

### 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
  - ⊕ II (1)G [EEx ia] IIB / IIC
  - ⊕ I (M1) [EEx ia] I
- instalation on DIN rail 35 mm
- variants for 24V and 230V



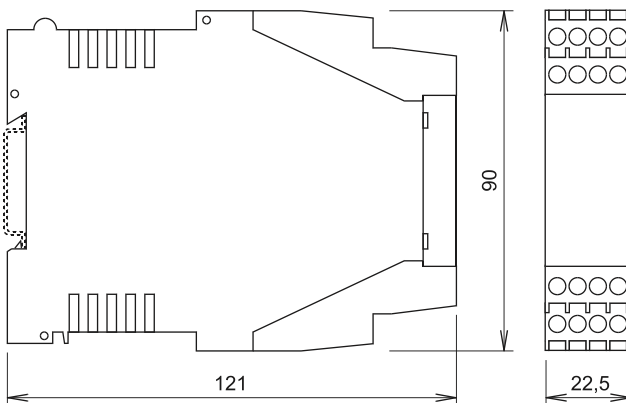
### Description

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.

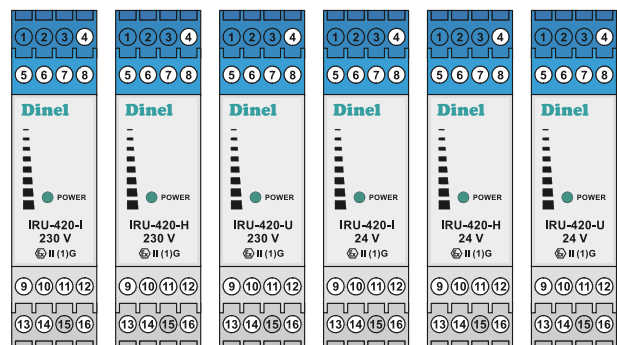
Variants:

- 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 <sup>2</sup>		
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
<b>II (1) G [EEx ia] IIC</b>	$U_o=27,3 \text{ V}$ , $I_o=93 \text{ mA}$ , $P_o=0,64 \text{ W}$ , $C_o=86 \text{ nF}$ , $L_o=2 \text{ mH}$	$U_i=28 \text{ V}$ , $I_i=93 \text{ mA}$ , $P_i=0,8 \text{ W}$ , $C_i \sim 0 \text{ }\mu\text{F}$ , $L_i \sim 0 \text{ mH}$
<b>II (1) G [EEx ia] IIB</b>	$U_o=27,3 \text{ V}$ , $I_o=93 \text{ mA}$ , $P_o=0,64 \text{ W}$ , $C_o=0,68 \text{ }\mu\text{F}$ , $L_o=8 \text{ mH}$	
<b>I (M1) G [EEx ia] I</b>	$U_o=27,3 \text{ V}$ , $I_o=93 \text{ mA}$ , $P_o=0,64 \text{ W}$ , $C_o=1,0 \text{ }\mu\text{F}$ , $L_o=10 \text{ mH}$	

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.

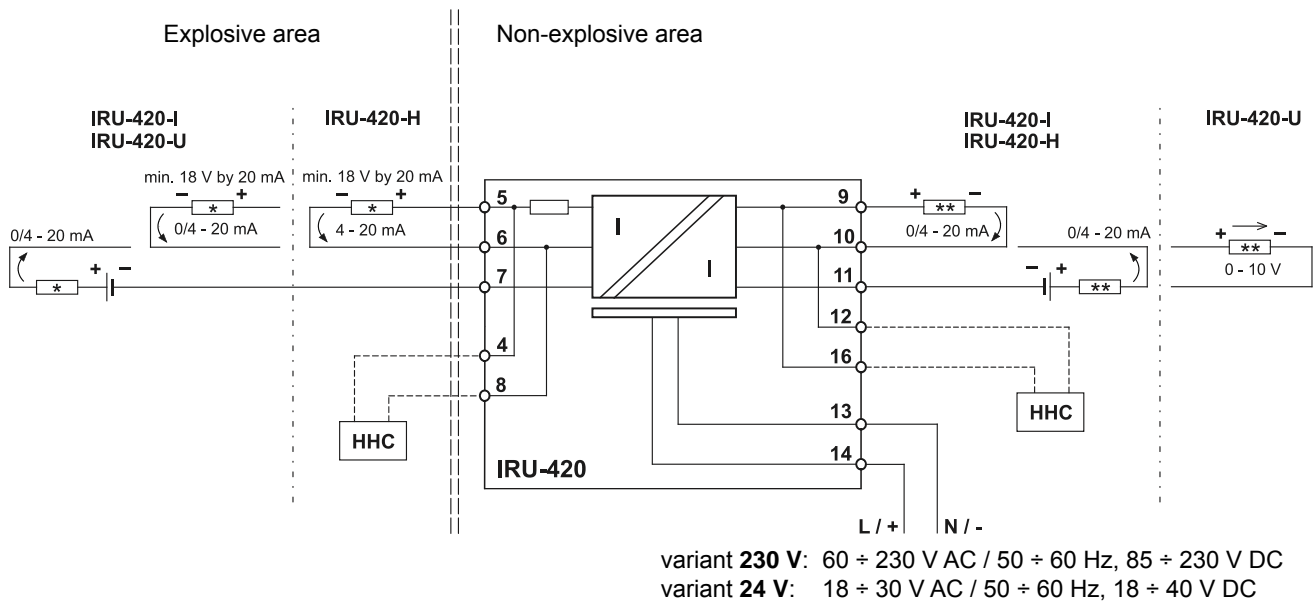
Electrical safety according to EN 61010 - 1.

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.

**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.

HART® is registered mark of HART Communication Foundation

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