MEGGITT

DATA SHEET

vibro-meter®

AE119 housing expansion probe

CE

KEY FEATURES AND BENEFITS

- From the vibro-meter® product line
- Measurement based on eddy-current principle
- Integrated electronics
  (no need for additional signal conditioner)
- Measurement ranges: 50 or 100 mm versions
- Current output signal (4 to 20 mA)
- Splash proof: IP54 protection rating
- Temperature range: 0 to 80°C

APPLICATIONS

- Designed for absolute housing expansion monitoring on large to medium thermal machines
- Suitable for gas turbine and steam turbine applications

DESCRIPTION

The AE119 housing expansion probe is designed to measure the absolute expansion that thermal machines experience due to variations in temperature. The transducer is available in two versions, with either a 50 or 100 mm measurement range, for different size machines.

The AE119 transducer uses the eddy-current principle so it is non-wearing. The processing (signal conditioner) electronics are included in the supporting body so it requires a 24 V_{DC} supply to produce an output signal that is proportional to the measured housing expansion. The AE119's output is a 4 to 20 mA current loop signal, with the maximum current given when the measurement rod is fully extracted.

A range of EH140 shielded cables are available to connect the AE119 to the monitoring system, depending on the environment. The EH140 cables are available in lengths from 0.2 m, either with or without a flexible stainless steel hose (protection tube) for additional mechanical protection. In very harsh industrial environments, the AE119 should be installed using an EH140 with a flexible hose (protection tube).

For specific applications, contact your local Meggitt representative.

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SPECIFICATIONS

General electrical

Power supply (to AE119)

- Voltage : +24 V_{DC} nom. (+20 to +32 V_{DC})
- Current : 60 mA nom. at 24 V_{DC}.
  70 mA max.

Load resistance : 500 Ω max.

Operating

Frequency response

- Electrical : 0 to 1000 Hz
- Mechanical : 0 to 5 Hz

Accuracy

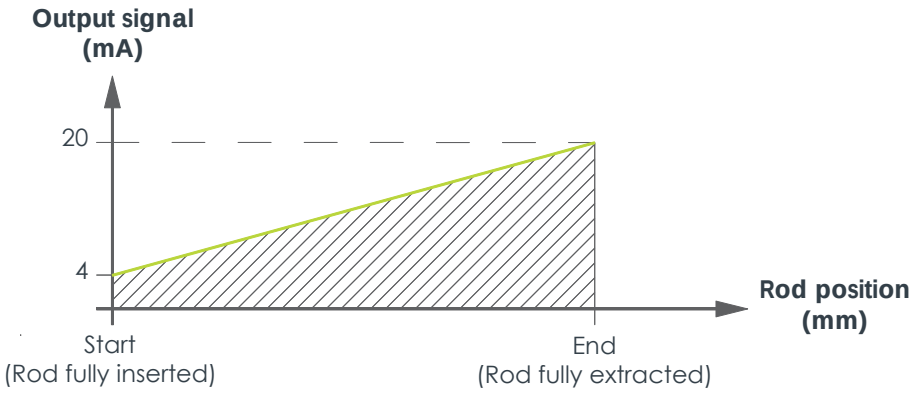
- Linearity : <1% of FSD
- Resolution : <0.05‰ of FSD
- Reproducibility : <0.05‰ of FSD

Temperature drift

- On zero : <150 ppm/°C of FSD
- On sensitivity : <150 ppm/°C of FSD

Output signal

- Constant current signal : 4 to 20 mA
- Start position : Adjusted to 4 mA ±0.15 mA (measurement rod fully inserted)
- End position : Adjusted to 20 mA ±0.3 mA (measurement rod fully extracted)
  Note: The AE119 (transducer and rod) are calibrated at the factory.



Mechanical

Spring forces

F_0, initial force on the spring when the measurement rod is fully extracted (corresponding to 0 mm)

- AE119 – 50 mm version : 30 N (6.7 lb)
- AE119 – 100 mm versions : 20 N (4.5 lb)

F_{max}, force on the spring when the measurement rod is fully inserted (corresponding to 50 or 100 mm)

- AE119 – 50 mm version : 73 N (16.4 lb)
- AE119 – 100 mm versions : 74 N (16.6 lb)

SPECIFICATIONS *(continued)*

Environmental

Temperature range	
• Operating	: 0 to 80°C (32 to 176°F)
• Storage	: 0 to 100°C (32 to 212°F)
Protection rating (according to IEC 60529)	: IP54
Shock acceleration (according to IEC 60068-2-27)	: Half sine-wave, 3 ms duration)
• Radial	: 100 g
• Axial	: 300 g

Approvals

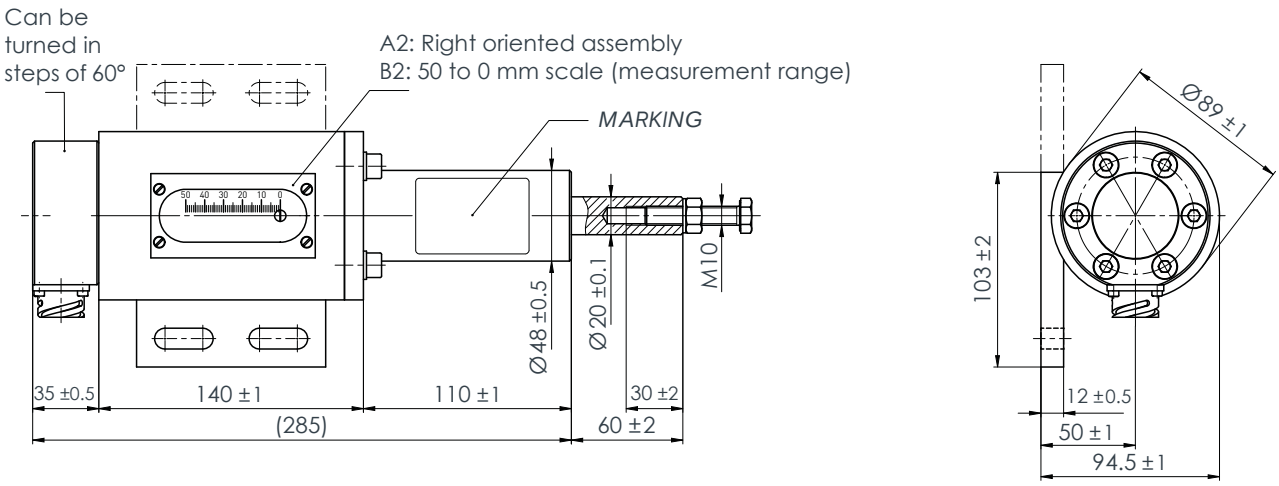
Conformity	: CE marking, European Union (EU) declaration of conformity
Electromagnetic compatibility (EMC)	: EN 61000-6-2:2005. EN 61000-6-4:2007 + A1:2011.
Electrical safety	: EC 61010-1:2010

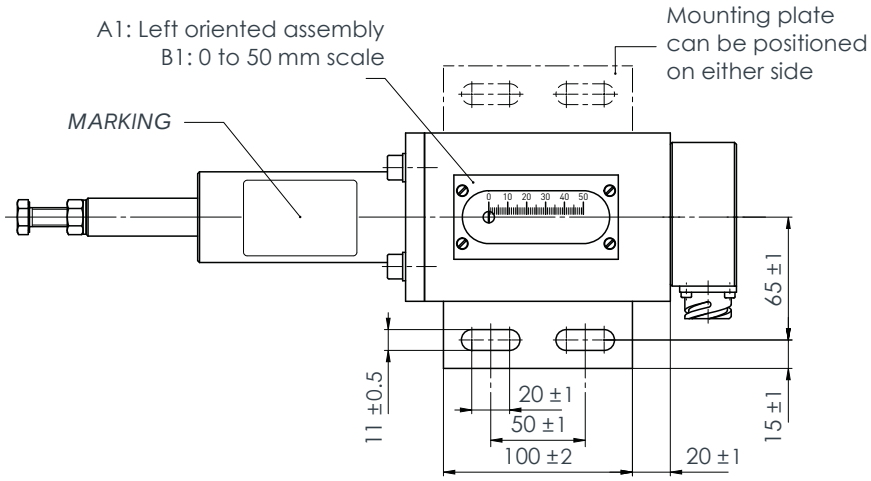
Physical

Material	: Aluminium and stainless steel
Dimensions	: See **Mechanical drawings and ordering information on page 4**
Weight	
• AE119 – 50 mm version	: 4.0 kg (8.8 lb) approx.
• AE119 – 100 mm versions	: 5.1 kg (11.2 lb) approx.
Mounting	: The housing expansion probe is installed by means of a mounting bracket that can be positioned on either side of the transducer (see **Mechanical drawings and ordering information on page 4**.). The mounting bracket (plate) is fixed to the transducer body using 4 × hex (hexagonal) socket screws with a nominal tightening torque of 5 N•m (3.7 lb-ft). The housing expansion probe (mounting bracket) is installed on the machine using 2 × M10 hex (hexagonal) screws and spring washers with a nominal tightening torque of 44 N•m (32.5 lb-ft). Refer also to the *Housing expansion measurement using the AE119 housing expansion probe manual*.
Connector	: Rugged circular, threaded-coupling, 5-pin connector with keyway. Mates with the CA310xF type connectors used by the recommended cable assemblies.
Recommended cable assemblies	: EH140 (see **Accessories on page 6**)

MECHANICAL DRAWINGS AND ORDERING INFORMATION

AE119 housing expansion probe – 50 mm version





Note: All dimensions are in mm (in) unless otherwise stated.

Ordering number (PNR): 800 - 119 - 000 - 025 - A B

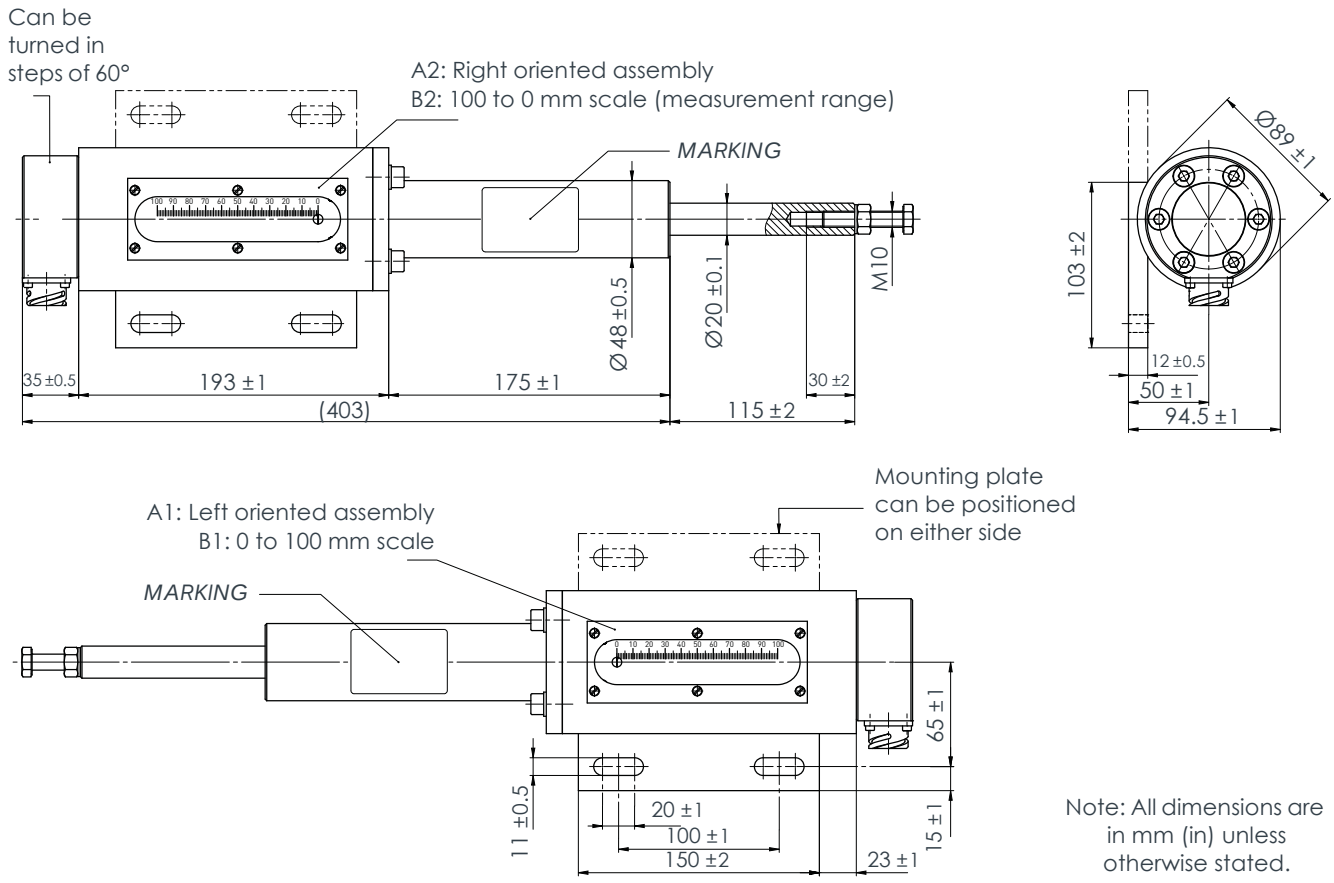
Orientation (A)	
Left	1
Right	2

Scale (B)	
0 to 50 mm	1
50 to 0 mm	2

Note: Reading from left to right.

MECHANICAL DRAWINGS AND ORDERING INFORMATION *(continued)*

AE119 housing expansion probe – 100 mm version



Note: All dimensions are in mm (in) unless otherwise stated.

Ordering number (PNR): 800 - 119 - 000 - 112 - A B

Orientation (A)	
Left	1
Right	2

Scale (B)	
0 to 100 mm	1
100 to 0 mm	2

Note: Reading from left to right.

ACCESSORIES

Item	Type	Part number (PNR)
• Cable assemblies	EH140 3-wire cable assemblies for current transmission with either a straight or right-angle (90°) connector:	
	– without a flexible hose (protection tube)	943-140-000-032
	– with a flexible hose (protection tube).	943-140-000-132
	Refer to sales drawings 943-140-000D032 and 943-140-000D132 for further information.	

Note: The type of connector (straight or right-angle (90°)), and cable and protection tube lengths must be specified when ordering a cable assembly.

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The Energy & Equipment division includes the Energy Sensing and Controls product group that specialises in sensing and monitoring solutions for a broad range of energy infrastructure, and control valves for industrial gas turbines, primarily for the Power Generation, Oil & Gas and Services markets. Energy & Equipment is headquartered in Switzerland (Meggitt SA) and incorporates the vibro-meter® product line, which has over 65 years of sensor and systems expertise and is trusted by original equipment manufacturers (OEMs) globally.

Sales offices

Meggitt has offices in more than 30 countries. For a complete list, please visit our website.

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