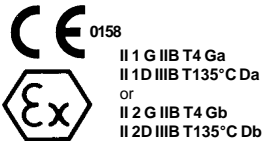
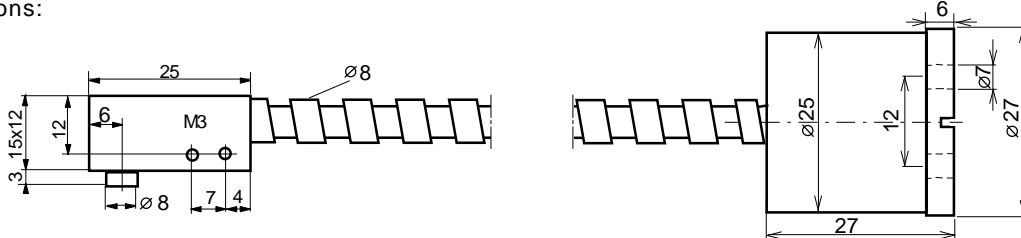


**Original Operating Manual:**
**Glass Fibre Optics MS-xxxx-2.5-T-90°-1GD / MS-xxxx-2.5-T-90°-2GD / MS-xxxx-4-T**


- Yellow brass protection sheath, for reflective measurement method
- MS-....-2.5-T-90°-1GD: Applicable in Ex Zones 0, 1, 2, 20, 21, 22
- MS-....-2.5-T-90°-2GD: Applicable in Ex Zones 1, 2, 21, 22
- MS-....-2.5-T-90°: Applicable in Non-Hazardous Locations up to T<sub>A</sub>=+200°C

Technical data	Type	MS-xxxx-2.5-T-90°-1GD	MS-xxxx-2.5-T-90°-2GD	MS-xxxx-2.5-T-90°
Standard length	MS-xxxx-2.5-T-90°(-1GD/2GD)	(xxxx=Length in mm, 500, 1000, 2000)		
Type of Ex Protection, Gas		II 1G IIB T4 Ga	II 2G IIB T4 Gb	none
Type of Ex Protection, Dust		II 1D IIIB T135°C Da	II 2D IIIB T135°C Db	none
Applicable in Ex Zones		0, 1, 2, 20, 21, 22	1, 2, 21, 22	--
Maximum optical input power		<=15mW	<=35mW	Not limited
Maximum potential radiant intensity		<=5mW/mm <sup>2</sup>	<=5mW/mm <sup>2</sup>	Not limited
Active fibre optic diameter		2.5mm		
Active cross-sectional area		4.9mm <sup>2</sup>		
Transmission rate, average		50-70%, at 870nm		
Optical aperture		appr. 65°, at 870nm		
Individual fibre diameter		50um		
Minimum bending radius		30mm (Single bend)		
Operating temperature range T <sub>amb</sub>		0°C < T <sub>amb</sub> < +120°C		-20°C < T <sub>amb</sub> < +200°C
Enclosure rating at EN 60529		IP68		
Material, adaption probe tip		Special steel, V2A		
Material, probe tip		Special steel, V2A		
Material, protection sheath		Brass, chromium plated		
Accessories, included		2 x Shrink-down plastic tubing	--	
ATEX Designation of the fibre optics	CE 0158 Type marking: MS-.-1GD Type marking: MS-.-2GD EC-Certification No: T <sub>amb</sub> : 0°C < T <sub>amb</sub> < +120°C, Production date: Numerals 5 to 8 of the serial number(Y/W) (X designation of the certification number: Fibre optics must only be applied with sensors with certificated limited optical power)	Manufacturer with address II 1G IIB T4 Ga, II 1D IIIB T135°C Da II 2G IIB T4 Gb, II 2D IIIB T135°C Db BVS 10 ATEX E 130 X. DEKRA Production date: Numerals 5 to 8 of the serial number(Y/W)		

**Dimensions:**

**Operating Manual / EC - Declaration of Conformity:**
**Ex mounting prescriptions**

**Types MS-....-1GD: Applicable in Ex zones 0, 1, 2, 20, 21, 22.**

**Types MS-....-2GD: Only applicable in Ex zones 1, 2, 21, 22.**

**General regulations for all types:**

The fibre optics must only be operated with the ATEX certified sensor with limited optical output power. The local equipotential bonding have to be done by grounding the fixed ATEX sensor. It is necessary to take into consideration the valid international and national rules and regulations (EN 60079-14). The maximum rated optical input power must not be exceeded. Other than original manufacturer, additional optical lenses are not allowed in hazardous locations. The fibre optics have to be installed in a manner to avoid tensile stress and frictional heat. If fibre optics and associated sensors are not mounted in the same hazardous location, the change over of the different areas must be realized in accordance with the valid regulations. With the additional shrink-down plastic tubings (only types MS-.-1GD) a required change over can be realized.

**Function**

The fibre optics series MS.. are designed for the construction of reflective measurement method arrangements in hazardous locations and for high ambient temperatures. The fibre optics can be operated with certificated Matrix sensors, with an optical wave length from 500nm to 900nm. The fibre optics must not be buckled or laid with a small radius. Buckled or bad laid fibre optics results to a strong decrease of performance. Avoid performance decreasing and failures caused by wear, by a functional mounting of the fibre optics.

**Maintenance**

The fibre optics are maintenance-free. Protect the fibre optics against pollution. If they are contaminated, clean with alcohol. Do not use aggressive solvents.

**General Notes**

We reserve the right to modify our equipment. Our equipment is designed such way, that it has the least possible adverse effect on the environment. No longer usable or irreparable units must be disposed of in accordance with local waste disposal regulations. Equipment must only be repaired or serviced by the manufacturer.

**Safety Informations**

When installing and operating, it is necessary to take into consideration the relevant international and other national regulations. EN 60079-14, single directive 1999/92/EC.

**Standards met:**

- EN 13463-1:2009-07, EN 60079-0:2009, EN 60079-28:2007, EN 60529:2000
- Ex-Protection: 94/9/EC
- Machine directive: 2006/42/EC
- RoHS directive: 2011/65/EC

**EC-Declaration of Conformity:**

MS-.-GD: EC type certification No: BVS 10 ATEX E 130 X. DEKRA ATEX certification of quality type production of Ex devices at the directive 94/9/EC. CE 0158.

Certification No: BVS 12 ATEX ZQS / E118

The conformity of the devices with the EC standards and directives and the observation of the Quality Safety System ISO 9001:2008 with the ATEX module "Production", declares:

Hans Bracher, Matrix Elektronik AG

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