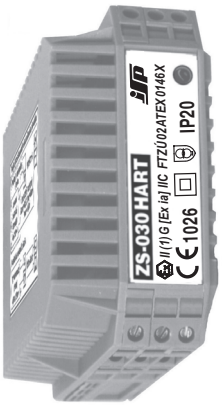
ZS-030
Intrinsically Safe Isolator and Stabilized Power Supply without/with HART Communication Signal Transparency

- **Galvanic isolation of current signal and power supply for intrinsically safe transmitter.**
- **Isolation of 4(0) to 20 mA signal with accuracy 0,1 %, or conversion of 4 to 20 mA signal into 0 to 20 mA, , 4 to 20 mA signal into 0 to 5 mA.**
- **Two-way transmission of the HART communication signal across galvanic isolation.**
- **IP 20 housing (mounted on rail DIN TS 35 and TS 32).**
- **Intrinsic safety [Ex ia] IIC.**
- **High resistance to interference according to EN 61326-1/A1 (industrial environment).**



Application

The isolation device ZS-030 is designed for galvanic isolation of 4 to 20 mA current signal and for power supply of intrinsically safe transmitters in two-wire connection to be used in explosive environment. It can be also used for galvanic isolation of an intrinsically safe 4(0) to 20 mA signal loop (without power supply to transmitter) and for conversion of a 4 to 20 mA current signal to 0 to 20 mA current signal. The device supports communication with SMART transmitters using HART protocol across galvanic isolation.

Supplementary parameters

The power supply is designed as insulation class II, installation overvoltage category 3 acc to EN 61010-1 (CAT III - 300 V). The powering circuit for transmitter is type SELV and is resistant against long-term short-circuit and is protected by resettable thermal fuse. The device is intended for continuous operation and has no mains power switch, therefore a switch or circuit-breaker must be installed in lead in power line. The device is protected by internal current fuse F80 mA / 230 V and only the manufacturer can replace it. Device must be installed according to ATEX directive and local and international standards.

The manufacturer issued EC Declaration of Conformity.

Description

The device must be installed in an environment without explosion hazard. Only wires connected to the intrinsically safe side of the device (terminals 1 – 3) may lead to an environment with explosion hazard. The device is designed for rail mounting – DIN TS 35 and TS32 with IP 20 housing. Plastic housing features high mechanical resistance and temperature stability.

Technical specifications

Application: isolating of current signal and power supply of intrinsically safe transmitter

Input signal: 4 (0) to 20 mA

Output signal: 4 (0) to 20 mA, max load 600 Ohm

Output signal accuracy:
≤ ±0.1 % (for input current 0.5 to 20 mA)

Voltage for powering of two-wire transmitter:
(between terminals 2 and 3)
without HART transparency 16 to 19 VDC / 21 mA
with HART transparency 15 to 19 VDC / 21 mA

Voltage drop between terminals 1 and 2:
without HART transparency < 230 mV / 21 mA
with HART transparency < 2 V / 21 mA

Supply voltage:
230 VAC (±10 %), 48 to 62 Hz

Power consumption:
max 5 VA

Influence of ambient temperature:
for signal accuracy ≤ ±0.1 %/10 °C
for transmitter powering voltage ≤ ±1.1 %/10 °C

Effect of supply voltage change:
without any effect on signal accuracy

EMC: EN 61326-1

Isolation resistance:
min. 50 MOhm

Operating conditions

Ambient temperature:
-30 to +60 °C

Humidity:
10 to 80 % r. h.

Altitude:
up to 2000 m above sea level

Others parameters

Housing: (acc to EN 60529): IP 20

Weight: 270 g

Material of enclosure: PA

Suitable mounting rails:
35 x 27 x 7,5 mm EN 50022
35 x 24 x 15 mm EN 50022
35 x 27 x 15 mm
32 mm EN 50035 G-32

Dielectric strength:
4000 VAC, input and output circuits against power supply circuit
2500 VAC, output circuit against input or transmitter powering circuit

Special conditions for safe use of intrinsically safe circuit

Protection:
Ex II (1) G [Ex ia] IIC acc to EN 60079-11:2007 and EN 60079-0:2007

Certificate:
EC-Type Examination Certificate FTZÚ 02 ATEX 0146 X

Terminals 1, 2 and 3:

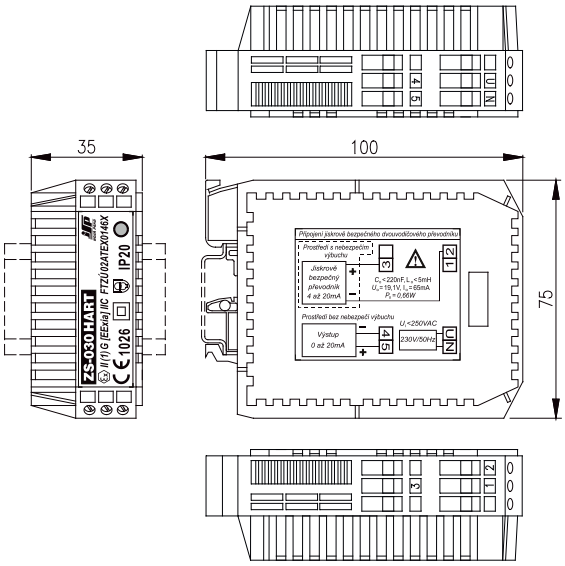
U_O = 19,1 V	U_i = 28 V
I_O = 65 mA	I_i = 93 mA
P_O = 0,66 W	P_i = 0,66 W
C_O < 220 nF	C_i ~ 0 nF
L_O < 5 mH	L_i ~ 0 mH

In case of connection of device of category IIB acc to EN 60079-11:2007 following parameters can be used:
C_O < 1400 nF and L_O < 20 mH.

Terminals U and N:
U_m = 250 V

Terminals 4 and 5:
U_m = 250 V

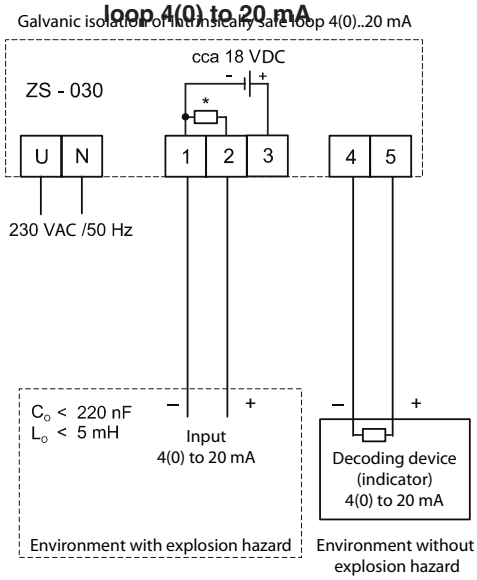
Dimension drawing



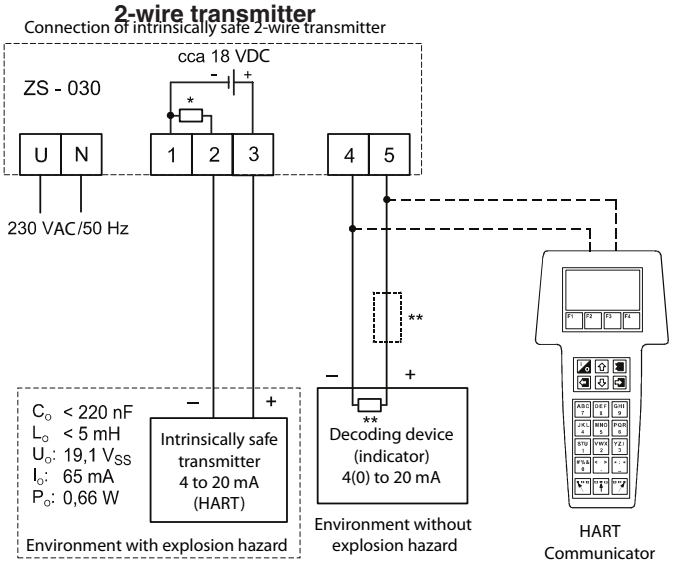
Screw terminals are used to connect wires with cross-section of 0.5 to 1.5 mm².
Minimum distance between mains power terminals from metal panel is 8 mm!

Electrical connections

Galvanic isolation of intrinsically safe loop 4(0) to 20 mA



Connection of intrinsically safe 2-wire transmitter



* Voltage drop for device without HART signal transparency < 230 mV / 21 mA.
Voltage drop for device with HART signal transparency < 2 V / 21 mA.

** HART communication requires loop resistance between terminals 4 and 5 to be at least 250 Ohm.

	Type	Description
•	**119 030**	**ZS-030, intrinsically safe isolator and stabilized power supply (Ex) II (1)G [Ex ia] IIC, FTZÚ 02 ATEX 0146X**
	Code	**Signal conversion**
•	**0**	**4 to 20 mA into 4 to 20 mA or 0 to 20 mA into 0 to 20 mA without HART Communication**
•	**1**	**4 to 20 mA into 0 to 20 mA without HART Communication**
	2	4 to 20 mA into 4 to 20 mA or 0 to 20 mA into 0 to 20 mA with HART Communication
	3	4 to 20 mA into 0 to 20 mA with HART Communication
Example of order: 119 0300		

• ... Ex stock version