

ASSURIX Intrinsically Safe Photoelectronic Sensors

NAMUR types

Operating Manual and Control Drawing No. OM-AX-02



1258 CLASSIFIED

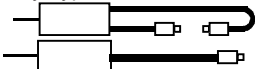
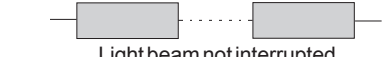

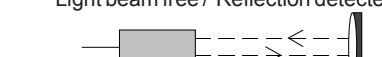


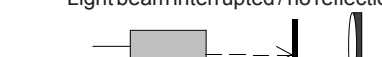





II 2G Ex ia IIC T6 Gb



24VL

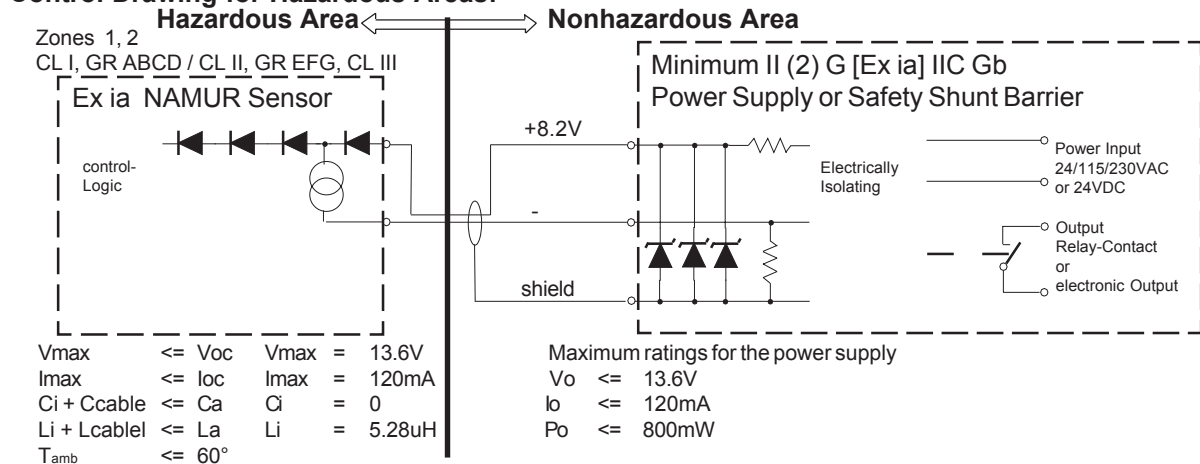
- Applicable in CL I, CL II, CL III, Division 1, GR ABCDEFG, HAZARDOUS LOCATIONS.
- Applicable in ATEX Ex Zones 1, 2
- Type of Ex protection: Intrinsically safe II 2G Ex ia IIC T6 Gb.
- CLASSIFIED BY UNDERWRITER'S LABORATORIES INC. ASSIGNED CONTROL No. 24VL.
- ATEX Certification DMT 03 ATEX E003

Types	Light Barriers	Proximity Switch	Retroreflective Barriers
Technical Data			
Type of Ex protection	II 2G Ex ia IIC T6 Gb		
Designation	AX-SE-10N-N18	AX-SE-10P-N18	AX-T-3N-N18 AX-T-3P-N18 AX-T-3N-N30 AX-T-3P-N30
Type	S: Emitter / E: Receiver	T: Proximity switch	R: Retroreflective barrier
Range	10m	0.3m Note1	1m Note2
Housing (Yellow brass, nickel plated)	M18	M18	M18
Light source, wave length	870nm		623nm
Nominal supply voltage	8.2VDC (intrinsically safe)		
Current consumption	3.5mA	3.5mA	2.5mA
Safety ratings	Ui ≤ 13.6VDC / li ≤ 120mA / Pi ≤ 800mW (in accordance with the power supply)		
Effective capacity / inductance	Ci = 0pF / Li = 5.28uH		
Response time	25Hz	25Hz	100Hz
Output	no output, status indication by current consumption (NAMUR specification)		
Operating temperature T _{amb}	-20°C < T _{amb} < +60°C		
Enclosure rating, at EN 60529	IP65		
Cable, Length: 2m, shielded, blue covered	Emitter: 2 x AWG24 Receiver: 2 x AWG24	2 x AWG24	2 x AWG24
Fibre optics connection	--	only types M30 and *-S205 	--
Accessories, included	4 nuts M18 (2 clamps M18, optional)	2 nuts M18/M30 (1 clamp M18/M30, optional)	2 nuts M18 (1 clamp M18, optional)
Accessories, not included	- Reflector (triple mirror for retroreflective barriers), D=40mm, 50mm or 83mm		
Options	<p>- AX-R-1N/1P-N18-90°: Device with 90° viewing angle.</p> <p>- AX-R-0.1N-N18: Retroreflective light barrier, range=3cm .. 10cm, housing M18.</p> <p>- AX-R-4N/4P-N30: Retroreflective light barrier, range=4m, housing M30.</p> <p>- AX-T-1*-N30: Proximity switch, range=10cm, switching frequency= 1kHz.</p> <p>- AX-T-2*-N30: Proximity switch, range=20cm, switching frequency= 700Hz.</p> <p>- AX-S-10-N18-S009: Light barrier emitter with adjustable optical output power.</p> <p>- AX-R-1N/1P-N18-S087: Retroreflective light barrier with potentiometer 90° viewing angle, cable length = 5m.</p> <p>- AX-R-1P-N18-90°-S096: Housing M18, socket M12 (5P) at cable, length 10cm, with LED.</p> <p>- AX-***-S099: Housing M30, socket M12 Lumberg RSF 5 (5P), with LED, proximity switch and *-S171 with potentiometer.</p> <p>- AX-T-3N/P-N18/30S146: Output function determined by polarity of the supply voltage.</p> <p>- AX-R-**-S171: Retroreflective light barrier with adjustable optical output power.</p> <p>- AX-R-4N/4P-N30-S172: Retroreflective light barrier, range=4m, housing M30, with potentiometer, LED and socket M12 (5 pins)</p> <p>- AX-R-1P-N18-90°-S196: Housing M18, socket M12 (5P) at cable, length 25cm, with LED. Minimum working range: 20mm, with deflector 90°.</p> <p>- AX-T-3N/P-N18-S205: For applications with fibre optics.</p> <p>- AX-R-1P-N18-S216: Working range 0mm - 1m, range with deflector U-90-M18-40: 0mm - 0.5m. socket M12 (5P) at cable, length 25cm, with LED, housing length: 138mm.</p> <p>- AX-R-1P-N18-S255: Housing M18, socket M12 (5P) at cable, length 25cm, with LED.</p> <p>- AX-R-1P-N18-S256: Same as AX-R-1P-N18-S255, with extended optical range: 1.8m</p>		
Function and LED indication	Light barriers	Proximity switch	Retroreflective barriers
	 Light beam not interrupted	 Light beam free / Reflection detected	 Light beam not interrupted LED = ON
	 Light beam interrupted	 Light beam interrupted / no reflection	 Light beam interrupted LED = OFF
Function and LED indication	Sensors Type "N"		
	 I > 2mA LED = ON		
Function and LED indication	Sensors Type "P"		
	 I < 1mA LED = OFF		
	 I > 2mA LED = ON		

Note 1: Range on white paper 30cm x 20cm.

Note 2: Range on reflector (Triple mirror) D=83mm

Control Drawing for Hazardous Areas:

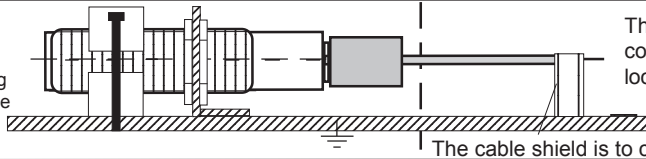


Wiring:	Function	Cable type 1	Cable type 2	*-S096/S196/S255: socket M12 at cable 10/25cm	*-S099: socket M12
(cable shield ,	+8.2V	brown	brown	Pin 1 (br)	Pin 1 (br)
connect to PE) -	FE	black	blue	Pin 3 (bl)	Pin 3 (bl)
		at the housing	at the housing	Pin 5 (gr)	Pin 5 (gr)

Equipotential Bonding

prescription:

The local equipotential bonding have to be done with conductive corrosion-resistant clamps or nuts M18/M30



The end of the cable must be connected outside the hazardous location.

The cable shield is to connect at PE.

ATEX related designations

CE 1258

Manufacturer with address

Date of production:



II 2G Ex ia IIC T6 Gb

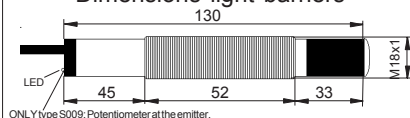
Tamb: -20°C < Tamb < +60°C

Numerals 5 to 8 of the serial number (Year/Week)

ATEX Certification number: DMT 03 ATEX E 003 DEKRA

Electrical data according to the chart

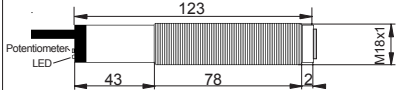
Dimensions light barriers



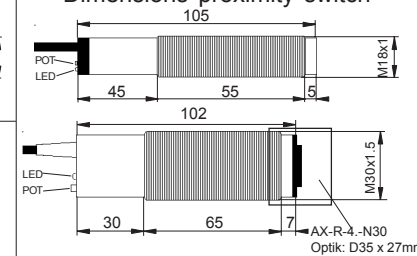
ONLY type S099: Potentiometer at the emitter.

Dimensions type AX-T-3N/P-N18-S205

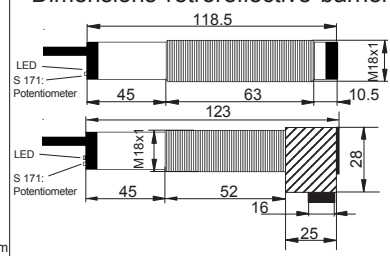
(M18 for fibre optica connection)



Dimensions proximity switch



Dimensions retroreflective barriers



Operating Manual / EC - Declaration of Conformity:

Mounting prescriptions:

Ex-Protection

It is necessary to take into consideration the valid international and national rules and regulations (EN 60079-14). The electrical connections must be exactly as shown in the control drawing for hazardous areas. The local equipotential bonding have to be done by a reliable, noncorrosive holding of the protection earth connection. The cable must be protected against damages. To connect cables inside the hazardous locations, only use certificated Ex e housings. Only original manufacture optical parts must be used. Other additional optical lenses or fibre optics are not allowed in hazardous locations. The sensor must only be supplied by an approved intrinsically safe power supply or safety shunt barrier with the minimum specification II (2)G [Ex ia] IIC Gb, mounted out of the hazardous location. Connector versions: The maximum rates of capacity and inductance of the connection cable must be respected.

Function

Light barriers and retroreflective light barriers "N" types: When the light beam is not interrupted the current consumption will be $\geq 2mA$ and the LED lights up. When the light beam is interrupted the current consumption is reduced to $\leq 1mA$ and the LED switches OFF.

Light barriers and retroreflective light barriers "P" types: If the light beam is not interrupted the current consumption will be $\leq 1mA$ and the LED switches OFF. When the light beam is interrupted the current consumption is increased to $\geq 2mA$ and the LED lights up.

Proximity Switches "N" types: When the sensor detects diffused reflected light, the current consumption will be $\geq 2mA$ and the LED lights up. When no light will be detected the current consumption is reduced to $\leq 1mA$ and the LED switches OFF.

Proximity Switches "P" types: When the sensor detects diffused reflected light, the current consumption will be $\leq 1mA$ and the LED switches OFF. When no light will be detected the current consumption is increased to $\geq 2mA$ and the LED lights up.

Proximity Switches types "-S146":

With selectable output mode (X-Function). By changing the polarity of the supply voltage, the output mode will be reversed. On standard connection the current consumption will be $\geq 2mA$, when the sensor

detects diffuse reflected light. The supply voltage must be minimum 11VDC to maximum 13.6VDC.

Maintenance, General Notes, Disposal

No special maintenance is required. Cleaning only with a non-aggressive cleaning liquid. 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. It neither emit or contain any damaging or siliconized substances and use a minimum of energy and resources. No longer usable or irreparable units must be disposed of in accordance with local waste disposal regulations.

Safety Informations

The sensors of the aeries AX-** must not be used for Accident-Prevention! When installing and operating with the light barrier, it is necessary to take into consideration the relevant international and other national regulations. EN 60079-14, UL508, UL913 Intrinsically Safe Apparatus and Associated Apparatus for use in Class I, II, III Division 1, Hazardous (Classified) Locations. There is no risk on eye injuries by the diode emitters. The maximum possible exposure is less then the ratings described by the standard EN 60825-1/item 13). Equipment must only be repaired or serviced by the manufacturer.

UL/EU-Declaration of Conformity / Approvals:

We, Matrix Elektronik AG, declare under our sole responsibility that the product family OM-AX-02 with the certificate DMT 03 ATEX E003(0158) complies with the requirements of Directives 2014/34/EU, UL913, 2014/30/EU, 2006/42/EC and 2011/65/EU and meets the following standards: UL 913, UL 508, EN/IEC 60079-0:2018, EN 60079-11:2012, EN 60825-1:2014, EN 60529:2014, EN 60950-1:2006, EN 61000-4-2 to EN 61000-4-6, EN 61000-6-1/-2 and EN 61000-6-4. One or more of the standards mentioned in the associated EU type-examination certificate DMT 03 ATEX E003 have already been replaced by new editions. The manufacturer also declares that the product family OM-AX-02 complies with the requirements of the new editions of the standards, since the amended requirements of the new editions of the standards are not relevant for this product. The above listed product is produced under a quality schema with certification No: SEV 21 ATEX 4580, Eurofins, NB:1258 in conformity with ISO 9001:2015 requirements.

Pablo Ledergerber, Matrix Elektronik AG

OM-AX-02_e29/2024-04-29/MP

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