

## Operating manual: LBG-EEZ-HRZ-ZA

### Light barrier emitter



IECEx BVS 14.0108X



- For use in Ex Zones 1, 2, 21 and 22. Optical radiation can operate into Ex Zones (0) and (20).
- Range 50m
- Housing M18


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

 Ex db [op is Ga] IIC T4 Gb  
Ex tb [op is Da] IIIC T135°C Db

| Technical Data                                      | Type   | LBG-EEZ-HRZ-ZA  |   |         |          |       |        |       |    |       |              |
|---|--|---|---|---------|----------|-------|--------|-------|----|-------|--------------|
| Gas Ex protection designation                       |  | II 2(1)G Ex db [op is Ga] IIC T4 Gb   |   |         |          |       |        |       |    |       |              |
| Dust Ex protection designation                      |  | II 2(1)D Ex tb [op is Da] IIIC T135°C Db  |   |         |          |       |        |       |    |       |              |
| For use in Ex Zones                                 |  | Zones (0), 1, 2, (20), 21, 22   |   |         |          |       |        |       |    |       |              |
| Light Source  |  | Laser, visible red, 650nm, class 2  |   |         |          |       |        |       |    |       |              |
| Measuring range                                     |  | 50m   |   |         |          |       |        |       |    |       |              |
| Min. recognizable object size                       |  | 10mm (avoid mirror effects)   |   |         |          |       |        |       |    |       |              |
| Maximum optical radiant power                       |  | <=1mW   |   |         |          |       |        |       |    |       |              |
| Maximum optical radiant intensity                   |  | <=5mW/mm <sup>2</sup>   |   |         |          |       |        |       |    |       |              |
| Pollution degree                                    |  | 4 (according to EN 60664-1)   |   |         |          |       |        |       |    |       |              |
| Utilization category according to EN 60947-5-1      |  | DC13 (according to EN 60947-5-1/2)  |   |         |          |       |        |       |    |       |              |
| Supply voltage, Ue                                  |  | +24VDC  |   |         |          |       |        |       |    |       |              |
| Current consumption                                 |  | 40mA  |   |         |          |       |        |       |    |       |              |
| Housing   |  | M18, brass, nickel plated   |   |         |          |       |        |       |    |       |              |
| Enclosure rating                                    |  | IP67  |   |         |          |       |        |       |    |       |              |
| Ambient working temperature range, T <sub>amb</sub> |  | 0°C up to +50°C   |   |         |          |       |        |       |    |       |              |
| Storage temperature range                           |  | -20°C up to +70°C   |   |         |          |       |        |       |    |       |              |
| Relative humidity                                   |  | 10% ... 90%, noncondensing  |   |         |          |       |        |       |    |       |              |
| EMC, shock and vibration resistance                 |  | Vibration: 30g over 20Hz to 2kHz. Shock: 100g for 3ms   |   |         |          |       |        |       |    |       |              |
| Connection cable                                    |  | PVC cable shielded black 2xAWG24, Length: 10m   |   |         |          |       |        |       |    |       |              |
| Accessories   | <b>Included</b>  | <b>Optional</b>   |   |         |          |       |        |       |    |       |              |
|   | <ul style="list-style-type: none"> <li>• 2x nuts M18</li> <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> <li>• Additional "Tubus M18/90/8": Aperture tube, open by 8mm</li> </ul>   |   |         |          |       |        |       |    |       |              |
| EX related markings                                 | CE 1258<br>Typ: LBG-EEZ-HRZ-ZA<br>Gas: Ⓜ II 2(1)G Ex db [op is Ga] IIC T4 Gb<br>ATEX:<br>IECEx:<br>Tamb:<br>Manufacturing date:  | Manufacturer with Address<br>Electrical data according table<br>Dust: Ⓜ II 2(1)D Ex tb [op is Da] IIIC T135°C Db<br>BVS 10 ATEX E130 X<br>IECEx BVS 14.0108X<br>0°C up to +50°C<br>Number 5 to 8 of the Serial Number (Year / CW) |   |         |          |       |        |       |    |       |              |
| Dimensions and wiring                               |  |   | <table border="1"> <thead> <tr> <th>Lead-No</th> <th>Function</th> </tr> </thead> <tbody> <tr> <td>brown</td> <td>+24VDC</td> </tr> <tr> <td>black</td> <td>0V</td> </tr> <tr> <td>white</td> <td>Cable shield</td> </tr> </tbody> </table> | Lead-No | Function | brown | +24VDC | black | 0V | white | Cable shield |
| Lead-No   | Function   |   |   |         |          |       |        |       |    |       |              |
| brown   | +24VDC   |   |   |         |          |       |        |       |    |       |              |
| black   | 0V   |   |   |         |          |       |        |       |    |       |              |
| white   | Cable shield   |   |   |         |          |       |        |       |    |       |              |
| Safe equipotential bonding for Ex devices           | <p>Ensure local equipotential bonding by means of a corrosion-resistant PE connection.</p> <p>The end of the cable must be connected outside the hazardous locations.<br/>The cable shield is to connect to PE in a wide area.</p> |   |   |         |          |       |        |       |    |       |              |

LBG-EEZ-HRZ-ZA\_e3/2022-03-09/MP

## Operating Manual / EC-/EU-declaration of conformity

### Installation prescriptions for Ex hazardous locations

It is necessary to take into consideration all the valid international and national rules and regulations (IEC 60079-14). Do not exceed the maximum ratings. The electrical connections must be exactly as shown in the wiring diagram. The local equipotential bonding connection is corrosion-resistant and durable to connect. The protective earth (PE) is solid connected with the housing. The cable shield should be connected to the protection earth. The cable have to be installed and protected against damages. Install cables with termination fittings or puted in cable tray systems in a manner to avoid tensile stress at the termination fittings. Adequate strain relief must be provided. The end of the cable must either be installed within a certificated Ex housing or must be installed outside of any Ex area. Use only original manufactured fibre optics and additional optical lenses, other additional optical lenses are not allowed in hazardous locations. The product LBG-EEZ-HRZ-ZA is allowed to be installed and operated within Ex zones 1, 2, 21 and 22. The limited optical radiation of the laser can operate into hazardous locations zones (0) and (20).

### General mounting prescriptions

Do not exceed the maximum ratings. 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 the protection earth, large-surfaced. Connection cables must not be installed parallel to high voltage cables. During electrical installation, the power must be disconnected from the device.

### Function

As soon as the sensor is connected to +24V switches to ON.

### Mechanical Mounting Prescriptions

Because lasers have a very small aperture angle, mount the laser pointer free from vibrations and shocks. If it is practicable, protect the lenses from contamination.

### Maintenance

No special maintenance is required. If the lenses becomes dirty, they should be cleaned with a non-aggressive solvents. Equipment must only be repaired by the manufacturer.

### Safety regulations for Laser devices class 2



By the installation, the going into operation and the application, it is necessary to take into consideration the valid rule EN 60825-1/-2 (Parts 12.5.1/12.6.2). Laser Class 2 without connected fibre optics. Do not stare into the beam!

### 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 sensors must not be used for Accident-Prevention! When installing and operating with the sensor, it is necessary to take into consideration the relevant international and other national regulations: IEC 60079-14, ATEX directive 1999/92/EG

The products are conform to the following standards: EN IEC 60079-0:2018, IEC 60079-1, IEC 60079-28:2015, IEC 60079-31:2013, EN 60529, IEC 61000-4-2 to IEC 61000-4-6, ATEX directive 2014/34/EU, Machine directive 2006/42/EC, EMC directive 2014/30/EU, RoHS directive 2011/65/EU

### General notes, disposal

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.

### EU-Declaration of Conformity

ATEX: EU type examination certificate no. BVS 10 ATEX E130 X, IECEx CoC: IECEx BVS 14.0108X, NB: DEKRA Testing and Certification GmbH, Carl-Beyling-Haus, Dinen-dahlstrasse 9, D-44809 Bochum, Ident number: 0158.

ATEX certificate for the production of Ex products according to the ATEX directive 2014/34/EU No: SEV 21 ATEX 4580, QAR No. CH/SEV/QAR21.0009/00, Eurofins Electric & Electronic Product Testing AG, Luppmenstrasse 3, CH-8320 Fehraltorf. Ident. No.: 1258

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 with the ATEX module „Production“, declares:

Ehrendingen, 9.3.2022

Pablo Ledergerber, Matrix Elektronik AG

LBG-EEZ-HRZ-ZA\_e3/2022-03-09/MP

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