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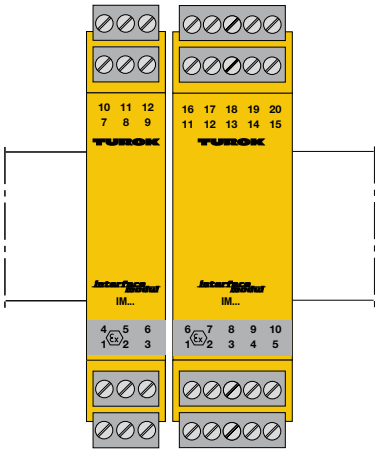
TURCK

IM
Interface Technology in Modular Housings

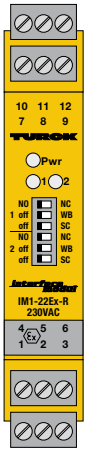
Interface Technology in Modular Housings – IM Series

Functions and selection guide



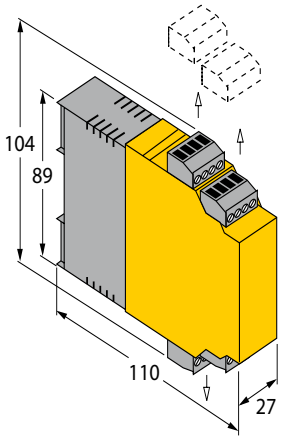
The housing concept

Depending on the device's scope of functions, there are housings with a width of 18 or 27 mm, while they are 104 mm high. All modules may be mounted directly next to each other and can be powered via the power bus.



Universal power supply

With a universal power supply ranging from 20…250 VUC, or 20…250 VAC/ 20…125 VDC for the intrinsically safe versions, the new IM-modules may be connected to practically all industrial power networks. The universal power supply facilitates device selection, as well as device and spare parts inventory management.



Removable terminal blocks

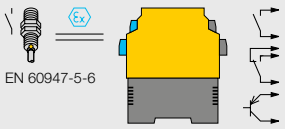
Removable terminal blocks simplify installation and device replacements significantly. The terminals are coded, thus preventing interchange errors.

ATEX compliance

All interface devices of the IM series feature intrinsically safe input and output circuits and are approved according to the new framework directive 94/9/EC, regarding equipment and protective systems intended for use in potentially explosive atmospheres. They can thus be used as associated equipment.

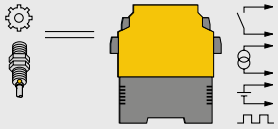
The blue terminals are designated for connection of intrinsically safe signals.

Further information on the ATEX directive is available via the Internet: http://ec.europa.eu/enterprise/atex/guide/index.htm



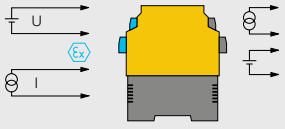
Isolating amplifiers
Processing of switching states of mechanical contacts and sensors according to EN 60947-5-6 (NAMUR).

(Page 4)



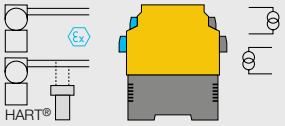
Rotational speed monitors/Frequency-current converters
Rotation speed monitoring for overspeed/underspeed and window function, operating range between 0.06…600000/min

(Page 5)



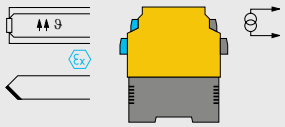
Analog data transmitters/intrinsically safe input isolators
Galvanic isolation and/or conversion of analog current and voltage signals. There are devices with intrinsically safe input and output circuits.

(Page 6)



Isolating transducers
Supply and transmission of current signals of 2-wire transmitters located in explosion hazardous areas. HART® devices enable bi-directional communication. This range incorporates devices with and without auxiliary power and active or passive outputs. Series-FSD includes smoke and fire detectors.

(Page 7)



Temperature measuring amplifiers
Linear conversion of temperature values into standard current signals. Linear conversion of temperature values, which are detected by a thermo-element, into standard current signals. All customary thermo-elements or mV-signals may be connected. Types -Ci, -CRi = programmable via PC using software PACTware™.

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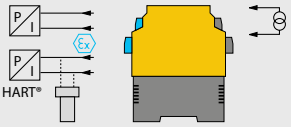

Analog data transmitters/intrinsically safe output isolators
Galvanic isolation and transfer of analog current signals into the explosion hazardous area. The family comprises a selection of devices with intrinsically safe output circuits. HART® devices enable bi-directional communication.

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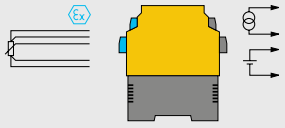
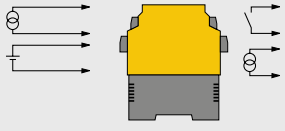


Potentiometer amplifiers
Conversion of the variable resistance values of a potentiometer into standard current and voltage signals. The input circuit is intrinsically safe, so that the potentiometer may be mounted in the explosion hazardous area.

(Page 10)



Limit value monitors
Monitoring of standard current and voltage signals relative to preset limit values. This series includes devices with three limit values and versions with current output. Types -SR, -SRi feature a manual teach function, whereas types -R and -Ri are adjustable via a coded rotary switch.

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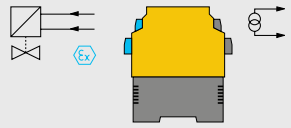

Valve control modules
Intrinsically safe supply of magnetic valves, pilot indicators, transmitters etc.

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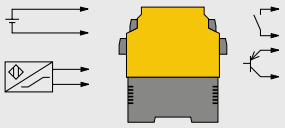

Coupling devices
Galvanically isolated transmission of binary switching states. These devices function as a reliable interface between different potentials.

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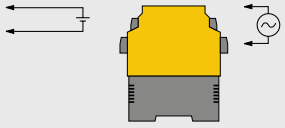
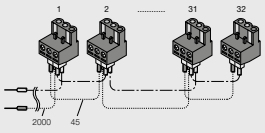


Power supplies
Power supply with galvanic isolation used to power low power consumers, particularly suited for powering the switching and monitoring devices of Turck's interfacemodul, multimodul und multisafe® series.

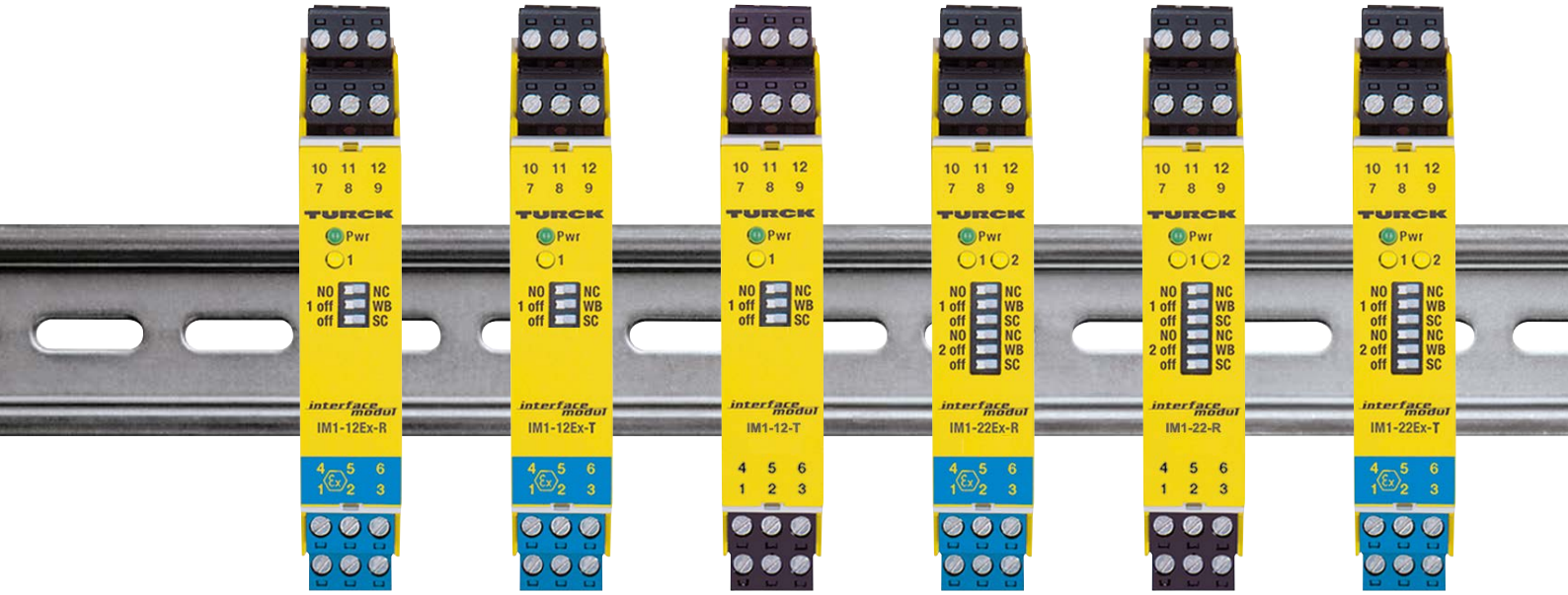
(Page 14)

Programming adapter
For programming the IM-modules via a PC.

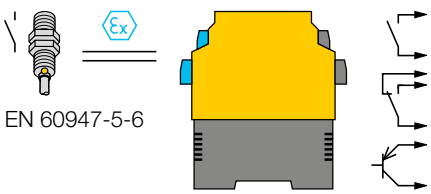


Power-bus for power distribution
Distribution of the power supply to several modules. „xx" in the type code stands for the number of modules, „03" for 3-pole terminals.

Cage-clamp terminals
Removable cage-clamp terminals (3/5-pole) for IM modules.

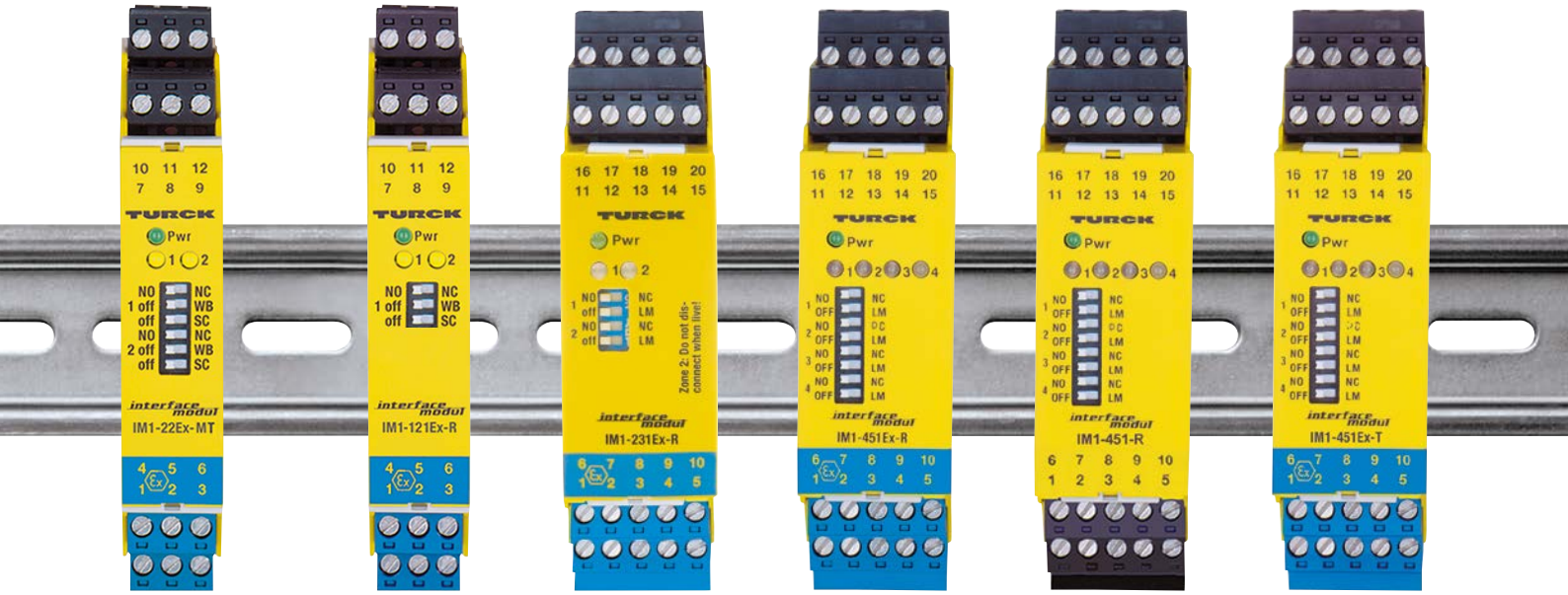


Type	IM1-12Ex-R	IM1-12Ex-T	IM1-12-T	IM1-22Ex-R	IM1-22-R	IM1-22Ex-T
	[Ex ia]	[Ex ia]		[Ex ia]		[Ex ia]
Function	Isolating switching amplifier	Isolating switching amplifier	Isolating switching amplifier	Isolating switching amplifier	Isolating switching amplifier	Isolating switching amplifier
Voltage supply	20…250 VAC 20…125 VDC	20…250 VAC 20…125 VDC	20…250 VAC 20…125 VDC	20…250 VAC 20…125 VDC	20…250 VAC 20…125 VDC	20…250 VAC 20…125 VDC
Inputs	1 Namur sensor or contacts	1 Namur sensor or contacts	1 Namur sensor or contacts	2 Namur sensors or contacts	2 Namur sensors or contacts	2 NAMUR sensors or contacts
Outputs	2 x relays (N.O.)	2 transistors ≤ 30 V, 50 mA, ≤ 5 KHz	2 x transistors	2 x relays (N.O.)	2 x relays (N.O.)	2 x transistors ≤ 30 V, 50 mA, ≤ 5 KHz
Approvals	ATEX, IECEx, UL, cFMus, CSA, TR CU, NEPSI, KOSHA, TIIS, CCOE	ATEX, IECEx, UL, FMus, CSA, TR CU, NEPSI, KOSHA, TIIS, CCOE	TR CU	ATEX, IECEx, UL, cFMus, CSA, TR CU, NEPSI, KOSHA, TIIS, CCOE	TR CU	ATEX, IECEx, UL, cFMus, CSA, TR CU, NEPSI, KOSHA, TIIS, CCOE
Special features	SIL 2, mounting in zone 2 possible	SIL 2, mounting in zone 2 possible	SIL 2	SIL 2, mounting in zone 2 possible	SIL 2	SIL 2, mounting in zone 2 possible

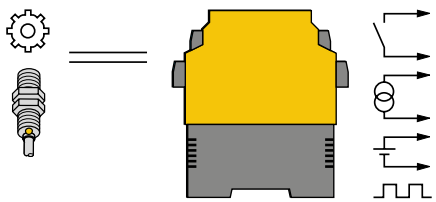


Isolating amplifiers

Evaluation and processing of switching states of mechanical contacts and sensors according to EN 60947-5-6 (NAMUR).



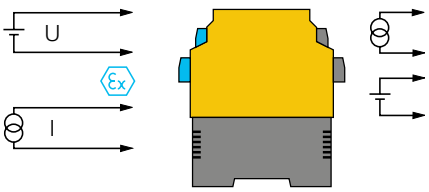
IM1-22Ex-MT	IM1-121Ex-R	IM1-231Ex-R	IM1-451Ex-R	IM1-451-R	IM1-451Ex-T
[Ex ia]	[Ex ia]	[Ex ia]	[Ex ia]		[Ex ia]
Isolating switching amplifier	Isolating switching amplifier	Isolating switching amplifier	Isolating switching amplifier	Isolating switching amplifier	Isolating switching amplifier
20…250 VAC 20…125 VDC	20…250 VAC 20…125 VDC	20...250 VAC 20...125 VDC	20…250 VAC 20…125 VDC	250 VUC	20…250 VAC 20…125 VDC
2 Namur sensors or contacts	1 Namur sensor or contacts	2 Namur sensors or contacts	4 NAMUR sensors or contacts	4 NAMUR sensors or contacts	4 Namur sensors or contacts
2 MOSFETS ≤ 250 VAC	2 relays (N.O.) incl. 1 alarm output	2 relays (change-over) additionally 1 alarm output (N.O.)	5 Relais (N.O.) incl. 1 alarm output	5 Relais (N.O.) incl. 1 alarm output	5 transistors, incl. 1 alarm output
ATEX, IECEx, UL, cFMus, CSA, TR CU, NEPSI, KOSHA, TIIS, CCOE	ATEX, IECEx, UL, cFMus, CSA, TR CU, NEPSI, KOSHA, TIIS, CCOE	ATEX, IECEx, TR CU, INMETRO	ATEX, IECEx, UL, cFMus, CSA, TR CU, INMETRO, TIIS	TR CU	ATEX, IECEx, UL, cFMus, CSA, TR CU,INMETRO, TIIS
Mounting in zone 2 possible	SIL 2, mounting in zone 2 possible	Mounting in zone 2 possible	Mounting in zone 2 possible	–	Mounting in zone 2 possible



Speed monitors/Frequency-current converters

Selectable line monitoring for wirebreak/short-circuit (ON/OFF mode), galvanic isolation of input circuits, output circuits and supply voltage, rotation speed monitoring for overspeed/underspeed and window function, operating range between 0.06…600000/min, sensor control acc. to EN 60947-5-6 (NAMUR), connection of 3-wire sensors and external voltage sources 5…30 VDC, 2 relay and one transistor output, pulse divider, current output 0/4…20 mA, reversible, pulse output, adjustable analog output in case of input circuit errors FDT/DTM with diagnostic function HART®, ring buffer for storing of measured values, removable terminal blocks, universal operating voltage (20…250 VAC/20…125 VDC for Ex-version, 20…250 VUC for non-Ex-version).

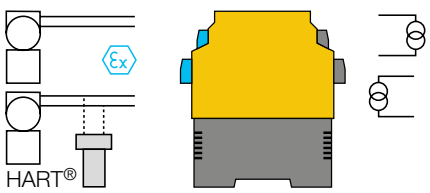
Type	IM1-451-T	IM12-22Ex-R	IM12-22ExR/24VDC	IM12-22ExR-230VAC	IM21-14Ex-CDTRi	IM21-14-CDTRi
		[Ex ia]	[Ex ia]	[Ex ia]	[Ex ia]	
Function	Isolating switching amplifier	Isolating switching amplifier	Isolating switching amplifier	Isolating switching amplifier	Speed monitor/Freq.-current converter	Speed monitor/Freq.-current converter
Voltage supply	20…250VAC 20…250VDC	20…250 VAC 20…125 VDC	10…30 VDC	196…253 VAC	20…250 VAC 20…125 VDC	250 VUC
Inputs	4 NAMUR sensors or contacts	2 NAMUR sensors or contacts	2 NAMUR sensors or contacts	2 NAMUR sensors or contacts	1 NAMUR	1 Namur or 3-wire sensors, 5…30 VDC
Outputs	5 transistors, incl. 1 alarm output	2 x relays (N.O.)	2 x relays (N.O.)	2 x relays (N.O.)	2 x relays (N.O.) 1 transistor 1 x 0/4…20 mA	2 x relays (N.O.) 1 transistor 1 x 0/4…20 mA
Approvals	TR CU	ATEX, IECEx, UL, cFMus, CSA, TR CU, NEPSI, KOSHA, TIIS, CCOE	ATEX, cFMus, TR CU	ATEX, cFMus, TR CU	ATEX, IECEx, cFMus, TR CU, NEPSI, TIIS, KOSHA	TR CU
Special features	–	Mounting in zone 2 possible	Signal multiplier	Signal multiplier	Display, programmable via PC (FDT/DTM), mounting in zone 2 possible	Display, programmable via PC (FDT/DTM)



Analog data transmitters/Intrinsically safe input isolators

Galvanic isolation and/or conversion of analog current and voltage signals. There are devices with intrinsically safe input and output circuits.

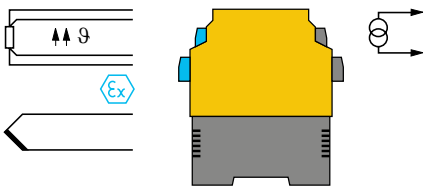
IM31-11Ex-i	IM31-11-i	IM31-12Ex-i	IM31-12-i	IM31-22Ex-U IM31-22Ex-i	IM31-22-i
[Ex ia]		[Ex ia]		[Ex ia]	
Analog data transmitter	Analog data transmitter	Analog data transmitter	Analog data transmitter	Analog data transmitter	Analog data transmitter
20…250 VAC 20…125 VDC	250 VUC	20…250 VAC 20…125 VDC	250 VUC	20…250 VAC 20…125 VDC	250 VUC
0/2…10 V 0/4…20 mA	0/2…10 V 0/4…20 mA	0/2…10 V 0/4…20 mA	0/2…10 V 0/4…20 mA	2 x 0/2…10 V 2 x 0/4…20 mA	2 x 0/2…10 V 2 x 0/4…20 mA
0/4…20 mA	1 x 0/4…20 mA	2 x 0/4…20 mA	2 x 0/4…20 mA	2 x 0/4…20 mA 2 x 0/2...10 V	2 x 0/4…20 mA
ATEX, IECEx, UL, cFMus, TR CU, NEPSI	TR CU	ATEX, IECEx, UL, cFMus, TR CU, NEPSI	TR CU	ATEX, IECEx, UL, cFMus, TR CU, NEPSI	TR CU
Mounting in zone 2 possible	–	Signal multiplier, mounting in zone 2 possible	–	Mounting in zone 2 possible	–



Isolating transducers

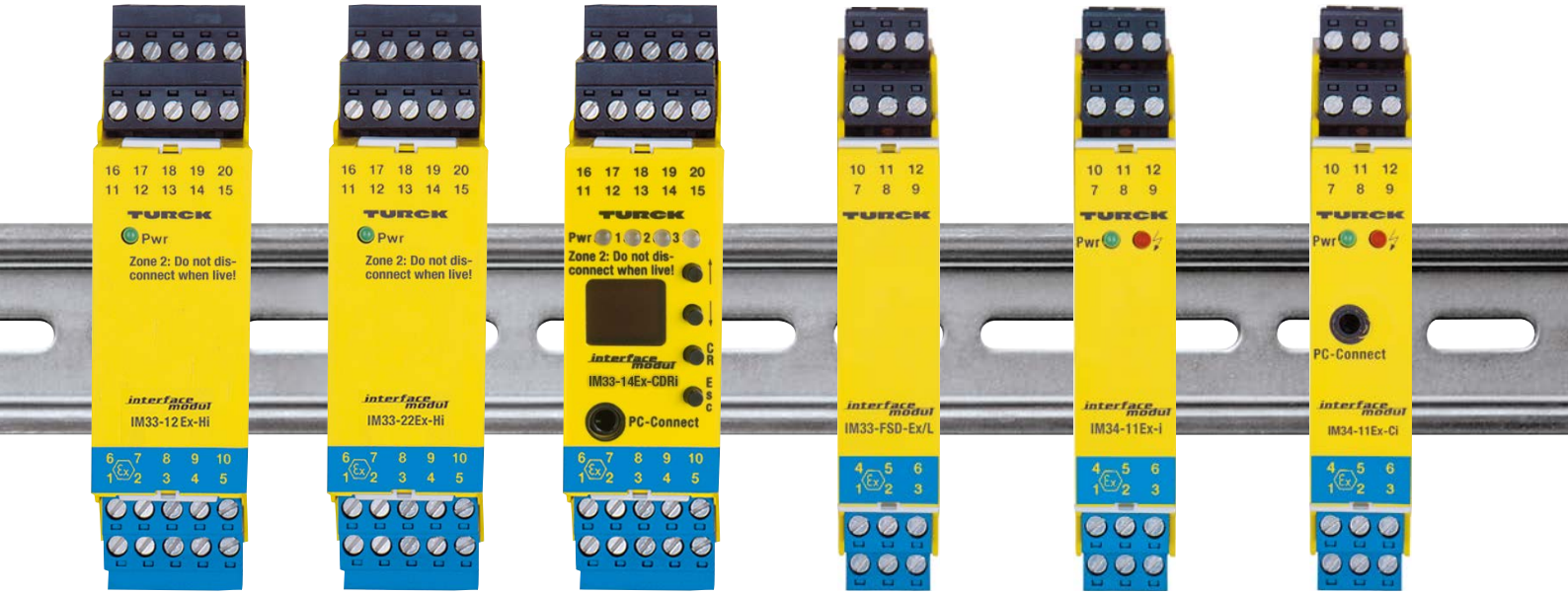
These devices are suited for the supply and transmission of current signals of 2-wire transmitters located in explosion hazardous areas. HART® devices enable bi-directional communication. This range incorporates devices with and without auxiliary power and active or passive outputs. Series-FSD includes smoke and fire detectors. FDT/DTM with diagnostic function.

Type	IM33-11Ex-Hi/24VDC	IM33-12Ex-Hi/24VDC	IM33-12-Hi/24VDC	IM33-22Ex-Hi/24VDC	IM33-22-Hi/24VDC	IM33-11Ex-Hi
	[Ex ia]	[Ex ia]		[Ex ia]		[Ex ia]
Function	HART® isolating transducer	HART® isolating transducer	HART® isolating transducer	HART® isolating transducer	HART® isolating transducer	HART® isolating transducer
Voltage supply	24 VDC	24 VDC	19…29 VDC	24 VDC	19…29 VDC	20…250 VAC 20…125 VDC
Inputs	0/4…20 mA	1 x 0/4…20 mA	1 x 0/4…20 mA	2 x 0/4…20 mA	1 x 0/4…20 mA	1 x 0/4…20 mA
Outputs	0/4…20 mA	2 x 0/4…20 mA	2 x 0/4…20 mA	2 x 0/4…20 mA	2 x 0/4…20 mA	1 x 0/4…20 mA
Approvals	ATEX, IECEx, UL, cFMus, TR CU, TIIS, CCEO, KOSHA	ATEX, IECEx, UL, cFMus, TR CU, TIIS, CCEO, KOSHA	TR CU	ATEX, IECEx, UL, cFMus, TR CU, TIIS, CCEO, KOSHA	TR CU	ATEX, IECEx, cFMus, TR CU, INMETRO
Special features	HART® transmission possible/SIL 2, mounting in zone 2 possible	HART® transmission possible/SIL 2, mounting in zone 2 possible	HART® transmission possible	HART® transmission possible/SIL 2, mounting in zone 2 possible	HART® transmission possible	HART® transmission possible/SIL 2, mounting in zone 2 possible

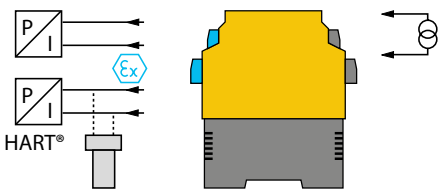


Temperature measuring amplifiers

Linear conversion of temperature values, which are detected by a thermo-element or RTD, into standard current signals. All customary or RTP thermoelements or mV signals may be connected. Types -Ci, -CRi = programmable via PC using software PACTware™ and FDT/DTM, with diagnostic function, HART® transparent



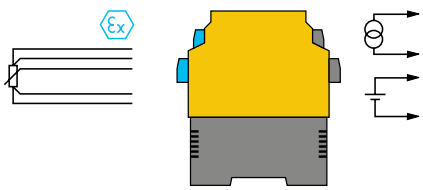
IM33-12Ex-Hi	IM33-22Ex-Hi	IM33-14Ex-CDRi	IM33-FSD-Ex/L	IM34-11Ex-i	IM34-11Ex-Ci
[Ex ia]	[Ex ia]	[Ex ia]	[Ex ia]	[Ex ia]	[Ex ia]
HART® isolating transducer	HART® isolating transducer	Transmitter power supply with trip amplifier	Isolating transducer	Temperature measuring amplifier	Temperature measuring amplifier
20…250 VAC 20…125 VDC	20…250 VAC 20…125 VDC	20…250 VAC 20…125 VDC	Without auxiliary energy	20…250 VAC 20…125 VDC	20…250 VAC 20…125 VDC
1 x 0/4…20 mA	2 x 0/4…20 mA	0/4…20 mA oder 0/2…10 V oder transmitter	2 x 0…20 mA	Ni/Pt100 or thermo-elements or mV-input	Ni/Pt100 or thermo-elements or mV-input
2 x 0/4…20 mA	2 x 0/4…20 mA	1 x 0/4…20 mA, 3 Relais (Schließer)	2 x 0…20 mA	1 x 0/4…20 mA	1 x 0/4…20 mA
ATEX, IECEx, cFMus, TR CU, INMETRO	ATEX, IECEx, cFMus, TR CU, INMETRO	ATEX, IECEx, TR CU	ATEX, cFMus, TR CU	ATEX, IECEx, cFMus, UL, TR CU, INMETRO, CCOE	ATEX, IECEx, cFMus, UL, TR CU, INMETRO, CCOE
HART® transmission possible/SIL 2, mounting in zone 2 possible	HART® transmission possible/SIL 2, mounting in zone 2 possible	Display, programmable via PC (FDT/DTM), mounting in zone 2 possible	Transducer for fire and smoke indicators	Mounting in zone 2 possible	Programmable via PC (FDT/DTM), mounting in zone 2 possible



Analog data transmitters/Intrinsically safe output isolators

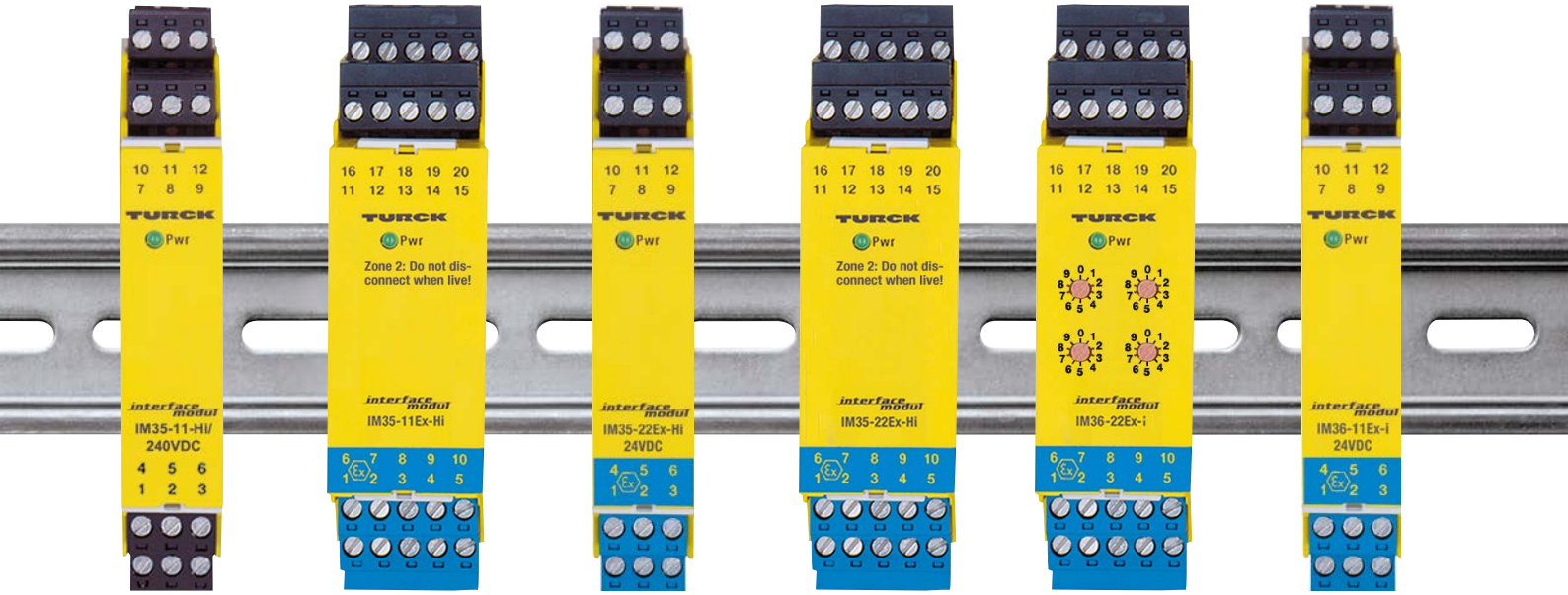
Galvanic isolation and transfer of analog current signals into the explosion hazardous area. The family comprises a selection of devices with intrinsically safe output circuits. HART® devices enable bi-directional communication.

Type	IM34-11Ex-Ci/24VDC	IM34-11-Ci	IM34-12Ex-Ri	IM34-12Ex-CRi	IM34-14Ex-CDRi	IM35-11Ex-Hi/24VDC
	[Ex ia]		[Ex ia]	[Ex ia]	[Ex ia]	[Ex ia]
Function	Temperature measuring amplifier	Temperature measuring amplifier	Temperature measuring amplifier	Temperature measuring amplifier	Temperature measuring amplifier	HART® Analog data transmitter
Voltage supply	20…30 VDC	20…250 VAC 20…125 VDC	20…250 VAC 20…125 VDC	20…250 VAC 20…125 VDC	20…250 VAC 20…125 VDC	24 VDC
Inputs	Ni/Pt100 or thermo-elements or mV-input	Ni/Pt100 or thermo-elements or mV-input	Ni/Pt100 or thermo-elements or mV-input	Ni/Pt100 or thermo-elements or mV-input	Ni/Pt100 or thermo-elements or mV-input	0/4…20 mA
Outputs	1 x 0/4…20 mA	1 x 0/4…20 mA	1 x 0/4…20 mA, 1 relays (N.O.)	1 x 0/4…20 mA, 1 relays (N.O.)	3 relays (N.O.) 1 x 0/4…20 mA)	0/4…20 mA
Approvals	ATEX, IECEx, TR CU, INMETRO, CCOE	TR CU	ATEX, IECEx, cFMus, UL, TR CU, INMETRO, CCOE	ATEX, IECEx, cFMus, UL, TR CU, INMETRO, CCOE	ATEX, IECEx, cFMus, TIIS, KOSHA	ATEX, IECEx, UL, cFMus, TR CU
Special features	Mounting in zone 2 possible		Mounting in zone 2 possible	Programmable via PC (FDT/DTM), mounting in zone 2 possible	Display, programmable via PC (FDT/DTM), mounting in zone 2 possible	HART® transmission possible, mounting in zone 2 possible

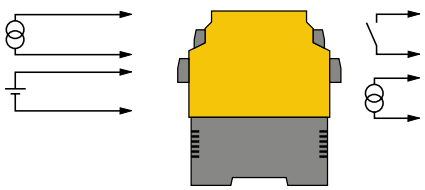


Potentiometer amplifiers

Conversion of the variable resistance values of a potentiometer into standard current and voltage signals. The input circuit is intrinsically safe, so that the potentiometer may be mounted in the explosion hazardous area.

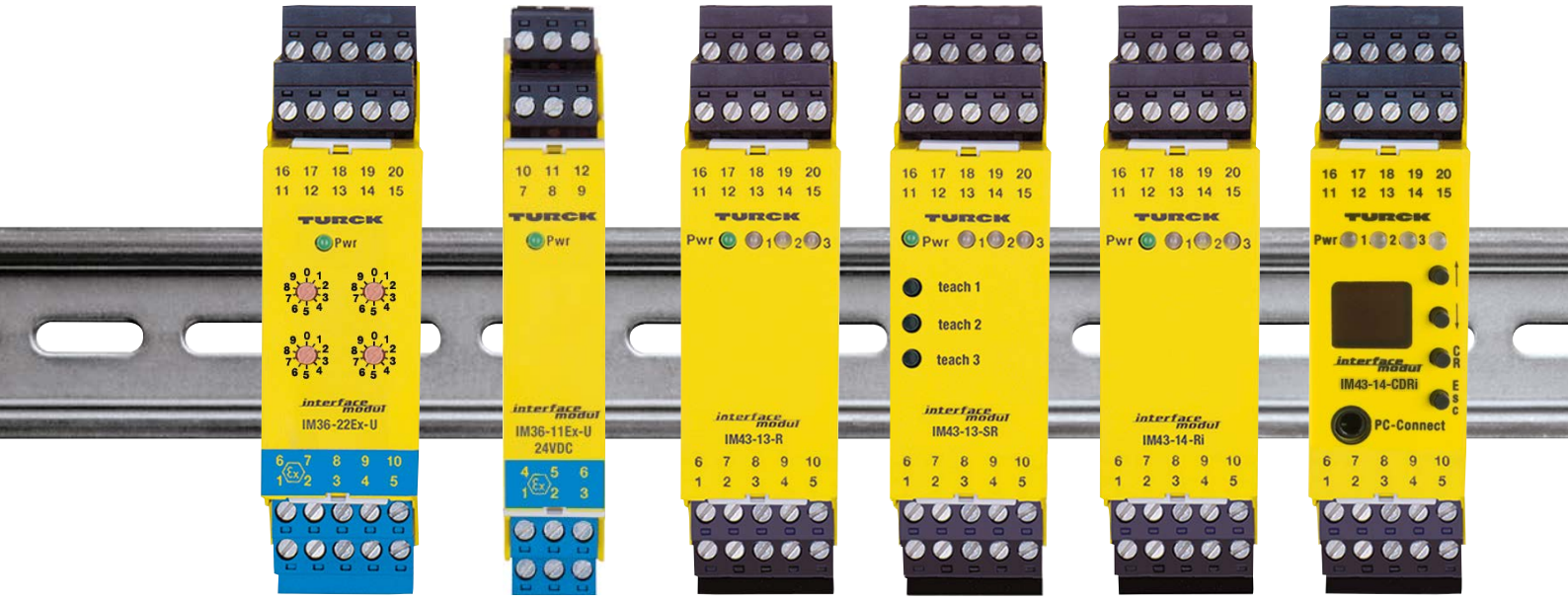


IM35-11-Hi/24VDC	IM35-11Ex-Hi	IM35-22Ex-Hi/24VDC	IM35-22Ex-Hi	IM36-22Ex-I	IM36-11Ex-i/24VDC
	[Ex ia]	[Ex ia]	[Ex ia]	[Ex ia]	[Ex ia]
HART® Analog data transmitter	HART® Analog data transmitter	HART® Analog data transmitterr	HART® Analog data transmitter	Potentiometer amplifier	Potentiometer amplifier
24 VDC	20…250 VAC 20…125 VDC	24 VDC	20…250 VAC 20…125 VDC	20…250 VAC 20…125 VDC	24 VDC
0/4…20 mA	1 x 0/4…20 mA	2 x 0/4…20 mA	2 x 0/4…20 mA	800 Ω bis 100 kΩ	800 Ω bis 20 kΩ
0/4…20 mA	1 x 0/4…20 mA	2 x 0/4…20 mA	2 x 0/4…20 mA	0…20 mA	0…20 mA
TR CU	ATEX, TR CU	ATEX, IECEx, UL, cFMus, TR CU	ATEX, TR CU	ATEX, IECEx, TR CU	ATEX, TR CU
HART® transmission possible	HART® transmission possible, mounting in zone 2 possible	HART® transmission possible/SIL 2, mounting in zone 2 possible	HART® transmission possible, mounting in zone 2 possible	Mounting in zone 2 possible	–

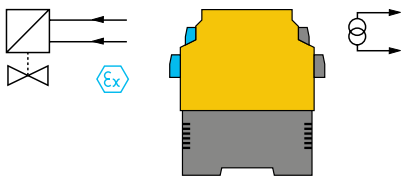


Limit value monitors

Monitoring of standard current and voltage signals relative to pre-set limit values. This series includes devices with three limit values and versions with current output. Types -SR and -SRi = a manual teach function, Types -R and -Ri = adjustable via a coded rotary switch Typ -CDRi: programmable via FDT/DTM with diagnostic function HART® transparent



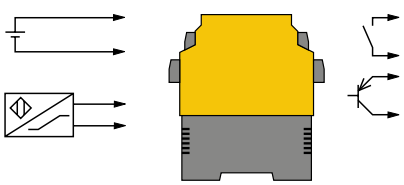
Type	IM36-22Ex-U	IM36-11Ex-U/24VDC	IM43-13-R	IM43-13-SR	IM43-14-Ri	IM43-14-CDRi
	[Ex ia]	[Ex ia]				
Function	Potentiometer amplifier	Potentiometer amplifier	Limit value monitor	Limit value monitor	Limit value monitor	Limit value monitor
Voltage supply	20…250 VAC 20…125 VDC	24 VDC	20…250 VUC	20…250 VUC	20…250 VUC	20…250 VUC
Inputs	800 Ω bis 100 kΩ	800 Ω bis 20 kΩ	0/4…20 mA or 0/2…10 V or transmitter	0/4…20 mA or 0/2…10 V or transmitter	0/4…20 mA or 0/2…10 V or transmitter	0/4…20 mA or 0/2…10 V or transmitter
Outputs	0…10 V	0…10 V	3 relays (N.O.)	3 relays (N.O.)	3 relays (N.O.), 1 x 0/4…20 mA	3 relays (N.O.) 1 x 0/4…20 mA
Approvals	ATEX, IECEx, TR CU	ATEX, TR CU	cFMus, TR CU	cFMus, TR CU	cFMus, TR CU	TR CU
Special features	Mounting in zone 2 possible	–	Setting of limit values via rotary coding switch	Manual teach function	Setting of limit values via rotary coding switch	Display, programmable via PC (FDT/DTM



Valve control modules

Intrinsically safe supply of magnetic valves, pilot indicators, transmitters etc.

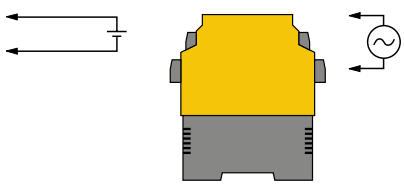
IM72-11Ex/L-24VDC	IM72-22Ex/L-VDC	IM73-12-R	IM73-22Ex-R/24VUC
[Ex ia]	[Ex ia]		[Ex ia]
Valve control module	Valve control module	Relay coupler	Relay coupler
Without power supply	Without power supply	Without auxiliary energy	10…30 VUC
19…30 V	19…30 V 19…30 V	24 VUC 230 VAC	2 x 10…30 VUC
24 V/45 mA 15 V/45 mA	24 V/45 mA 15 V/45 mA	2 Relais (Wechsler)	2 Relais (Wechsler)
ATEX, IECEx, UL, cFMus, KOSHA, TR CU, NEPSI, INMETRO	ATEX, IECEx, UL, cFMus, KOSHA, TR CU, NEPSI, INMETRO	TR CU	ATEX, TR CU
SIL 3, Loop-powered, mounting in zone 2 possible	SIL 3, Loop-powered, mounting in zone 2 possible	SIL 3	Mounting in zone 2 possible



Coupling devices

Galvanically isolated transmission of binary switching states. These devices function as a reliable interface between different potentials.

Typ	IM82-24-2,5	IM82-24-5,0	IM82-24-10	IM82-24-20
Function	Power supply	Power supply	Power supply	Power supply
Voltage supply	85…264 VAC, 90…375 VDC	90…132 VAC, 186…264 VAC, 210…370 VDC	90…132 VAC, 186…264 VAC, 210…370 VDC	90…264 VAC, 120…370 VDC
Outputs	24 V/2,5 A	24 V/5 A	24 V/10 A	24 V/20 A
Approvals		UL	UL	UL
Special features		Class 1 Div 2	Class 1 Div 2	Class 1 Div 2



Power supplies

The IM82-24 switching power supplies provide safety extra-low voltage (SELV) acc. to EN 60950. They supply electrical equipment as well as IM, IMS and IMC interface modules with 24 VDC.

IM82-24-5,0-3P	IM82-24-10-3P
3-phase power supply	3-phase power supply
340…575 VAC, 480…820 VDC	340…575 VAC, 480…820 VDC
24 V/5 A	24 V/10 A
UL	UL
Class 1 Div 2	Class 1 Div 2

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