OVERVIEW

The Metrix 5485C is a moving-coil velocity transducer, designed for continuous use in elevated temperatures up to 375°C. A zero-friction coil suspension provides accurate, repeatable vibration measurements over a wide range of amplitude and frequency and is built to withstand the high-g environments and cross-axis vibrations typical of gas turbines. The coil bobbin is suspended by two non-twisting, circular spider springs that provide a clean frequency response. Purely viscous electromagnetic damping is employed to eliminate friction-prone air damping and improving detection of small vibration amplitudes at low frequencies.

The sensor is available in two configurations: with integral armored cable or removable armored cable via a 2-pin MIL-style threaded connector. The case is constructed of stainless steel and its robust internals are hermetically sealed to ensure durability in the most hostile environments. The product is approved for use in Zone 2 / Div 2 hazardous areas without use of intrinsic safety barriers. It is also approved for use in Zone 0/1 and Div. 1 areas with use of an appropriate intrinsic safety barrier.

FEATURES

- Native velocity output – handles impulsive signals better than integrated accelerometers
- Designed for elevated temperatures up to 375°C
- Self-generating, no power required
- Stainless steel housing
- Eliminates friction-prone air damping
- Analog performance delivers excellent resolution
- Approved for use in hazardous areas
- Available with integral or removable cable

APPLICATIONS

- Gas Turbines
- Furnace Fans
- Machines with continuous or intermittent surface temperatures above 120°C

Removable Cable Configuration

Integral Cable Configuration

0598

SPECIFICATIONS

Axis Orientation	Any
Sensitivity	105, 145, 150, or 200 mV/in/sec (see ordering options)
Sensitivity vs. Temperature	Less than 0.02%/°C
Cross-Axis Sensitivity	Less than 10%
Service Temperature	-54° to + 375°C (-65° to +707°F)
Frequency Response (+/- 3dB passband)	15 Hz to 2000 Hz
Maximum g-level	50 g
Maximum Displacement	1.8 mm (70 mils) pk-pk
Case-to-Coil Isolation (min)	• 100 MΩ @ 20°C • 10 MΩ @ 200°C • 1 MΩ @ 375°C
Case Sealing	Welded; hermetically sealed
Material	• Housing: 416 Stainless Steel • Connector: 316 Stainless Steel • Cable Armor: 302 Stainless Steel
Weight	• Sensor: 0.2 kg (0.5 lb) • Armored Cable: 0.2 kg/m (0.13 lb/ft)
Connector Type	• Sensor: 2-pin MIL-style* (male) • 4850 Cable: 2-pin MIL-style* (female) • Integral Cable: none (cable is not detachable)

* This connector is specific to high-temperature velocity sensors and removable cables. If the 5485C is to be connected to other instrumentation, the integral and removable cables terminate in flying leads (see pictures above) allowing user installation of other connector types as required.

APPROVALS

CE Mark	Yes
CSA (Canada)	Class I, Div 1, Groups A,B,C,D (intrinsically safe)[1]
ATEX/IECEx/ CCC/KOSHA	Ex ia IIC T^3 Ga (intrinsically safe)[1]
UL (US)	Class I, Div 1, Groups A,B,C,D (intrinsically safe)[1] Class I, Div 2, Groups A,B,C,D (non-incendive)[2]
SIL Level	SIL 2

Notes:
1. Intrinsically safe when installed with appropriate intrinsic safety barrier per Metrix drawing 7623.
2. Non-incendive when installed per Metrix drawing 8096.
3. Temperature Classification for the 5485C varies as a function of the ambient temperature. Essentially, the 5485C's surface temperature will not rise more than 40°C above its ambient surroundings, up to its rated maximum operating temperature of 375°C. See table below.

Ambient Temperature (Ta)	Temp. Classification
-54°C ≤ Ta ≤ +45°C	T6
-54°C ≤ Ta ≤ +60°C	T5
-54°C ≤ Ta ≤ +95°C	T4
-54°C ≤ Ta ≤ +160°C	T3
-54°C ≤ Ta ≤ +260°C	T2
-54°C ≤ Ta ≤ +375°C	T1

SAFETY INTEGRITY LEVEL

SIL is a method or measurement unit to determine the reliability of electrical, electronic and programmable systems.

The purpose of the SIL certification is to measure safety system performance and the likelihood of failure. Achieving SIL certification, based on the IEC61508 Functional Safety Standard, signifies that the product has been thoroughly assessed and is a reliable electronic device ready to use across a wide range of industries.

Metrix products have been thoroughly evaluated by an independent third party agency on the basis of IEC61508 Functional Safety standards to obtain SIL certification.

NOTE: Vibration Monitoring System Bias Voltage Specification if needed:
≤ 24 Vdc ; ≤ 16 mA

ORDERING INFORMATION

5485C-AAA Velocity Sensor with Removable Cable (Requires Cable 4850, Ordered Separately, see below)

AAA				Output Type
	0	0	2	105 mV/in/s (4.14 mm/sec), 73 Ω coil resistance
	0	0	4	145 mV/in/s (5.71 mm/sec), 102 Ω coil resistance
	0	0	6	200 mV/in/s (7.87 mm/sec), 135 Ω coil resistance
	0	0	8	150 mV/in/s (5.91 mm/sec), 105 Ω coil resistance

5485C-AAA-BBB Velocity Sensor with Integral Cable (Cable 4850 not required)

AAA				Output Type
	0	0	1	105 mV/in/s (4.14 mm/sec), 73 Ω coil resistance
	0	0	3	145 mV/in/s (5.71 mm/sec), 102 Ω coil resistance
	0	0	5	200 mV/in/s (7.87 mm/sec), 135 Ω coil resistance
	0	0	7	150 mV/in/s (5.91 mm/sec), 105 Ω coil resistance
BBB				**Cable Length (in feet)**
	0	1	0	10 feet (3 m)
	0	2	0	20 feet (6.1 m)
	0	6	0	60 feet (18.3 m)
	X	X	X	Other lengths in feet; minimum length 2 feet; max length 100 feet; must be ordered in 2 foot increments

4850-AAA High Temperature Armored Cable Assembly

AAA				Cable Length (in feet)
	0	1	0	10 feet (3 m)
	0	2	0	20 feet (6.1 m)
	0	6	0	60 feet (18.3 m)
	X	X	X	Other lengths in feet; min length 2 feet; max length 100 feet; must be ordered in 2-foot increments (e.g., AAA=042 for 42' length is allowed; AAA=043 for 43' length is not allowed)

Cable Length	Allowable Increments
2 – 20 feet	1 foot (e.g., AAA=018 for 18' and AAA=019 for 19')
20 – 60 feet	2 feet (e.g., AAA=042 for 42' and AAA=044 for 44')
60 – 100 feet	5 feet (e.g., AAA=075 for 75' and AAA=080 for 80')

Note: Metrix is continuously improving our products. Please refer to our website to download the latest version of this document.