



Fiberoptic Acceleration Sensor

FAS-200

The FAS-200 is a second-generation fiberoptic acceleration sensor for harsh generator environments, offering single or dual-axis vibration measurement with complete immunity to electromagnetic interference and long-term stability up to 155 °C.

KEY FEATURES

- Available in single or dual-axis configuration
- Frequency range: 5 – 1000 Hz (-3 dB)
- Output options: acceleration or displacement
- Sensitivity: 100 mV/g (acc.) / 10 mV/μm (disp.)
- Immunity to magnetic (2 T) and electrical fields (5 MV/m)
- Excellent electrical insulation > 65 kVrms
- >10-year lifetime, up to 155 °C operation



MONITORING SOLUTIONS



Endwinding

TYPICAL APPLICATIONS



Hydrogenerators



Gearless millsdrives



Turbogenerators



DESCRIPTION

Fiberoptic Acceleration Sensors (FAS) are devices suited for the continuous monitoring of vibrations inside power generators. In turbo and hydro generators, endwinding vibrations are present during operation causing undesirable out-of-service repairs in the long term. Continuous monitoring of these vibrations is therefore required.

Furthermore, the high electromagnetic fields in the generators necessitate the use of devices that are by design non-conductive and immune to electromagnetic interferences.

This datasheet informs about MCm's second generation of FAS which is made out of a monolithic sensing element with remote optical readout. The chosen material of the sensing element ensures a proven extended product lifetime and stability with excellent resistance to temperature cycles up to 155°C. A dual-axis accelerometer is available using two independent sensing elements within the same package

size and one single feedthrough.

GLOBAL SPECIFICATIONS

OPERATION

Outputs	Acceleration	Displacement
Sensitivity at 100Hz	100 mV/g $\pm 5\%$	10 mV/ μm $\pm 5\%$
Bias voltage	+7.5 V _{DC}	+7.5 V _{DC}
Frequency response (-3dB)	5 to 1000 Hz	15 to 1000 Hz
Measuring range (peak)	0 to 60 g	0 to 0.6 mm
Residual overall noise	< 3 mVrms	< 15 mVrms
Resolution (p-p)	< 0.1 g	< 1 μm at 100 Hz (BP filtered)
Output resistance	100 Ω $\pm 1\%$	
Resonance frequency	1700 Hz	
Transverse sensitivity	< 5% with respect to sensitive axis	
Power supply		
• Voltage	+24 V _{DC} $\pm 20\%$	
• Current consumption	< 40 mA for single axis, < 80 mA for dual axis	

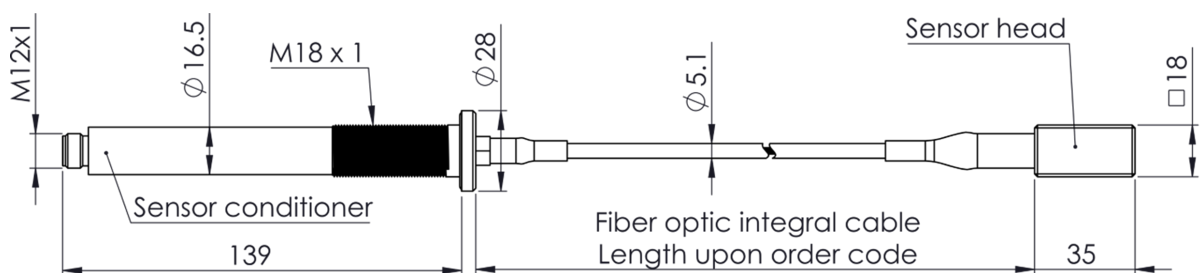
ENVIRONMENTAL

Temperature range – part	Transducer	Conditioner
Operation	+20° to +155°C	0° to +70°C
Storage	-30° to +155°C	-30° to +85°C
Temp. dev.	At 90°C below 5%	
Insulation voltage	>65 kVrms at (50/60)Hz between sensor and electronic	
Operating pressure (sensor head only)	Max 800 kPa (tested with helium)	
Max. shock acceleration	2000 g half sine, duration 0.5 ms	
Magnetic field	Max. 2 Tesla RMS at (50/60)Hz	
Electrical field	Max 5 MV/m	
CE certification	EMC in accordance with IEC 61326-1 + IEC 61000-66-5	

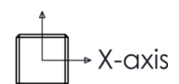
PHYSICAL

Sensor head dimensions [mm]	35 × 18 × 18 (L×W×H)
Sensor head weight [g]	50
Sealed feed-through dimensions [mm]	145, Ø 28 ; Thread: 45 L × M18×1
Sealed feed-through weight [g]	50
O-ring type	Viton O-ring 21.6 × 2.4 mm
Recommended max. tightening torque	20 Nm
Integral cable dimensions	10m ± 0.2m, × Ø5 mm; min. bending radius: 50 mm Other lengths on request

MECHANICAL DRAWING



Y-axis (optional)



ORDERING INFORMATION

Part type FAS-200
 Ordering Number 02.200.100 **AXX-BXX-CXX-DXX-EXX**

A	FO cable length	06	6m
		10	10m
		15	15m
B	Hazardous area approval	00	None
		01	Atex*
C	Outputs	01	Acceleration X + Y
		02	Displacement X + Y
		03	Single: Acceleration + Displacement
D	Bandwidth	01	Full range
E	Pressure test	01	None
		02	800 kPa
		03	800 kPa + Leakage test

* Available soon.

Exemple : 02.200.100 **A06-B00-C01-D01-E01**: FAS-200 6m FO cable length, Acceleration X + Y Outputs, Pressure test: None.

ACCESSORIES

Ordering code	Description
02.902.005	Ext. cable, WA, 4x0.34mm ² for FAS /1 & M2 - 5m
02.902.010	Ext. cable, WA, 4x0.34mm ² for FAS /1 & M2 - 10m

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Quality certification



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