DATA SHEET

vibro-meter®

PV685 piezoelectric velocity sensor

PV685
(sensor only version)

CE

KEY FEATURES AND BENEFITS

- From the vibro-meter® product line
- Current output signal: 4 to 20 mA proportional to 0 to 20, 0 to 25, or 0 to 50 mm/s
- Frequency response: 3 to 1000 Hz
- Temperature range: −55 to 90°C
- Isolated electronics for reduced noise
- Ground isolated from case
- Available as a sensor only or with an integral cable
- Available in standard versions (non-hazardous areas only)

APPLICATIONS

- General-purpose vibration monitoring in harsh industrial environments and/or hazardous areas

DESCRIPTION

The PV685 piezoelectric velocity sensor from Meggitt's vibro-meter® product line is a general-purpose vibration sensor designed for the monitoring and protection of machinery in harsh industrial environments.

The PV685 is an industry standard 4 to 20 mA loop-powered vibration sensor (vibration transmitter) that provides a vibration output signal in a current loop. It is available with a sensitivity of 4 to 20 mA proportional to 0 to 20 mm/s, 0 to 25 mm/s or 0 to 50 mm/s.

The PV685 is available as a sensor only or fitted with an integral cable that is protected by a stainless-steel overbraid. Sensor only versions allow one of a range of different cable assemblies to be used to connect the sensor to the monitoring system, depending on the application and environment.

The PV685 is available in standard versions for use in standard (non-hazardous) areas only.

For specific applications, contact your local Meggitt representative.

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SPECIFICATIONS

Note: Unless otherwise stated, all values listed are typical values, referenced at 24°C (75°F).

Operating

Sensitivity

• 0 to 20 g versions (ordering option code B020)	: 4 to 20 mA proportional to 0 to 20 mm/s RMS ±5%
• 0 to 25 g versions (ordering option code B025)	: 4 to 20 mA proportional to 0 to 25 mm/s RMS ±5%
• 0 to 50 g versions (ordering option code B050)	: 4 to 20 mA proportional to 0 to 50 mm/s RMS ±5% Note: 4 mA corresponds to no vibration, 20 mA to full scale.
Transverse sensitivity	: <5%
Linearity	: ±1% maximum
Frequency response	: 3 to 1000 Hz (±10%)
Resonant frequency	: 21 kHz nominal

Electrical

Power supply voltage (for current loop)	: 10 to 30 V_{DC}. Note: 4 to 20 mA current loop voltage between pins A+ and B−.
Maximum loop resistance (R_{MAX})	: R_{MAX} = (Power supply voltage − 10 V) / 20 mA
Grounding	: Isolated from case (machine ground)
Internal isolation (case to shield)	: 100 MΩ minimum
Reverse polarity	: Protected
Overvoltage	: Protected

Environmental

Temperature range	: −55 to 90°C (−67 to 194°F). Note: −55 to 120°C (−67 to 248°F) with max. loop current of 10 mA.
Humidity	: IP68 (according to IEC 60529)
Shock vibration limit	: 2500 g peak
Continuous vibration limit	: 500 g peak

Approvals

Conformity	: European Union (EU) declaration of conformity (CE marking)
Electromagnetic compatibility (EMC)	: EMC compliant (2014/30/EU). EN 61326-1.
Environmental management	: RoHS compliant (2011/65/EU)

SPECIFICATIONS *(continued)*

Physical

Case material	: Stainless steel (AISI 316L, DIN 1.4404)
Dimensions	: See **Mechanical drawings starting on page 4**
Weight	
• Sensor only versions	: 70 g (0.15 lb) approx.
• Integral cable versions	: 60 g/m (0.04 lb/ft) approx.

Connector

Sensor version	: Sensor only versions (PNR 440-685-000-111). See **Sensor only versions on page 4**.
Connector type	: MIL-C-5015-10SL-4P – rugged circular, threaded coupling, 2-pin connector with keyway. Note: Mates with MIL-C/DTL-5015 type connectors, as used by the recommended cable assemblies.
Connector pinouts (pin allocation)	
• Pin A (+)	: Loop positive (+)
• Pin B (−)	: Loop negative (−)
Recommended cable assemblies	: EC318, EC319, EC622 and EC632 (see **Accessories on page 6**)

Cable

Sensor version	: Integral cable versions (PNR 440-685-000-211). See **Integral cable versions on page 5**.
Cable type	: Cable: Teflon® FEP cable, twisted-pair shielded, Ø4.8 ± 0.2 mm. Conductors: 2 × 0.5 mm^2 twisted cores. Overbraid: Stainless steel (AISI 316L). Outer diameter: Ø5.2 ± 0.3 mm (0.20"). Maximum temperature: 200°C (392°F). Weight: See **Physical on page 3**.
Cable pinouts (flying lead allocation)	
• Red (+) wire	: Loop positive (+)
• White (−) wire	: Loop negative (−)

Mounting

Stud or adaptor	: 1/4"-28UNF-2A (see **Accessories on page 6**)
Torque	: 2.4 N•m (1.8 lb-ft). Refer also to the *CExxx and PVxxx vibration sensors (piezoelectric accelerometers and piezoelectric velocity sensors) installation manual*.

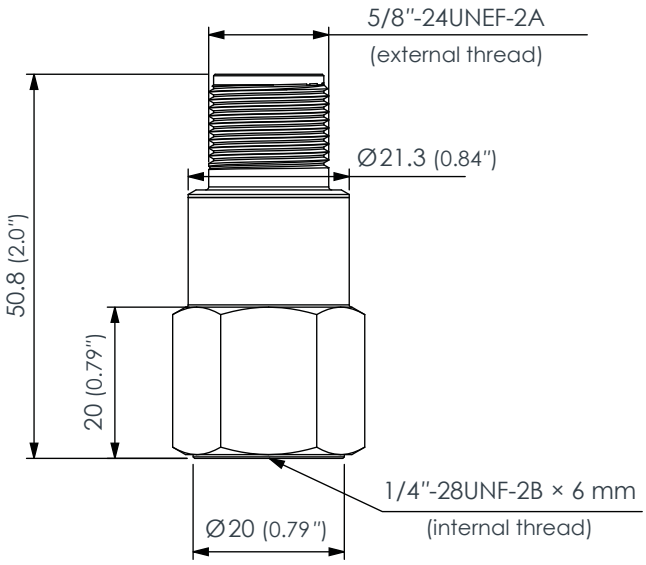
Calibration

Dynamic calibration at factory. No subsequent calibration necessary.

MECHANICAL DRAWINGS

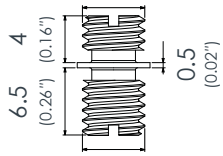
Sensor only versions

PV685 accelerometer



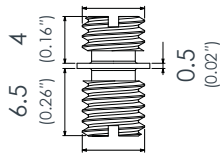
Adaptor studs

1/4"-28UNF-2A

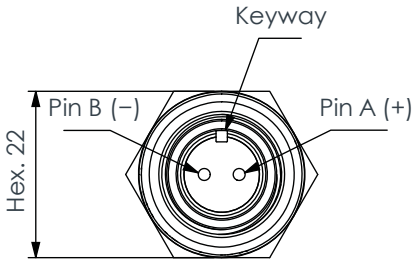


1/4"-28UNF

1/4"-28UNF-2A



M8 × 1.25



Notes

All dimensions in mm (in) unless otherwise stated.

For the sensor only versions of the PV685, the sensor mates with MIL-C/DTL-5015 type connectors. See **Ordering information on page 6** and the ECxxx cable assemblies in **Accessories on page 6**.

Ordering number (PNR):

440 - 685 - 000 - 111 — **A** — **B** — **C**

Environment (A)	
Standard	1

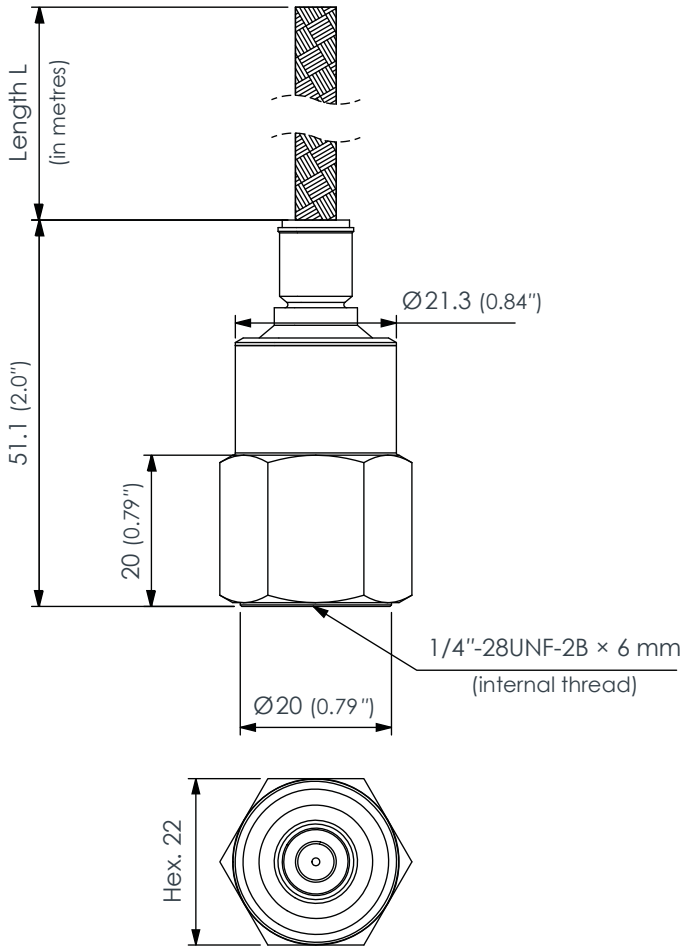
Sensitivity (B)	
4 to 20 mA proportional to 0 to 20 mm/s	020
4 to 20 mA proportional to 0 to 25 mm/s	025
4 to 20 mA proportional to 0 to 50 mm/s	050

Connector (C)	
01	MIL-C-5015-10SL-4P

MECHANICAL DRAWINGS *(continued)*

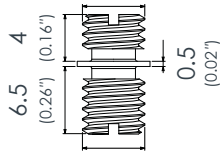
Integral cable versions

PV685 accelerometer



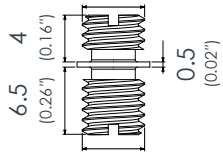
Adaptor studs

1/4"-28UNF-2A



1/4"-28UNF

1/4"-28UNF-2A



M8 × 1.25

Notes

All dimensions in mm (in) unless otherwise stated.

For the integral cable versions of the PV685, the length of cable is defined at the time of ordering. See **Ordering number (PNR)** below and the **Ordering information on page 6**.

Ordering number (PNR):

440 - 685 - 000 - 211 — **A** | **B** | **C** | **L**

Environment (A)	
Standard	1

Integral cable length (L)	
05	5 m

Sensitivity (B)	
4 to 20 mA proportional to 0 to 20 mm/s	020
4 to 20 mA proportional to 0 to 25 mm/s	025
4 to 20 mA proportional to 0 to 50 mm/s	050

Cable (C)	
72	Integral FEP cable with overbraid

ORDERING INFORMATION

To order, please specify the version(s) of the PV685 piezoelectric velocity sensor required …

Type	Designation	Ordering number (PNR)
PV685	0 to 20 mm/s sensor only version	440-685-000-111-A1-B020-C01
PV685	0 to 25 mm/s sensor only version	440-685-000-111-A1-B025-C01
PV685	0 to 50mm/s sensor only version	440-685-000-111-A1-B050-C01
PV685	0 to 20 mm/s integral cable version – 5 m cable length	440-685-000-211-A1-B020-C72-L05
PV685	0 to 25 mm/s integral cable version – 5 m cable length	440-685-000-211-A1-B025-C72-L05
PV685	0 to 50mm/s integral cable version – 5 m cable length	440-685-000-211-A1-B050-C72-L05

ACCESSORIES

Supplied

Item	Type	Part number (PNR)
• Adaptor studs	1/4-28UNF (1/4"-28UNF-2A to 1/4"-28UNF-2A)	809-601-000-011
	M8 × 1.25 (1/4"-28UNF-2A to M8 × 1.25)	809-601-000-021

Note: One of each of these type of adaptor studs is supplied with a PV685, that is, one M8 × 1.25 and one 1/4"-28UNF.

Optional

Item	Type	Part number (PNR)
• Adaptor studs	M8 × 1 (1/4"-28UNF-2A to M8 × 1)	809-601-000-031

ACCESSORIES *(continued)*

Optional *(continued)*

Item	Type	Part number (PNR)
• Cable assemblies	EC318. Standard version with a 2-pin MIL-C/DTL-5015 type connector, 2-wire RADOX® cable.	922-318-000-002
	EC318. Standard version with a 2-pin MIL-C/DTL-5015 type connector, 2-wire RADOX® cable and cable protection (flexible stainless-steel hose).	922-318-000-403
	EC319. Splashproof version with a 2-pin MIL-C/DTL-5015 type connector, 2-wire RADOX® cable.	922-319-000-002
	EC319. Splashproof version with a 2-pin MIL-C/DTL-5015 type connector, 2-wire RADOX® cable and cable protection (sealed, flexible stainless-steel hose).	922-319-000-103
	EC622. Standard version with a 2-pin MIL-C/DTL-5015 type connector, 2-wire Polyurethane (PUR) cable, IP67 cable boot (overmold).	922-622-000-001
	EC632. Higher-temp. version with a 2-pin MIL-C/DTL-5015 type connector, 2-wire Teflon® FEP cable, IP67 cable boot (overmold).	922-632-000-001
	EC632. Higher-temp. version with a 2-pin MIL-C/DTL-5015 type connector, 2-wire Teflon® FEP cable, IP67 cable boot (overmold) and cable protection (stainless steel (AISI 316L) overbraid).	922-632-000-101

Notes

The cable length must be specified when ordering a cable assembly.

When ordering a EC31x cable assembly, the ordering option code -L or -U is used to specify the overall cable length. EC31x cable assemblies can be specified with any cable length.

When ordering a EC6x2 cable assembly, the ordering option code -L is used to specify the overall cable length. EC6x2 cable assembles must be specified with a standard length of 2, 5, 10, 15, 20 or 30 m (corresponding to ordering option codes of L2000, L5000, L10000, L15000, L20000 or L30000, respectively).

Refer to the cable assembly product drawings for further information.

Item	Type	Part number (PNR)
• Mounting adaptor	MA122_012 (1/4"-28UNF-2A to M6, with a conic base)	809-122-000-012
• Insulating stud	MA122_021 (1/4"-28UNF-2A to M6, with a conic base)	809-122-000-021

RELATED PRODUCTS

CE620	Piezoelectric accelerometer (100 or 500 mV/g output)	: Refer to corresponding data sheet
CE630	Piezoelectric accelerometer (100 or 500 mV/g output, side connector)	: Refer to corresponding data sheet
CE687	Piezoelectric accelerometer (4 to 20 mA output proportional to g)	: Refer to corresponding data sheet
PV660	Piezoelectric velocity sensor (4 mV/mm/s output)	: Refer to corresponding data sheet

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In this publication, a dot (.) is used as the decimal separator and thousands are separated by thin spaces. Example: 12345.67890.

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