

# MANUAL

## ZS-020

### Isolator and Stabilized Power Supply without/with HART Communication



- Galvanic isolation of current signal and power supply for 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, active or passive output
- Two-way transmission of HART communication signal across galvanic isolation
- Dielectric strength 4000 VAC against power supply circuit and 2500 VAC against transmitter powering circuit
- Housing IP 20 (to DIN rails TS 35 and TS 32)
- High resistance to interference according to EN 61326-1 (industrial environment)

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## 1. General instructions and information

### 1.1 Symbols used



Symbol of warning; for safe use it is necessary to proceed according to the instructions



Symbol CE certifies compliance of the product with the respective government directives



The double insulation symbol shows that the device is protected by double or reinforced insulation



The product does not belong to public waste and it is subjected to separate collection

### 1.2 Safety cautions and warnings



The equipment may only be installed by a qualified personnel who are familiar with national and international laws, directives, standards and with the instructions manual.

The instrument may not be used for other purposes than as specified in this instruction manual. For elimination of a risk of injury from electric shock or fire, the maximum operational parameters of the instrument may not be exceeded.

The device should be installed in suitable environment without any direct sunlight, occurrence of dust, high temperatures, mechanical vibrations and shocks and protected against rain and excessive moisture.

### 1.3 Scope of delivery

With the product is delivered:

- Manual for installation, operation and maintenance

### 1.4 Description of the delivery and packing

The product is packaged in a protective cover and provided with an identification label with a mark of the output control.

The product must not be exposed to direct rain, vibrations and shocks during transport.

### 1.5 Storage

Devices should be stored at the temperature ranging from -30 to +60 °C and at relative humidity up to 80 %, in place where condensation onto the products is excluded. Products must not be exposed to any crash, shock and any action of harmful vapors and gases.

### 1.6 Installation and commissioning

During installation, commissioning, operation and maintenance follow the instructions in chapter 4.

### 1.7 Spare parts

Any of the compact parts of the product can be also ordered as a spare part if there are not required special procedures or technological operations for the exchange.

### 1.8 Repairs

Products are repaired by the manufacturer. The products for repair should be sent in a packing that guarantees damping of shocks and vibrations and protects against damage during transport.

## 1.9 Warranty

Products are covered by a warranty for a period of 24 months from the delivery date on the delivery note. The manufacturer guarantees technical and operational parameters of the products within scope of the applicable documentation. Warranty period is specified with individual items and begins from the day of takeover of the goods by the purchaser or delivery to the carrier. Any claims concerning to defects of the goods together can be filed in writing with the manufacturer within the warranty period and the claimed product shall be presented. The claiming party shall give identification of the product, number of the delivery note and description of the fault or defect.

The manufacturer is not responsible for any defects caused by improper storage, incorrect connection, damages caused by external effects, in particular by effects of factors with excessive values, unqualified installation, improper operation or common wearing.

### 1.10 Lifetime

Minimal lifetime of the product is 10 years.

## 2. End of service and disposal

### 2.1 End of service



Dismounting and disposal of the device is possible after disconnecting of power supply voltage.

### 2.2 Disposal



The product does not contain any environmentally harmful parts. When disposing the packing and destroyed or irreparably damaged product proceed according to the local regulations.

### 3. Product description

## ZS-020 Isolator and Stabilized Power Supply without/with HART Communication

- Galvanic isolation of current signal and power supply for transmitter
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#### 3.1 Application

The isolation device ZS-020 is designed for galvanic isolation of 4 to 20 mA current signal and for power supply of transmitters in two-wire connection in areas without explosion hazard. It can be also used for conversion of a 4 to 20 mA current signal to 0 to 20 mA current signal or as galvanic isolation of 4(0) to 20 mA. The device supports communication with SMART transmitters using HART protocol across galvanic isolation.

#### 3.2 Description

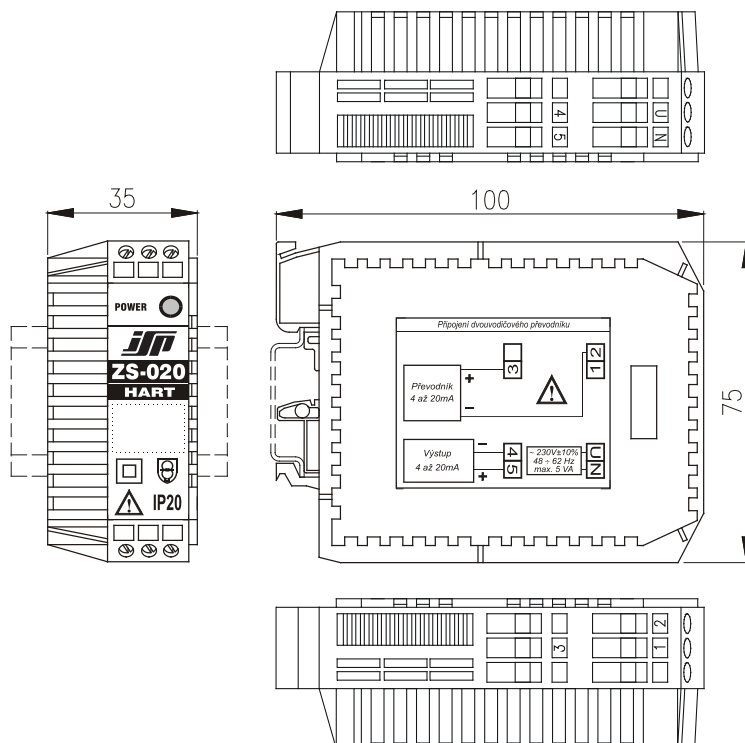
The device is designed for rail mounting – DIN TS 35 and TS 32 with IP 20 housing. Transmitter or indicator can be connected to the power supply device. Used plastic housing features with high mechanical resistance and temperature stability.

#### 3.3 Dimension drawing

##### 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

Screw terminals are used to connect wires with cross-section of 0.5 to 1.5 mm<sup>2</sup>. Minimum distance between mains power terminals from metal panel is 8 mm!



## 4. Installation, operation and maintenance

### 4.1 Installation and commissioning

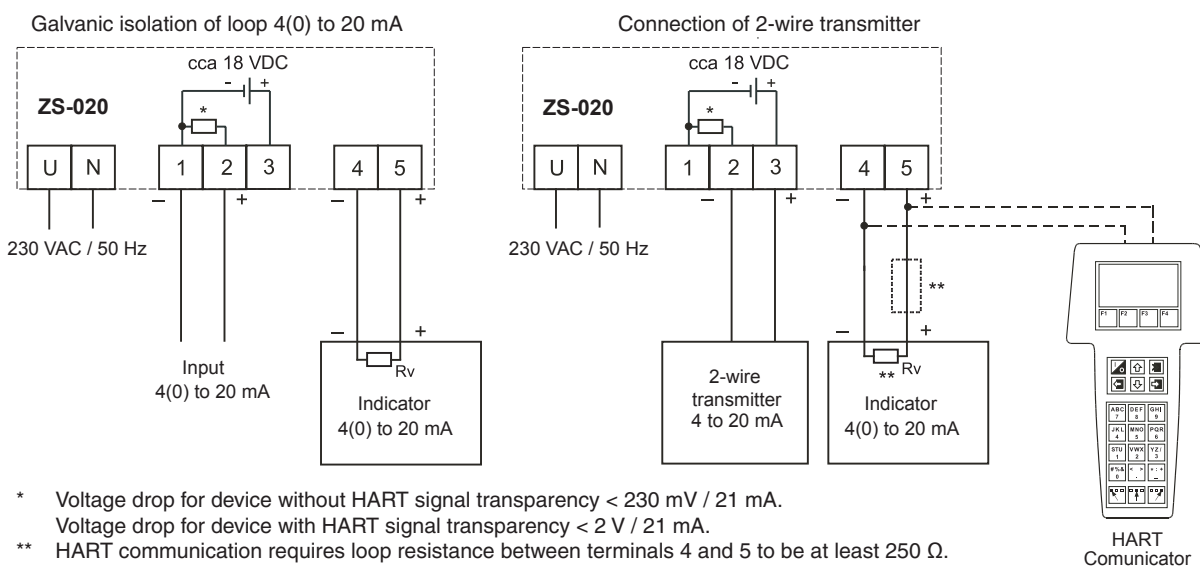
#### 4.1.1 General

The product is designed for installation in an environment without explosion hazard. The device is designed for rail mounting within an installation cabinet. The device must be installed in vertical position (see picture) and the cooling openings must remain unobstructed to prevent overheating. The power supply device is designed for continuous operation and power supply has no fuse nor mains power switch. Therefore external fuse F80 mA / 230 V or circuit breaker should be installed. Power supply has to be able to switch off.

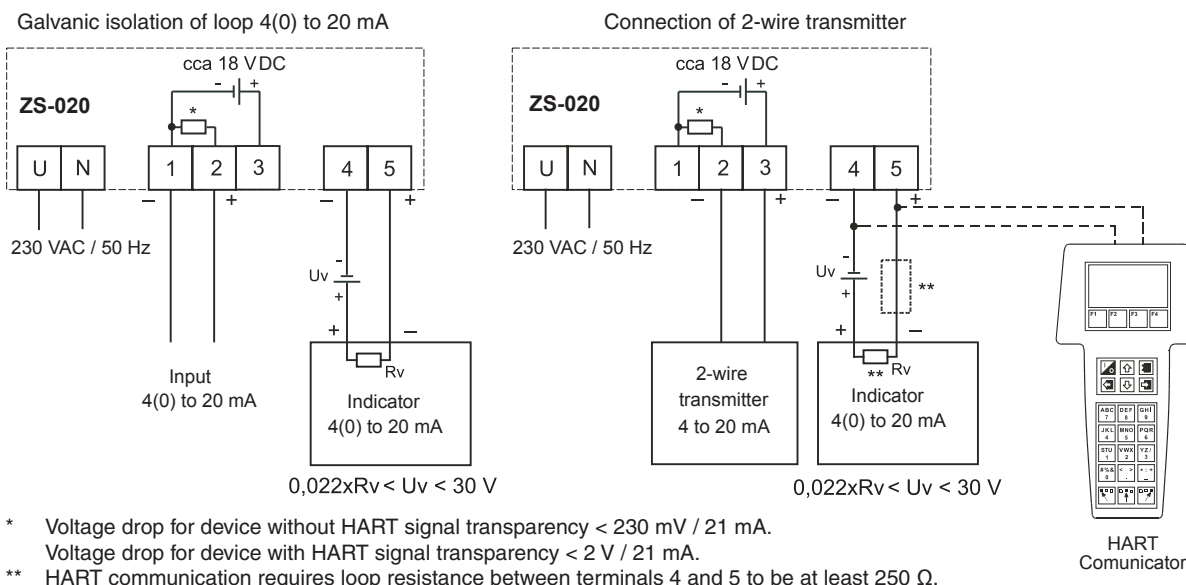
Switch must be installed close to the installed power supply device, identified as a disconnecting device and easily accessible to the operator. The device may be installed only by qualified personnel. The device must be installed in accordance with the corresponding harmonized standards. Screw terminals are used to connect wires with cross-section of 0.5 to 1.5 mm<sup>2</sup>. Mains power terminals must be at least 8 mm from the metal panel. In case of mounting in a S55 cabinet, the outer diameter of wires has to be in range 7 to 10 mm and the cable glands PG11 should be carefully tightened and sealed in order to maintain housing IP 55. Plugs are used to seal unused cable glands.

#### 4.1.2 Electrical connections

##### Active output



##### Passive output



### 4.2 Operation and maintenance

The device does not need any operation or maintenance.

## 5. Product specifications

### 5.1 Technical specifications

**Application:**

galvanic isolation of current signal  
and power supply of transmitter

**Input signal:**

4 (0) to 20 mA

**Output signal:**

active output 4 (0) to 20 mA, max. 600 Ω  
passive output 4 (0) to 20 mA, max. 30 V

**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

**Dielectric strength:**

4000 V<sub>STP</sub> input and output circuits against power  
supply circuit  
2500 V<sub>STP</sub> output circuit against input or transmitter  
powering circuit

**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 (Electromagnetic compatibility):**

EN 61326-1

**Isolation resistance:**

min. 50 MΩ

### 5.3 Operating conditions

**Ambient temperature:**

-30 to +60 °C

**Humidity:**

10 to 80 % r. h.

**Altitude:**

up to 2000 m above sea level

### 5.4 Other specifications

**Housing (according to EN 60529):**

IP 20

**Weight:**

270 g

**Material of enclosure:**

polyamide

### 5.2 Supplementary parameters

The power supply is designed as insulation class II, installation overvoltage category 3 according 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 protection. 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.

## 6. Ordering information

### 6.1 Ordering table

Type	Description
• 119 020	Isolator and stabilized power supply ZS-020 (rail mounted version, DIN TS 35, TS 32)
Code	Signal conversion
• 0	4 to 20 mA into 4 to 20 mA or 0 to 20 mA into 0 to 20 mA
1	4 to 20 mA into 0 to 20 mA
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
4	4 to 20 mA into 0 to 5 mA
Code	Optional version
PV	Passive output
Code	Optional accessories
S55	Box for wallmounting (170x145x85 mm, housing IP 55)

**Example of order: 119 0200**

• ... Ex stock version



## **JSP Industrial Controls**

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