



# Vibration Analyzer **VA-11**

Sophisticated Vibration Analyzer With FFT Capability

**Simple Operation Using Only Ten Switches**



- Digital processing allows simultaneous display of acceleration, velocity, and displacement
- 16-bit A/D converter achieves 80 dB dynamic range
- Large LCD panel with EL backlight and 192 x 128 dot resolution
- Memory card slot for speedy transfer of data to a PC
- Operates for more than 22 hours on one set of batteries (alkaline)
- Internal memory holds up to 500 data sets without the need for a memory backup battery

# Outline

The VA-11 is a portable analyzer designed for examining machinery vibrations and performing diagnostic routines on various kinds of equipment. The unit has a vibration meter mode and an analyzer mode encompassing FFT analysis. In vibration meter mode, simultaneous measurement of acceleration, velocity, and displacement is carried out.

Acceleration rms value, peak value, and crest factor can also be displayed simultaneously. In analyzer mode, FFT analysis is used to determine the power spectrum and vibration waveform. The capability to perform envelope processing before FFT analysis is highly useful for equipment diagnostics.

## Specifications

### Input section

Number of input channels: 1  
 Input connector: Standard acceleration pickup connector  
 Standard pickup is PV-55  
 Vibration measurement quantities: Acceleration, acceleration envelope, velocity, displacement  
 Acceleration envelope in analyzer mode only

### Input range (with PV-55)

Acceleration: 1, 3.16, 10, 31.6, 100, 316 m/s<sup>2</sup> (rms)  
 Velocity: 3.16, 10, 31.6, 100, 316, 1000 mm/s (rms)  
 Displacement: 0.089, 0.283, 0.894, 2.83, 8.94, 28.3 mm (E<sub>OP-P</sub>)

### Measurement frequency range (electrical)

Acceleration: 3 Hz - 20 kHz  
 Velocity: 3 Hz - 3 kHz  
 Displacement: 3 Hz - 500 Hz

### Measurement level range

Acceleration: 0.02 - 316 m/s<sup>2</sup> (rms)  
 Velocity: 0.1 - 1000 mm/s (rms)  
 Displacement: 0.003 - 28.3 mm (E<sub>OP-P</sub>)  
 High-pass filter: 3 Hz, 10 Hz, 1 kHz (-10% point)  
 Low-pass filter: 1 kHz, 5 kHz, 20 kHz (-10% point)

### Vibration meter mode

Processing items  
 Simultaneous processing of following items (digital)  
 Acceleration: rms, peak, crest factor  
 Velocity: rms  
 Displacement: Equivalent P-P value (E<sub>OP-P</sub>)

### Analyzer mode

A/D converter: 16 bit, delta sigma principle, 51.2 kHz sampling  
 Processing items: Waveform, spectrum  
 Display range: 80 dB  
 Time window function: Rectangular, Hanning, Flat-top  
 Frequency span: 100, 200, 500, 1k, 2k, 5k, 10k 20k Hz  
 Anti-aliasing filter: 100, 200, 500, 1k, 2k, 5k, 10k 20k Hz  
 Zoom factor: ×1 (100 lines), ×2 (200 lines), ×4 (400 lines), ×8 (800 lines)

### Average processing

Spectrum: Instantaneous value, exponential averaging, linear averaging, peak hold  
 Instantaneous value  
 Waveform: Instantaneous value  
 Trigger source: External signal, input level  
 Trigger operation: Free-run, repeat, single  
 Pre and post trigger function: Yes

### Display section

Display  
 LCD dot resolution: 192 × 128  
 Display size: 77.5 × 54 mm  
 Backlight: EL backlight  
 Display data  
 Vibration meter display: Acceleration, velocity, displacement  
 Bar graph and numeric indication  
 Graph, list  
 Spectrum display: 102 lines (frequency spectrum 101 lines + overall value)  
 Graph display: Y axis (dB, linear)

### List display:

Upper 10 levels and frequency  
 Graph only, 128 data  
 Waveform display:  
 Display contents  
 Measurement data: Processing results, cursor, measurement conditions  
 Status indication: Overload, trigger standby, storing  
 Date and time indication: Date: MM:DD Time: HH:MM (24-hour notation)  
 Power supply voltage: 4-segment battery status indicator

### Memory

Data memory  
 Manual store: Measurement parameters and analysis results are stored in specified address  
 Capacity 500 data sets, regardless of vibration meter mode or analyzer mode  
 Transient store: Continuous store of waveform (store cycle: frequency span x 2.56)  
 Timer store function: Start time, repeat interval, number of store data can be specified for storing data in data memory  
 Data stored in transient memory can be re-analyzed.  
 Re-analyze function: 10 sets, for storing and recalling all measurement parameters  
 Measurement settings memory: ATA type compact flash card  
 Contents of entire data memory are written to the card as one ASCII file in MS-DOS format

### Inputs/outputs

RS-232C interface  
 Function: Control of VA-11 from computer  
 Transfer of measurement data to computer

### Printer output

Compatible printers: CP-10, CP-11  
 Function: Screen hard copy, continuous printout  
 External trigger input: TTL level falling edge  
 Beep tone: When operating and as error warning

### Others

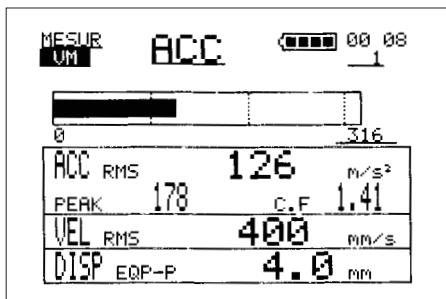
Dimensions: Approx. 17.4 × 15.6 × 4.6 cm  
 Weight: Approx. 770 g (including battery)  
 Power supply  
 System batteries: Four IEC R14 (size C) batteries  
 Ambient conditions for use  
 Temperature: 0 - +40°C  
 Humidity: 20 - 90%

### Supplied accessories:

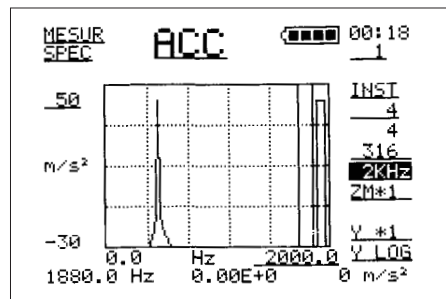
Acceleration pickup (PV-55) 1  
 Soft carrying case 1  
 IEC R14 (size C) batteries 4  
 Instruction manual 1  
 Lithium battery (CR-1/3N) 1

### Optional accessories

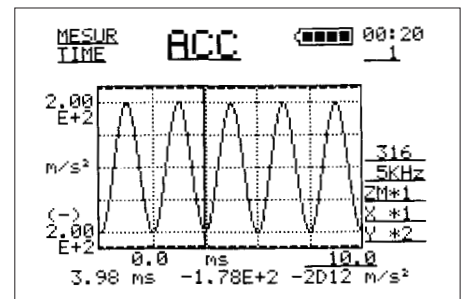
PCMCIA card: ATA type compact flash card  
 Hard case (CF-21)  
 Printer (CP-11)  
 AC adapter (NC-94)



Vibration meter display



Spectrum display



Waveform display

\* Specification subject to change without notice.



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