

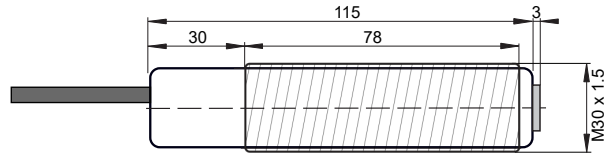
# TDD-BAC-DBA-TF LED TOF Distance Sensor



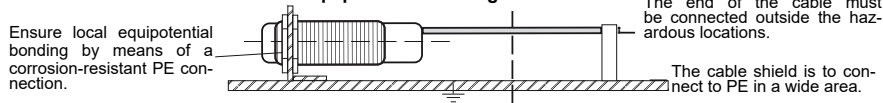
Technical Data	TDD-BAC-DBA-TF
Gas Ex protection designation	II 2G Ex db IIC T6 Gb
Dust Ex protection designation	II 2D Ex tb IIIC T100°C Db
For use in Ex Zones	(0), 1, 2, (20), 21 and 22
Light Source	860nm (LED)
Measuring range	10cm to 2m
Absolute measuring accuracy	±10%
Response time	100ms
Output type	RS485 + 4 - 20mA PNP, max. 100mA, short circuit protected
Device designation according to EN 60947-5-1/2	D3ASS1
Supply voltage, Ue	+24 VDC ±10%
Absolute maximum supply voltage, Um	+30 VDC
Current consumption	< 50mA
Power consumption	1.2 W
Power up delay time	3s
Housing	M30, brass Ms 58, nickel plated
Enclosure rating	IP67
Ambient working temperature range, T <sub>amb</sub>	+10°C up to +50°C
Storage temperature range	-10°C up to +80°C
Connection cable	TPU insulation, AWM 20236, 5+PE x 0.5mm <sup>2</sup> , halogen free, shielded, leads numbering marked, oil resistant cable for trailing, length: 10m

Wiring and Dimensions

Lead-No	Function
1	+24V
2	0V
3	4 - 20mA PNP, max. 100mA, short circuit protected
4	RS485: A (D+)
5	RS485: B (D-)



Safe equipotential bonding for Ex devices



EX related markings

CE 1258  
 Typ: TDD-BAC-DBA-TF  
 Gas: II 2G Ex db IIC T6 Gb  
 ATEX:  
 IECEx:  
 Tamb:  
 Manufacturing date:

Manufacturer with Address  
 Electrical data according to table  
 Dust: II 2D Ex tb IIIC T100°C Db  
 BVS 10 ATEX E130 X  
 IECEx BVS 14.0108X  
 +10°C up to +50°C  
 Number 5 to 8 of the Serial Number (Year / CW)

Operating Manual / EU-declaration of conformity

Product description

- LED (890nm) TOF Distance Sensor
- Analog current output (PNP), 4mA to 20mA
- Distance reasing over RS-485
- Measurement range: 10cm to 2m

General installation prescriptions

The electrical connections must be exactly as shown in the connection diagram. The cable shield must be connected short. The cable shield should be connected to protection earth, large-surfaced. Do not exceed the maximum ratings. Connection cables must not be installed parallel to high voltage cables.

Ex installation prescriptions

It is necessary to take into consideration the valid international and national rules and regulations (IEC 60079-14). The maximum ratings must not be exceeded. The electrical connections must be done according to the wiring diagram. The local equipotential bonding must be connected corrosion resistant and permanently. The protective earth (PE) is solidly connected with the housing.

The cable shield must be solidly connected to protection earth. The cable have to be installed and protected against damages. The cable with termination fittings, or in cable tray systems and installed in a manner to avoid tensile stress at the termination fittings. To connect cables inside hazardous locations only use certificated Ex housings. All cable terminals must be connected outside hazardous locations.

Other than original manufacturer, additional optical lenses are not allowed in hazardous locations.

The product TDD-BAC-DBA-TF may only be installed and operated within Ex zones 1, 2, 21 and 22. The limited optical radiation may operate inside Ex zones 0 and 20.

Function

- RS-485 protocol (9600/8/1/no parity):
- ASCII-transfer
- Format: <xxxx> <CR>+<LF> (xxxx=Distnace in mm)
- Signal overflow indication: "overfl <CR>+<LF>"
- Signal underflow indication: "no sig <CR>+<LF>"
- Analog output:
- 10cm: 4mA; 1m: 20mA
- Overflow: 3mA; Underflow: 21mA

General safety

The sensor must not be used for Accident-Prevention! In worst case the output can change to any state! When installing and operating the product, it is necessary to take into consideration all relevant international and other national regulations, especially those regarding explosion protection.

Maintenance

No special maintenance is required. Protect the product and any optical ports (if applicable) from pollution. Clean with non-aggressive solvents only. Strong solvents may damage certain fibre optics. The equipment must only be repaired or serviced by the manufacturer.

General notes and disposal

We reserve the right to modify our products. Our products are designed in such a way, that it has the least possible adverse effect on the environment. It neither emits or contains 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.

EU-Declaration of Conformity

The product meets the requirements of the following standards and directives: IEC 60079-0:2017, EN IEC 60079-0:2018, IEC/EN 60079-1:2014, IEC/EN 60079-28:2015, IEC 60079-31:2013, EN 60529:2014, EN 60950-1:2006, EN 61000-4-2 to EN 61000-4-6, EN 61000-6-1/-2, EN 61000-6-4, ATEX directive 2014/34/EU, Machine directive 2006/42/EC, EMC directive 2014/30/EU, RoHS directive 2011/65/EU

ATEX/IECEx-Designation:

Gas: II 2G Ex db IIC T6 Gb  
 Dust: II 2D Ex tb IIIC T100°C Db  
 ATEX EU-type examination certificate No.: BVS 10 ATEX E130 X  
 IECEx CoC No.: IECEx BVS 14.0108X  
 Ex CB IECEx: DEKRA Testing and Certification GmbH, Carl-Beyling-Haus, Dinen-dahlstrasse 9, D-44809 Bochum.

ATEX certification of quality management system, type production of Ex devices, in accordance to the directive 2014/34/EU:

Certification No.: SEV 21 ATEX 4580, QAR No.: CH/SEV/QAR21.0009, CB: Eurofins Electric & Electronic Product Testing AG, Luppenstrasse 3, CH-8320 Fehraltorf CE 1258 Ident. Number: 1258

Pablo Ledergerber, Matrix Elektronik AG, is authorized to generation of documentation. The conformity of the devices with all used standards, directives and EC-type examination certificates and the observation of the Quality Management System ISO 9001:2015, declares:

Ehrendingen, 29.10.2025

Pablo Ledergerber, Matrix Elektronik AG

TDD-BAC-DBA-TF\_e1/2025-10-29/MPP

Tippkemper-Matrix GmbH  
 Meegerner Str. 43, D-51491 Overath  
 Tel.: +49 2206 9566-0, Fax -19  
 info@tippkemper-matrix.de

Matrix Elektronik AG (Manufacturer)  
 Kirchweg 24, CH-5420 Ehrendingen  
 Tel.: +41 56 20400-20, Fax -29  
 info@matrix-elektronik.com