

The IVS-500 Industrial Vibrometer is the key to reliable acoustic quality inspection, clear and repeatable pass-fail or structure-borne noise analysis in-line.

With its rugged and robust design, the optical sensor measures reliably in demanding industrial environments, without contact and therefore non-invasively, on virtually all technical surfaces. Productivity is improved by reducing false-alarms and rejects.

Thanks to its simple setup, wide frequency range up to 100 kHz, variable working distances and application-specific accessories, the IVS-500 easily adapts to any production line.



Highlights

- Flexible setup with large and variable working distances up to 3 m
- Non-contact and reliable with laser precision
- Auto and remote focus for best signal level
- Versatile with large bandwidth up to 100 kHz

IVS-500 Industrial Vibration Sensor

Acoustic quality control with laser precision

Datasheet



Technical data



Metrological specifications

| Model | Version | Max. frequency | Focus | Velocity full scale (peak) | # of measurement ranges |
|----------------|---------|----------------|--------|----------------------------|-------------------------|
| Entry | EM | 10 kHz | Manual | 0.5 m/s | 6 |
| | ER | 10 kHz | Remote | 0.5 m/s | 6 |
| Basic | BM | 25 kHz | Manual | 1.0 m/s | 7 |
| | BR | 25 kHz | Remote | 1.0 m/s | 7 |
| High frequency | HR | 100 kHz | Remote | 2.0 m/s | 8 |

| Measurement range | mm/s/V | 2.5 | 5 | 12.5 | 25 | 50 | 125 | 250 | 500 |
|---------------------------------------------------------------------------|---------------------------------------|--------|--------|--------|--------|--------|-------|-------|-------|
| Full scale output (peak) | mm/s | 10 | 20 | 50 | 100 | 200 | 500 | 1,000 | 2,000 |
| Typical resolution ¹ depending on adjusted frequency bandwidth | | | | | | | | | |
| 10 kHz | $\mu\text{m s}^{-1}/\sqrt{\text{Hz}}$ | < 0.01 | < 0.01 | < 0.02 | < 0.02 | < 0.04 | < 0.1 | < 0.2 | < 0.4 |
| 25 kHz | $\mu\text{m s}^{-1}/\sqrt{\text{Hz}}$ | < 0.02 | < 0.02 | < 0.02 | < 0.02 | < 0.04 | < 0.1 | < 0.2 | < 0.4 |
| 100 kHz | $\mu\text{m s}^{-1}/\sqrt{\text{Hz}}$ | < 0.03 | < 0.03 | < 0.03 | < 0.03 | < 0.04 | < 0.1 | < 0.2 | < 0.4 |

¹ The noise-limited resolution is defined as the signal amplitude (rms) at which the signal-to-noise ratio is 0 dB with 1 Hz spectral resolution. measured on 3M Scotchlite™ Tape (reflective film). The typical value refers to the center of the operating frequency range.

| | |
|---------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Decoder type | Digital velocity decoder, 6 ... 8 measurement ranges ¹ |
| Filters | Adjustable frequency bandwidth: 1 kHz, 5 kHz, 10 kHz, 25 kHz ² , 50 kHz ³ , 100 kHz ³ Digital high pass filter 13 Hz / 104 Hz (-3 dB) ASE Adaptive Signal Enhancement for signal optimization on uncooperative surfaces |
| Analog output | $\pm 4\text{ V}$ |
| Connectors | Industrial connector for voltage supply, optical signal level and velocity output Connector for IVS-A-510 signal level indicator and RS-232 serial interface |

¹ Depending on model.

² Only available for models IVS-500 BM, BR and HR.

³ Only available for model IVS-500 HR.

Optical specifications

| | | |
|-----------------------------------------|-------------------------------------------------------------------|------------|
| Laser type | Helium Neon (HeNe) | |
| Laser class | Class 2, < 1mW output power, eye-safe | |
| Laser wavelength | 633 nm, visible red laser beam | |
| Focus | Manual (M) | Remote (R) |
| Minimum stand-off distance ¹ | 86 mm | 47 mm |
| Maximum stand-off distance ¹ | 3 m | 3 m |
| Visibility maxima ^{1,2} | $x = 53\text{ mm} + n \cdot 138\text{ mm}; n = 0, 1, 2, 3, \dots$ | |

¹ For definition of stand-off distance see drawing on last page, dimension "x".

² The optimal stand-off distances where the signal level is at its maximum are called visibility maxima. The visibility maxima recur every 138 mm corresponding to the laser cavity length.

| General specifications | |
|------------------------|--------------------------------------|
| Operating temperature | +5 °C ... +40 °C (41 °F ... 104 °F) |
| Storage temperature | -10 °C ... +65 °C (14 °F ... 149 °F) |
| Relative humidity | max. 80%, non-condensing |
| Protection class | IP 64 |
| Dimensions | see drawing on last page |
| Weight | ca. 3.1 kg |
| Power supply | 11 V ... 14.5 V DC , max. 15 W |

Accessories for process integration



Accessories for optics

VIB-A-210 90° deflection unit

VIB-A-220 Protective window,
VIB-A-221 Protective window (flat)
protects front lens

VIB-A-230 Air purge unit
for oily and dusty environment

VIB-A-240 Pneumatic beam shutter
protects optics when not
measuring

VIB-A-310 Alignment tool
for easy perpendicular beam
setup

VIB-A-320 Folding ruler
shows visibility maxima for
optimal working distance

VIB-A-P07 Adjustable mounting plate
(pan/tilt)

VIB-A-P09 Alignment device (pan/tilt)



Control / data acquisition

IVS-Prog
Programming Kit

VibSoft-20
2-channel USB data
acquisition up to 20 kHz

VibSoft-8x
2- or 4-channel data
acquisition up to 80 kHz

QuickCheck
Evaluation Software

... or any analog data
acquisition

PC /
PLC

IVS-E-500 Junction box
with I/O controls, BNC output, USB interface,
AC power supply (100 ... 240 V) and
integrated Signal Level Display

IVS-A-510 Signal level display
Handheld Unit

Wiring / electrical accessories

Two wiring alternatives with or without IVS-E-500 Junction Box

Using junction box:

- 1 IVS-C-500 Main connecting cable
- 3 IVS-C-520 Serial connecting cable
- 5 Measured data (BNC) and configuration data (USB)

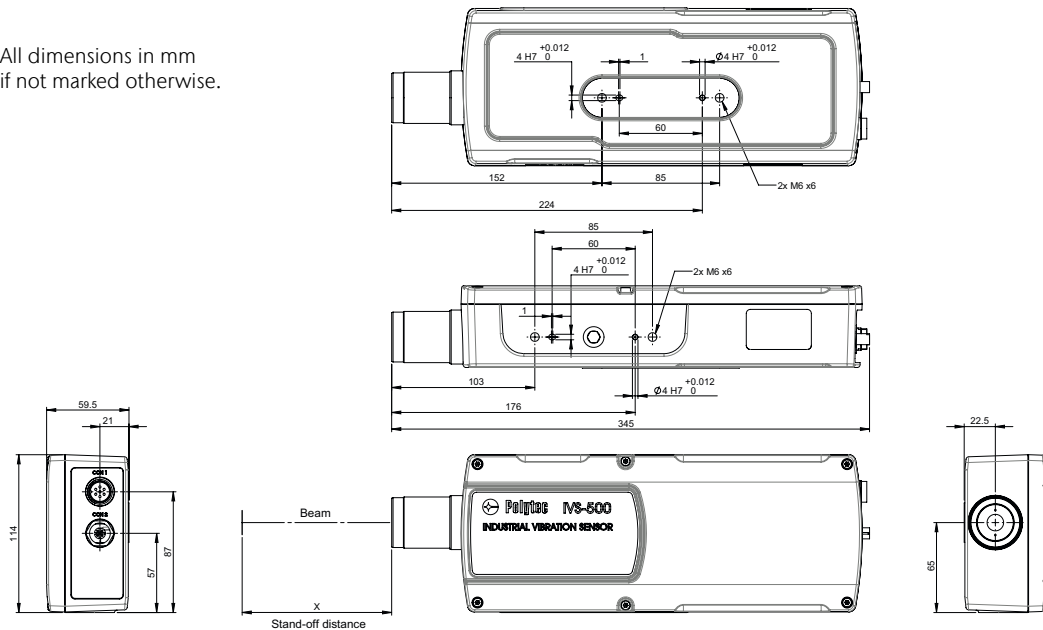
Direct connection:

- 2 IVS-C-510 Main connecting cable with jack and open end
- 4 IVS-C-530 RS-232 cable

Compliance with standards

| | |
|-------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Laser safety | IEC/EN 60825-1 (Safety of laser products, complies to US 21 CFR 1040.10 and 1040.11 except for deviations pursuant to laser notice no. 50, dated 24 June 2007) |
| Electrical safety | IEC/EN 61010-1 (Safety requirements for electrical equipment for measurement, control, and laboratory use) |
| EMC | IEC/EN 61326-1 (EMC requirements on emission and immunity – Electrical equipment for measurement, control, and laboratory use) Emission: Limit class B IEC/EN 61000-3-2 and 61000-3-3 Immunity: IEC/EN 61000-4-2 to 61000-4-6 and IEC/EN 61000-4-11 |

All dimensions in mm
if not marked otherwise.



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