Fiberoptic Acceleration Sensor

FAS-1xx M5

The FAS-1xx M5 is a Fiberoptic Acceleration Sensor for harsh industrial environments, delivering precise acceleration and displacement measurements with full immunity to electromagnetic interference and ATEX certification for hazardous areas.

KEY FEATURES

- Immunity to magnetic and electrical fields
- Excellent sensor head to feedthrough electrical insulation
- Dual output: acceleration and displacement
- Acceleration output sensitivity: 100mV/g
- Displacement output sensitivity: 10 mV/µm
- Available standard cable length: 10m
- Mode of protection: **Ex ec IIC T4 Gc**

MADE IN SWITZERLAND

MONITORING SOLUTIONS

Endwinding

TYPICAL APPLICATIONS

Hydrogenerators

Gearless millsdrives

Turbogenerators

DESCRIPTION

The Fiberoptic Acceleration Sensor (FAS) is designed to be non conductive and immune to electromagnetic interferences. Its optical link ensures an excellent electrical insulation between the sensor and the

instrumentation.

Its passive technology makes it ideal for shock and vibration measurements in areas where conventional piezoelectric and piezoresisitive accelerometers may create hazards to machine and personnel and impair reliable operation.

The optical sensor body does not contain any metallic parts. The optical fibers are embedded and protected by an integral 5mm thick PTFE tube. The standard available optical cable lengths is 10m. The sealed feedthrough connector houses the optoelectronic and conditioning circuitry.

The sensor provides dual output, acceleration and displacement, simultaneously.

GLOBAL SPECIFICATIONS

OPERATION

Outputs	**Acceleration**	**Displacement**
Sensitivity at 100Hz	100 mV/g ±5%	10 mV/µm ±5%
Bias voltage	+6 V_{DC}	+7.5 V_{DC}
Frequency response (-3dB)	10 to 400 Hz	20 to 400 Hz

Output resistance	100 Ω ±1%
Output surge protection	> 16.8V_{DC}
Measuring range	0 to 40g (1 mm peak-peak at 100 Hz)
Resonance frequency	> 600 Hz
Transverse sensitivity	< 5% with respect to sensitive axis
Residual noise	< 3 mVrms overall noise between 20 and 400 Hz
Resolution	< 1 µm peak-peak at 100 Hz
Power supply	
Voltage	Nominal: +24 V_{DC}
	Nominal: Range: +18V to +30 V_{DC}
Current consumption	< 30 mA
Power consumption	< 0.72W @ 24V_{DC}
Voltage surge protection	> 31V_{DC}
Reversed polarity protection	Max - 38V_{DC}

ENVIRONMENTAL

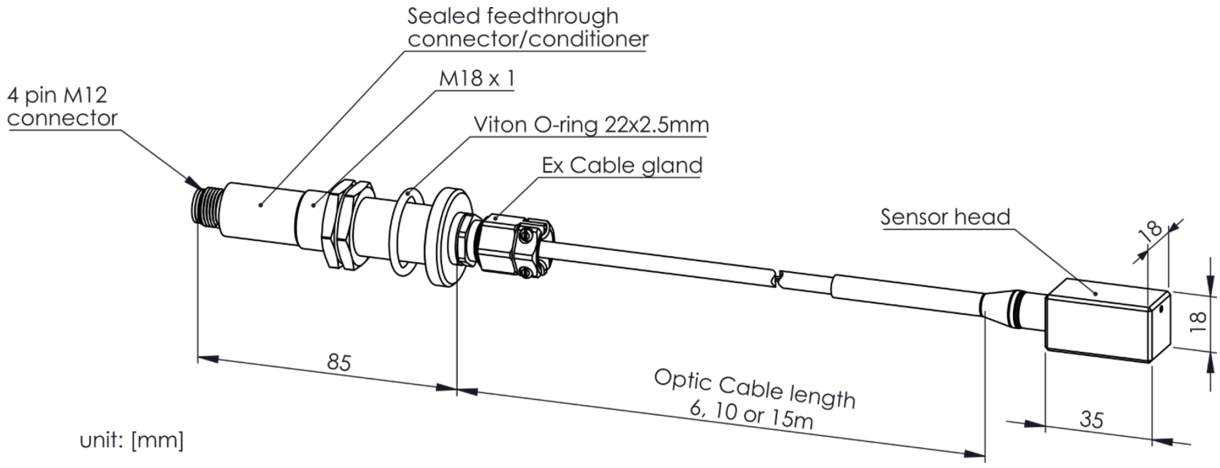
Temperature range – part	**Sensor**	**Electronic**
Operation	+20° to +155°C	0° to +60°C
Non-destructive	–40° to +155°C	–20° to +85°C

Sensor head dielectric strength	5MV/m
Sensor head isolation voltage	65kV for 1 minute (50/60Hz)
Operating pressure	800 kPa hydrogen
Max. shock acceleration	600g half sine, duration 1 ms
Magnetic field	Max 1 Tesla RMS at (50/60Hz)
Electrical field	Max 5 MV/m RMS at (50/60Hz)
CE certification	In conformance with EN 61000-6-2 and EN 61000-6-3
Ex mode of protection	Ex ec IIC T4 Gc

PHYSICAL

Sensor head dimensions [mm]	35 × 18 × 18 (L×W×H)
Sensor head weight [g]	30
Sealed feed-through dimensions [mm]	75 L × Ø30 ; Thread: 45 L × M18×1
Sealed feed-through weight [g]	130
Recommended max. tightening torque	10 Nm
Integral cable dimensions	10 m × Ø5 mm ; minimum bending: 80 mm radius
Extension cable information	10m length cable (other length on request) terminated by a 4 pins connector embedded in stainless steel case, not removable in normal operation. Other end blunt cut. Optionally with flexible stainless steel armor.

MECHANICAL DRAWING



ORDERING INFORMATION

Part type	Fiberoptic Acceleration Sensor
Ordering code	02.110.000 M5 A
Description	FAS-110 M5 Atex Sensor head composed of polymer & ceramic, mounted on 2 fibre glass strands with PTFE protection tubing of 10m, terminated by a stainless steel sealed feed-through with a M12 4-pin connector. Delivered with Viton O-ring 22x2.5mm and 2 hex nuts M18 x 1. Ex ec IIC T4 Gc

OTHER AVAILABLE LENGTH (ON REQUEST)

Ordering code	02.106.000 M5 A	02.115.000 M5 A
Description	FAS-106 M5 Atex 6m length	FAS-115 M5 Atex 15m length

ACCESSORIES

Ordering code	Description
02.914.005	Ext. cable, WA, 4x0.34mm2 for FAS M5 - 5m - ATEX
02.914.010	Ext. cable, WA, 4x0.34mm2 for FAS M5 - 10m - ATEX
02.913.010	Ext. cable, A, 4x0.34mm2 for FAS M5 - 10m - ATEX
02.913.020	Ext. cable, A, 4x0.34mm2 for FAS M5 - 20m - ATEX

Quality certification

Local representative

MC-monitoring SA
Route André Piller 19
CH-1762 Givisiez
+41 58 411 54 00
info@mc-monitoring.com
sales@mc-monitoring.com
www.mc-monitoring.com