Shinkawa acceleration and velocity sensors are compact and robust. Ideal for measurement, monitoring, and analysis of casing or bearing vibration, as specified in ISO 10816 and API 670, these transducers measure a broad band of frequencies.

Features

- Connects directly to vibration signal conditioners/monitors.
- Built-in amp, 2-wire transducer (no external charge amp needed).
- Intrinsically safe (TIIS, NEPSI, KTL)/marine certified (NK, LR).
- Dust/water resistance (IP67).
- Can be mounted on the machine with single M6 stud bolt.

Applications

- Fans
- Motors
- Pumps
- Compressors
- Centrifuges
- Gearboxes
- Machine Tools
- and more

Overview of Shinkawa Connected Monitors

**VM-7 Series**
Fully digital and AVERE compliant, the VM-7 Series monitors are configurable from a computer and can be connected directly to vibration analyzers and diagnostic systems. Ideal for monitoring turbines, compressors, and other rotating machinery at petrochemical and power plants.

**VM-5 Series**
The VM-5 Series monitors are also designed to meet AVERE, and are flexible and configurable to meet a variety of needs. Concepts between a simple or redundant sensor back-end to a stack mounted 19" rack configuration, or as standalone units.

**VM-15/16 Series**
VM-15 and VM-16 Series monitors are compact, lightweight, and a cost-effective solution for general purpose machinery. They feature an easy-to-read digital or multifunction LED display, alarm levels, and data output. Data can be saved via CompactFlash memory card or a USB connection.

**VM-21 Series**
These signal conditioners convert input signals from transducers or existing machinery into isolated 4-20mA or 0-10V signals.

...and more

- **AHRE compliant**
- **Compact design suitable for tight spaces**
- **Ruggedness and durability**
- **Sturdy and easily adjustable**
- **Frequent sensor monitoring**
- **Compact design suitable for tight spaces**
- **Ruggedness and durability**
- **Sturdy and easily adjustable**
- **Frequent sensor monitoring**
- **Compact design suitable for tight spaces**
- **Ruggedness and durability**
- **Sturdy and easily adjustable**
- **Frequent sensor monitoring**

* Contact your nearest Shinkawa dealer for information on other vibration analysis and remote monitoring systems.
**CA-302**

**ACCELERATION TRANSDUCER**

**Overview**
CA-302 piezoelectric acceleration transducers are designed for constant monitoring of pumps, fans, gearboxes, and other rotating machinery.

These sensors are internally amplified and have an integral cable type.

**Ordering Information**

**Specifications**

<table>
<thead>
<tr>
<th>Sensitivity</th>
<th>100 mV/10 m/s² (100 mV/g REF) pk; 10% at 100 Hz, 25 °C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acceleration Range</td>
<td>480 m/s² (500 g REF) pk</td>
</tr>
<tr>
<td>Vibration Limit</td>
<td>4,800 m/s² (500 g REF) pk</td>
</tr>
<tr>
<td>Shock Limit</td>
<td>9,800 m/s² (1,000 g REF) pk</td>
</tr>
<tr>
<td>Linearity</td>
<td>±1% of F.S.</td>
</tr>
<tr>
<td>Natural Frequency</td>
<td>30 kHz</td>
</tr>
<tr>
<td>Frequency Response</td>
<td>2 to 5.000 Hz ±10%, 1 to 10,000 Hz ±0 dB</td>
</tr>
<tr>
<td>Transverse Sensitivity</td>
<td>Max. 10%</td>
</tr>
<tr>
<td>Output Impedance</td>
<td>100Ω</td>
</tr>
</tbody>
</table>

**Power Supply**

20 to 100 VDC, 2 to 10 mA (non-intrinsically safe)

20 to 25 VDC, 2 to 10 mA (intrinsically safe)

**CA-72**

**ACCELERATION TRANSDUCER**

**Overview**
CA-72 series piezoelectric acceleration transducers are designed for constant monitoring of pumps, fans, gearboxes, and other rotating machinery. These heavy-duty acceleration transducers are internally amplified, highly noise resistant, and measure a broad frequency range.

**Ordering Information**

**Specifications**

<table>
<thead>
<tr>
<th>Sensitivity</th>
<th>100 mV/8.9 m/s² (100 mV/g REF) pk; 5% at 100 Hz, 25 °C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acceleration Range</td>
<td>480 m/s² (500 g REF) pk</td>
</tr>
<tr>
<td>Vibration Limit</td>
<td>4,800 m/s² (500 g REF) pk</td>
</tr>
<tr>
<td>Shock Limit</td>
<td>49,000 m/s² (5,000 g REF) pk</td>
</tr>
<tr>
<td>Linearity</td>
<td>±1% of F.S.</td>
</tr>
<tr>
<td>Natural Frequency</td>
<td>268 kHz</td>
</tr>
<tr>
<td>Frequency Response</td>
<td>3 to 5,000 Hz ±5%, 2 to 7,000 Hz ±10%, 1 to 15,000 Hz ±3 dB</td>
</tr>
<tr>
<td>Transverse Sensitivity</td>
<td>Max. 5%</td>
</tr>
<tr>
<td>Output Impedance</td>
<td>100Ω</td>
</tr>
</tbody>
</table>

**Power Supply**

16 to 10 VDC, 2 to 10 mA (constant current)

**Temperature Response**

Within ±10% (Around the operating temperature range)

**CA-721**

**Connector Type**

**CA-722**

**With integral cable type**
CV-86 VELOCITY TRANSDUCER

Overview
As with piezoelectric acceleration transducers, the CV-86 series of piezoelectric velocity transducers employ a piezoelectric element to detect acceleration, which is then converted to a velocity signal by the built-in integrator.

Specifications
- **Sensitivity**: 3.94mV/mm/s (100mV/vs REF2) (+2%/±5% at 10kHz, 5kHz for REF2)
- **Max. Velocity**: 1,270mm/s (650mm/s REF1/kpk)
- **Vibration Limit**: 2,450mV/s² (250g REF/kpk)
- **Shock Limit**: 24,500mV/s² (2,500g REF, 23,500mV/s² (2,420g REF) pk non-internally safe, 23,500mV/s² (2,420g REF) pk internally safe)
- **Linearity**: ±1% of FS.
- **Natural Frequency**: 15kHz
- **Frequency Response**: 2.5 to 3,500Hz ±10%, 2 to 1000Hz ±1dB
- **Output Sensitivity**: Max. 5V
- **Grounding**: Case isolated, internally shielded
- **Cable**: CV-861: Twisted pair shielded cable; CV-862: Coax. cable (integral cable type)
- **Power Supply**: 16 to 30VDC, 2 to 10mA (constant current)
- **Temperature Response**: Within ±1% around the operating temperature range
- **Relative Humidity**: 100%RH
- **Protection Rating**: IP67 (CV-861 & CV-862) (IP-68 for CV-862)

Appendix 1: Selection Guide of an Optimal Vibration Transducer
Measuring the health of your rotating machinery begins at the transducer. Before choosing a transducer, a thorough understanding of the machine type, application and transducer’s specifications must be taken into account. The following chart is an overview of applications for displacement, velocity and acceleration measurements. Please consult a vibration expert to find out what is right for your plant.

**Relevant Machinery**
- Steam turbines
- Gas turbines
- Vertical pumps
- Medium-sized pumps
- Generators
- Motors
- Fans

**Applications**
- Detects absolute displacement vibrations at low to high speeds
- Detects absolute displacement vibrations by applying frequency integration

**Specifications**
- **Linear range**: 2,000 m
- **Sensitivity**: 7.47 mV/1000 m
- **Frequency response**: 0 to 20kHz
- **Sensor operating temperature**: -20 to 80°C
- **Power**: -26VDC ±10%

**Notes**
- Run-out (offset) will occur in output when measuring points subject to residual magnetic fields or non-uniform materials.
- Sensitivity may vary depending on the electrical properties of the target material.
- Heat noise from interferers may arise if multiple sensors are placed close to each other.
- Due to unavoidable low-frequency phase characteristics, care must be taken when measuring phase analysis.
- May be unavoidable due to installation with magnets or adhesives.

Appendix 2: Mounting Methods and Frequency Characteristics
Inherent vibration will vary depending on how the acceleration sensor is mounted on the vibrating body. For optimal measurement conditions, place the bottom of the sensor in closest possible contact with the vibrating body.

1. Spherical Mounting
2. Flange Mounting
3. Adhesive Mounting
4. Stud Mounting