

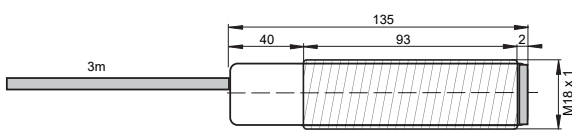
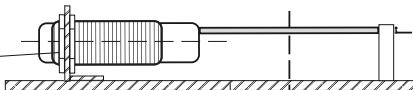
## Operating manual: LPD-655-AEB-ZA Laser pointer inside M18 housing



IECEx SEV 23.0006


 II 2(1)G  
II 2(1)D

 Ex db [op is Ga] IIC T6 Gb  
Ex tb [op is Da] IIIC T85°C Db


Type	LPD-655-AEB-ZA															
<b>Technical Data</b>																
Beam shape	point															
Gas Ex protection designation	II 2(1)G Ex db [op is Ga] IIC T6 Gb															
Dust Ex protection designation	II 2(1)D Ex tb [op is Da] IIIC T85°C Db															
For use in Ex Zones	Zones (0), 1, 2, (20), 21, 22															
Light Source	Laser, red, 655nm, class 2															
Maximum optical radiant power	<1mW															
Beam divergence angle	< 2mrad															
Supply voltage, Ue	24 VDC ± 10%															
Absolute maximum supply voltage, Um	30 VDC															
Maximum power dissipation	1.5W															
Maximum current consumption	50mA															
Housing	M18, Material: Ms 58 nickel plated															
Enclosure rating	IP67															
Ambient working temperature range, T <sub>amb</sub>	-10°C up to +50°C															
Storage temperature range	-20°C up to +70°C															
EMC, shock and vibration resistance	Vibration: 30g over 20Hz to 2Khz. Shock: 100g for 3ms															
Connection cable	TPU insulation, AWM 20236, 4+PE x 0.5mm <sup>2</sup> , halogen free, shielded, leads numbering marked, oil resistant cable for trailing, length: 3m															
Accessories	<b>Included</b>	<b>Optional</b>														
	<ul style="list-style-type: none"> <li>1x Warning plate "LASER RADIATION. DO NOT STARE INTO BEAM. CLASS 2 LASER PRODUCT", self-adhesive for gluing near to the sensor.</li> </ul>	<ul style="list-style-type: none"> <li>1x clamp</li> </ul>														
Wiring and Connection	<table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th style="width: 50%;">Lead-No</th> <th style="width: 50%;">Function</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>24 VDC ± 10%</td> </tr> <tr> <td>2</td> <td>0V</td> </tr> <tr> <td>3</td> <td>DO-Output</td> </tr> <tr> <td>4</td> <td>Disable Input</td> </tr> <tr> <td>yellow-green</td> <td>PE/PA</td> </tr> <tr> <td>white</td> <td>Cable shield</td> </tr> </tbody> </table>		Lead-No	Function	1	24 VDC ± 10%	2	0V	3	DO-Output	4	Disable Input	yellow-green	PE/PA	white	Cable shield
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yellow-green	PE/PA															
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Dimensions																
EX related markings	CE 1258 Typ: LPD-655-AEB-ZA Gas: Ⓜ II 2(1)G Ex db [op is Ga] IIC T6 Gb ATEX: IECEx: Tamb: Manufacturing date:	Manufacturer with Address Electrical data according table Dust: Ⓜ II 2(1)D Ex tb [op is Da] IIIC T85°C Db SEV 23 ATEX 0671 IECEx SEV 23.0006 -10°C up to +50°C Number 5 to 8 of the Serial Number (Year / CW)														
Safe equipotential bonding for Ex devices	Ensure local equipotential bonding by means of a corrosion-resistant PE connection.  The end of the cable must be connected outside the hazardous locations. The cable shield is to connect to PE in a wide area.															

LPD-655-AEB-ZA\_e1/2023-04-04/MP

**Installation prescriptions for Ex hazardous locations**

It is necessary to take into consideration the valid international and national rules and regulations (EN 60079-14). The local potential equalization must be connected with the PA-connector using a reliable and noncorrosive connection. The PE/PA connector is permanently attached to the enclosure. The absolute maximum supply voltage  $U_m = 30$  VDC must not be exceeded. No external parts are allowed for focusing or reshaping of the emitted laser beam, except for original parts. The cable must be protected against damaging. The end of the cable must either be installed within a certificated Ex housing or must be installed outside of any Ex area. Type LPD-655-AEB-ZA: Allowed to be installed and operated within Ex zones 1, 2, 21 and 22. The limited optical radiation can operate into hazardous locations zones 0 and 20.

**Safety regulations for Laser devices class 2**

 The relevant standard is IEC/EN 60825-1 "Safety of laser products", see paragraphs 12.5.1 and 12.6.1. It is only necessary to take precautions to avoid a direct and prolonged staring into the beam. A direct look into the beam is not considered hazardous if the normal eye reflex limits it to a short duration (max. 0.25s). The laser beam path should be blocked at the end of its useful path when this is reasonably practicable. Additionally, the laser should not be directed at people.

**General mounting prescriptions**

Mount the laser stable and vibration-free. The electrical connections must be exactly as shown in the connection diagram. The cable shield must be connected as short as possible. The cable shield should be connected to the protection earth, large-surfaced. Do not exceed the maximum ratings or install the connection cables parallel to high voltage cables.

**Function**

Once the laser pointer is energized, it takes about 2 seconds to start. To prolong laser lifetime, the laserpointer should be switched off when not in use. The laser can be disabled using the DI-Input. The DI-input must be set to +24V to switch off the laser pointer. The laser pointer is switched on when the DI input is set to 0V or left open. The switching frequency of the laser pointer can be up to the kHz range. The lifetime depends on the switching frequency and the ambient temperature. If there is an internal error, the DO output switches to "High". Connect the DO output only to inputs or leave it open. Never connect the DO output directly to 0V, GND, ground or +24V.

**General safety instructions**

"WARNING - EXPLOSION HAZARD - WHEN IN HAZARDOUS LOCATIONS, TURN OFF POWER BEFORE REPLACING OR WIRING MODULES. DO NOT DISCONNECT EQUIPMENT UNLESS POWER HAS BEEN SWITCHED OFF OR THE AREA IS KNOWN TO BE NONHAZARDOUS". The mounting of the sensor in dusty locations without fixed cordset or protection cap results in a high ignition risk. The sensors must not be used for Accident-Prevention! In worst case the output can change to any state! When installing and operating with the sensor, it is necessary to take into consideration all relevant international and other national regulations.

**General notes, disposal**

We reserve the right to make changes. The laser pointer is built as environmentally friendly as possible. It contains no environmentally harmful substances. A minimum of energy and resources are used during production and operation. Irreparable or no longer used devices must be disposed of according to the valid regulations.

**Maintenance**

No special maintenance is required. For a high reliability hold the Laserpointer window free from sediments. It should be cleaned only with a non-aggressive cleaning liquid. Equipment should only be repaired by the manufacturer.

**EU-Declaration of Conformity**

The product meets the requirements of the following standards and directives: IEC 60079-0 (Ed. 7.0), IEC 60079-1 (Ed. 7.0), IEC 60079-28 (Ed. 2.0), IEC 60079-31 (Ed. 2.0), IEC/EN 60825-1, IEC/EN 60825-2, IEC/EN 60529, IEC 61000-4-2 to IEC 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 2(1)G Ex db [op is Ga] IIC T6 Gb  
 Dust: II 2(1)D Ex tb [op is Da] IIIC T85°C Db  
 ATEX EU-type examination certificate No.: SEV 23 ATEX 0671  
 IECEx CoC No.: IECEx SEV 23.0006  
 Ex CB IECEx: Eurofins Electric & Electronic Product Testing AG, Luppenstrasse 3, CH-8320 Fehraltorf

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/QAR21.0009/00, 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 and directives and the EC-type examination certificate and the observation of the Quality Management System ISO 9001:2015, declares:

Ehrendingen, 4.4.2023



Pablo Ledergerber, Matrix Elektronik AG

LPD-655-AEB-ZA\_e1/2023-04-04/MP

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