


Characteristics

- Universal intrinsically safe isolating repeater of current signals $0/4 \div 20$ mA with 0.07 % accuracy and with option voltage output $0 \div 10$ V
- Galvanically separated input and output signal
- For supply sensors with output $0/4 \div 20$ mA e.g.(SLU or MSLU) in explosive area up to zone 0 (acc. to EN 60079-10)
- Option bi-directional transmission of communication signal HART®
- Classification of explosive-proof performance
 II (1)G [EEx ia] IIB / IIC
 I (M1) [EEx ia] I
- Installation on DIN rail 35 mm
- Variants for 24V and 230V

Universal intrinsically safe isolating repeater SIR-420 is designed for transducers (sensors) in explosive areas and for conversion of input signal $0/4 \div 20$ mA to output signal. Galvanic separation of current signal $0/4 \div 20$ mA from transducer in explosive area to transducer in non-explosive area.

Variants:

SIR420 - I

Convert's signal $0/4 \div 20$ mA to $0/4 \div 20$ mA

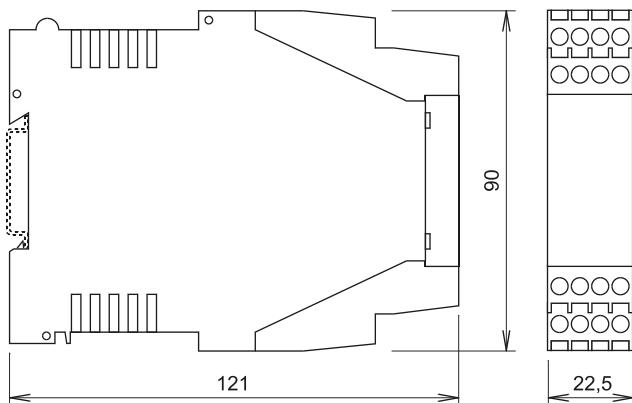
SIR420-H

Convert's signal $4 \div 20$ mA to $4 \div 20$ mA and bi-directional transmission of HART® communication signal

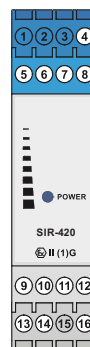
SIR420-U

Convert's signal $4 \div 20$ mA to $0 \div 10$ V

Dimension drawing



Front view and LED function



Technical Specifications

Type	SIR-420-I	SIR-420-H	SIR-420-U
Input signal	0/4 ÷ 20 mA	4 ÷ 20 mA	4 ÷ 20 mA
Output signal	0/4 ÷ 20 mA	4 ÷ 20 mA	0 ÷ 10 V
Bi-directional transmission communication signal HART®	NO	YES	NO
Nominal supply voltage: variant 230 V variant 24 V	60 ÷ 230 V AC / 50 ÷ 60 Hz, 85 ÷ 230 V DC (+10 %) 18 ÷ 30 V AC / 50 ÷ 60 Hz, 18 ÷ 40 V DC (+10 %)		
Nominal power demand: variant 230 V variant 24 V	7 VA 4 W		
Voltage on active input (terminals 5 and 6)	typ. 24,1 V DC (0 mA) / min. 18V DC (20 mA)		
Output auxiliary voltage (terminals 9 and 11)	24 V DC (max. 25 mA)		
Linearity	≤ 0,05 % (4 ÷ 20 mA) / ≤ 0,07 % (0 ÷ 20 mA)		≤ 0,05 %
Temperature error	≤ 0,05 % / 10 K		
Allowed short circuit time (input and output)	unlimited (short on output is indicated by off LED)		
Ambient temperature	-20 to +60 °C		
Protection class	IP 20		
Weight	ca. 0,2 kg		
Housing material	polycarbonate		
Material of terminals	CuBe		
Max. conductor size	1 x 2,5 mm ²		
Isolating voltage: main terminals / input + output	3,5 kV		

Classification of areas and limiting parameters of intrinsically safe circuit

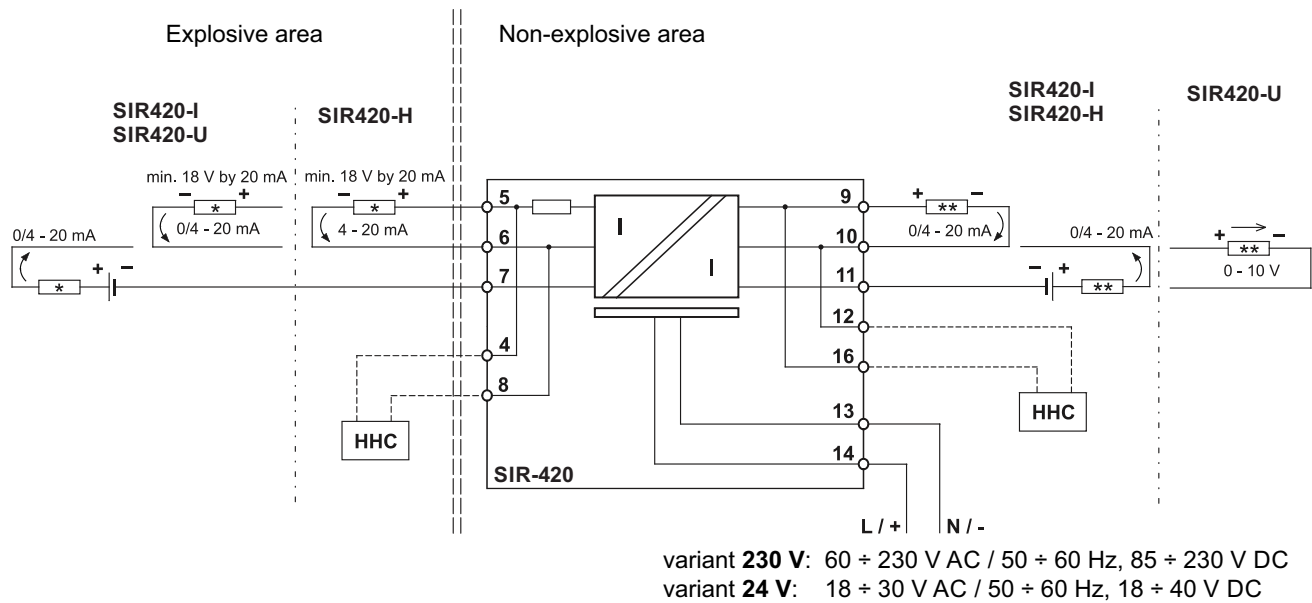
Classification	Limiting parameters of intrinsically safe circuit	
	Active input - terminals 5 and 6	Passive input - terminals 6 and 7
II (1) G [EEx ia] IIC	$U_o=27,3 \text{ V}$, $I_o=93 \text{ mA}$, $P_o=0,64 \text{ W}$, $C_o=86 \text{ nF}$, $L_o=2 \text{ mH}$	$U_i=28 \text{ V}$, $I_i=93 \text{ mA}$, $P_i=0,8 \text{ W}$, $C_i=0 \text{ nF}$, $L_i=0 \text{ mH}$
II (1) G [EEx ia] IIB	$U_o=27,3 \text{ V}$, $I_o=93 \text{ mA}$, $P_o=0,64 \text{ W}$, $C_o=0,68 \text{ mF}$, $L_o=8 \text{ mH}$	
I (M1) G [EEx ia] I	$U_o=27,3 \text{ V}$, $I_o=93 \text{ mA}$, $P_o=0,64 \text{ W}$, $C_o=1,0 \text{ mF}$, $L_o=10 \text{ mH}$	

Maximum voltage which can be connected on terminals 9 to 16 without failure of intrinsically safe: $U_m = 253 \text{ V}$

Safety, protections, compatibility and explosion proof

Isolating repeater is equipped with protection against input and output current overload.
 Working areas acc. to EN 60079-10 - non-explosive, or installation in flameproof enclosure "d".
 Connection to supply can be only through fuse or overcurrent circuit breaker - max. 16 A.
 Unit is sheltered by fuse T80 mA (variant 230 V) and T500 mA (variant 24 V).
 Electrical equipment of protection group II.
 Electrical safety according to EN 61010 - 1.
 EMC according to EN 55022, EN 61326, EN 61000-6-2, EN 61000-4-2, -3, -4, -5, -6, -11.
 Intrinsically safety according to EN 50014 and EN 50020.

Block diagram of SIR-420 with available configuration options



- Notes:
- HHC - Hand-held communicator (communicator HART®). Only for variant SIR 420-H.
 - * - Device in explosive area with output signal 0/4 ÷ 20 mA (two-wire intrinsically safe level meters, e.g. SLU, MSLU). SIR420-U only convert signal 4 ÷ 20 mA to 0 ÷ 10 V.
 - ** - Output devices (e.g. programmable display unit PDU, analog input PLC etc.). For bi-directional transmission HART® communication signal, the loop's resistance must be min. 250 Ω. For variant with voltage output, the device resistance must be min. 500 Ω.

Electrical connection for level meter in Classified Area

