

# Instruction Manual

## Marking

Digital Output LB2102A
Pepperl+Fuchs GmbH Lilienthalstraße 200, 68307 Mannheim, Germany
EC-Type Examination Certificate: PTB 03 ATEX 2042 Group, category, type of protection: $\text{Ex}$ II (1) G [Ex ia] IIB $\text{Ex}$ II (1) D [Ex ia] IIC Statement of conformity: PF 08 CERT 1234 X Group, category, type of protection, temperature class: $\text{Ex}$ II 3 G Ex nA IIB T4 Gc

table 1

## Validity

Specific processes and instructions in this instruction manual require special provisions to guarantee the safety of the operating personnel. Observe laws, standards, and directives applicable to the intended use and the operating location. Observe Directive 1999/92/EC in relation to hazardous areas.

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The corresponding datasheets, declarations of conformity, EC-type-examination certificates, certificates and control drawings if applicable (see datasheet) are an integral part of this document. You can find this information under [www.pepperl-fuchs.com](http://www.pepperl-fuchs.com).

Due to constant revisions, documentation is subject to permanent change. Please refer only to the most up-to-date version, which can be found under [www.pepperl-fuchs.com](http://www.pepperl-fuchs.com).

## Target Group, Personnel

Responsibility for planning, assembly, commissioning, operation, maintenance, and dismantling lies with the plant operator.

Mounting, installation, commissioning, operation, maintenance and dismantling of the device may only be carried out by appropriate trained and qualified personnel. The instruction manual must be read and understood.

## Intended Use

The device is only approved for appropriate and intended use. Ignoring these instructions will void any warranty and absolve the manufacturer from any liability.

Use the device only within the specified ambient conditions.

Only use the device stationary.

The device is an electrical apparatus for hazardous areas of Zone 2.

The device is an associated apparatus according to IEC/EN 60079-11.

The I/O modules, com units, and power supplies of the remote I/O system must only be used together with the associated backplanes.

The backplane connections are non-intrinsically safe.

The I/O modules of the remote I/O system act as an interface between signals from the hazardous area and the non-hazardous area.

## Improper Use

Protection of the personnel and the plant is not ensured if the device is not being used according to its intended use.

The device is not suitable for isolating signals in power installations unless this is noted separately in the corresponding datasheet.

## Mounting and Installation

Prior to mounting, installation, and commissioning of the device you should make yourself familiar with the device and carefully read the instruction manual.

Observe the instruction manuals for the associated backplanes.

The device must only be operated in the specified ambient temperature range and at the specified relative humidity without condensation.

Do not mount the device at locations where an aggressive atmosphere may be present.

The device must be installed and operated only in an environment that ensures a pollution degree 2 (or better) according to IEC/EN 60664-1.

If used in areas with higher pollution degree, the device needs to be protected accordingly.

All circuits connected to the device must comply with the overvoltage category II (or better) according to IEC/EN 60664-1.

Do not mount a damaged or polluted device.

Only use accessories specified by the manufacturer.

Do not push the modules into the slots with too much force. The rear connections of the devices may be damaged if using excessive force.

Only plug and pull the energized module in the absence of a potentially explosive atmosphere.

Observe the installation instructions according to IEC/EN 60079-14.

Connection or disconnection of energized non-intrinsically safe circuits is only permitted in the absence of a potentially explosive atmosphere.

Before connecting or disconnecting circuits in the presence of a potentially explosive atmosphere, ensure that all non-intrinsically safe circuits are voltage-free and currentless.

## Requirements for Equipment Protection Level Gc

The device must be installed and operated only in surrounding enclosures that

- comply with the requirements for surrounding enclosures according to IEC/EN 60079-0,
- are rated with the degree of protection IP54 according to IEC/EN 60529.

## Requirements for Cables and Connection Lines

Observe the following points when installing cables and connection lines:

Observe the permissible core cross-section of the conductor.

The insulation stripping length must be considered.

When installing the conductors the insulation must reach up to the terminal.

If you use stranded conductors, crimp wire end ferrules on the conductor ends.

Never pull the cable. A wire could become loose from the terminal and protection against electric shock can no longer be ensured. Always pull the terminal.

Unused cables and connection lines must be either connected to terminals or securely tied down and isolated.

## Requirements for Usage as Associated Apparatus

If circuits with type of protection Ex i are operated with non-intrinsically safe circuits, they must no longer be used as circuits with type of protection Ex i.

Intrinsically safe circuits of associated apparatus (installed in non-hazardous area) can be led into hazardous areas. Observe the compliance of the separation distances to all non-intrinsically safe circuits according to IEC/EN 60079-14.

Observe the compliance of the separation distances between two adjacent intrinsically safe circuits according to IEC/EN 60079-14.

Observe the maximum values of the device, when connecting the device to intrinsically safe apparatus.

The respective peak values of the field device and the associated apparatus with regard to explosion protection should be considered when connecting intrinsically safe field devices with intrinsically safe circuits of associated apparatus (verification of intrinsic safety). Make sure to observe IEC/EN 60079-14 and IEC/EN 60079-25.

If more channels of one device are connected in parallel, ensure the parallel connection is made directly at the terminals of the device. When verifying the intrinsic safety, observe the maximum values for the parallel connection.

If no  $L_o$  and  $C_o$  values are specified for the simultaneous appearance of lumped inductances and capacitances, the following rule applies.

- The specified value for  $L_o$  and  $C_o$  is used if one of the following conditions applies:
  - The circuit has distributed inductances and capacitances only, e. g., in cables and connection lines.
  - The total value of  $L_i$  (excluding cable) of the circuit is  $< 1\%$  of the specified  $L_o$  value.
  - The total value of  $C_i$  (excluding cable) of the circuit is  $< 1\%$  of the specified  $C_o$  value.
- A maximum of 50 % of the specified value for  $L_o$  and  $C_o$  is used if the following condition applies:
  - The total value of  $L_i$  (excluding cable) of the circuit is  $\geq 1\%$  of the specified  $L_o$  value.
  - The total value of  $C_i$  (excluding cable) of the circuit is  $\geq 1\%$  of the specified  $C_o$  value.
- The reduced capacitance for gas groups I, IIA and IIB must not exceed the value of  $1\ \mu\text{F}$  (including cable). The reduced capacitance for gas group IIC must not exceed the value of  $600\ \text{nF}$  (including cable).

## Requirements for Non-Hazardous Areas

The device must be installed and operated only in surrounding enclosures that

- comply with the requirements for surrounding enclosures according to IEC/EN 60079-0,
- are rated with the degree of protection IP54 according to IEC/EN 60529.

Alternatively, it is permitted to install and operate the device in a controlled environment that ensures a pollution degree 2 according to IEC/EN 60664-1.

## Operation, Maintenance, Repair

Prior to using the device you should make yourself familiar with the device and carefully read the instruction manual.

Substitution of components may impair intrinsic safety.

Substitution of components may impair suitability for Zone 2.

Do not use a damaged or polluted device.

Only use accessories specified by the manufacturer.

The device must not be repaired, changed or manipulated.

If there is a defect, always replace the device with an original device from Pepperl+Fuchs.

Do not push the modules into the slots with too much force. The rear connections of the devices may be damaged if using excessive force.

Only plug and pull the energized module in the absence of a potentially explosive atmosphere.

Observe IEC/EN 60079-17 for maintenance and inspection of associated apparatus.

Connection or disconnection of energized non-intrinsically safe circuits is only permitted in the absence of a potentially explosive atmosphere. Before connecting or disconnecting circuits in the presence of a potentially explosive atmosphere, ensure that all non-intrinsically safe circuits are voltage-free and currentless.

### **Requirements for Cables and Connection Lines**

Observe the following points when installing cables and connection lines:

Observe the permissible core cross-section of the conductor.

The insulation stripping length must be considered.

When installing the conductors the insulation must reach up to the terminal.

If you use stranded conductors, crimp wire end ferrules on the conductor ends.

Never pull the cable. A wire could become loose from the terminal and protection against electric shock can no longer be ensured. Always pull the terminal.

Unused cables and connection lines must be either connected to terminals or securely tied down and isolated.

### **Delivery, Transport, Disposal**

Check the packaging and contents for damage.

Check if you have received every item and if the items received are the ones you ordered.

Keep the original packaging. Always store and transport the device in the original packaging.

Store the device in a clean and dry environment. The permitted ambient conditions (see datasheet) must be considered.

Disposing of device, packaging, and possibly contained batteries must be in compliance with the applicable laws and guidelines of the respective country.