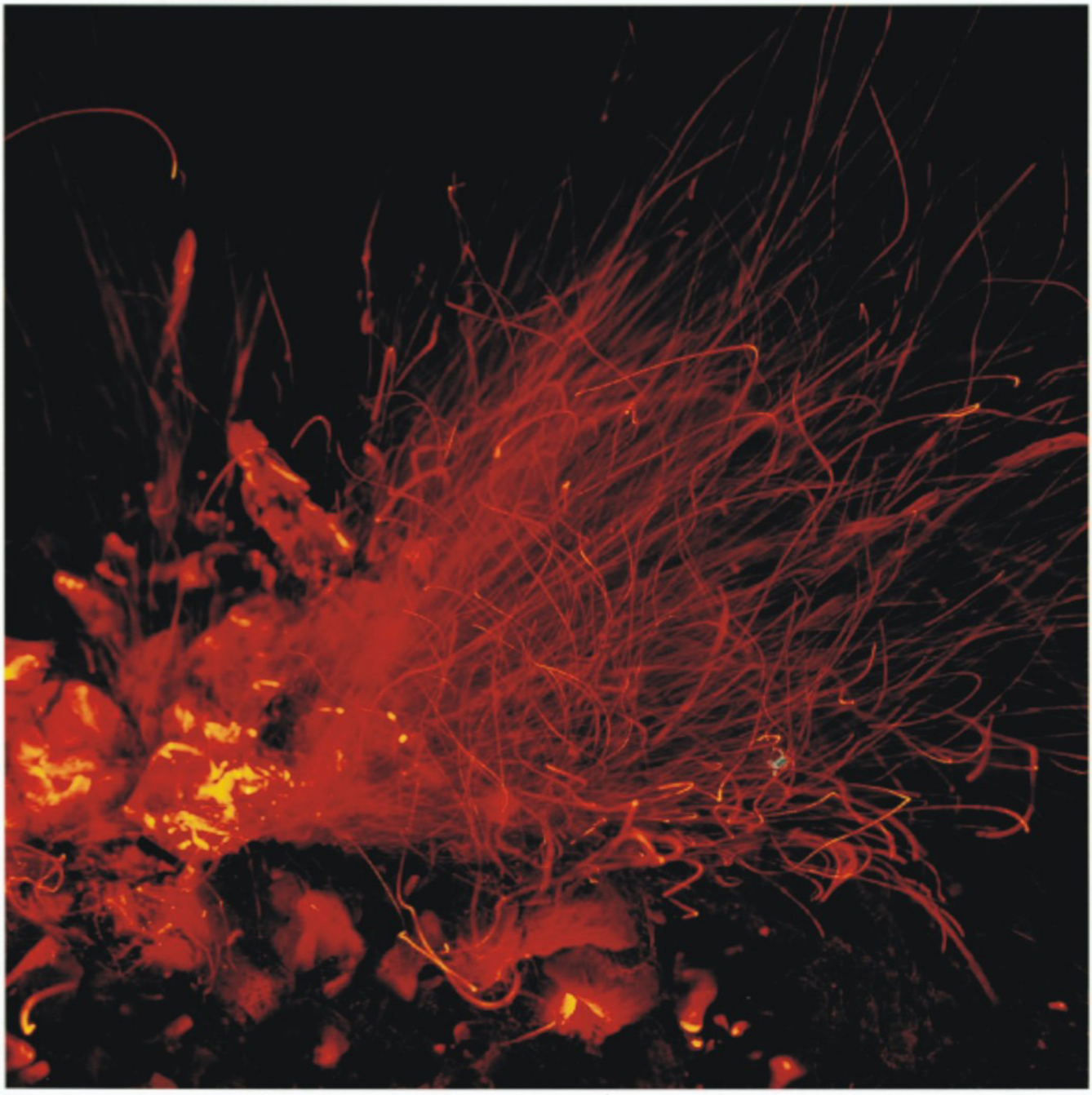
To avoid a "blow up" in your workplace ...



ISO 9001:2000 / ATEX

ASSURIX Intrinsically Safe Photoelectronic Sensors

3-wire construction

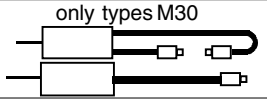
Operating Manual and Control Drawing No. OM-AX-01

CE 0158

Ex II 2 G EEx ia IIC T6

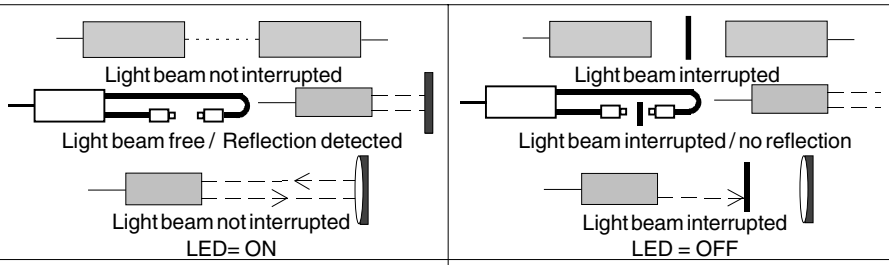
CLASSIFIED UL 24VL

- applicable in Ex Zones 1, 2 / CL I, CL II, CL III, Division 1, GR ABCDEFG, HAZARDOUS LOCATIONS.
- Intrinsically Safe EEx ia IIC T6.
- CLASSIFIED BY UNDERWRITER'S LABORATORIES INC. ASSIGNED CONTROL No. 24VL.
- ATEX Certification DMT 03 ATEX E003

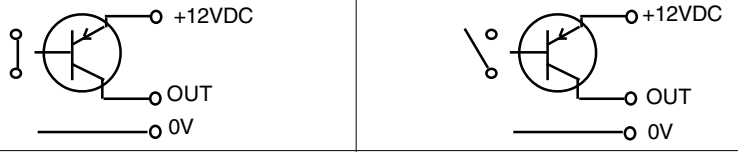
Types / Technical Data	Light Barriers		Proximity Switch		Retroreflective Barriers	
Type of Ex protection	EEx ia IIC T6, applicable in zones 1 and 2					
Designation	AX-SE-25-P18 AX-SE-25-P30	AX-SE-50-P30	AX-T-5-P18 AX-T-5-P30	AX-T-10-P18 AX-T-10-P30	AX-R-1-P18	AX-R-4-P30
Marking	S:Emitter / E: Receiver		T: Proximity switch		R: Retroreflective barrier	
Range	25m	50m	0.5m Note1	1m Note1	1m Note2	4m Note2
Housing (Yellow brass, nickel plated)	...-P18 = M18 ...-P30=M30	M30	...-P18=M18 ...-P30=M30	...-P18=M18 ...-P30=M30	M18	M30
Light wave length	880nm	880nm	880nm	880nm	625nm	625nm
maximum radiant intensity	2.6mW/mm²	2.6mW/mm²	1.2mW/mm²	6.2mW/mm²	0.6mW/mm²	0.6mW/mm²
Power supply	12VDC (intrinsically safe)					
Current consumption	13mA	13mA	15mA	15mA	15mA	15mA
Safety ratings	Vi <=13.6VDC / Ii <= 120mA /Pi <= 800mW (in accordance with the power supply)					
effective capacity / inductance	Ci = 150pF / Li = 7.92uH					
Response	50Hz	50Hz	100Hz	100Hz	100Hz	100Hz
Output	PNP, short circuit protected					
Operating temperature TA	-20°C < TA < +60°C					
Protection rating	IP65 EN 60529					
Cable, Length: 3m, shielded, blue covered	Emitter: 2 x AWG24 Receiver: 3xAWG24		3xAWG24		3xAWG24	
Fibre optics connection	--		only types M30 		--	
Accessories	M18: 4 nuts M18 M30: 4 nuts M30		M18: 2 nuts M18 M30: 2 nuts M30		2 nuts M18	2 nuts M30
Options	- Light barrier with 10kHz response: Type AX-SE-10-P18 - Light barrier with a range of 100m: Type AX-SE-100-P30 - Light barrier for fibre optics: Types AX-SE-56-P30-GF (High density), AX-SE-25/50-P30-GF maximum radiant intensity <= 3.2mW/mm² with connected fibre optics - Device with 90° viewing angle: AX-R-1-P18/90° - Light barriers series **S17**: With connector M18: Type AX-S/E-..-P30 **S17**: Socket M18: Binder series 714, 4 terminals, housing M30, LED inside the socket for receiver and emitter - Series **S92**, housing M30: Socket M12/4P, without potentiometer, LED in the socket - Series **S99**, housing M30: Socket M12/ 5P, with Potentiometer and LED - Devices with special high flexible cable for trailing: Types AX-..-**S74** - Reflector (triple mirror for retroreflective barriers, D=83mm					

Function and LED indication

Light barriers / Proximity switch / Retroreflective barriers



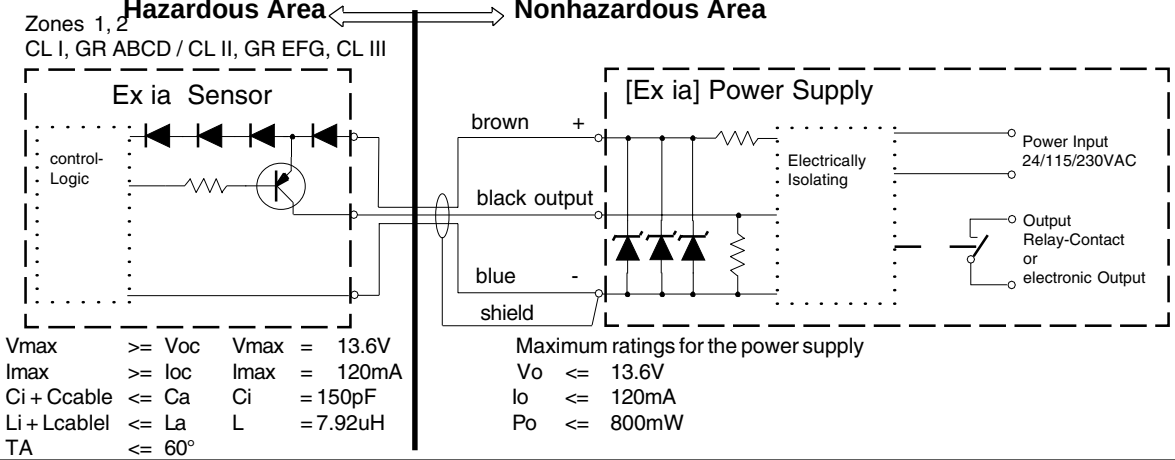
Output function:
Inverted output function by changing the polarity of the supply voltage.



Connection diagram::	Devices with cable connection	Socket S17: (Pin 4: Not connected)	Socket S92:	Socket S99: (Pin:2: Not connected)
+12VDC	Brown	Pin 1	Pin 1	Pin 1
0V:	Blue	Pin 3	Pin 3	Pin 3
Output:	Black	Pin 2	Pin 2	Pin 4
Protection earth PA	At the housing	Pin 4	At the housing	Pin 5
Cable shield	blank or white	--	--	--

Note 1: Range on white paper 30cm x 20cm. Note 2: Range on reflector (Triple mirror) D=83mm

Control Drawing for Hazardous Areas:



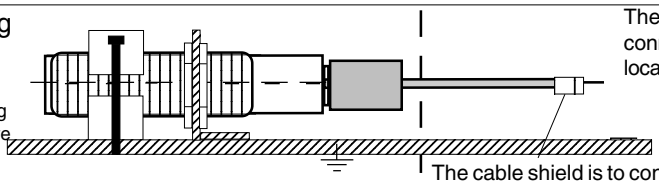
Vmax	>=	Voc	Vmax	=	13.6V	
Imax	>=	Ioc	Imax	=	120mA	
Ci + Ccable	<=	Ca	Ci	=	150pF	
Li + Lcablel	<=	La	L	=	7.92uH	
TA	<=	60°				

Maximum ratings for the power supply

Vo	<=	13.6V
Io	<=	120mA
Po	<=	800mW

Equipotential Bonding prescription:

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

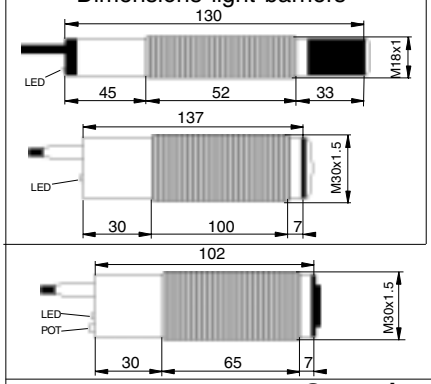


The end of the cable must be connected outside the hazardous location.

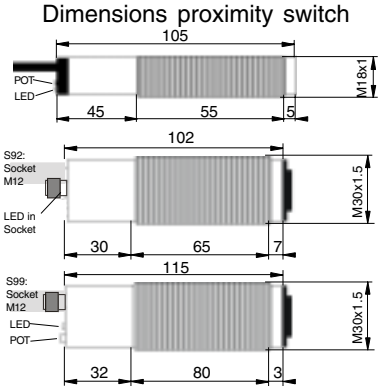
The cable shield is to connect at 0V(-) of the supply voltage.

ATEX related designations	CE 0158	Manufacturer with address
	Device type	⟨Ex⟩ II 2 G EEx ia IIC T6
	Certification number:	DMT 03 ATEX E 003
	TA: -20° < TA < 60°	Electrical data according to the chart
	Date of construction: Numeral 4 to 7 of the serial number	

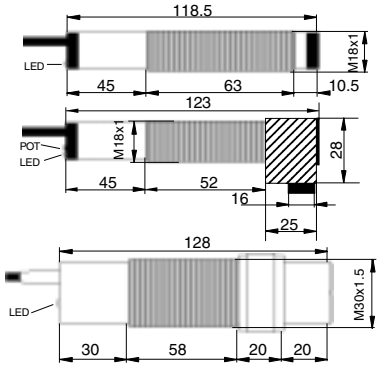
Dimensions light barriers



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 type [EEx ia], 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: If the light beam is not interrupted the output switches to ON (+12V). If the light beam is interrupted the output switches to OFF. The load must be connected between the output and 0V.

Proximity Switches: If the sensor detects reflected light, by any object, the output is switching ON (H-Level). If the sensor detects no reflected light, the output is switched OFF.

Retroreflective light barriers: If the light beam the sensor and the reflector, is not interrupted the output switches to ON (+12V). If the light beam is interrupted the output switches to OFF. The load must be connected between the output and 0V.

Output-Mode (X-Function): By changing the polarity of the supply voltage (Blue +, Brown-), the output mode will be reversed. The LED function will remain unchanged.

Maintenance

No special maintenance is required. Cleaning only with a non-aggressive cleaning liquid.

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. ATEX 118a, ElexV, TRbF, TRD, UVV, EX-RL, BetrSichV, 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).

Standards met:

- EN 50014, EN 50020; EN 50081-1/-2, EN 50082-1/-2,
- Ex protection: 94/9/EG (ATEX 100a), UL 913
- Machine directive: 98/37/EG
- Low volatge directive: 73/23/EWG
- RoHS directive: 2002/95/EG

General Notes

We reserve the right to modify our equipment. Our equipment is designed in accordance with the RoHS directive. 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.

Declaration of Conformity / Approvals:

DMT 03 ATEX E 003

UL-Classified, Assigned Control No. 24VL / E185916

The conformity of the devices with the EC/UL standards and directives and the EC/UL-type examination certificate and the observation of the Quality Safety System ISO 9001:2000 with the ATEX module "Production", declares:

Hans Bracher, Matrix Elektronik AG

Matrix Elektronik AG (Manufacturer)
Kirchweg 24 CH-5420 Ehrendingen
Tel.:+41 56 20400-20 Fax -29

Tippkemper - Matrix GmbH
Meegener Str. 43 D-51491 Overath
Tel.:+49 2206 9566-0 Fax -19

OmAx01_e16/MAY22,06/HB

ISO 9001:2000 / ATEX

ASSURIX Intrinsically Safe Photoelectronic Sensors

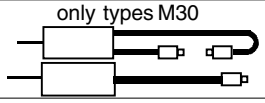
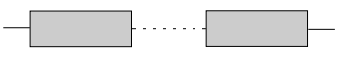
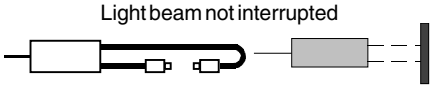
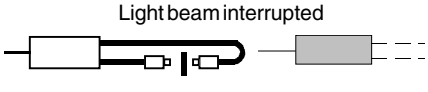
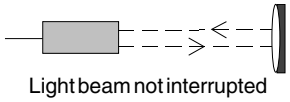
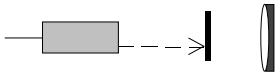
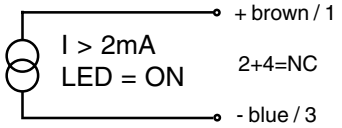
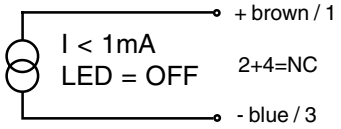
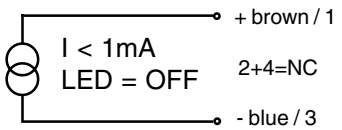
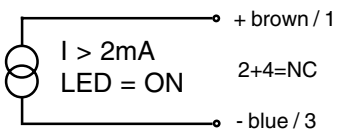
NAMUR types

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

CE 0158

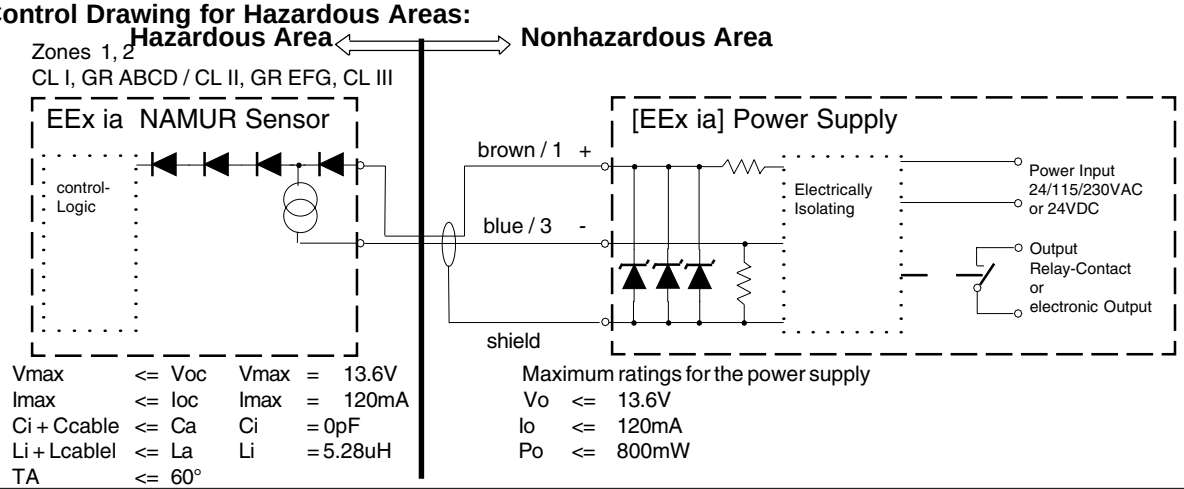
II 2 G
EEx ia IIC T6

- applicable in Ex Zones 1, 2 / CL I, GR ABCD, CL II GR EFG, CL III HAZARDOUS LOCATIONS.
- Intrinsically Safe EEx ia IIC T6.
- CLASSIFIED BY UNDERWRITER'S LABORATORIES INC. ASSIGNED CONTROL No. 24VL.
- ATEX Certification DMT 03 ATEX E003

Types / Technical Data	Light Barriers		Proximity Switch		Retroreflective Barriers	
Type of Ex protection	EEx ia IIC T6, applicable in zones 1 and 2					
Designation	AX-SE-10N-N18	AX-SE-10P N18	AX-T-3N-N18 AX-T-3N-N30	AX-T-3P-N18 AX-T-3P-N30	AX-R-1N-N18	AX-R-1P-N18
Marking	S:Emitter / E: Receiver		T: Proximity switch		R: Retroreflective barrier	
Range	10m	10m	0.3m Note1	0.3m Note1	1m Note2	1m Note2
Housing (Yellow brass, nickel plated)	M18	M18	...-N18=M18 ...-N30=M30	...-P18=M18 ...-P30=M30	M18	M18
Light wave length	880nm	880nm	880nm	880nm	625nm	625nm
maximum radiant intensity	2.6mW/mm²	2.6mW/mm²	1.2mW/mm²	6.2mW/mm²	0.6mW/mm²	0.6mW/mm²
Nominal supply voltage	8.2VDC (intrinsically safe)					
Current consumption	3.5mA	3.5mA	2.5mA	2.5mA	2.5mA	2.5mA
Safety ratings	Vi <=13.6VDC / Ii <= 120mA /Pi <= 800mW (in accordance with the power supply)					
effective capacity / inductivity	Ci = 0pF / Li = 5.28uH					
Response time	25Hz	25Hz	100Hz	100Hz	100Hz	100Hz
Output	no output, status indication by current consumption (NAMUR specification)					
Operating temperature T_A	-20°C < T_A < +60°C					
Protection rating	IP65 EN 60529					
Cable, Length: 2m, shielded, blue covered	Emitter: 2 x AWG24 Receiver:2xAWG24		2xAWG24		2xAWG24	
Fibre optics connection	--		only types M30 		--	
Accessories	4 nuts M18 (2 clamps M18, optional)		M18: 2 nuts M18 M30: 2 nuts M30		2 nuts M18 (1 clamp M18, optional)	
Options	- Device with 90° viewing angle: AX-R-1N/1P-N18-**90°** - Retroreflective light barrier with potentiometer: AX-R-1N/1P-N18 **S87** - Retroreflective light barrier, range=4m, housing M30: AX-R-**4N/4P-N30** - Sensors with connector M12: AX-... **S92** - Proximity switch, range=10cm, switching frequency= **1kHz** AX-T-**1.**-N30 - Proximity switch, range=20cm, switching frequency= **700Hz** AX-T-**1.**-N30 - Devices with special high flexible cable for trailing: AX-... **S74** **The devices S74 are not UL approved!** - Reflector (triple mirror for retroreflective barriers, D=83mm					
Function and LED indication: Light barriers	Light beam not interrupted 		Light beam interrupted 			
Proximity switch	Light beam free / Reflection detected 		Light beam interrupted / no reflection 			
Retroreflective barriers	Light beam not interrupted LED= ON 		Light beam interrupted LED = OFF 			
Function and LED indication Sensors Type "N" AX-E-10N-N18 AX-T-3N-N18 AX-T-3N-N30 AX-R-1N-N18						
Function and LED indication Sensors Type "P" AX-E-10P-N18 AX-T-3P-N18 AX-T-3P-N30 AX-R-1P-N18						

Note 1: Range on white paper 30cm x 20cm. Note 2: Range on reflector (Triple mirror) D=83mm

Control Drawing for Hazardous Areas:



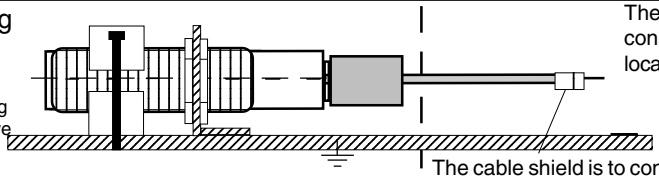
Vmax	<=	Voc	Vmax	=	13.6V
Imax	<=	Ioc	Imax	=	120mA
Ci + Ccable	<=	Ca	Ci	=	0pF
Li + Lcablel	<=	La	Li	=	5.28uH
TA	<=	60°			

Maximum ratings for the power supply

Vo	<=	13.6V
Io	<=	120mA
Po	<=	800mW

Equipotential Bonding prescription:

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

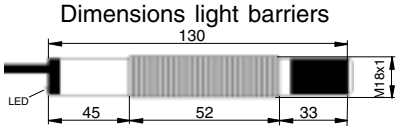


The end of the cable must be connected outside the hazardous location.

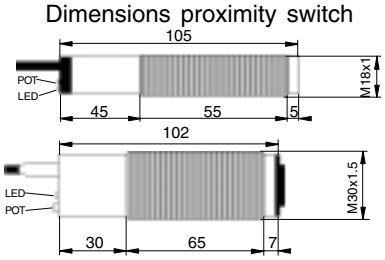
The cable shield is to connect at 0V(-) of the supply voltage.

ATEX related designations	CE 0158	Manufacturer with address
	Device type	⟨Ex⟩ II 2 G
	Certification number:	DMT 03 ATEX E 003
	TA: -20° < TA < 60°	Electrical data according to the chart
	Date of construction: Numeral 4 and 5 of the serial number	

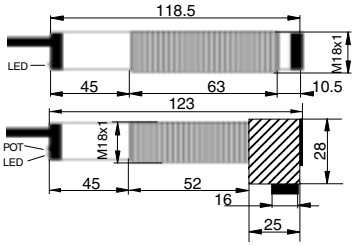
Dimensions light barriers



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. 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 type [EEx ia], mounted out of the hazardous location. Connector versions: The maximum rates of capacity and inductivity 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 >= 2mA and the LED lights up. When the light beam is interrupted the current consumption is reduced to <=1mA and the LED switches OFF.

Light barriers and retroreflective light barriers "P" types: When the light beam is not interrupted the current consumption will be <= 1mA and the LED switches OFF. When the light beam is interrupted the current consumption is increased to >=2mA and the LED lights up.

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

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

Maintenance

No special maintenance is required. Cleaning only with a non-aggressive cleaning liquid.

Fibre optics

For efficiently detection solutions look for our multiple program of fibre optics, also for high temperature areas.

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. ATEX 118a, ElexV, TRbF, TRD, UVV, EX-RL(BGR104), BetrSichV(ATEX137), 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).

Standards met:

- EN 50014, EN 50020, UL 508, UL 913
  EN 61000-6-1/-2, EN 61000-6-3/4; EN 60529
- Ex Protection: 94/9/EG (ATEX 100a)
- Machine directive: 98/37/EG
- Low voltage directive: 73/23/EWG, 93/68/EWG
- EMC: 89/336/EWG, 91/263/EWG, 92/31/EWG, 93/68/EWG

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. 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.

Declaration of Conformity and Approvals

Approvals: DMT 03 ATEX E 003 , UL-Classified, Assigned Control No. 24VL / E185916

The conformity of the devices with the EC/UL standards and directives and the EC/UL-type examination certificate and the observation of the Quality Safety System ISO 9001 with the ATEX module "Production", declares:

Hans Bracher, Matrix Elektronik AG

OmAx02_e8/APR.01,05/HB

Matrix Elektronik AG (Manufacturer)
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ASSURIX Intrinsically Safe Laser Light Barrier AXL-S/E-51

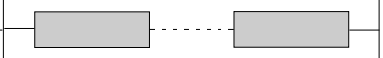
Operating Manual and Control Drawing No. Om-AxL-1e

CE 0158

II 2G

ISO 9001 ATEX

- Applicable in Hazardous Locations, Ex-Zone 1 and 2
- Intrinsically Safe - Protection Level EEx ia IIC T6
- Laser Class 2 (BG Approval)
- High EMC reliability
- ATEX approved

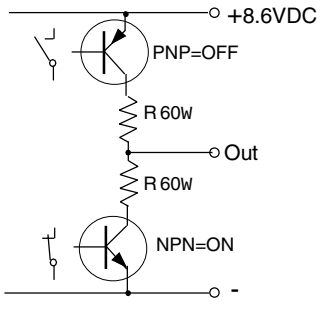
Type / Technical Data	AXL-S/E-51
Designation	S: Emitter / E: Receiver
Laser Class / Laser Output Power	Class 2 / P < 1mW
Laser Beam Diameter	~ 8mm at a distance of 10m
Wave Length	640-680nm / visible red
Range	50m
Minimum Detectable Object Size	11mm (without additional slip-on diaphragm)
Switching Frequency	1000Hz
Output Response Time	0.5ms
Connection Values Ex-i Power supply	V_O <=8.6VDC / I_O <= 120mA /P_O <= 800mW
Supply Voltage	7.0 VDC up to max. 8,6 VDC intrinsically safe
Current Consumption (Normal Modus)	Emitter: 35 mA / Receiver: 6mA
Max. Power Dissipation (Normal Modus)	Transmitter: 300mW / Receiver: 52mW
Output	1 x Push-Pull
Output Impedance	60W
Housing	M18 Yellow Brass, Nickel Plated
Enclosure Rating	IP 65 according to EN 60529
Operating Temperature T_A	0°C < T_A < +50°C
Connecting Cable Emitter	2 x AWG24 (0.2mm²) + Shield / L=3m / blue covered
Connecting Cable Receiver	3 x AWG24 (0.2mm²) + Shield / L=3m / blue covered
Accessories included	2 Clamps M18 or 4 Nuts M18
Options	- Plug-type connector (Binder M18, Series 714), Designation: AXL-S/E-51-**C** - Cable Length up to 100m - Devices with special high flexible cable for trailing, Designation AXL-S/E-51-**K** - Slip-on Diaphragms 5mm to 1mm
LED Indication Output Function	 Light Beam Interrupted LED extinguished
	 Light Beam not interrupted LED shows yellow
Connection Layout	

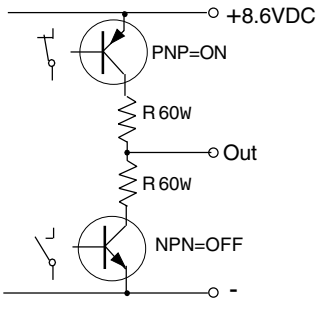
Receiver:

Standard	Highflex	Connector	
brown	brown	1	= +
blue	white	3	= -
black	green	2	= Output
white	blank	--	= Shield

Emitter:

Standard	Highflex	Connector	
brown	brown	1	= +
blue	white	3	= -
white	blank	--	= Shield

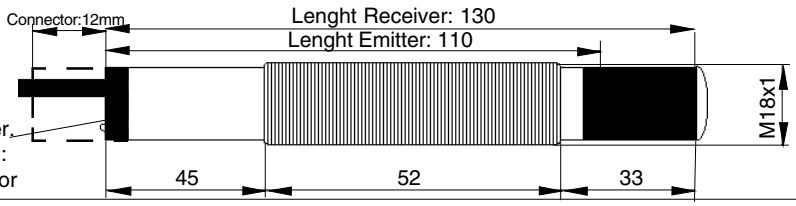




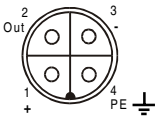
Dimensions:

(Same Dimensions for Emitter and Receiver)

LED at the Receiver, Connector Version: Inside the Connector

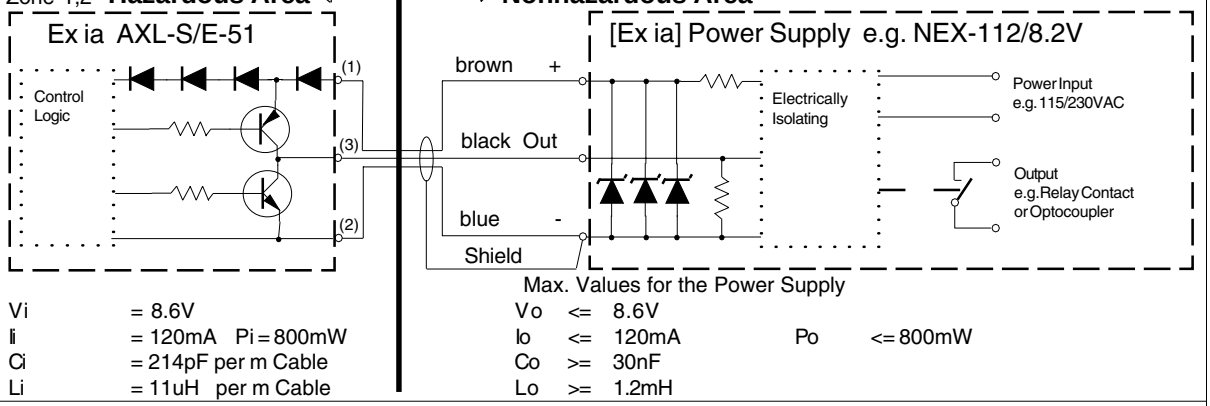


Connection layout for connector versions ..-**C**
View on the pins at the sensor



Control Drawing for Hazardous Areas:

Zone 1,2 **Hazardous Area** ⇦⇨ **Nonhazardous Area**



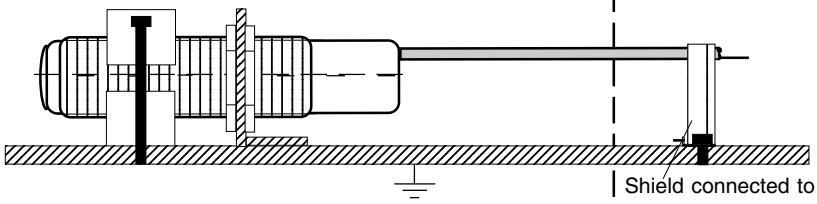
Max. Values for the Power Supply

Vi	= 8.6V	Vo	<=	8.6V	
Ii	= 120mA Pi = 800mW	Io	<=	120mA	Po <= 800mW
Ci	= 214pF per m Cable	Co	>=	30nF	
Li	= 11uH per m Cable	Lo	>=	1.2mH	

Equipotential Bonding:

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

The end of the cable must be connected outside the hazardous locations to an intrinsically safe power supply.



Shield connected to PE large-surfaced

Operating Manual

Mounting prescriptions

Ex-Protection

It is necessary to take into consideration the valid international and national rules and regulations. 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. Additional optical lenses are not allowed in hazardous locations. The sensor must only be supplied by an approved intrinsically safe power supply type [EEx ia], mounted out of the hazardous location. Connector versions: The maximum rates of capacity and inductivity of the connection cable must be respected.

Mounting Prescriptions

Because Lasers have a very small aperture angle, mount the light barriers free from vibrations and shocks. If it is practicable, protect the lenses from contamination. Do not exceed the maximum ratings. The electrical connections must exactly as shown in the connection layout. The cable shield must be connected short. The cable shield should be connected to the protection earth, large surfaced. Connection cables must not be installed parallel to high voltage cables.

Function:

If the light beam between emitter and receiver is not interrupted the PNP-Transistor is switched ON (H level) and the NPN-Transistor is switched OFF. If the light beam between emitter and receiver is interrupted the PNP-Transistor is switched OFF (L level) and the NPN-Transistor is switched ON.

Laser Safety

Safety Notes for Laser Installations of Class 2.

- The instructions for planning and installation must be followed in accordance with EN 60825-1
- Do not stare into Laser Beam

General Safety Informations

For installing and using the Laser Light Barrier it is necessary to take into consideration the relevant international and other national regulations:

ATEX118a, EX-RL, ElexV, TrbF, TRD, UVV

Standards met:

- EN 50014, EN 50020, EN 50081-1/-2, EN 50082-1/-2, EN 60825-1
- Ex-Protection 94/9/EG (ATEX 100a)
- Machine Directive 89/392/EWG, 91/368/EWG, 93/44/EWG, 93/68/EWG
- Low Voltage Directive 73/23/EWG, 93/68/EWG
- EMC 89/336/EWG, 91/263/EWG, 92/31/EWG, 93/68/EWG

Maintenance

The Laser Light Barrier does not require any special maintenance. Contaminated lenses are to clean with a non aggressive medium. Equipment must only be repaired or serviced by the manufacturer.

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. 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.

Approvals

DMT 00 ATEX E020

OmAxL1_e1,SEP.12,00/HB

Group

Tippkemper - Matrix GmbH
Meegener Str. 43 D-51491 Overath
Tel.:+49 (0) 2206/9566-0 Fax -19

Matrix Elektronik AG
Kirchweg 24 CH-5422 Oberehrendingen
Tel.:+41 (0) 56/2220-757 Fax -563

ASSURIX Intrinsically Safe Laser Light Barrier AXL-S/E-80

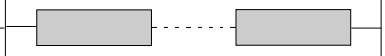
Operating Manual and Control Drawing No. Om-AxL-0e

CE 0158

II 2G

ISO 9001 ATEX

- Applicable in Hazardous Locations, Ex-Zone 1 and 2
- Intrinsically Safe - Protection Level EEx ia IIC T6
- Laser Class 2 (BG Approval)
- High EMC reliability
- ATEX approved

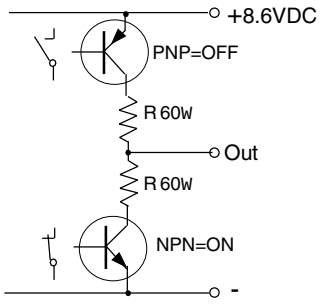
Technical Data \ Type	AXL-S/E-80
Designation	S: Emitter / E: Receiver
Laser Class / Laser Output Power	Class 2 / P < 1mW
Laser Beam Diameter	~ 8mm at a distance of 10m
Wave Length	640-680nm / visible red
Range	80m
Minimum Detectable Object Size	20mm
Switching Frequency	1000Hz
Output Response Time	0.5ms
Connection Values Ex-i Power supply	V_O <=8.6VDC / I_O <= 120mA /P_O <= 800mW
Supply Voltage	7.0 VDC up to max. 8,6 VDC intrinsically safe
Current Consumption (Normal Modus)	Emitter: 35 mA / Receiver: 6mA
Max. Power Dissipation (Normal Modus)	Transmitter: 300mW / Receiver: 52mW
Output	1 x Push-Pull
Output Impedance	60W
Housing	M30 Yellow Brass, Nickel Plated
Enclosure Rating	IP 65 according to EN 60529
Operating Temperature T_A	0°C < T_A < +50°C
Connecting Cable Emitter	2 x AWG24 (0.2mm²) + Shield / L=3m / blue covered
Connecting Cable Receiver	3 x AWG24 (0.2mm²) + Shield / L=3m / blue covered
Accessories included	2 Clamps M30 or 4 Nuts M30
Options	- Plug-type connector (Binder M30/M18, Series 714), Designation: AXL-S/E-80-C - Cable Length up to 100m - Devices with special high flexible cable for trailing, Designation AXL-S/E-80-K - Slip-on Diaphragms 5mm to 1mm
LED Indication Output Function	 Light Beam Interrupted LED extinguished
	 Light Beam not interrupted LED shows yellow
Connection Layout	

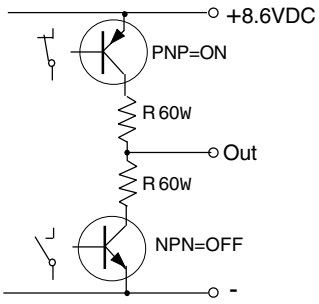
Receiver:

Standard	Highflex	Connector	
brown	brown	1	= +
blue	white	3	= -
black	green	2	= Output
white	blank	--	= Shield

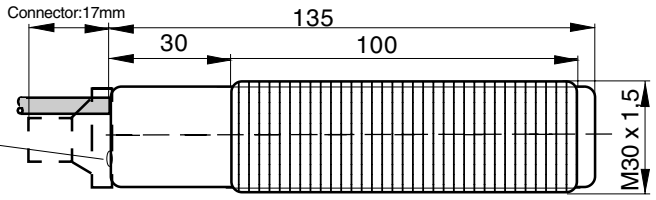
Emitter:

Standard	Highflex	Connector	
brown	brown	1	= +
blue	white	3	= -
white	blank	--	= Shield



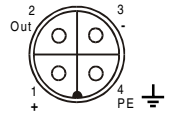


Dimensions:
(Same Dimensions for Emitter and Receiver)



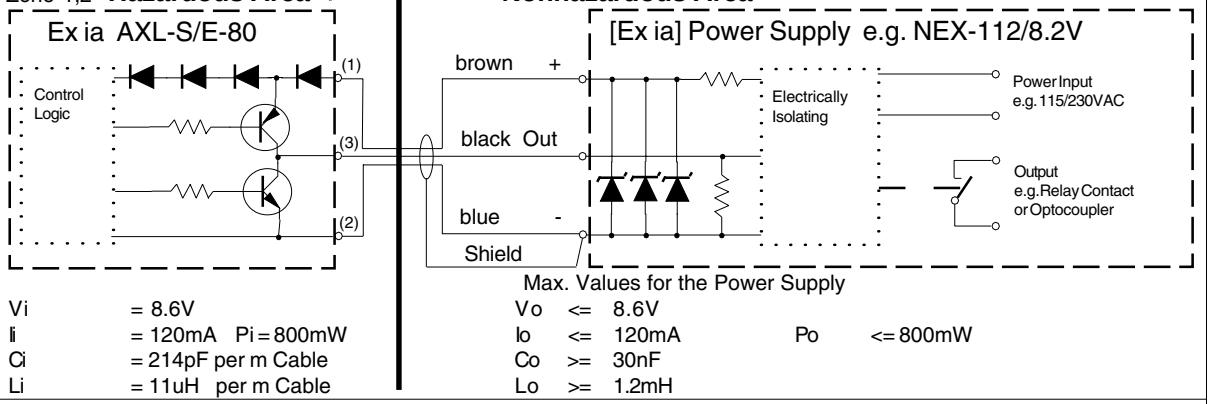
LED at the Receiver
Connector Version: inside the Connector

Connection layout for connector versions ..-**C**
View on the pins at the sensor



Control Drawing for Hazardous Areas:

Zone 1,2 **Hazardous Area** ⇔ **Nonhazardous Area**



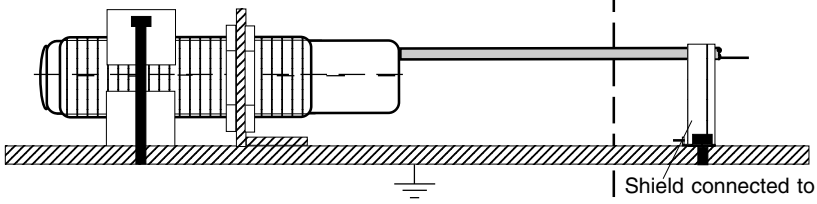
Max. Values for the Power Supply

Vi	= 8.6V	Vo	<=	8.6V	
Ii	= 120mA Pi = 800mW	Io	<=	120mA	Po <= 800mW
Ci	= 214pF per m Cable	Co	>=	30nF	
Li	= 11uH per m Cable	Lo	>=	1.2mH	

Equipotential Bonding:

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

The end of the cable must be connected outside the hazardous locations to an intrinsically safe power supply.



Shield connected to PE large-surfaced

Operating Manual

Mounting prescriptions

Ex-Protection
It is necessary to take into consideration the valid international and national rules and regulations. 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. Additional optical lenses are not allowed in hazardous locations. The sensor must only be supplied by an approved intrinsically safe power supply type [EEx ia], mounted out of the hazardous location. Connector versions: The maximum rates of capacity and inductivity of the connection cable must be respected.

Mounting Prescriptions
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Laser Safety
Safety Notes for Laser Installations of Class 2.
- The instructions for planning and installation must be followed in accordance with EN 60825-1
- Do not stare into Laser Beam

General Safety Informations
For installing and using the Laser Light Barrier it is necessary to take into consideration the relevant international and other national regulations:
ATEX118a, EX-RL, ElexV, TrbF, TRD, UVV
Standards met:
- EN 50014, EN 50020, EN 50081-1/-2, EN 50082-1/-2, EN 60825-1
- Ex-Protection 94/9/EG (ATEX 100a)
- Machine Directive 89/392/EWG, 91/368/EWG, 93/44/EWG, 93/68/EWG
- Low Voltage Directive 73/23/EWG, 93/68/EWG
- EMC 89/336/EWG, 91/263/EWG, 92/31/EWG, 93/68/EWG

Maintenance
The Laser Light Barrier does not require any special maintenance. Contaminated lenses are to clean with a non aggressive medium. Equipment must only be repaired or serviced by the manufacturer.

General Notes
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Approvals
DMT 00 ATEX E020

OmAxL0_e1,SEP.12,00/HB

Group

Tippkemper - Matrix GmbH
Meegener Str. 43 D-51491 Overath
Tel.:+49 (0) 2206/9566-0 Fax -19

Matrix Elektronik AG
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Tel.:+41 (0) 56/2220-757 Fax -563

Tippkemper®

MATRIX elektronik ag

ISO 9001:2000 / ATEX

ASSURIX Intrinsically Safe Power Supply NEX-112-..AC

Operating Manual and Control Drawing No. OM-NEX-01a

CE 0158

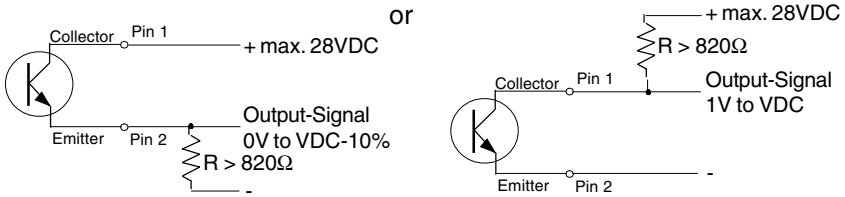
II (2) G [EEx ia] IIC

UL LISTED

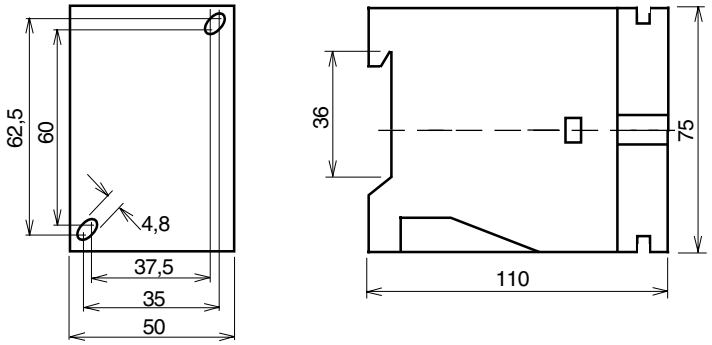
- Power Supply for 3-wire and NAMUR EEx ia Sensors. Process Control Equipment for Hazardous locations.
- Type of protection: Intrinsically Safe [EEx ia] IIC
- Listed by Underwriter's Laboratories Inc. Assigned Control No. 36HN
- Int. Safe Connections Cl.I, II,III Division 1, Applicable Gp.A-G
- EU Certification of Conformity PTB 03 ATEX 2091
- with Relay or Electronic Output.
- also available with adjustable delay function.

Types / Specifications	NEX-112-R-...VAC	NEX-112-E-...VAC	NEX-112-RZ-...VAC	NEX-112-EZ-...VAC
Supply Voltage NEX-112-.-24VAC NEX-112-.-115VAC NEX-112-.-230VAC	24VAC / 100mA (50-60Hz) (Vm=250VAC) 115 VAC / 40mA (50-60Hz) (Vm=250VAC) 230 VAC / 20mA (50-60Hz) (Vm=250VAC)			
Connections	1 proximity-switch or 1 light barrier or 1 NAMUR-sensor			
Intrinsically safe output voltage for 3-wire Sensors	12 VDC (Vo = 13.6 VDC)			
Intrinsically safe output voltage for NAMUR sensors	8.2 VDC (Vo = 13.6 VDC)			
Maximum output current	Io = 111mA			
Max. usable output current	30mA			
Maximum output power	Po = 785mW			
Max. capacitive load	Co = 250nF			
Max. inductive load	Lo = 1.4mH			
Switching frequency	5 Hz	1kHz	5Hz	10Hz
Time delay	--	--	0.1 to 10sec.	0.1 to 10sec.
Drop-in and Drop-out Delay			adjustable	adjustable
Output	Relay	Opto-Coupler	Relay	Opto-Coupler
Maximum AC load	250VAC/4A/100VA Cos φ >= 0,7	-- --	250VAC/4A/100VA Cos φ> = 0,7	-- --
Maximum DC load	30VDC/4A 100W	28VDC/50mA 1W	30VDC/4A 100W	28VDC/50mA 1W
Housing	Synthetic (Polycarbonate, Polystyrole)			
Protection rating	IP 20 at EN 60529			
Ambient temperature range	0°C < TA < 60°C			
Mounting	On rail EN 50022 or with 2 screws			
Options (not UL LISTED)	with NPN input circuit, Type NEX-112-.-...**N** (without NAMUR input)			

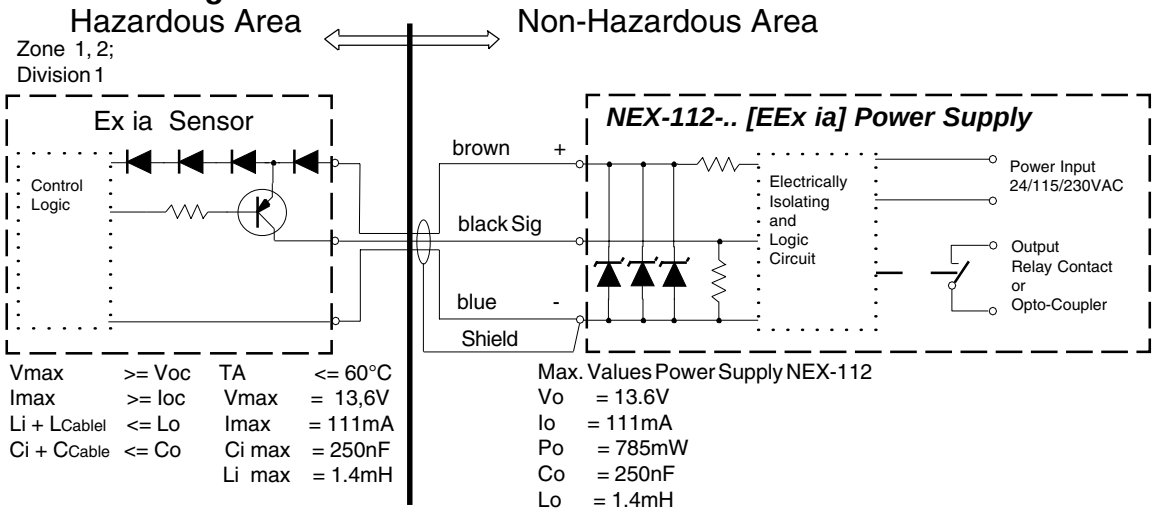
Connection to the Optocoupler-Output: (Only for devices with Coupler-Output)



Dimensions:



Control Drawing for Hazardous Areas:

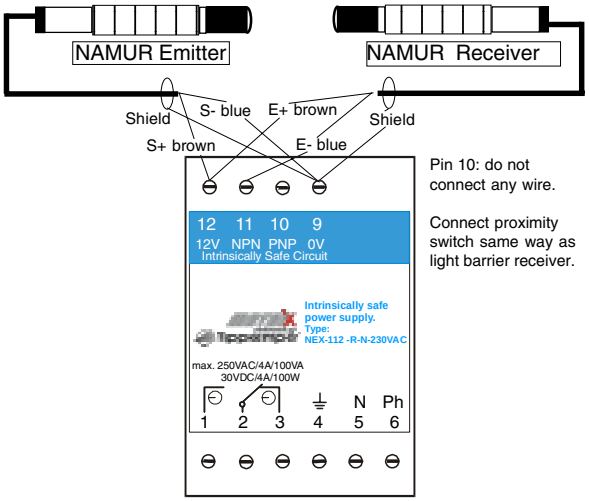


Vmax	>= Voc	TA	<= 60°C
Imax	>= Ioc	Vmax	= 13,6V
Li + LCablel	<= Lo	Imax	= 111mA
Ci + CCable	<= Co	Ci max	= 250nF
		Li max	= 1.4mH

Max. Values Power Supply NEX-112
Vo = 13.6V
Io = 111mA
Po = 785mW
Co = 250nF
Lo = 1.4mH

Connections:

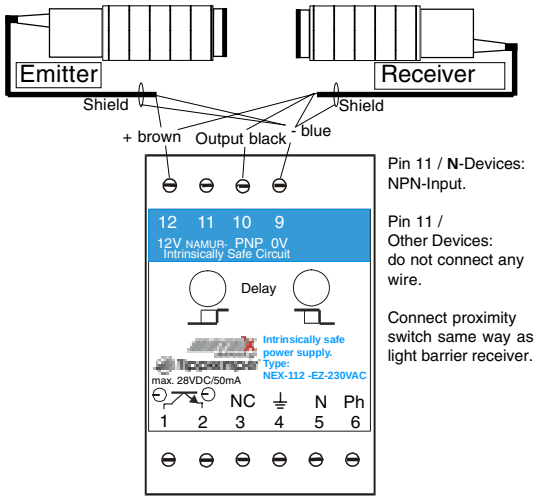
NAMUR-Sensors to NEX-112-R



Pin 10: do not connect any wire.

Connect proximity switch same way as light barrier receiver.

3-wire Sensors to NEX-112-EZ



Pin 11 / **N**-Devices: NPN-Input.

Pin 11 / Other Devices: do not connect any wire.

Connect proximity switch same way as light barrier receiver.

Operating Manual / EC - Declaration of Conformity:

Mounting prescriptions:

WARNING:

"To prevent ignition of flammable or combustible atmospheres, disconnect power before servicing"

Ex-Protection

The power supply must be installed out of the explosion risk area. The stated limit values must not be exceeded. The power supply must only be used with the voltage shown on the identification label. The connection for the intrinsically safe circuit is marked in blue. The power supply must only drive approved EEx ia intrinsically safe sensors.

Function:

The power supply NEX-112-.. will provide the power and signalling function for intrinsically safe sensors at protection level EEx ia. When the PNP-input is activated or I-NAMUR > 2mA, the red LED will light up and the output will be activated. When the inputs are passive the LED shows green. For the "Z"-versions the drop-in and drop-out time delays can be adjusted by 2 potentiometers. For the types NEX-112-..-N, the NAMUR input is replaced by an NPN input. (Attention: This versions are not UL listed!)

Maintenance:

The power supply does not require any special maintenance.

Safety Instructions:

When installing and operating with the NEX-112 power supply, it is necessary to take into consideration the relevant EU/US and other national regulations and the relevant guidelines ATEX 118a, ElexV, TRbF, TRD, UVV, EX-RL, BetrSichV, UL508, UL913, Intrinsically Safe Apparatus and Associated Apparatus for use in Class I, II, III Division 1, Hazardous (Classified) Locations..

Standards met:

EN 50014; EN 50020; EN 50081; EN 50082

Ex Protection 94/9/EG (ATEX 100a), UL 508, UL 913

- Machine Directive: 98/37/EG
- Low Voltage Directive: 73/23/EWG, 93/68/EWG
- EMC: 89/336/EWG, 91/263/EWG, 92/31/EWG, 93/68/EWG
- RoHS directive: 2002/95/EG

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. 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.

Declaration of Conformity / Approvals:

PTB 03 ATEX 2091

UL-LISTED, ASSIGNED CONTROL No. 36HN / E210500

The conformity of the devices with the EC standards and directives and the EC-type examination certificate and the observation of the Quality Safety System IS[illegible] the ATEX module "Production", declares:

Hans Bracher, Matrix Elektronik AG

Nex112AC_250VAC_e9/FEB.21,2007/HB

Matrix Elektronik AG (Manufacturer)
Kirchweg 24 CH-5420 Ehrendingen
Tel.:+41 56 20400-20 Fax -29

Tippkemper - Matrix GmbH
Meegener Str. 43 D-51491 Overath
Tel.:+49 2206 9566-0 Fax -19

ISO 9001:2000 / ATEX

ASSURIX Intrinsically Safe Power Supply NEX-108-..VAC

Operating Manual and Control Drawing No. OM-NEX-01a

CE 0102

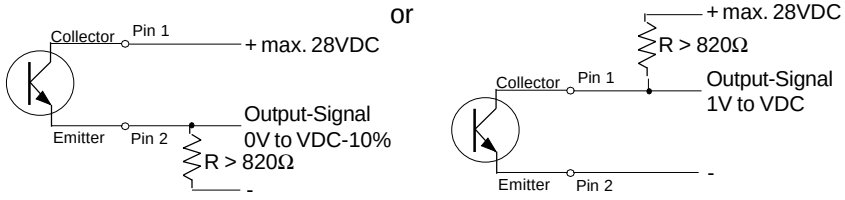
II (2) G
[EEx ia] IIC

LISTED

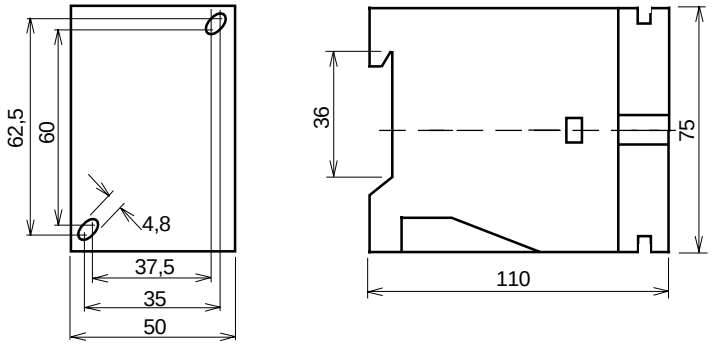
- Power Supply for 3-wire and NAMUR EEx ia Sensors.
  Process Control Equipment for Hazardous locations.
- Type of protection: Intrinsically Safe [EEx ia] IIC
- Listed by Underwriter's Laboratories Inc. Assigned Control No. 36HN
- Int. Safe Connections Cl.I, II,III Division 1, Applicable Gp.A-G
- EU Certification of Conformity PTB 03 ATEX 2091
- with Relay or Electronic Output.
- also available with adjustable delay function.

Types / Specifications	NEX-108-R-...VAC	NEX-108-E-...VAC	NEX-108-RZ-...VAC	NEX-108-EZ-...VAC
Supply Voltage NEX-108-.-24VAC NEX-108-.-115VAC NEX-108-.-230VAC	24VAC / 100mA (50-60Hz) (Vm=250VAC) 115 VAC / 40mA (50-60Hz) (Vm=250VAC) 230 VAC / 20mA (50-60Hz) (Vm=250VAC)			
Connections	1 proximity-switch or 1 light barrier or 1 NAMUR-sensor			
Intrinsically safe output voltage for 3-wire Sensors	8.2 VDC (Vo = 8.6 VDC)			
Intrinsically safe output voltage for NAMUR sensors	8.2 VDC (Vo = 8.6 VDC)			
Maximum output current	Io = 111mA			
Max. usable output current	50mA			
Maximum output power	Po = 660mW			
Max. capacitive load	Co = 400nF			
Max. inductive load	Lo = 2mH			
Switching frequency	5 Hz	1kHz	5Hz	10Hz
Time delay	--	--	0.1 to 10sec.	0.1 to 10sec.
Drop-in and Drop-out Delay			adjustable	adjustable
Output	Relay	Opto-Coupler	Relay	Opto-Coupler
Maximum AC load	250VAC/4A/100VA Cos φ >= 0,7	-- --	250VAC/4A/100VA Cos φ> = 0,7	-- --
Maximum DC load	30VDC/4A 100W	28VDC/50mA 1W	30VDC/4A 100W	28VDC/50mA 1W
Housing	Synthetic (Polycarbonate, Polystyrole)			
Protection rating	IP 20 at EN 60529			
Ambient temperature range	0°C < TA < 60°C			
Mounting	On rail EN 50022 or with 2 screws			
Options (not UL LISTED)	with NPN input circuit, Type NEX-108-.-...**N** (without NAMUR input)			

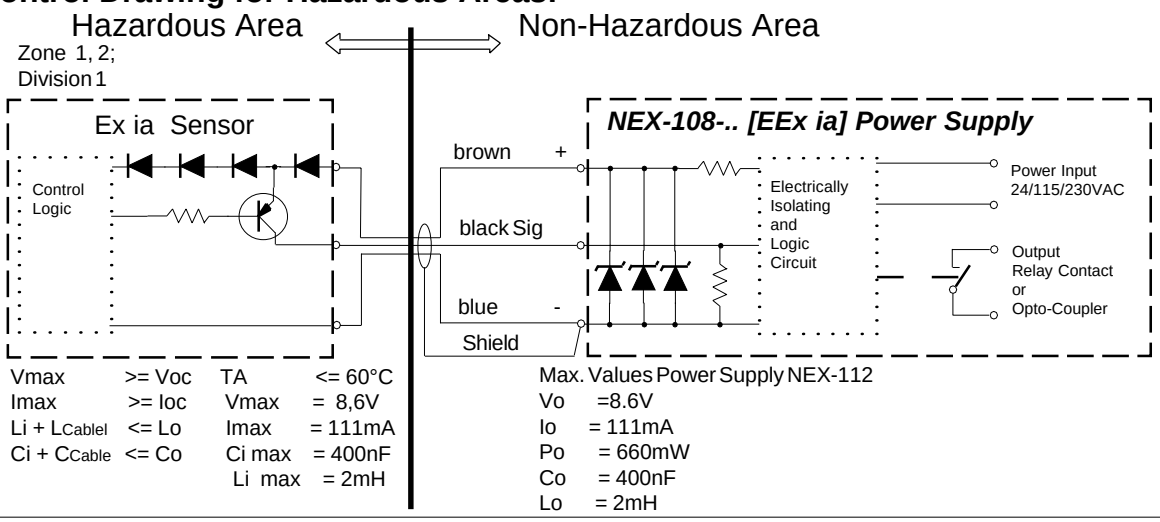
Connection to the Optocoupler-Output:
(Only for devices with Coupler-Output)



Dimensions:



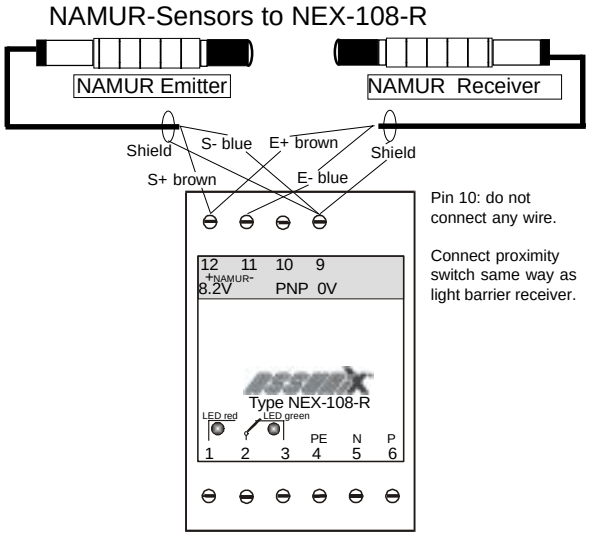
Control Drawing for Hazardous Areas:

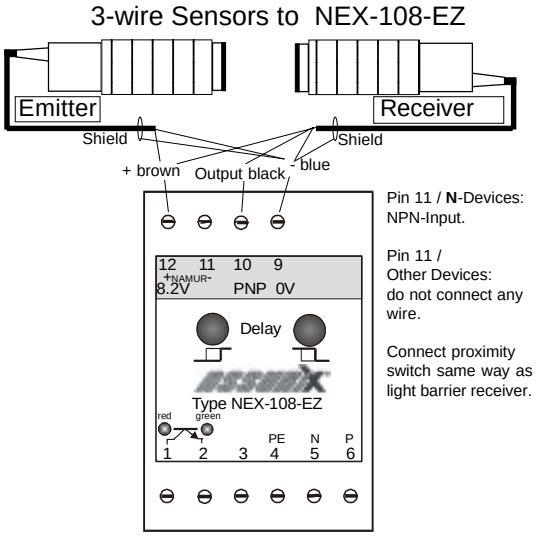


Vmax	>= Voc	TA	<= 60°C
Imax	>= Ioc	Vmax	= 8,6V
Li + L_{Cable}	<= Lo	Imax	= 111mA
Ci + C_{Cable}	<= Co	Ci max	= 400nF
		Li max	= 2mH

Max. Values Power Supply NEX-112
Vo =8.6V
Io = 111mA
Po = 660mW
Co = 400nF
Lo = 2mH

Connections:





Operating Manual / EC - Declaration of Conformity:

Mounting prescriptions:

Ex-Protection

The power supply must be installed out of the explosion risk area. The stated limit values must not be exceeded. The power supply must only be used with the voltage shown on the identification label. The connection for the intrinsically safe circuit is marked in blue. The power supply must only drive approved EEx ia intrinsically safe sensors.

Function:

The power supply NEX-108-.. will provide the power and signalling function for intrinsically safe sensors at protection level EEx ia. When the PNP-input is activated or I-NAMUR > 2mA, the red LED will light up and the output will be activated. When the inputs are passive the LED shows green. For the "Z"-versions the drop-in and drop-out time delays can be adjusted by 2 potentiometers. For the types NEX-108-..-N, the NAMUR input is replaced by an NPN input. (Attention: This versions are not UL listed!)

Maintenance:

The power supply does not require any special maintenance.

Safety Instructions:

When installing and operating with the NEX-108 power supply, it is necessary to take into consideration the relevant EU/US and other national regulations and the relevant guidelines ATEX 118a, ElexV, TRbF, TRD, UVV, EX-RL (BGR 104), BetrSichV (ATEX 137), UL508, UL913, Intrinsically Safe Apparatus and Associated Apparatus for use in Class I, II, III Division 1, Hazardous (Classified) Locations..

Standards met:

- EN 50014, EN 50020;EN 61000-6-1/-2,EN 61000-6-3/4
- Ex Protection 94/9/EG (ATEX 100a), UL 508, UL 913
- Machine Directive: 98/37/EG
- Low Voltage Directive: 73/23/EWG, 93/68/EWG
- EMC: 89/336/EWG, 91/263/EWG, 92/31/EWG, 93/68/EWG

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. 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.

Approvals:

PTB 03 ATEX 2091

UL-LISTED, ASSIGNED CONTROL No. 36HN / E210500

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

Hans Bracher, Matrix Elektronik AG

Nex108AC_250VAC_e7/OCT.02,03/HB

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