



# Instruction Manual

## 1. Marking

Digital inputs FB1201B, FB1202B, FB1203B, FB1203C, FB1203D, FB1203F, FB1203FL, FB1204F, FB1204FL, FB1208B
Digital outputs FB2201B, FB2201BR, FB2201E, FB2201ER, FB2203B, FB2203BR, FB2203E, FB2203ER, FB2203G, FB2204B, FB2204D, FB2205B, FB2205E, FB2212B, FB2212BR, FB2212D, FB2212E, FB2212ER, FB2213B, FB2213BR, FB2213D, FB2213E, FB2213ER
Analog inputs FB5201B, FB5201F3, FB5201F4, FB5202B, FB5202F, FB5204B, FB5204F3, FB5204F4, FB5205B, FB5205F, FB5206B
ATEX certificate: PTB 97 ATEX 1074 U ATEX marking:  II 2(1) G Ex d [ia Ga] IIC Gb  II (1) D [Ex ia Da] IIIC
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## 2. 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.

Observe laws, standards, and directives applicable to the intended use and the operating location.

The corresponding datasheets, manuals, declarations of conformity, EU-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).

## 3. Target Group, Personnel

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

The personnel must be appropriately trained and qualified in order to carry out mounting, installation, commissioning, operation, maintenance, and dismantling of the device. The trained and qualified personnel must have read and understood the instruction manual.

## 4. 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 and operating conditions. Only use the device stationary.

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.

## 5. Improper Use

Protection of the personnel and the plant is not ensured if the device is not 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.

## 6. 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 of 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.

Push the module into the slot until all rear catches have audibly engaged in position. The module must engage twice.

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. In this case the explosion protection can no longer be ensured.

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

The device may only be installed and operated in Zone 1 if mounted in a surrounding enclosure, which corresponds to equipment protection level Gb.

If intrinsically safe and non-intrinsically safe circuits are being operated together, the connections of the non-intrinsically safe circuits must be covered. The cover must comply with degree of protection IP30 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.

When using 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.

Observe the respective peak values of the field device and the associated apparatus with regard to explosion protection when connecting intrinsically safe field devices with intrinsically safe circuits of associated apparatus (verification of intrinsic safety). Also 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 nF (including cable).

## 7. Surrounding Enclosure

Place warning marking "Warning – Refer to instruction manuals!" visibly on the surrounding enclosure.

Place warning marking "Warning – Non-intrinsically safe circuits protected by internal cover with a degree of protection IP30!" visibly on the surrounding enclosure.

Avoid electrostatic charges which could result in electrostatic discharges while installing, operating, or maintaining the device.

Place warning marking "Warning – Avoid electrostatic charge!" visibly on the surrounding enclosure.

The surrounding enclosure may be opened for maintenance while energized in Zone 1 provided that the following conditions are met:

- The connections of the non-intrinsically safe circuits must be protected by a cover with a degree of protection IP30.
- All other devices in the surrounding enclosure must permit the opening of the surrounding enclosure while energized in Zone 1.
- An appropriate marking is placed on the surrounding enclosure.

## 8. Operation, Maintenance, Repair

Prior to using the product make yourself familiar with it. Read the instruction manual carefully.

Do not use a damaged or polluted device.

Only use accessories specified by the manufacturer.

Do not repair, modify, or manipulate the device.

Substitution of components may impair intrinsic safety.

If there is a defect, always replace the device with an original device.

Only remove the device with the corresponding mounting tool. The mounting tool requires a two-stage removing procedure.

1 . Unlock

2 . Remove

Push the module into the slot until all rear catches have audibly engaged in position. The module must engage twice.

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. In this case the explosion protection can no longer be ensured.

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

The surrounding enclosure may be opened for maintenance while energized in Zone 1 provided that the following conditions are met:

- The connections of the non-intrinsically safe circuits must be protected by a cover with a degree of protection IP30.
- All other devices in the surrounding enclosure must permit the opening of the surrounding enclosure while energized in Zone 1.
- An appropriate marking is placed on the surrounding enclosure.

Except for FB I/O modules with Ex e connections, all FB I/O modules, FB power supplies, and FB com units may be swapped in Zone 1 while energized (hot swap).

### 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.

When using 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.

## 9. 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 must be considered, see datasheet.

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