



# MicroVibe P

CMVL 3850

*Power Without Complexity, an Advanced Instrument for Simplified Vibration Assessment that Fits in Your Pocket*

With SKF's new MicroVibe P, vibration assessment is as close and convenient as your PDA! This economical vibration meter expansion module fits in a PocketPC's compact flash card slot (CF Type II) and features the user-friendly Windows Mobile Operating System. Identify problems and assess machine condition quickly and easily with this versatile and easy-to-use pocket tool.

## Power Without Complexity

A handy "quick-check" solution, based on the universal PDA platform, MicroVibe P is simple to use. Built-in automatic functions virtually eliminate set-up, while the analytical displays and automatic judgment of machine vibration readings help users identify machine problems on the spot!



The SKF MicroVibe P System



## Features

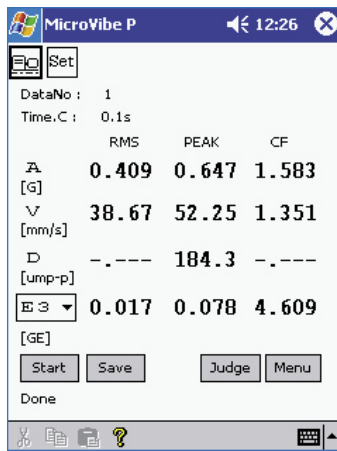
- **Exceptional Value**
  - Low cost, compact, lightweight, works with many Pocket PC PDA's by Hewlett-Packard, Dell, Toshiba, etc.
- **Quickly Identify Problems**
  - Expert Judgment Criteria based on ISO vibration severity standard and SKF bearing evaluation
  - FFT Spectrum analysis enables user to pinpoint problems like unbalance, misalignment, bearing, rubs, etc.
  - Multi-Point Automation
- **Standard Vibration Measurements**
  - Envelope Acceleration, Acceleration, Velocity, Displacement, Time Waveform, and FFT Spectrum Analysis
- **Store and Recall Measurements**
  - For trending and analysis, store up to 2,000 overall vibration signals, 1,000 FFT Spectrum, and 200 Time Waveforms
- **Data Management Software**
  - Enables users to transfer machinery vibration data to a computer for trending and further analysis
- **MicroVibe P Kit Includes:**
  - MicroVibe P Module, Data Management Software, Accelerometer and Cable, Magnetic Base, Earphones, User Manual, and Carrying Case (everything but the PDA).

## An Advanced Instrument for Simplified Vibration Assessment

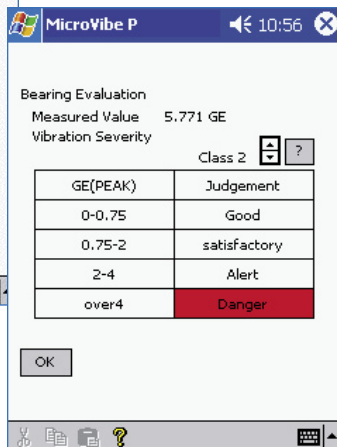
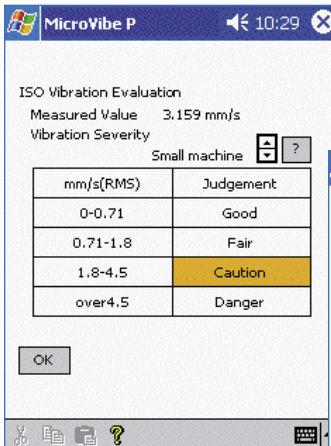
The MicroVibe P collects and displays overall vibration readings and automatically provides expert judgment of the measured velocity and overall enveloped acceleration levels, enabling immediate, accurate and reliable assessment of machine or bearing condition.

## Multi-Point Automation™ Saves Time and Improves Reliability

Automatically collect the most useful measurements for vibration analysis – acceleration, velocity, displacement, and enveloped acceleration – simultaneously. SKF's Multi-point automation™ saves time and enhances the power, accuracy and overall reliability of your decision making – giving you the information needed to make the best possible judgment call.



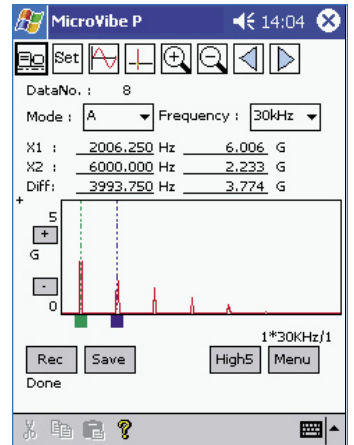
## Automatic Setup and Onboard Expertise



The MicroVibe P provides extensive automatic setup and evaluation of vibration results. Simply collect the data and MicroVibe P does the rest – comparing readings to pre-programmed Velocity and Enveloped Acceleration severity criteria for a reliable and accurate evaluation of vibration severity. This allows even novice users to easily determine abnormal conditions and take appropriate action.

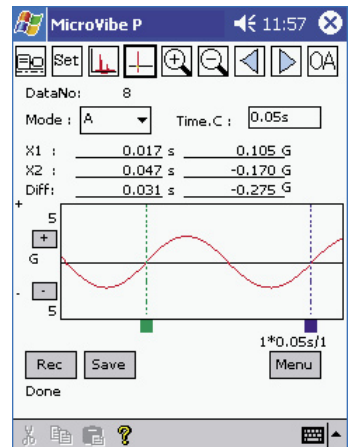
## FFT Spectrum Analysis Capabilities

With pre-set measurements and user selectable FFT resolution at 400, 800 or 1600-lines, selectable Fmax and a 90 db dynamic range, the MicroVibe P has what it takes to help you easily pinpoint the start of impending machine problems. Cursor position readout with display zoom optimizes your analysis power. In addition, it automatically tabulates and displays the highest vibration peaks from a spectrum, making it easy to quickly identify signals indicative of specific machine problems, like misalignment, imbalance or bearing faults.



## Time-Waveform Displays

Measure and store time data, with the capability to select acquisition type and time measurement. Time displays in acceleration, velocity, displacement or enveloped acceleration. A unique automatic transient capture function starts taking measurements when the signal exceeds a user-specified trigger level, enabling more detailed analysis of the pre- and post-trigger events surrounding a change in machine condition.



## Versatile Measurement Capability

The MicroVibe P works with the two most commonly used vibration sensors – accelerometers and dynamic velocity transducers. Both enable you to take a multi-parameter approach to your analysis and to optimize vibration data gathering.

## Audio Analysis

Now you can actually listen to machine problems using the MicroVibe P's acoustic capability. Simply connect the earphones and listen to the operation of your machine. When abnormal noise is

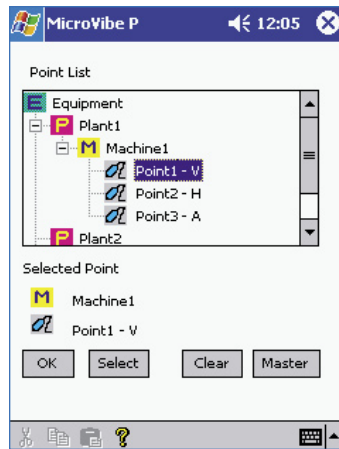


## Audio Analysis *(continued)*

detected, use the vibration analysis capabilities of the MicroVibe P Analyzer to zero in on the problem.

## Store and Recall Measurements for Trending and Analysis

The MicroVibe P's data storage capacity is also extraordinarily impressive. It can store up to 2,000 overall vibration signals, 1,000 FFT spectrums or 200 records of time waveform data for later recall. A search function retrieves specific measurement points and a "repeat" measurement let's you recall and repeat any measurement for more focused analysis or trending of a potential problem. Finally, a "recall data storage" list helps you keep track of and reference all collected data.



## Data Management and Software for Desktop Computer

The next generation MicroVibe P now offers added functionality, including a software program to extract, save, edit and display collected data. It's even ideal for small route data collection.

For further analysis and trending, data may be uploaded to your desktop computer using the Data Management software. Once uploaded, vibration data, overall trends and spectra can be stored, trended and graphically displayed.

## Utilities Add Value

Several exciting utilities help make the MicroVibe P an universal tool for machine vibration analysis, for any level of expertise. Collect data in English or Metric units or reference a dictionary of vibration terminology.

SKF's new MicroVibe P truly brings you vibration monitoring and analysis power without complexity. It's tomorrow's big solution for vibration analysis in a small, smart package – and its available today! Get more information at [www.skf.com/reliability](http://www.skf.com/reliability).

SKF Reliability Systems is part of the worldwide SKF Service organization. The organization's condition monitoring and service businesses extend machine service life, reduce overall maintenance costs and improve plant efficiency by creating integrated solutions for end-users who need to improve plant operation and reliability maintenance management with minimal investment.

## Specifications

### MicroVibe P CMVL 3850

**Minimum PDA Requirements(\*):**  
Conforms to the Pocket PC Specifications

**Operating System:** Microsoft Pocket PC 2003 (Windows Mobile 3.0)

**Processor:** ARM Processor

**Interface:** Compact Flash TYPE II Slot 3.3 V only

### Recommended Specifications:

**Processor:** PXA255 400 MHz or higher

**Memory (RAM):** 64 MB or higher

**Interface with Pocket PC:** Compact Flash TYPE II, Slot 3.3 V only

**Power Supply:** +3.3 V (Supplied by Pocket PC)

### Current:

**Standby:** 44  $\mu$ A

**Under Measurement:** 48 mA

### Pickup Input (PU IN):

**AC Voltage Signal:** Maximum  $\pm 2.5$  V

**Input Terminal:** 8-pin modular jack (RJ-45) (ICP type pre-amp built-in accelerometer is not connected).

### Raw Waveform Output (PU OUT):

**AC Voltage Signal:** Maximum  $\pm 2.5$  V

**Output Terminal:** Mini-jack (2.5 mm  $\phi$ )

**Sampling Frequency:** Maximum 76.8 kHz (Changes according to Mode) 76.8 kHz/38.4 kHz

**Aliasing Filter:** 20 kHz/2 kHz (Changes according to Mode and Sampling Frequency)

**A/D:** 16-Bit

**Temperature Range:** 0 to +45°C (+32°F to +113°F)

**Humidity Range:** <90% relative humidity, non-condensing

**Weight:** 25 g (0.88 oz) approximate (Card only)

**Dimensions:** 60.0 mm x 42.1 mm x 16.9 mm (2.36" x 1.66" x 0.67")

**Shape:** Conforms to CF Card TYPE II, Card Type. See photograph.

**Color:** Black

### CMSS 3811 Accelerometer

**Type:** Pre-amp is built-in. Shear type.

**Power Supply:** DC  $\pm 5$  V

**Voltage Sensitivity:** 20 mV/g

**Resonance Frequency:** 20 kHz approximate

**Frequency Range:** 3 Hz to 10,000 Hz

**Maximum Acceleration:** 500 m/s<sup>2</sup>

**Vibration Limit:** 5000 m/s<sup>2</sup>

**Maximum Output Voltage:**  $\pm 1$  V

**Output Impedance:** Below 100  $\Omega$

**Temperature Range:** -20°C to +80°C (-4°F to +176°F)

**Material:** SUS

**Weight:** 60 g (2.1 oz) approximate

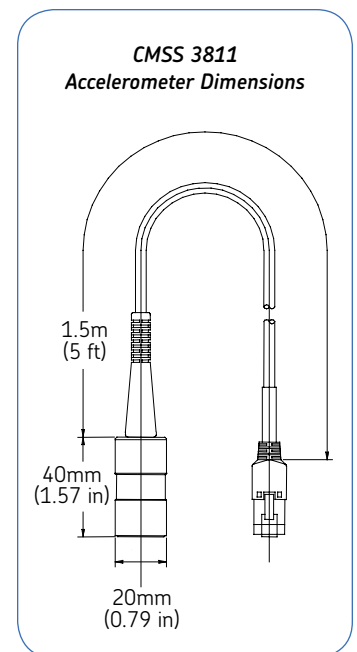
**Tapped Hole:** M6, P = 1, depth 5 mm, internal thread

**Integral Cable:** Length 1.5 meters (5 feet)

**Connector:** 8-pin modular plug

**Dimensions:** See Drawing Below

**Structure:** Dust-proof, spray-proof



\* May not work with all PDA's. Please see list of Certified PDA's.

# Measurement Specifications

(For Measurement with CMSS 3811 Accelerometer)

## Frequency Specifications

Item	Specifications
<b>Frequency Range</b>	
A	Acceleration: 10~15 kHz (*1)
V	Velocity: 10~1000 Hz
D	Displacement: 10~150 Hz
E1	Envelope Detection: 5~100 Hz
E2	Envelope Detection: 50~1 kHz
E3	Envelope Detection: 500~10 kHz
E4	Envelope Detection: 5 k~20 kHz
<b>Sampling Frequency</b>	A, E3, E4: 76.8 kHz E1, E2, V, D: 38.4 kHz
<b>Aliasing Filter</b>	A, E3, E4: 20 kHz E1, E2, V, D: 2 kHz
<b>Range</b>	
A, E1, E2, E3, E4	0~1G: (x100 range) 0~5G: (x20 range) 0~20G: (x5 range) 0~100G: (x1 range)
V	0~10 mm/s: (x100 range) 0~50 mm/s: (x20 range) 0~200 mm/s: (x5 range) 0~1000 mm/s: (x1 range)
D	0~50 m: (x100 range) 0~250 m: (x20 range) 0~1000 m: (x5 range) 0~5000 m: (x1 range)

(\*1) The upper bound frequency can be changed by Utility Menu's A Filter.

## Overall and Judgment Specifications

Item	Specifications
<b>Overall Value</b>	Simultaneous Measurement of Overall Vibration Level, Multi-Mode (A, V, D, E1~E4)
<b>Simultaneous Measurement</b>	Range = Auto Measuring Time = 0.1s; 0.5s; 1.0s Measurement Data = RMS Value, PEAK Value, C.F. Value Measured Value Display Digits: Significant Figure 4 digits Example: 9999/999.9/99.99/9.999 Status Display (Under Measurement, Measurement End)
<b>Judgment</b>	Abnormal Judgment by Vibration Severity Standard (ISO-10816 [JIS-B-0906] Standard) Abnormal Bearing Judgment by Enveloped Acceleration E3 Mode

## Display Specifications

Item	Specifications
<b>Graph Display</b>	FFT Graph <ul style="list-style-type: none"> <li>• Dominant Frequency Component (Highest 5 Frequencies)</li> <li>• Cursor Indication Value Display</li> <li>• Zoom Scroll Value Display</li> </ul> Waveform Graph <ul style="list-style-type: none"> <li>• Cursor Indication Display</li> <li>• Zoom Scroll Display</li> </ul>

## FFT Specifications

Item	Specifications
FFT, Waveform Analysis	<b>Mode</b> = A/ V/ D/ E1/ E2/ E3/ E4 <b>Range</b> = Fixed/ Auto <b>FFT Measurement Condition</b> Analysis Frequencies: Selection List <ul style="list-style-type: none"> <li>• A: 250/ 500/ 1k/ 2k/ 5k/ 10k/ 15k/ 30k Hz</li> <li>• V: 250/ 500/ 1k Hz</li> <li>• D: 250/ 500 Hz</li> <li>• E1: 50 Hz</li> <li>• E2: 250/ 500 Hz</li> <li>• E3: 250/ 500/ 1k/ 2k/ 5k Hz</li> <li>• E4: 250/ 500/ 1k/ 2k/ 5k/ 10k Hz</li> </ul> Lines of Resolution: 1600/ 800/ 400 Averaging: Stable/ Exponential/ Peak Hold 1/ 2/ 4/ 8 Times Window: Hanning/ Rectangular/ Flat Top <b>Measurement Mode:</b> <b>Normal/ Recorder/ Post Process</b> <ul style="list-style-type: none"> <li>• <b>Normal:</b> Recording time of waveform data is determined by FFT measurement condition (analysis frequency, line number). Executes the measurement for average cycle in FFT and records the waveform for frame time (final frame time).</li> <li>• <b>Recorder:</b> Records the waveform of specified time by Rec.time. Average cycle of FFT is one time.</li> <li>• <b>Rec. Time:</b> 1/ 2/ 5/ 10 sec</li> <li>• <b>Post-Process:</b> Calculates from raw waveform data (temporary saved data). Average cycle of FFT is one time.</li> </ul> <b>Trigger Function</b> Trigger: Input Signal Trigger Trigger Level: 0/ 10/ 20/ 30/ 40/ 50/ 60/ 70/ 80/ 90%. Specify % of the used range Delay: 0/ 10/ 20/ 30/ 40/ 50%. Specify % of the specified waveform measurement time <b>Status Display:</b> During measurement, Measurement end

# Ordering Information

## MicroVibe P Kit

CMVL 3850 Includes:

- MicroVibe P Module
- CMSS 3811 Accelerometer, 1.5 Meters (5 Feet) Integral Cable, with Plug, and Stinger One (1) Each.
- CMAC 3825 Two-Bar Magnetic Base, High Strength 40 lb Pull, One (1) Each.
- CMAC 3830 Earphones, One (1) Each.
- CMAC 3860 Data Management Software CD-ROM, One (1) Each.
- MicroVibe P Documentation (English Only)
  - User Manual
  - Data Management Software Manual
  - Quick Start Guide
  - CE Declaration of Confirmation
- Carrying Case

**NOTE:** Pocket PC PDA NOT INCLUDED.

## Additional Accessories

- CMSS 3811 Accelerometer, 1.5 Meters (5 Feet) Integral Cable (Replacement), with Plug, and Stinger, One (1) Each.
- CMSS 3812 Velocity Pickup Sensor, 1.5 Meters (5 Feet) Integral Cable, with Plug, One (1) Each.
- CMAC 3825 Two-Bar Magnetic Base, High Strength 40 lb Pull, One (1) Each.
- CMAC 3830 Earphones, One (1) Each.

# Certified Pocket PC PDA's with Windows Mobile™ 2003

- Hewlett Packard
  - iPAQ hx2400
  - iPAQ hx2700
  - iPAQ hx4700
- Toshiba
  - e830
- ASUS MyPal A730
- Dell AXIM X50

## Compatible Pocket PC PDA's

- Hewlett Packard
  - iPAQ h2210
  - iPAQ h2215
- Toshiba
  - e800



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