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Intrinsic safety barriers

Isolated barriers are a combination of an intrinsic safety zener barrier and a galvanic isolation network. The energy limitation delivered to the field is achieved through a zener diode for voltage limitation and a resistor for current limitation. These components are protected with a fuse. The galvanic isolation within these barriers prevents noise, potential effects and transients from affecting the measurement signals.

Signal conditioners

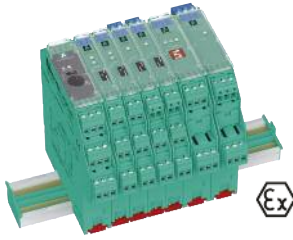
Signal conditioners convert field signals into standard signals and avoid interference from ground loops – but did you also know that they protect personnel and equipment from dangerous overvoltage?

Five reasons why using signal conditioners pays off . . .

- 1 Filtering of couplings**
Signal conditioners protect signal circuits against high-frequency coupling.
For example: For drive motors with variable frequency control, the input filter of the signal conditioner filters coupled interference ensuring measurement and control circuits in environments with high-frequency interference are protected.
- 2 Protection of field signals in case of failure**
Signal conditioners protect the field circuits in the event of a short circuit.
For example: Faulty circuits may shut down the entire supply chain and could cause damage to the wiring. Signal conditioners offer short circuit protection for each circuit of the field device, if a single circuit fails, the other circuits are not affected.
- 3 Protection against surges**
Signal conditioners protect personnel and equipment from dangerous voltages.
For example: In case of failure, high a.c. voltages or voltage pulses can enter the measuring circuit – signal conditioners prevent the passage of high voltages into the control-side loop by galvanic isolation. Personnel and equipment are protected from dangerous high voltages.
- 4 Reliable signal doubling (signal splitting)**
Signal conditioners double input signals.
For example: When signals are needed for several parallel outputs, such as in DCS and ESD systems, or data acquisition systems, signal conditioners provide the input signal at the output in parallel. The input signal can be used independently by several systems. In case of system failure the other signal remains available.
- 5 Potential equalization within a channel**
Signal conditioners adapt sources and sinks within a signal circuit.
For example: When a field device and a control unit feed current at the same time into the channel, the result is a non-functional circuit – signal conditioners ensure the potential equalization within the channel. All combinations of current sink, current sources, and voltage sources can be realised.



KFD system – 20mm barriers

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**Features**


- 3 port galvanic isolation
- Single, dual and quad channels designed to reduce DIN rail space
- SIL rated solutions for safety instrumentation systems (up to SIL2 acc.)
- DIN rail/power rail solutions
- Removable terminals reduce maintenance time
- Fault detection and local indication

Technical specification

| | |
|----------------------|---|
| Supply voltage | 20-30V d.c. |
| Mounting | ... 35mm DIN rail or panel mount |
| Ambient temperature | -20 to +60°C |
| Vibration resistance | ... acc. to EN60068-2-6, 10Hz to 150Hz, 1g, frequency |
| Shock resistance | ... acc. to EN60068-2-27, 15g, 11ms, half-sine |
| Protection rating | IP20 |

24V d.c.

| Input/Output | Channels | Description | Output Relay | Output 0/4-20mA | Order Code | List Price |
|-----------------------|----------|--|--------------|-----------------|-------------------|------------|
| Digital input | 1 | Switch amplifier | 1 | - | KFD2-SR2-EX1.W | £114.70 |
| | 2 | Switch amplifier | 2 | - | KFD2-SR2-EX2.W | £151.75 |
| | 4 | Switch amplifier | 4 | - | KFD2-SRA-EX4 | £283.39 |
| | 1 | Safety switch amplifier with 3 outputs | 1 | - | KFD2-SH-EX1 | £429.48 |
| | 1 | Switch amplifier with LFD relay | 2 | - | KFD2-SR2-EX1W.LB | £140.00 |
| | 1 | Switch amplifier, transistor output | - | - | KFD2-SOT2-EX1.LB | £154.04 |
| | 1 | Universal frequency converter, trip point relays | 2 | 1 | KFD2-UFC-EX1.D | £453.76 |
| | 1 | Overspeed/underspeed monitor | 2 | - | KFD2-DWB-EX1.D | £257.44 |
| Digital output | 1 | Solenoid driver 10V 45mA | - | - | KFD0-SD2-EX1.1045 | £160.74 |
| | 2 | Solenoid driver 10V 45mA | - | - | KFD0-SD2-EX2.1045 | £240.28 |
| | 1 | Solenoid driver 10V 65mA | - | - | KFD0-SD2-EX1.1065 | £160.74 |
| | 1 | Solenoid driver logic input | - | - | KFD2-SL2-EX1 | £197.16 |
| | 2 | Solenoid driver logic input | - | - | KFD2-SL2-EX2 | £288.42 |
| Analogue input | 1 | Smart transmitter power supply | - | 1 | KFD2-STC5-EX1 | £208.88 |
| | 2 | Smart transmitter power supply | - | 2 | KFD2-STC5-EX2 | £355.81 |
| | 1 | Smart transmitter power supply, dual output | - | 2 | KFD2-STC5-EX1.2O | £329.85 |
| | 1 | Transmitter power supply, trip point relays | 2 | 1 | KFD2-CRG2-EX1.D | £376.32 |
| | 1 | Temperature converter, trip point relays | 2 | 1 | KFD2-GUT-EX1.D | £469.67 |
| | 1 | Potentiometer converter | - | 1 | KFD2-PT2-EX1.5 | £269.16 |
| | 1 | Universal temperature converter | - | 1 | KFD2-UT2-EX1 | £332.37 |
| | 2 | Universal temperature converter | - | 2 | KFD2-UT2-EX2 | £521.58 |
| | 1 | Strain gauge converter 0 to ± 20mA, 0 to ± 10V | 2 | 1 | KFD2-WAC2-EX1.D | £663.06 |
| Analogue output | 1 | Current driver | - | 1 | KFD2-CD2-EX1 | £216.42 |
| | 2 | Current driver | - | 2 | KFD2-CD2-EX2 | £326.09 |
| | 1 | Smart current driver | - | 1 | KFD2-SCD2-EX1.LK | £254.09 |
| | 2 | Smart current driver | - | 2 | KFD2-SCD2-EX2.LK | £391.81 |
| Analogue input/output | 1 | Current driver/repeater 040mA | - | 1 | KFD0-CS-EX1.51P | £151.95 |
| | 2 | Current driver/repeater 040mA | - | 2 | KFD0-CS-EX2.51P | £247.81 |

Go to next page for KCD system 12.5mm barriers and barrier accessories 

KCD system – 12.5mm barriers



Features

- 12.5mm slimline housing
- 3 port galvanic isolation
- Single or dual channel designed to reduce DIN rail space
- SIL rated solutions for safety instrumentation systems (up to SIL2 acc.)
- DIN rail/power rail solutions
- Removable terminals reduce maintenance time
- Fault detection and local indication

Technical specification

Supply voltage 20-30V d.c.
 Mounting . . . 35mm DIN rail or panel mount
 Ambient temperature -20 to +60°C
 Vibration resistance . . . acc. to EN60068-2-6,
 10Hz to 150Hz, 1g, frequency
 Shock resistance acc. to EN60068-2-27,
 15g, 11ms, half-sine
 Protection rating IP20

24V d.c.

| Input/Output | Channels | Description | Output Relay | Output 0/4-20mA | Order Code | List Price |
|-----------------|----------|---------------------------------|--------------|-----------------|------------------|------------|
| Digital input | 2 | Switch amplifier | 2 | – | KCD2-SR-EX2 | £151.95 |
| | 1 | Switch amplifier with LFD relay | 2 | – | KCD2-SR-EX1.LB | £119.72 |
| Digital output | 1 | Solenoid driver 12V 45mA | – | – | KCD0-SD-EX1.1245 | £153.63 |
| Analogue input | 1 | Smart transmitter power supply | – | 1 | KCD2-STC-EX1 | £221.21 |
| | 1 | Thermometer resistance repeater | – | – | KCD2-RR-EX1 | £251.58 |
| Analogue output | 1 | Smart current driver | – | 1 | KCD2-SCD-EX1 | £234.00 |

◀ Go to previous page for KFD system – 20mm barriers

Barrier accessories



Universal power rail



Programming adaptor



Terminal blocks



Power supply



Power feed module

| Description | Order Code | List Price |
|---|-------------------|------------|
| Universal power rail 2m | UPR-03 | £127.13 |
| Universal power rail 0.8m | UPR-03-S | £57.76 |
| End caps for power rail (pack of 10pcs) | UPR-E | £10.88 |
| Power feed module (for use with KFD2 units only) | KFD2-EB2 | £74.93 |
| Redundant power feed module (2 recommended per rail) | KFD2-EB2-R4A.B | £76.19 |
| Power supply 115/230V a.c. to 24V d.c. 4A, power rail connection | KFA6-STR-1.24.4 | £398.51 |
| Power supply 115/230V a.c. to 24V d.c. 500mA, power rail connection | KFA6-STR-1.24.500 | £156.56 |
| Terminal block with cold junction compensation, blue | K-CJC-BU | £37.67 |
| Terminal block with cold junction compensation, black | K-CJC-BK | £37.67 |
| Programming adapter with USB interface | K-ADP-USB | £73.26 |

SC system – 6mm signal conditioners

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Features

- 6mm slimline housing
- Broad range with 3 port isolation
- Set up via DIP switches and/or software
- Power feed module available

The SC-System offers highly compact (6 mm) and powerful signal conditioners that allow completely interference-free communication between the control level and the field, ensuring a smooth and efficient process.

PLEASE NOTE

These devices are not suitable for use in hazardous areas.

Technical specification

| | |
|----------------------|--|
| Supply voltage | 16.8-31.2V d.c. |
| Mounting | 35mm DIN rail |
| Ambient temperature | -20 to +70°C |
| Vibration resistance | acc. to EN60068-2-6, 10Hz to 150Hz, 1g, high crossover frequency |
| Shock resistance | acc. to EN60068-2-27, 15g, 11ms, half-sine |
| Protection rating | IP20 |

| Input/Output | Channels | Description | Input | Output | Order Code | List Price |
|----------------|----------------|--|--|-------------------------------------|---------------|------------|
| Analogue input | 1 | Transmitter power supply | 2/3 wire transmitter or current source | 0/1-5V 0/2-10V 0/4-20mA | S1SD-1AI-1U | £99.82 |
| | 1 | SMART transmitter power supply | 2 wire transmitter or current source | 0/4-20mA | S1SD-1AI-1C-H | £109.94 |
| | 1 | Transmitter power supply/signal splitter | 2 wire transmitter or current source | Dual 0/4-20mA | S1SD-1AI-2C | £149.04 |
| | 1 | Isolating amplifier | 0/4-20mA source or 0/2-10V | 0/1-5V 0/2-10V 0/4-20mA | S1SD-1AI-1U-1 | £128.80 |
| | 1 | Isolating amplifier | 0/4-20mA or 20mA or 0-5/10V± | 0/5V 0/2-10V 0/4-20mA± | S1SD-1AI-1U-2 | £171.12 |
| | 1 | Millivolt converter | ±60mV to ±500mV | 0/1-5V 0/2-10V 0/4-20mA ±10mA ±20mA | S1SD-1AI-1U-3 | £186.30 |
| | 1 | Passive isolator (loop powered) | 0/4-20mA source | 0/4-20mA | S1SL-1AI-1C | £95.68 |
| | 1 | Isolating amplifier/splitter | 0/4-20mA or V or mA sources | Dual 0/4-20mA 0/1-5V 0/2-10V | S1SD-1AI-2U | £171.12 |
| | 2 | Passive isolator (loop powered) | 0/4-20mA source | 0/4-20mA | S1SL-2AI-2C | £149.04 |
| | 1 | Temperature converter | 100mV/1000mV/RTD/TC/PTC/POT | 0/1-5V 0/2-10V 0/4-20mA 0/2-10mA | S1SD-1TI-1U | £155.94 |
| 1 | Trip amplifier | 2/3 wire transmitter or voltage | Relay contact | S1SD-1AI-1R | £151.34 | |
| Digital input | 1 | Switch amplifier | 2/3 wire sensors or a.c. source | Relay contact | S1SD-1DI-1R | £93.84 |
| | 1 | Rotation speed monitor | Namur SN NPN PNP Z0 | Relay contact | S1SD-1FI-1R | £151.34 |

Accessories

| Description | Order Code | List Price |
|--|--------------------|------------|
| Programming cable | S-ADP-USB | £89.24 |
| Power feed module (3A max) | S1SD-2PF | £59.80 |
| Power rail end cap both ends (pack of 5) | POWERBUS-CAP | £25.76 |
| Power bus cover x 5, length 250mm | POWERBUS-COV-250 | £38.18 |
| Bus rail for 15mm DIN, length 250mm | POWERBUS-SETHS-250 | £37.26 |
| Bus rail for 7.5mm DIN, length 250mm | POWERBUS-SETLS-250 | £33.58 |

Single function signal converter and isolator



Ultra slim (6.2mm) signal converters and isolators with simple single function capability. Ideal for OEMs and machine

builders who have specific signals to interface to equipment. Full 3-way isolation. Slot-in jumper combs available.

Features

- Slim DIN rail case
- 2.5kV 3-way isolation (except loop powered device)
- High accuracy
- IP20 screw and push-in terminals, up to 1.5mm²
- Wide operating voltage range

Technical specification

Supply voltage 19.2-30V
 Accuracy ±0.1% FRS
 Ambient temperature . . . -25 to +60°C
 Installation . . . DIN rail (TS35/EN50022)
 Dimensions h90 x w6.2 x d92.5mm

| Approvals | | |
|-----------|------|------------|
| • CE | • UL | • DNV • GL |

| Description | Input | Output | Screw-in Terminals | | Push-in Terminals | |
|------------------------------------|--------|--------|--------------------|------------|-------------------|------------|
| | | | Order Code | List Price | Order Code | List Price |
| 24V d.c., 3-way isolation | 0-10V | 4-20mA | 750532.0000 | £69.93 | 751532.0000 | £70.93 |
| 24V d.c., 3-way isolation | 4-20mA | 0-10V | 750536.0000 | £69.93 | 751536.0000 | £70.93 |
| 24V d.c., 3-way isolation | 4-20mA | 4-20mA | 750534.0000 | £69.93 | 751534.0000 | £69.93 |
| 24V d.c., 3-way isolation | 0-10V | 0-10V | 750530.0000 | £65.93 | 751530.0000 | £66.93 |
| Loop powered, 2-way only isolation | 4-20mA | 4-20mA | 750528.0000 | £39.16 | 751528.0000 | £40.16 |

Accessories

| Description | 2 poles | | 4 poles | | 8 poles | | 16 poles | |
|----------------------|-------------|------------|-------------|------------|-------------|------------|-------------|------------|
| | Order Code | List Price | Order Code | List Price | Order Code | List Price | Order Code | List Price |
| Jumper combs – white | 762803.1000 | £2.06 | 762813.1000 | £2.34 | 762823.1000 | £2.66 | 762833.1000 | £4.46 |

ACT20M – narrow 6mm signal converter



This new range combines innovative technologies with the highest levels of functionality in an electronics housing measuring just 6mm in width. Up to 2 channels per module result in space savings in the electrical cabinet.

Features

- 2.5kV electrical isolation (300V)
- DIP switches configuration options
- Accuracy of up to 0.05%
- Screw clamp technology

Technical specification

Supply voltage 24V d.c. ±30%
 Accuracy ±0.05% measured range
 Ambient temperature -25 to +70°C
 Installation DIN rail (TS35/EN50022)
 Dimensions . . . h112.5 x w6.1 x d114.3mm

| Approvals | | |
|-----------|---------|-------|
| • ATEX | • CULUS | • GL |
| • IECEx | • FM | • DNV |

| Type | Input | Output | Order Code | List Price |
|--------------------|--|-----------------------------|------------|------------|
| ACT20M-CI-CO-S | 0-20mA, 4-20mA | 0-20mA, 4-20mA | 1175980000 | £111.29 |
| ACT20M-CI-2CO-S | 0-20mA, 4-20mA | 2 x 0-20mA, 4-20mA | 1175990000 | £156.53 |
| ACT20M-AI-AO-E-S | 0-20mA, 4-20mA, 0-10V, 0-5V | 0-20mA, 4-20mA, 0-10V, 0-5V | 1176010000 | £119.21 |
| ACT20M-CI-CO-OLP-S | 4-20mA | 4-20mA | 1176040000 | £115.12 |
| ACT20M-CI-CO-ILP-S | 0-20mA, 4-20mA | 0-20mA, 4-20mA | 1176070000 | £115.12 |
| ACT20M-TCI-AO-S | Thermocouple type J -100 to +1200°C, Thermocouple type K -200 to +1370°C | 0-20mA, 4-20mA, 0-10V, 0-5V | 1375480000 | £102.94 |
| ACT20M-RTI-AO-S | PT100/2/3/4 -200 to +850°C | 0-20mA, 4-20mA, 0-10V, 0-5V | 1375510000 | £96.17 |



Selectable multi-function signal converter and isolator



Single row terminal



Double row terminal

Features

- Slim DIN rail case
- 3-way isolation
- High accuracy
- IP20 screw and push-in terminals, up to 1.5mm²

Approvals

- CE
- UL
- DNV
- GL

Technical specification

Supply voltage
 Single row 19.2-30V a.c./d.c.
 Double row 19.2-264V a.c./d.c.
 Accuracy ±0.1% FRS
 Ambient temperature ... -25 to +60°C
 Installation DIN rail
 Dimensions
 Single row h93 x w6.2 x d73mm
 Double row ... h93 x w17.5 x d73mm

Ultra slim signal converters and isolators with simple selectable conversion capability. Ideal for OEMs and machine builders who have basic signals to interface to equipment but wish to reduce the spares and maintenance requirements. Full 3-way isolation. Slot-in jumper combs.

| | Input options <i>(Adjustable via DIP switch S1)</i> | | | | | | | | | | | Output options | | | | | | | | | | |
|-------------------|--|---------|---------|---------|------|------|------|-------|-------|-------|-------|----------------|--------|------|-------|---------------|-----------------------|-------|--------|--------|---------|--|
| | 0-60mV | 0-100mV | 0-300mV | 0-500mV | 0-1V | 0-2V | 0-5V | 0-10V | 0-20V | 2-10V | 0-5mA | 0-10mA | 0-20mA | ±5mA | ±20mA | PT100, 2-wire | Thermal elements J, K | 0-10V | 0-20mA | 4-20mA | 0-10kHz | |
| Single row | | | | | | | | | | | | | | | | | | | | | | |
| 750539.0000 | | | | | | | | ● | | | | | | ● | ● | | | ● | ● | ● | | |
| 751539.0000 | | | | | | | | ● | | | | | | ● | ● | | | ● | ● | ● | | |
| 750511.0000 | | | | | | | | ● | | | | | | ● | ● | | | ● | ● | ● | ● | |
| 751511.0000 | | | | | | | | ● | | | | | | ● | ● | | | ● | ● | ● | ● | |
| 750809.0000 | | | | | | | | | | | | | | | | ● | | ● | ● | ● | ● | |
| 750839.0000 | | | | | | | | | | | | | | | | | ● | ● | ● | ● | ● | |
| Double row | | | | | | | | | | | | | | | | | | | | | | |
| 750517.0000 | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | | ● | ● | ● | ● | |
| 751517.0000 | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | | ● | ● | ● | ● | |
| 750510.0000 | | | | | | | | ● | | | | | | ● | ● | | | ● | ● | ● | ● | |
| 751510.0000 | | | | | | | | ● | | | | | | ● | ● | | | ● | ● | ● | ● | |
| 750847.0000 | | | | | | | | | | | | | | | | | ● | ● | ● | ● | ● | |

Single row terminal – 6.2mm wide

| Description | Insulation | Screw-in Terminals | | Push-in Terminals | |
|--------------------------------|------------|--------------------|------------|-------------------|------------|
| | | Order Code | List Price | Order Code | List Price |
| 24V a.c./d.c., 3-way isolation | 2.5kV | 750539.0000 | £71.93 | 751539.0000 | £76.92 |
| 24V a.c./d.c., 3-way isolation | 2.5kV | 750511.0000 | £86.36 | 751511.0000 | £86.52 |
| 24V a.c./d.c., 3-way isolation | 2.5kV | 750809.0000 | £89.91 | — | — |
| 24V a.c./d.c., 3-way isolation | 2.5kV | 750839.0000 | £124.46 | — | — |

Double row terminal – 17.5mm wide

| Description | Insulation | Screw-in Terminals | | Push-in Terminals | |
|------------------------------------|------------|--------------------|------------|-------------------|------------|
| | | Order Code | List Price | Order Code | List Price |
| 24-240V a.c./d.c., 3-way isolation | 2.5/4.0kV | 750517.0000 | £110.89 | 751517.0000 | £111.89 |
| 24-240V a.c./d.c., 3-way isolation | 4.0kV | 750510.0000 | £113.64 | 751510.0000 | £114.72 |
| 24-240V a.c./d.c., 3-way isolation | 4.0kV | 750847.0000 | £176.41 | — | — |

Accessories

| Description | 2 poles | | 4 poles | | 8 poles | | 16 poles | |
|----------------------|-------------|------------|-------------|------------|-------------|------------|-------------|------------|
| | Order Code | List Price | Order Code | List Price | Order Code | List Price | Order Code | List Price |
| Jumper combs – white | 762803.1000 | £2.06 | 762813.1000 | £2.34 | 762823.1000 | £2.66 | 762833.1000 | £4.46 |

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