



**Operating Instructions
for
Isolation Switching Amplifier
for Pulse Generators**

Model: KFD-2/KFA-6



We don't accept warranty and liability claims neither upon this publication nor in case of improper treatment of the described products.

The document may contain technical inaccuracies and typographical errors. The content will be revised on a regular basis. These changes will be implemented in later versions. The described products can be improved and changed at any time without prior notice.

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2. Note

2.1 General

Before unpacking and commissioning the device, the operating instructions and the “General Safety Instructions” document must be read and followed carefully. The general safety instructions, the operating instructions, the data sheet as well as approvals and further information can be downloaded via the QR code on the device or under the respective product on www.kobold.com.

Operating instructions, data sheet, approvals and further information via the QR code on the device or via www.kobold.com

The devices are only to be used, maintained and serviced by persons familiar with these operating instructions and in accordance with local regulations applying to Health & Safety and prevention of accidents.

When used in machines, the device should be used only when the entire machine fulfils the EU machinery directive.

2.2 Validity and version of the operating instructions

Due to technical changes, the device documentation available online may not always correspond to the product version you have purchased. If you need an instruction manual that corresponds to the purchased product version, you can request it from us free of charge by email (info.de@kobold.com) in PDF format, specifying the relevant invoice number and serial number. If you wish, the operating instructions can also be sent to you by post in paper form.

2.3 Hazard warnings

The following instructions are intended to ensure your personal safety and to prevent damage to the product described or connected devices. Safety instructions and warnings to prevent danger to the life and health of users or maintenance personnel, or to prevent damage to property, are highlighted in this documentation using the symbols defined here. *The symbols and terms used have the following meaning in the documentation itself:*

Symbol	Explanation	Symbol	Explanation
 Note	Is important information about the product, the handling of the product or the respective part of the documentation to which particular attention should be drawn.	 Caution	Means that minor personal injury or minor property damage may occur if proper precautions are not taken.

Symbol	Explanation	Symbol	Explanation
 Warning	Indicates that serious personal injury or substantial property damage may occur if proper precautions are not taken.	 Danger	Means that death can occur if proper precautions are not taken.
 Warning	Attention: Hot surface!	 Warning	Warning: Dangerous electrical voltage

3. Instrument Inspection

Instruments are inspected before shipping and sent out in perfect condition. Should damage to a device be visible, we recommend a thorough inspection of the delivery packaging. In case of damage, please inform your parcel service / forwarding agent immediately, since they are responsible for damages during transit.

Scope of delivery:

The standard delivery includes:

- Isolating Switching Amplifier for Pulse Generators model: KFD-2/KFA-6

4. Regulation Use

Any use of the model: KFD-2/KFA-6... which exceeds the manufacturers specification may invalidate its warranty. Therefore, any resulting damage is not the responsibility of the manufacturer. The user assumes all risk for such usage.

MSR technology is used with the devices for galvanic separation of MSR signal for input signals of 20 mA and 10 V, for example or also for adjustment or to standardise signals. Devices which have intrinsically safe control circuits are used to operate field devices within hazardous areas. The data sheets of individual devices contain the electrical data for the EC Declaration of conformity and must be considered as an essential component of the instruction manual.

Applicable laws and regulations for use of or for the intended purpose of the devices in question must be observed.

Devices that have been operated in general electrical systems must no longer be used after that in electrical systems that are associated with areas exposed to the danger of explosion.

5. Operating Principle

The isolation switching amplifier transmits pulse signals of up to 5 kHz from hazardous areas. Sensors according to DIN EN 60947-5-6 (NAMUR) or mechanical contacts may be used as signal transmitters. The control circuit is monitored for line interruption (LB). The input is safely isolated from the output and mains according to DIN EN 60079-11. Output and mains are isolated from each other according to DIN EN IEC 62477-1.

The devices are fitted with detachable terminals that greatly simplify installation.

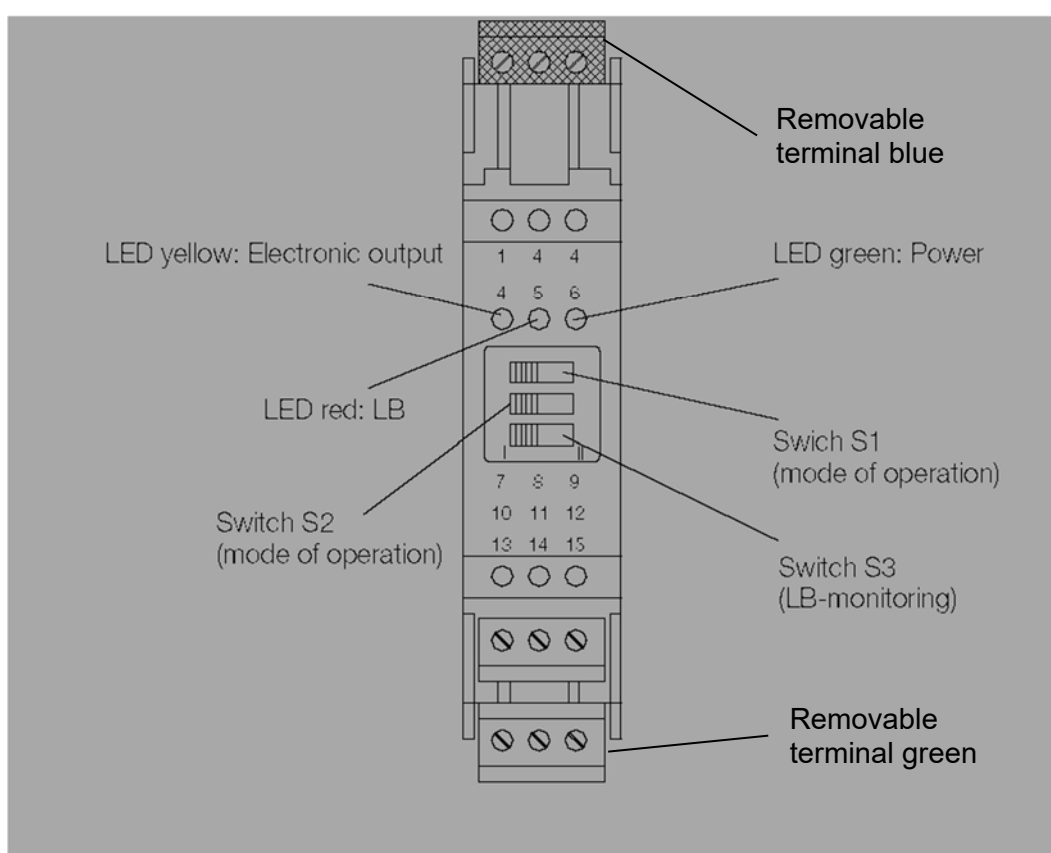
6. Commissioning and Installation



Note

Attention! Commissioning and installation must only be performed by competent professionals trained for this purpose. For Installation and use within an EX Zone please request the ATEX supplementary manual from our Sales Team.

6.1 Front View



6.2 Installation of Devices Outside of Hazardous Areas

- The devices are constructed to satisfy the IP20 protection classification and must be protected accordingly from adverse environmental conditions such as water spray or dirt exceeding the pollution severity level 2.
- The devices must be installed outside the hazardous area!
- Depending on the ignition protection class, intrinsically safe circuits of devices (light blue marking on the devices) may be placed in hazardous areas. In this case, particular care must be taken to ensure secure separation from all non-intrinsically safe circuits. The installation of the intrinsically safe circuits is to be conducted in accordance with the relevant installation regulations.
- The respective peak values of the field device and the associated device with regard to explosion protection should be considered when connecting intrinsically safe field devices with the intrinsically safe circuits of WE-/K system devices (Demonstration of intrinsic safety). For installation in an ATEX Zone, the provisions of EN 60079-14/IEC 60079-14 must be observed in this regard.
- When intrinsically safe circuits are used in areas made hazardous by dust (Ex-Zone "D") only appropriately certificated field devices must be used.
- The EC Certificates of Conformity or the EC Declarations of Conformity must be observed. It is especially important to observe the "Special Conditions" where these are contained in the certificates.

6.3 Installation of Devices within Zone 2 of the Hazardous Area

- Only devices with the relevant statement of conformity from an approved test centre or covered by the manufacturer's declaration of conformity can be installed in Zone 2.
- The individual data sheets indicate whether these conditions are met.
- The devices should be installed in a switch or junction box to IP54 or better, in accordance with EN 60529.
- Depending on the ignition protection class, intrinsically safe circuits of devices (light blue marking on the devices) may be placed in hazardous areas. In this case, particular care must be taken to ensure secure separation from all non-intrinsically safe circuits.
- The installation of the intrinsically safe circuits is to be conducted in accordance with the relevant installation regulations.
- The respective peak values of the field device and the associated device with regard to explosion protection should be considered when connecting intrinsically safe field devices with the intrinsically safe circuits of WE-/K system devices (Demonstration of intrinsic safety). For installation in an ATEX Zone, the provisions of EN 60079-14/IEC 60079-14 must be observed in this regard.
- When intrinsically safe circuits are used in areas made hazardous by dust (Ex-Zone "D"), only appropriately certificated field devices must be used.
- The EU Certificates of Conformity, the EU Declarations of Conformity, the EU Statement of Conformity or the Manufacturer's Declaration of Conformity must be observed. It is especially important to observe the "Special Conditions" where these are contained in the certificates.

Insulation Coordination for devices Ex certificate in accordance with DIN EN 60079-11

The devices are designed for use in Accumulation Level 2 in accordance with DIN EN IEC 62477-1.

Insulation Coordination for information on galvanic separation in accordance with DIN EN IEC 62477-1 and EN 61140

Devices of the WE-/K system are built-in devices or electronic equipment for use in enclosed electrical operating locations to which only professional electronic personnel or personnel with electrotechnical instruction have access or admittance. The devices are designed for use in accumulation level 2 in accordance with DIN EN IEC 62477-1.

Ambient conditions

For ambient temperature see data sheet

Storage temperature -25 °C....+70 °C (248 K ... 343 K)

Max. humidity 75 % rel. humidity without moisture condensation

7. Mechanical Connection

Basically, the K-Series can be mounted in two ways:

1. Panel / wall mounting
2. Mounting on a 35 mm standard DIN rail to DIN EN 60715

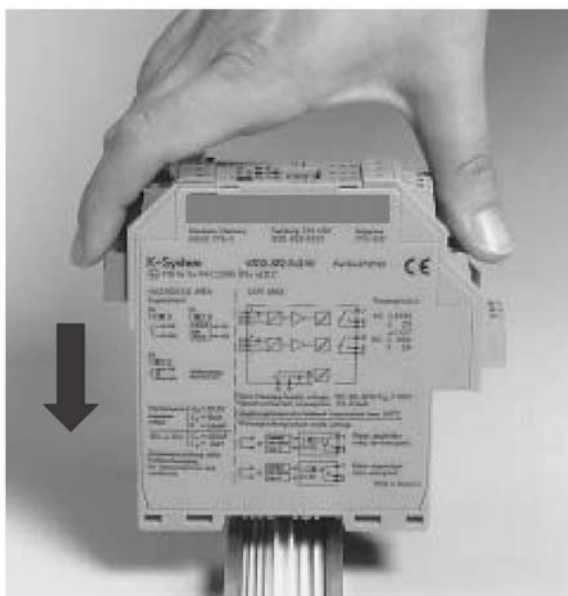
Panel mounting is only recommended if a very small number of isolating modules are involved.

When mounting on the DIN rail, the units are simply snapped on. The expenditure on wiring for the power supply is significantly reduced by using the "Power Rail".

Series with removable terminals

The removable terminals simplify control cabinet construction and allow the units to be replaced while under power. The screw-in self-opening apparatus terminals have a high volume connection area for a wire cross-section of up to 2.5 mm². Connectors are coded, making it impossible for them to be confused.

With the KF-CP coding profile, separately available connectors with test sockets or cage spring release terminals can be easily coded.



CORRECT: Unit snapped on vertically.



INCORRECT: Unit snapped on at an angle.

8. Electrical Connection

8.1 Electrical Standards

General

Isolator modules with and without explosion protection, mostly with Ex ia IIC, international approvals

EMC in accordance with NAMUR NE21 and EN 61326

LED functionality according to NAMUR NE 44

Switch-on pulse suppression supply voltage min. 20 V ... 30 V_{DC}

DC: Power Rail; supply terminals

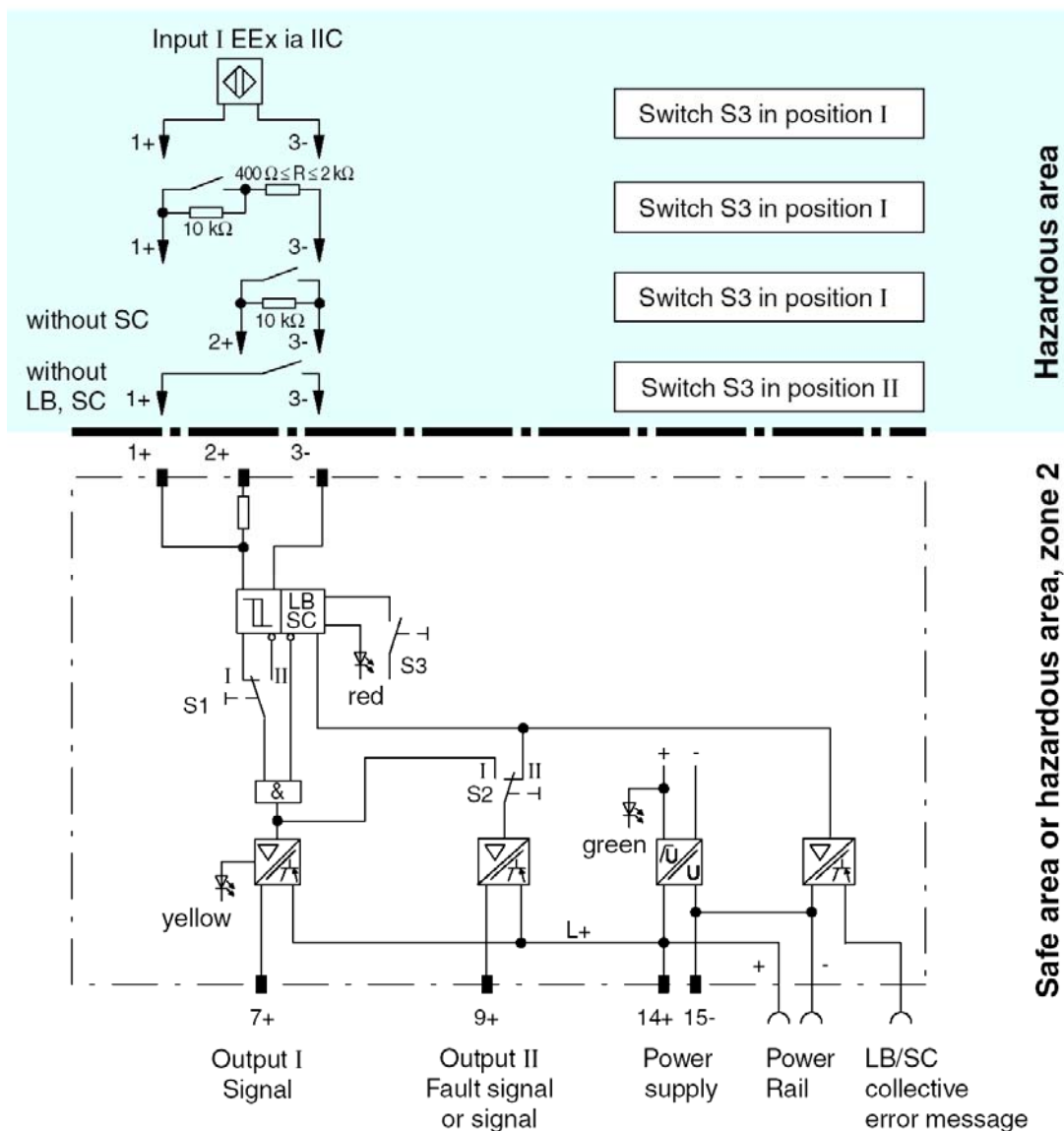
Fault signals via power rail

Supply voltage AC 115/230 V+/-10 %

Man/machine interface software to VDE/VDI 2187

SIL

Up to SIL2 (SC3) according to IEC/EN 61508



9. Maintenance

The transfer characteristics of the devices remain stable, even over long periods of time, thus eliminating the need for regular adjustment. Maintenance is therefore not required.

Fault elimination

No changes can be made to devices which are operated in hazardous areas. Repairs to devices must only be carried out by specially trained and qualified personnel.

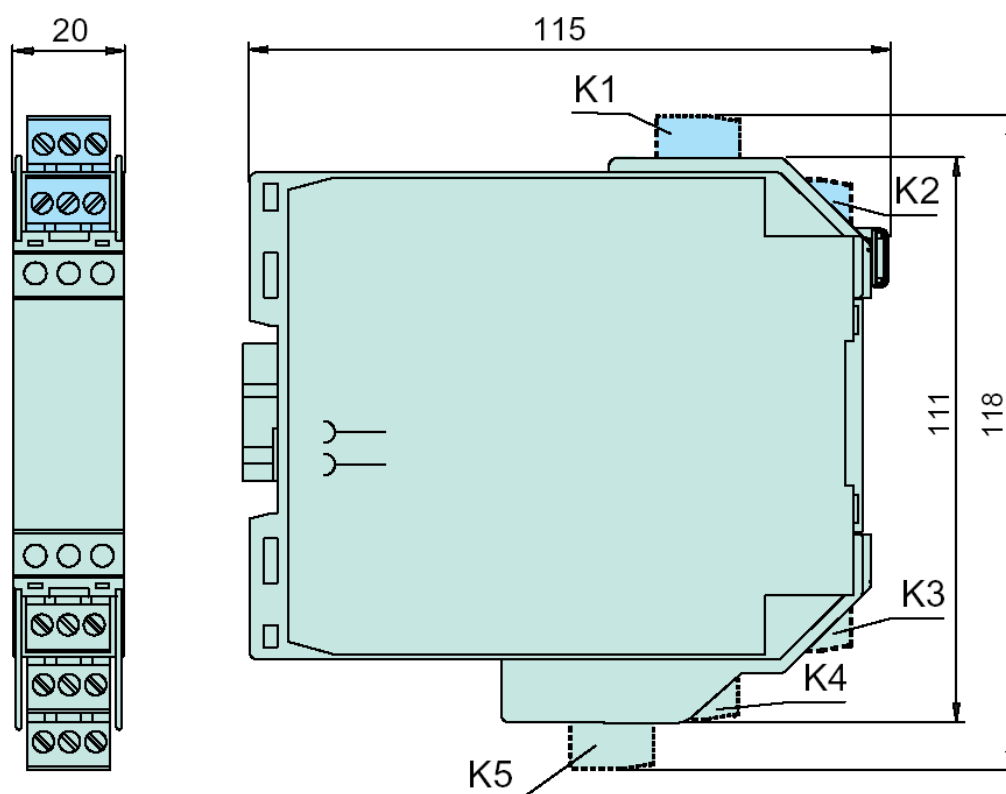
10. Technical Information

Operating instructions, data sheet, approvals and further information via the QR code on the device or via www.kobold.com

11. Order Codes

Operating instructions, data sheet, approvals and further information via the QR code on the device or via www.kobold.com

12. Dimensions



13. Disposal

See "General Safety Instructions" - via the QR code on the device or via www.kobold.com