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* All company and product names in this brochure are trademarks or registered trademarks.
Vibration analysis & diagnostic system that is applicable to a variety of rotating machinery, helps safe operation and to improve operational efficiency.

infiSYS RV-200 precisely keeps track of and quickly feeds back conditions of rotating machinery which are the key production assets of plants.
infiSYS RV-200 Basic System

When used for large rotating machinery, it acquires phase mark signals and shaft vibration waveform, processes phase analysis and frequency analysis, and then displays the information in various graphs for further analysis. For small rotating machinery, infiSYS acquires acceleration vibration waveform of casing and the information is displayed with graphs based on the frequency analysis.

infiSYS RV-200 Configuration Example

(for Large Rotating Machinery)

Based on the vibration waveform detected by shaft vibration sensors, the system provides vibration monitoring and anomaly analysis for rated-speed operation, and shaft behavior analysis for critical startup/shutdown.

infiSYS RV-200 Configuration Example

(for Small Rotating Machinery)

Based on the vibration detected by acceleration sensors installed on the bearing housings, the system provides trend management and abnormality diagnostics not only on overall vibration but also on vibration of each fault frequency resulting from bearing failure.

High-speed data acquisition

- Trend data every 1 sec
- Waveform data every 10 sec

Machine’s data during startup/shutdown (transient data) are acquired to a level, allowing for detailed plotting of analysis graphs. The gradual changes over time can also be analyzed in real time.

Various system configurations

- VM-7
- VM-5 (with DAQpod)
- Non-SHINKAWA monitors

System can be configured independently of a condition monitor that is already deployed on large rotating machinery. Whether an existing SHINKAWA monitor or non-SHINKAWA monitor, data can be acquired and analyzed via DAQpod, upgrading the customer’s existing system to a current analysis-capable system.

Multi channel

- Maximum number of inputs 480 ch

Integrating, monitoring, and analyzing vibration data of machinery in a plant in one analysis system, the system contributes to plant’s stable operation with early detection, analysis / diagnostics of abnormality.

Analysis data acquisition unit DAQpod

Analyzes vibration waveform signals received from a condition monitor on large rotating machinery and sends analysis data to the infiSYS View Station. When it is used for bearing vibration analysis on small rotating machinery, acceleration sensors can be directly connected for data collection.
infiSYS RV-200 offers a variety of analysis and plotting functions.

Provides analysis and plotting functions required by vibration analysists certified in accordance with ISO 18436-2.

ISO18436-2: Condition monitoring and diagnostics of machines - Requirements for training and certification of personnel - Part 2: Vibration condition monitoring and diagnostics

### Data display examples

#### Polar Plot
This shows the vibration vector at the time of critical startup/shutdown of the machine. From this plot, the user can observe the balancing condition, vibration levels and critical speed during the startup/shutdown of the machine.

Display data (switchable display): 1X, 2X
This allows overlay of current data on top of past data.

#### Waterfall Plot
This plot is used to analyze changes in frequency components that occur over time. Cascade plot can also be displayed with width (z-axis) as rotation speed to analyze changes in frequency components in relation to changes in rotation speed.

#### Trend Plot
This plot displays short term and long term chronological changes using a line chart.

Displayed data (multiple selections are allowed): Rotation speed, GAP, OA, 0.5 X amplitude, 0.5 X phase, 1X amplitude, 1X phase, 2X amplitude, 2X phase, Not-1X amplitude, nX1 to nX4 amplitude and phase, Smax amplitude, various alarm setting values.

#### Machine Train Diagram
The 3D illustration of rotating machinery diagram displays the rotation speed as well as the location and the vibration amplitude of each measuring point.

For each machine, current values can be displayed in a list view.

#### Orbit and Waveform Plot
This plot composes signals from each X and Y sensor and displays the dynamic motion of the center of a rotating shaft. The Orbit plot helps to identify any abnormal status including imbalance, misalignment, oil whirl and oil whip.

#### Bode Plot
This plot displays the amplitude and phase in separate graphs with rotation speed used as the horizontal axis.

From this plot, the user can see the vibration status and critical speed during the startup/shutdown of the machine.

Display data (switchable display): 1X, 2X
This allows overlay of current data on top of past data.

### Case Studies

#### Unbalanced Vibration
The most common abnormal vibration is due to the mismatch between shaft center and mass center, due to manufacturing error or machine components missing.

The characteristic of the vibration generates the rotation synchronous component (1X), which is sine wave or similar. Vibration becomes largest at critical speed.

#### Oil Whirl Vibration
Self-excited, unstable vibration typical for sleeve bearing supported rotating machinery. Possible causes include effects from the shape of the sleeve bearing, oil film characteristics, etc. Normally, this vibration appears at two or less times lower the critical speed, and the frequency is around half the rotation synchronous frequency (0.5X).

#### Misalignment Vibration
Vibration that occurs when the shaft centers of driving rotating machinery and its associated driven rotating machinery are not properly aligned. Typically the vibration includes rotation synchronous frequency component (1X) and harmonic components (2X, 3X).

#### Loss of Rotor Component
When a piece of rotor component is lost/flys off, unbalanced vibration condition suddenly changes. The typical phenomenon includes sudden changes in the amplitude and phase angle (vibration vector) of the rotation synchronous frequency component (1X).
User-friendly operability and plotting functions

Examples of easy operation

Drag & drop
From tree at left to display area at right, desired plots can be displayed anywhere you want.

Tile display
Instant pickup of desired channel plot from tile display window. Channel plot specific window opens with one click.

Page switching tab
Desired graph display page can be displayed simply by switching the tabs. A step to create a new page is also simple. (Up to 20 pages.)

The SHINKAWA Network

SHINKAWA is employing global thinking to create a business with a worldwide network currently comprising over 50 bases around the world.

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**JAPAN**
SHINKAWA Electric Co., Ltd.
(Headquaters)

infSYS RV-200 (hardware & software) has a simple user interface, that is easy and instinctively operated by most plant personnel.

Quick learning of graphic display.

**Features 4**

**Subsidiary**

**Headquaters**

**Sales and Service**

Up to 20 pages can be created.

Pages with desired plots in desired arrangement can be created with specified tab name. Users can lock the displays as well, this allows uniformity and protection on your custom view settings.
### System Specifications

<table>
<thead>
<tr>
<th>Maximum number of connections</th>
<th>20 units* (VM-7, DAQpod)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum number of measuring points</td>
<td>480 points*</td>
</tr>
<tr>
<td>Number of FFT lines</td>
<td>VM-7: 800 lines DAQpod: 400 / 800 / 1600 lines</td>
</tr>
</tbody>
</table>

### Hardware Specifications

**For VM7 (Analysis board installed)**

<table>
<thead>
<tr>
<th>Number of inputs (number of channels)</th>
<th>AP-2000H* (19&quot; rack)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of frequency analysis lines</td>
<td>400 / 800 / 1600 lines</td>
</tr>
</tbody>
</table>

**For DAQpod**

| Trend data | Rotation speed, OA amplitude, GAP, 0.5X amplitude / phase, 1X amplitude / phase, 2X amplitude / phase, Not-1X amplitude, nx1 to nx4 amplitude/phase, Smax amplitude, 2X or higher amplitude, IR / OR / BS vibration. |
| Data collection interval | Trend data collection interval Every 1 sec (every 0.1 sec during alarm high speed acquisition mode)* |
| During normal operation | Every 10 / 20 sec, 1 / 2 / 3 / 5 / 10 min |
| During transient | : at setting : Trend every 1 sec (fixed) : Waveform every 10 sec (fixed) : :rpm setting : From 0.1 rpm to 1000 rpm (1 rpm increments). |

**Network Interface**

<table>
<thead>
<tr>
<th>Ethernet 100 Base-T</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power supply voltage</td>
</tr>
<tr>
<td>DP-2000 (24 ch box) : DC 24 V ±10%</td>
</tr>
</tbody>
</table>

**Dimensions**

| AP-2000H/D (19" rack) | 482 (W) x 132.5 (H) x 444 (D) mm |
| DP-2000 (24 ch box) | 96 (W) x 224 (H) x 165 (D) mm |

**Number of inputs (number of channels)**

| Phase marker channels : 4 ch, vibration channels : 44 ch |

**Number of frequency analysis lines**

| 800 lines |

**Trend data**

| Rotation speed, OA amplitude, GAP, 0.5X amplitude / phase, 1X amplitude / phase, 2X amplitude / phase, Not-1X amplitude, nx1 to nx4 amplitude / phase, Smax amplitude. |

**Data collection interval**

| Trend data collection interval Every 1 sec (Process data : Every 10 sec) |
| During normal operation | Every 10 / 20 sec, 1 / 2 / 3 / 5 / 10 min |
| During transient | : at setting : Trend every 1 sec (fixed) : Waveform every 10 sec (fixed) : :rpm setting : From 0.1 rpm to 1000 rpm (1 rpm increments). |

**Network Interface**

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| 85-264 VAC, 24 VDC ±10%, 110 VDC ±10% |

* Windows, Windows Server, SQL Server, Microsoft, and Microsoft .NET are registered trademarks of Microsoft Corporation in the United States and other countries.