hz	0.5 - 14,000	0.5 - 10,000	0.1 - 13,000	0.5 - 14,000
<b>Resonance frequency</b>	30 kHz	22 kHz	30 kHz	30 kHz
<b>Electrical noise</b> 100 Hz	5 µg/√Hz	5 µg/√Hz	3 µg/√Hz	5 µg/√Hz
<b>Max temperature</b>	120°C	120°C	120°C	120°C
<b>Bias output voltage</b>	12 VDC	12 VDC	13 VDC	12 VDC
<b>Grounding</b>	case isolated	case isolated	case isolated	case isolated
<b>Mounting</b>	1/4-28 tapped hole	1/4-28 captive screw	1/4-28 tapped hole	1/4-28 tapped hole
<b>Output connector</b>	2-pin MIL-C-5015 or 4-pin M12	2-pin MIL-C-5015 or 4-pin M12	2-pin MIL-C-5015	2-pin MIL-C-5015
<b>Compliance</b>	CE, API 670 • [CSA/ATEX/IECEX]	CE, API 670 • [CSA/ATEX/IECEX]	CE	CE, API 760 • [CSA/ATEX/IECEX]



- Hazardous area certified models available for the 786A, 787A and 780A. See [page 23](#) for certification details.

## GENERAL PURPOSE

Accelerometers with a broad frequency range suited for general monitoring of rotating machinery. These sensors are used to detect faults between 30-60,000 CPM and track overall vibration levels.



Wilcoxon model	786B-10	787B	780B	785A
<b>Sensitivity</b>	100 mV/g	100 mV/g	100 mV/g	100 mV/g
<b>Sensitivity tolerance</b>	±10%	±10%	±10%	±10%
<b>Frequency response</b> ±3 dB, Hz	0.5 - 14,000	0.5 - 10,000	0.5 - 14,000	1.0 - 12,000
<b>Resonance frequency</b>	30 kHz	22 kHz	30 kHz	30 kHz
<b>Electrical noise</b> 100 Hz	5 µg/√Hz	5 µg/√Hz	5 µg/√Hz	6 µg/√Hz
<b>Max temperature</b>	120°C	120°C	120°C	120°C
<b>Bias output voltage</b>	12 VDC	12 VDC	12 VDC	12 VDC
<b>Grounding</b>	case isolated	case isolated	case isolated	case isolated
<b>Mounting</b>	1/4-28 tapped hole	1/4-28 captive screw or M8 captive screw	1/4-28 tapped hole	1/4-28 captive screw
<b>Output connector</b>	2-pin MIL-C-5015 or 4-pin M12	2-pin MIL-C-5015 or 4-pin M12	2-pin MIL-C-5015	2-pin MIL-C-5015
<b>Compliance</b>	CE	CE	CE	CE

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## EXTENDED TEMPERATURE RANGE

The HT series provides superior long-lasting performance in 150°C environments, with components designed to withstand continuous high operating temperatures. For more extreme temperatures, the 376 can be used up to 260°C with the CC701HT external charge amplifier.



Wilcoxon model	HT780A	HT786A	HT787A	376/CC701HT
<b>Sensitivity</b>	100 mV/g	100 mV/g	100 mV/g	100 mV/g
<b>Sensitivity tolerance</b>	±5%	±5%	±5%	±10%
<b>Frequency response</b> ±3 dB, Hz	0.5 - 14,000	0.5 - 14,000	0.5 - 10,000	1.0 - 15,000
<b>Resonance frequency</b>	30 kHz	30 kHz	22 kHz	30 kHz
<b>Electrical noise</b> 100 Hz	5 µg/√Hz	5 µg/√Hz	5 µg/√Hz	1 µg/√Hz
<b>Max temperature</b>	150°C	150°C	150°C	376: 260°C CC701HT: 100°C
<b>Bias output voltage</b>	at 25°C: 13 VDC at 150°C: 12 VDC	at 25°C: 13 VDC at 150°C: 12 VDC	at 25°C: 13 VDC at 150°C: 12 VDC	12 VDC
<b>Grounding</b>	case isolated	case isolated	case isolated	case isolated
<b>Mounting</b>	1/4-28 tapped hole	1/4-28 tapped hole	1/4-28 captive screw	1/4-28 tapped hole
<b>Output connector</b>	2-pin MIL-C-5015	2-pin MIL-C-5015	2-pin MIL-C-5015	376: microdot CC701HT: BNC
<b>Compliance</b>	CE	CE	CE	CE

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## HIGH SENSITIVITY, LOW FREQUENCY

With an extended low-end frequency response, Wilcoxon's high sensitivity, low frequency sensors detect both high- and low-speed vibrations, making them ideal for critical slow-turning machinery.



Wilcoxon model	• 786-500	• 787-500	786LF-500	799LF
<b>Sensitivity</b>	500 mV/g	500 mV/g	500 mV/g	500 mV/g
<b>Sensitivity tolerance</b>	±5%	±5%	±5%	±5%
<b>Frequency response</b> ± 3 dB, Hz	0.2 - 14,000	0.2 - 10,000	0.1 - 13,000	0.1 - 2,500
<b>Resonance frequency</b>	30 kHz	22 kHz	30 kHz	18 kHz
<b>Electrical noise</b> 100 Hz	1.5 µg/√Hz	1.5 µg/√Hz	2 µg/√Hz	1 µg/√Hz
<b>Max temperature</b>	120°C	120°C	120°C	120°C
<b>Bias output voltage</b>	12 VDC	12 VDC	13 VDC	8 VDC
<b>Grounding</b>	case isolated	case isolated	case isolated	case isolated
<b>Mounting</b>	1/4-28 tapped hole	1/4-28 captive screw	1/4-28 tapped hole	1/4-28 tapped hole
<b>Output connector</b>	2-pin MIL-C-5015 or 4-pin M12	2-pin MIL-C-5015 or 4-pin M12	2-pin MIL-C-5015	2-pin MIL-C-5015 or 4-pin M12
<b>Compliance</b>	CE • [CSA/ATEX/IECEX]	CE • [CSA/ATEX/IECEX]	CE	CE

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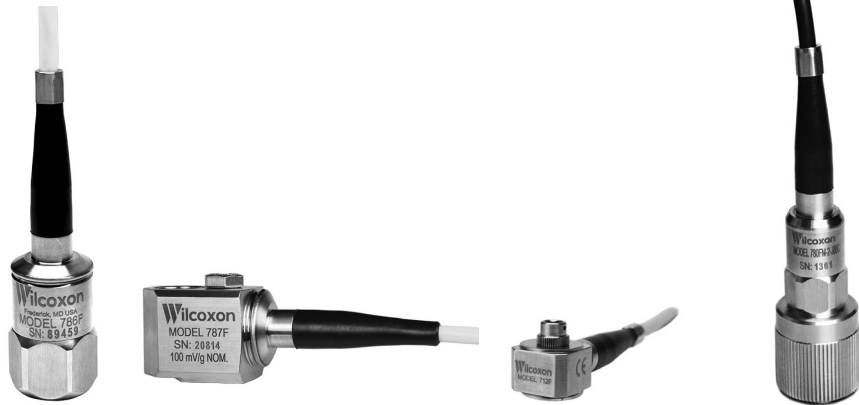
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- Hazardous area certified models available for the 786-500 and 787-500. See [page 23](#) for certification details.

# INTEGRAL CABLE

Wilcoxon's IP68 rated integral cable sensors help to prevent contamination by dust or debris and can be used with confidence in submerged applications of 30 feet or more.



Wilcoxon model	• 786F	787F	712F	780FM-2-J88C
<b>Sensitivity</b>	100 mV/g	100 mV/g	100 mV/g	100 mV/g
<b>Sensitivity tolerance</b>	±5%	±5%	±10%	±15%
<b>Frequency response</b> ± 3 dB, Hz	0.5 - 13,000	0.5 - 10,000	3.0 - 25,000	0.4 - 12,000
<b>Resonance frequency</b>	30 kHz	22 kHz	>45 kHz	30 kHz
<b>Electrical noise</b> 100 Hz	5 µg/√Hz	5 µg/√Hz	10 µg/√Hz	4 µg/√Hz
<b>Max temperature</b>	120°C	120°C	120°C	Sensor: 120°C Cable: 80°C
<b>Bias output voltage</b>	12 VDC	12 VDC	12 VDC	12 VDC
<b>Grounding</b>	case isolated	case isolated	case isolated	case isolated
<b>Mounting</b>	1/4-28 tapped hole	1/4-28 captive screw	8-32 captive screw or M4 captive screw	1/4-28 tapped hole, 2-pole magnet
<b>Output connector</b>	integral cable, blunt cut	integral cable, blunt cut	integral cable, blunt cut	integral cable, BNC
<b>Compliance</b>	CE • [CSA/ATEX/IECEX]	CE	CE	CE



- Hazardous area certified models available for the 786F. See [page 23](#) for certification details.

## HIGH G SENSORS

Accelerometers with a 500 g or greater range for high-impact applications, such as compressors, spindles, fans, gearboxes, or where there are high-speed components with higher harmonics.



Wilcoxon model	786A-I	997	• 793-10	732A
Amplitude range	500 g	600 g	500 g	500 g
Sensitivity	10 mV/g	10 mV/g	10 mV/g	10 mV/g
Sensitivity tolerance	±5%	±10%	±5%	±5%
Frequency response ± 3 dB, Hz	0.5 - 14,000	0.5 - 29,000	1.0 - 15,000	0.5 - 25,000
Resonance frequency	30 kHz	>45 kHz	25 kHz	60 kHz
Electrical noise 100 Hz	23 µg/√Hz	9 µg/√Hz	40 µg/√Hz	3 µg/√Hz
Max temperature	120°C	120°C	120°C	120°C
Bias output voltage	12 VDC	12 VDC	12 VDC	10 VDC
Grounding	case isolated	case isolated	case isolated	case grounded
Mounting	1/4-28 tapped hole	8-32 captive screw or M4 captive screw	1/4-28 tapped hole	10-32 tapped hole
Output connector	2-pin MIL-C-5015	integral cable, blunt cut	2-pin MIL-C-5015	10-32 coaxial
Compliance	CE	CE	CE • [ATEX]	CE

- Hazardous area certified model available for the 793-10. See [page 23](#) for certification details.

# SEISMIC

Our seismic sensors are recognized as setting the standard for ultra-low frequency monitoring. They are used in applications ranging from earthquake detection systems and structural monitoring to construction zone observation and isolation tables.



Wilcoxon model	731A/P31	735T	731-207	799M
<b>Sensitivity</b>	10 V/g	10 V/g	10 V/g	1 V/g
<b>Sensitivity tolerance</b>	±10%	±10%	±10%	±5%
<b>Frequency response</b> ± 3 dB, Hz	0.05 - 450	0.01 - 350	0.2 - 1,300	0.2 - 2,500
<b>Resonance frequency</b>	750 Hz	700 Hz	2.4 kHz	18 kHz
<b>Electrical noise</b> 100 Hz	0.004 µg/√Hz	3.5 ng/√Hz	0.03 µg/√Hz	1 µg/√Hz
<b>Max temperature</b>	65°C	65°C	70°C	80°C
<b>Bias output voltage</b>	9 VDC	8 VDC	10 VDC	8 VDC
<b>Grounding</b>	case isolated	case isolated	case grounded	case isolated
<b>Mounting</b>	3/8-16 tapped hole	M6x1 tapped hole	10-32 tapped hole	1/4-28 tapped hole
<b>Output connector</b>	2-pin MIL-C-5015	4-pin M12	10-32 coaxial	2-pin MIL-C-5015
<b>Compliance</b>	CE	CE	CE	CE

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## DUAL VIBRATION + TEMPERATURE OUTPUT

Dual-output sensors provide both vibration and temperature measurements for more data all in one, simplifying your monitoring setup.



Wilcoxon model	• 786T	787T	793T-3	797T-1
<b>Sensitivity</b>	100 mV/g	100 mV/g	100 mV/g	100 mV/g
<b>Sensitivity tolerance</b>	±5%	±5%	±5%	±5%
<b>Frequency response</b> ± 3 dB, Hz	0.5 - 12,000	0.5 - 12,000	0.5 - 15,000	1.0 - 12,000
<b>Resonance frequency</b>	30 kHz	22 kHz	24 kHz	26 kHz
<b>Electrical noise</b> 100 Hz	5 µg/√Hz	5 µg/√Hz	5 µg/√Hz	1 µg/√Hz
<b>Max temperature</b>	120°C	120°C	120°C	120°C
<b>Temperature sensor output sensitivity</b>	10 mV/°C	10 mV/°C	10 mV/K	10 mV/K
<b>Bias output voltage</b>	12 VDC	12 VDC	12 VDC	12 VDC
<b>Grounding</b>	case isolated	case isolated	case isolated	case isolated
<b>Mounting</b>	1/4-28 tapped hole	1/4-28 captive screw	1/4-28 tapped hole	1/4-28 captive screw
<b>Output connector</b>	3-pin MIL-C-5015	3-pin MIL-C-5015	3-pin MIL-C-5015	3-pin MIL-C-5015
<b>Compliance</b>	CE • [CSA/ATEX/IECEX]	CE	CE	CE




- Hazardous area certified models available for the 786T. See [page 23](#) for certification details.

# VELOCITY SENSORS


Piezoelectric velocity sensors offer the convenience and performance of a direct velocity output without the drawbacks of moving-coil or other styles of velocity sensors.



Wilcoxon model	 • 793V	793V-5	• 797V	893V
<b>Sensitivity</b>	100 mV/in/sec	500 mV/in/sec	100 mV/in/sec	100 mV/in/sec
<b>Sensitivity tolerance</b>	±10%*	±10%	±10%	±5%
<b>Frequency response</b> ± 3 dB, Hz	2.5 - 7,000	5.0 - 7,000	1.6 - 7,000	4.5 - 5,000
<b>Resonance frequency</b>	15 kHz	15 kHz	18 kHz	15 kHz
<b>Electrical noise</b> 100 Hz	1.0 µin/sec/√Hz	0.4 µin/sec/√Hz	0.8 µin/sec/√Hz	1.5 µin/sec/√Hz
<b>Max temperature</b>	120°C	120°C	120°C	120°C
<b>Bias output voltage</b>	10 VDC	10 VDC	10 VDC	12 VDC
<b>Grounding</b>	case isolated	case isolated	case isolated	case isolated
<b>Mounting</b>	1/4-28 tapped hole	1/4-28 tapped hole	1/4-28 captive screw	1/4-28 tapped hole
<b>Output connector</b>	2-pin MIL-C-5015	2-pin MIL-C-5015	2-pin MIL-C-5015	2-pin MIL-C-5015
<b>Compliance</b>	CE • [FM/CSA/ATEX]	CE	CE • [FM]	CE



• Hazardous area certified models available for the 793V and 797V. See [page 23](#) for certification details.

 Radiation-resistant model available for the 793V (see [Radiation-resistant products on page 22](#)).

\* Model 793V100-5: 100 mV/ips sensor with a ±5% sensitivity tolerance.

## SPECIALTY

Designed for a variety of specialized applications. HV series sensors provide over 6,000 volts of isolation between the connector and base, and high EMI resistance for areas such as wind turbines. The 746 is an underwater accelerometer with a 650 psi pressure rating. The LPA100T operates with < 300  $\mu$ W, making it ideal for wireless, battery-operated or energy harvesting applications, and offers a Class I, Div 2 certified option.



Wilcoxon model	HV100/200	HV100LF/200LF	746	• LPA100T
<b>Sensitivity</b>	100 mV/g	100 mV/g*	100 mV/g	50 mV/g
<b>Sensitivity tolerance</b>	±5%	±5%	±5%	±5%
<b>Frequency response</b> ± 3 dB, Hz	0.5 - 12,000	0.1 - 11,000	1.0 - 15,000	0.3 - 15,000
<b>Resonance frequency</b>	25 kHz	28 kHz	30 kHz	30 kHz
<b>Electrical noise</b> 100 Hz	5 $\mu$ g/ $\sqrt$ Hz	5 $\mu$ g/ $\sqrt$ Hz	0.8 $\mu$ g/ $\sqrt$ Hz	16 $\mu$ g/ $\sqrt$ Hz
<b>Max temperature</b>	120°C	120°C	80°C	120°C
<b>Bias output voltage</b>	12 VDC	13 VDC	10 VDC	1.5 VDC ±5%
<b>Grounding</b>	case isolated	case isolated	case isolated	case isolated
<b>Mounting</b>	1/4-28, M8 or M6 integral stud	1/4-28, M8 or M6 integral stud	10-32 tapped hole	1/4-28 tapped hole
<b>Output connector</b>	HV100: 4-pin M12 HV200: 2-pin MIL-C-5015	HV100LF: 4-pin M12 HV200LF: 2-pin MIL-C-5015	integral cable, blunt cut	4-pin M12
<b>Compliance</b>	CE	CE	CE	CE • [CSA/ATEX]



• Hazardous area certified model available for the LPA100T. See [page 23](#) for certification details.

\* HV100LF/200LF series sensors also available with 500 mV/g sensitivity (HV100LF-500/HV200LF-500 series sensors).

## TRADITIONAL & TRIAXIAL


Retain your test procedures, avoiding rewrites or specification changes, with Wilcoxon's legacy 793 and 797 sensors. Our 993B series of triaxial accelerometers offers 3-axis simultaneous sensing to simplify your monitoring setup, with multiple sensitivities and connector options available.



Wilcoxon model	 • 793	 • 797	• 993B-7-M12	• 993B series
<b>Sensitivity</b>	100 mV/g	100 mV/g	100 mV/g	25, 50, or 100 mV/g
<b>Sensitivity tolerance</b>	±5%	±5%	±10%	±10%
<b>Frequency response</b> ± 3 dB, Hz	0.5 - 15,000	1.0 - 12,000	2.0 - 10,000 (Z axis) 2.0 - 7,000 (X, Y axes)	2.0 - 10,000 (Z axis) 2.0 - 7,000 (X, Y axes)
<b>Resonance frequency</b>	25 kHz	26 kHz	>35 kHz	>35 kHz
<b>Electrical noise</b> 100 Hz	5 µg/√Hz	5 µg/√Hz	2 µg/√Hz	3.2, 2.0, or 1.4 µg/√Hz
<b>Max temperature</b>	120°C	120°C	120°C	120°C
<b>Bias output voltage</b>	12 VDC	12 VDC	12 VDC	11 VDC
<b>Grounding</b>	case isolated	case isolated	case isolated	case isolated
<b>Mounting</b>	1/4-28 tapped hole	1/4-28 captive screw	10-32 captive screw	10-32 captive screw
<b>Output connector</b>	2-pin MIL-C-5015	2-pin MIL-C-5015	4-pin M12	integral cable, blunt cut
<b>Compliance</b>	CE • [CSA/ATEX/IECEX]	CE • [CSA/ATEX/IECEX]	CE • [CSA]	CE • [CSA]



- Hazardous area certified models available for the 793, 797, 993B-7-M12, and each of the 993B-5, 993B-6, and 993B-7. See [page 23](#) for certification details.

-  Radiation-resistant models available for the 793 and 797 (see [Radiation-resistant products on page 22](#)).