

Absolute vibration monitor – single sensor input, two measurement types

VC12S3 type

Application

VC12S3 monitor is used in rotating machinery (compressors, fans, pumps, electric motors, transmissions and other) bearings absolute vibration measuring systems. Unit is equipped with single input for vibration sensor and two output types: proportional to vibration speed RMS value and proportional to vibration acceleration peak value.

It may be used to:

- Vibration data visualization and recording using standard dc output
- Protecting machinery from excessive vibrations, based on constant current signal proportional to vibration speed
- Diagnostics for rolling bearing wear evaluation purposes using constant current output proportional to vibration acceleration peak value.
- Diagnostics using variable voltage signal vibration sensor accessible through BNC socket using optional portable vibration analyzer / recorder.

Description

The monitor is made in ABS rail mounted housing of dimensions 55mm -width, 75mm - height, 125mm - depth, ready to mount on TS35 rail. The unit cooperates with one piezoelectric vibration acceleration sensor with built-in two-wire current supply preamplifier (according to ICP® standard). Monitor generates two output signals based on single sensor input signal:

- proportional to 10(5)Hz to 1000Hz vibration velocity RMS value, for machinery dynamic state evaluation, considering both causes arising from rotor and rolling bearings operation, recommended for use in machinery protection systems,
- proportional to 10(1000)Hz to 5000(10000)Hz vibration acceleration peak value, for diagnostics of rolling bearing and gear transmission wear evaluation purposes. Damaged rolling bearing may be detected and monitored before the damage is recognized by vibration speed signal.



This information is useful while planning bearing replacements. The monitor is calibrated for two measurement ranges for both measured quantities, and the selection of the range is made choosing jumper position available through access window in upper casing wall. The following measurement range pairs are available: 10 and 20mm/s or 15 and 30mm/s for vibration speed and 100 and 500m/s² for vibration acceleration. After selecting one range from the pair, the other is added automatically. Two band-pass filters with 24dB per octave edge for both measured quantities are available. It is necessary to order one filter for each measured quantity while ordering.

Performances

METROLOGICAL

Input: piezoelectric accelerometer with built-in preamplifier – two wire system, powered from constant current source 2-10mA/18-30V DC.

DC Output:

For vibration velocity

- 4...20mA, Rload <500Ω
- 0...2V, Rload >10kΩ

For vibration acceleration

- 4...20mA, Rload <500Ω
- 0...2V, Rload >10kΩ

AC Output:

- buffered variable voltage on BNC socket being the raw signal from the vibration sensor (accelerometer)

Binary output:

- one binary CMOS, indicating sensor-monitor circuit proper operation



Measurement range:

- for vibration velocity RMS value:
10mm/s and 20mm/s or 15mm/s and 30mm/s
- for vibration acceleration (zero-peak value):
100m/s² and 500m/s²

Amplitude performance nonlinearity: ±1%**Frequency characteristics for choice:**

5Hz-1kHz , 10Hz-1kHz, 10Hz-5kHz, 1kHz-10kHz

ELECTRICAL**Power consumption:** <2W**Supply voltage:** 18-36 VDC, <80mA**Galvanic isolation DC output/ power source:**1,5kV**ENVIRONMENTAL****Ambient temperature range:** -30°C to +70°C**Relative humidity:** 95% no condensation**MECHANICAL****Weight:** 150g**Housing :** ABS, mounted on TS 35 rail**Dimensions :** 55x75x125mm**Protection :** IP40**Ordering information**

VC12S3 - □□□ - □□ - □□ - □□ - □□

A □□□ Input sensitivity in mV/g

(cooperating accelerometer sensitivity)

e.g. 1 0 0 for 100mV/g sensitivity

B □□ Vibration velocity measurement range

0 1 0 – 10 mm/s range 0 3 0 – 20 mm/s range

0 2 0 – 15 mm/s range 0 4 0 – 30 mm/s range

C □□ Vibration acceleration measurement range0 1 0 – 100 m/s² range (machinery other than
transmissions)0 2 0 – 500 m/s² range (for gear transmission)**D □□ Frequency band for vibration velocity**

0 1 10Hz–1kHz

0 2 5Hz–1kHz (for slow-speed machinery
750 to 300 r.p.m.)**E □□ Frequency band for vibration acceleration**0 1 10Hz–5kHz (machinery other than
transmissions)

0 2 1kHz–10kHz (for gear transmissions)

