

Features

- 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
- galvanic separation input and output signal
- for supply sensors with output $0/4 \div 20$ mA e.g. CLM-36Xi, ULM-55Xi etc. 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 $\text{Ex II (1)G [EEx ia] IIB / IIC}$
 $\text{Ex I (M1) [EEx ia] I}$
- instalation on DIN rail 35 mm
- variants for 24V and 230V



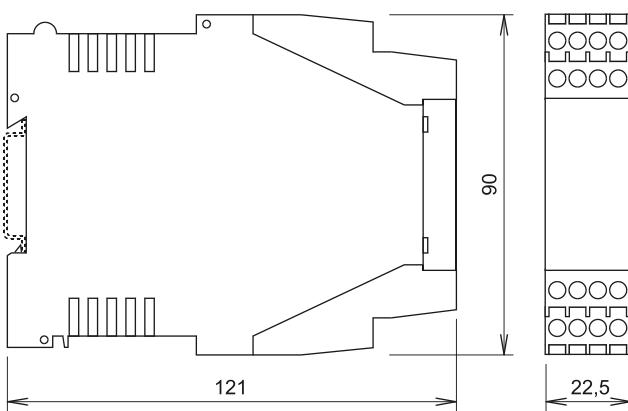
Description

Universal intrinsically safe isolating repeater IRU-420 is designed for supply transducers of physical value (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.

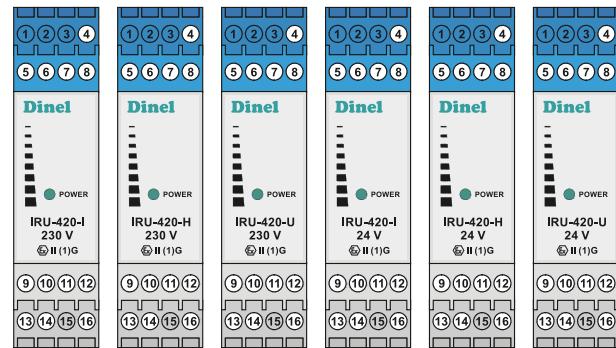
Variants:

- | | |
|----------------------|---|
| IRU - 420 - I | - convert's signal $0/4 \div 20$ mA to $0/4 \div 20$ mA |
| IRU - 420 - H | - convert's signal $4 \div 20$ mA to $4 \div 20$ mA and bi-directional transmission of HART® communication signal |
| IRU - 420 - U | - convert's signal $4 \div 20$ mA to $0 \div 10$ V |

Dimension drawing



Front view and LED function



Green LED "POWER"

- on - connected with power supply, correct function
- off - output terminals 9 and 11 are overload
- internal failure

List of all variants

variants 24 V **IRU-420-I-24V**
IRU-420-H-24V
IRU-420-U-24V

variants 230 V **IRU-420-I-230V**
IRU-420-H-230V
IRU-420-U-230V

Technical specification

Type	IRU-420-I	IRU-420-H	IRU-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	
Isolating voltage: 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	$U_o=27,3$ V, $I_o=93$ mA, $P_o=0,64$ W, $C_o=86$ nF, $L_o=2$ mH	
II (1) G [EEEx ia] IIB	$U_o=27,3$ V, $I_o=93$ mA, $P_o=0,64$ W, $C_o=0,68$ µF, $L_o=8$ mH	$U_i=28$ V, $I_i=93$ mA, $P_i=0,8$ W, $C_i\sim0$ µF, $L_i\sim0$ mH
I (M1) G [EEEx ia] I	$U_o=27,3$ V, $I_o=93$ mA, $P_o=0,64$ W, $C_o=1,0$ µF, $L_o=10$ mH	

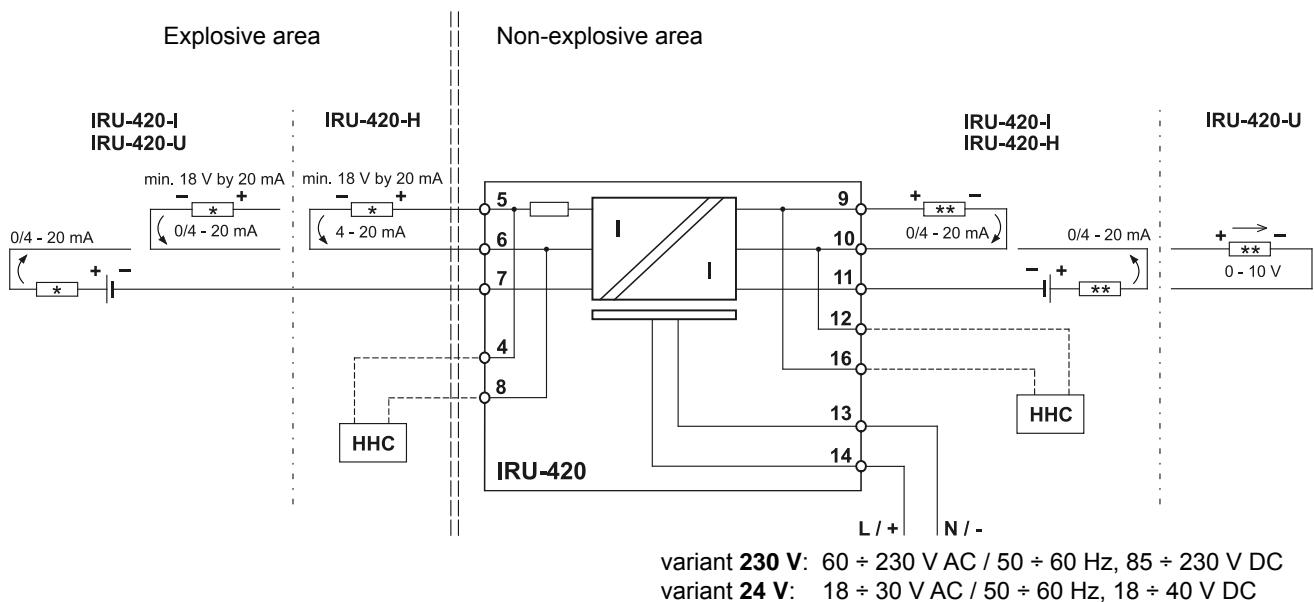
Maximum voltage which can be connected on terminals 9 to 16 without failure of intrinsically safe: $U_m = 253$ V

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.

Approval: FTZU - AO 210 Ostrava - Radvanice Certificate No.: FTZU 05 ATEX 0167X

Block diagram of IRU-420 and options of application connection



Notes:

HHC - Hand-held communicator (communicator HART®).
Only for variant IRU-420-H.

* - Device in explosive area with output signal 0/4 - 20 mA
(two-wire intrinsically safe level meters, e.g. ULM-55Xi, CLM-36Xi, etc.).
IRU-420-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.



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