

USER MANUAL

VIBRATION ANALYZER

PCE-VM 22

ENGLISH



User manuals in various languages (français, italiano, español, português, nederlands, türk, polski) can be found via our product search on:
www.pce-instruments.com

SAFETY PRECAUTIONS

To prevent possible electrical shock, fire, personal injury or the device damage:

- » Carefully read user's manual.
- » Do not place sensor on the objects which exposed to high voltages.
These voltages could cause personal injury or death.
- » The Analyzer could not be used in potentially explosive environments.
- » Take measures to prevent cables and straps become entangled by rotating part of machines at measurement site.
- » Do not expose PCE-VM 22 parts to heavy impacts, high humidity and extreme temperature.
- » Do not try to open the display unit – this can damage the system, and your after-sales service warranty will come void

OVERVIEW

The PCE-VM 22 Vibration Analyzer (Device, Analyzer) is a compact yet powerful, vibration analyzer designed to measure overall vibration parameters, FFT spectrum analysis of the rotating machinery, immediate evaluation against ISO 10816 standard, condition monitoring by route based measurements and data collection. Route files and data files exchange via email makes it ideal for data collection at remote sites. Simple in use, with free firmware upgrades, comes with data management and reporting software.

SPECIFICATIONS

Inputs	IEPE or charge type accelerometers with known sensitivity, switchable. Optical RPM transducer with IR pyrometer sensor (optional)
AD conversion	24 bits
Dynamic range	106 dB
Frequency range	1 ... 10000 Hz
Vibration measurement range	
Acceleration	200 m/s2
Velocity	200 mm/s
Displacement	2000 uM
Accuracy	±5%
Temperature measurement range	-70°C ... 380°C
Accuracy	±0.5% (0 ... +60°C), ±1% (-40 ... +120°C), ±2% (-70 ... +180°C), ±4% (-70 ... +380°C)
Tachometer measurement range	10 ... 200,000 rpm
Accuracy	±0.1% and ±1rpm
FFT spectrum resolution	400, 800, 1600 lines
Data storage	4GB micro SD card, built-in
PC interface	USB
Display	color, sunlight readable 128x160 dots
Battery	Li-Po rechargeable, up to 8 hrs continuous operation
Operating Temperature	0°C ... 50°C
Storage Temperature	-20°C ... 60°C
Operating humidity	<85% RH without condensation
Dimensions	132 x 70 x 33 mm
Weight	150 g

MEASUREMENT FUNCTIONS

Vibration mode - Analyzer measures overall level of vibration acceleration, velocity and displacement and FFT spectrum, route or off-route measurements.

Tachometer - Analyzer measures speed of rotation by means of contactless optical sensor. The measurement result is displayed in RPM and Hz.

IR thermometer - Contactless measurement of object temperature. The measurement result is displayed in °C and °F.

OPERATION

Keyboard

	Press and hold for 3 sec to turn device ON, short press to turn OFF
	Enter, confirm selection, start measurement
	Navigation arrow keys
	Menu
	Backspace, quit
	Option key

Settings

This menu is used to setup:

- » Date/Time
- » Sensors parameters
- » Units Metric/Imperial units
- » Auto OFF delay
- » English interface language
- » Brightness Low/Mid/High display brightness
- » MUX input multiplexer to use triaxial sensors (optional)

Date/Time

- » Use arrow keys to set date.
- » Hold F1 then press LEFT or RIGHT for month decrement/increment.
- » Confirm by OK when correct date is set.
- » Use arrow keys to set minutes and hours.
- » Use MENU key to switch focused field. Focused field is indicated by red frame.
- » Confirm by OK when correct time is set.

Sensors

- » Use UP/DOWN keys to choose sensor, which will be used for measurements. Drop down menu offers two types - IEPE or charge type sensors to choose from.
- » Confirm choice by OK key.
- » **Type**, **S.N.** and **Sensitivity** fields are editable.
- » Use MENU key to choose field to edit.
- » Then use arrow keys to edit the field value.

Units

- » Metric/Imperial units setup

Auto OFF

- » Use UP/DOWN keys to set auto OFF delay (minutes).
- » Press MENU or BACK key to confirm and quit menu.

Vibration

- » Analyzer measures vibration Acceleration, Velocity and Displacement. In ISO 10816 mode measurement result is compared to the built-in table of vibration severity grades according to ISO 10816-3.
- » Use UP/DOWN keys to choose measurement mode.

Vibration measurement settings

- » Press MENU key to enter Settings menu.
- » Use UP/DOWN to choose parameter to setup.
- » Use LEFT/RIGHT to change parameter value.
- » **Low Freq** - lower frequency limit. Can be set to 1, 2, 10 Hz.
- » **Hi Freq** - upper frequency limit. Can be set:
from 200 to 10000 Hz for Acceleration;
from 200 to 5000 Hz for Velocity;
from 200 to 800 Hz for Displacement;
- » **FFT lines** - FFT spectrum resolution. Can be set to 400, 800, 1600 lines.
- » **Trigger** - not implemented yet.
- » **Averaging** - measurement averaging. Can be set in range of 0 to 64. Zero means that averaging is OFF.
- » **Window** - weighting function. Can be set to Hanning or Rectangular.

Taking measurements

- » Choose vibration parameter e.g. **Velocity**, edit settings if needed, then press OK key to start measurement.

When measurement is running:

- » Use UP key to toggle FFT spectrum / waveform display.
- » Press OK key to stop/resume measurement.

When measurement is stopped:

- » Press MENU key for Options:
 - Save** - to save measurement data. Press OK key to proceed.
 - Format** - Linear/Logarithmic amplitude display. Use LEFT/RIGHT to change parameter value.
 - Zoom** - frequency axis display zoom change. Use LEFT/RIGHT to change parameter value

To save measurements

- » Press OK key to stop measurement
- » Press MENU key for Options
- » Choose Save.. and press OK key
- » Device will enter **My documents** menu
- » Browse to the destination folder, then press MENU key to save measurement.
- » Device writes two files at a time - FFT spectrum file and waveform file.
- » Device remembers path to the last written files.
- » To create new folder - press F1 key. Date/time stamp is used as a default name for new folder.
- » To create folders with meaningful names – connect device to the PC via USB as external flash drive, then create folders using PC keyboard.

Route based measurements

- » Using ConSpect software create route file and download it to the device
- » Go to **Documents** menu, move cursor to the route file and press OK key
- » Use UP/DOWN to browse route points
- » Attach sensor at the measurement point and press OK key. Device takes measurement with preset parameters and saves files to proper destination folder

Tachometer

- » Connect optical probe to the device
- » Enter **Tachometer** menu
- » Aim optical probe to the rotating machine part with attached reflective tape.
- » Press OK key to start/stop measurement.
- » Device displays measurement result in **RPM** and **Hz**

Thermometer

- » Connect optical probe to the device
- » Enter **Thermometer** menu
- » Aim optical probe to the machine.
- » Press OK key to start/stop measurement.
- » Device displays measurement result in °C and °F

DISPOSAL

For the disposal of batteries in the EU, the (EU) 2023/1542 directive of the European Parliament applies. Due to the contained pollutants, batteries must not be disposed of as household waste. They must be given to collection points designed for that purpose. In order to comply with the EU directive 2012/19/EU we take our devices back. We either re-use them or give them to a recycling company which disposes of the devices in line with law. For countries outside the EU, batteries and devices should be disposed of in accordance with your local waste regulations. If you have any questions, please contact PCE Instruments.

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