

MANUAL

ZS-030

Intrinsically Safe 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
- 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
- Intrinsic safety [Ex ia Ga] IIC, [Ex ia Da] IIIC
- Housing IP 20 (to DIN rails TS 35 and TS 32)
- High resistance to interference according to EN 61326-1 (industrial environment)

Contents

1. General instructions and information	3
1.1 Symbols used.....	3
1.2 Safety cautions and warnings.....	3
1.3 Scope of delivery.....	3
1.4 Description of the delivery and packing.....	3
1.5 Storage.....	3
1.6 Installation and commissioning.....	3
1.7 Spare parts.....	3
1.8 Repairs.....	3
1.9 Warranty.....	3
1.10 Lifetime.....	3
2. End of service and disposal	3
2.1 End of service.....	3
2.2 Disposal.....	3
3. Product description	4
3.1 Application.....	4
3.2 Description.....	4
3.3 Dimension drawing.....	4
4. Installation, operation and maintenance	5
4.1 Installation and commissioning.....	5
4.2 Operation and maintenance.....	5
5. Product specifications	6
5.1 Technical specifications.....	6
5.2 Supplementary parameters.....	6
5.3 Operating conditions.....	6
5.4 Other specifications.....	6
6. Ordering information	6
6.1 Ordering table.....	6
7. Appendix	7
7.1 Declaration of conformity.....	7

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



The product meets requirements for explosion hazard environment according to the further specification

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
- Copy of EC certificate on type examination ATEX

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



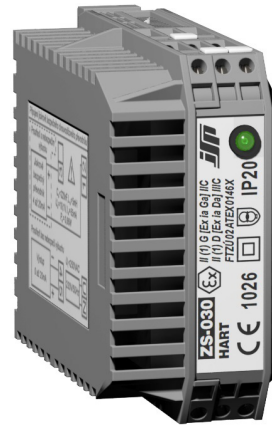
The product does not contain any environmentally harmful parts. When disposing the packing and destroyed or irreparably damaged product proceed according to the local regulations.

3. Product description

ZS-030

Intrinsically Safe 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
- 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
- Intrinsic safety [Ex ia Ga] IIC, [Ex ia Da] IIIC
- Housing IP 20 (to DIN rails TS 35 and TS 32)
- High resistance to interference according to EN 61326-1 (industrial environment)



3.1 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.

3.2 Description

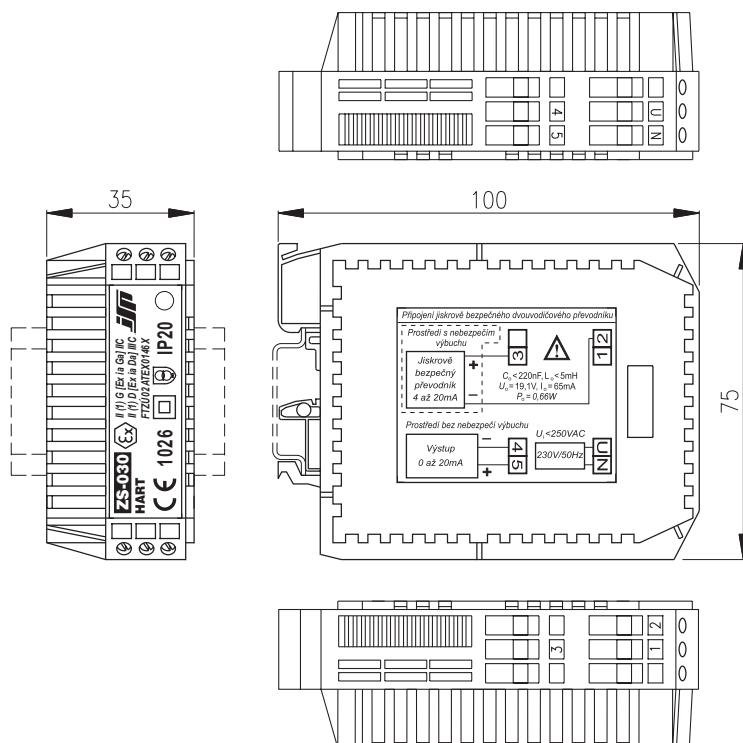
The device must be installed in an environment without explosion hazard. Only wires connected to the intrinsically safe side of the device (terminals 1 to 3) may lead to an environment with explosion hazard. The device is designed for rail mounting – DIN TS 35 and TS32 with IP 20 housing. Plastic housing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

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 mm². Minimum distance between mains power terminals from metal panel is 8 mm!



4. Installation, operation and maintenance

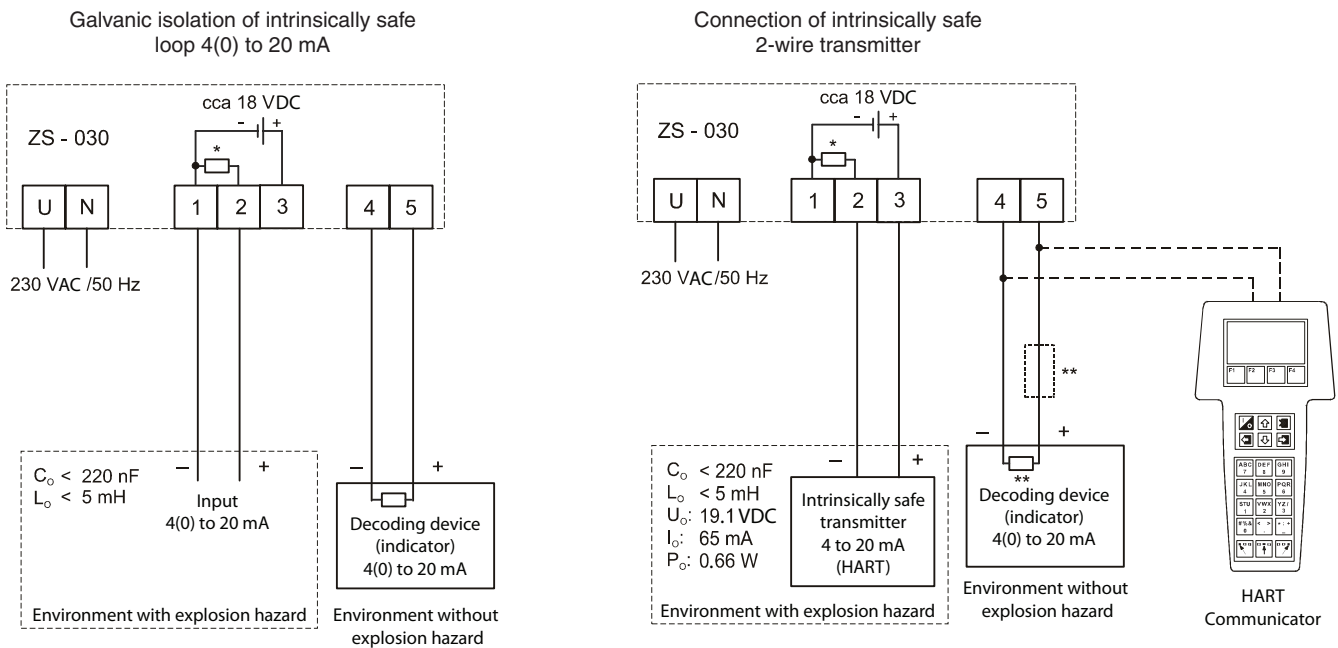
4.1 Installation and commissioning

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 has no mains power switch. The two pole disconnecting switch and external overcurrent protection according to EN

61010 clause 6.11.3.1 must be part of the installation. The switch must be in the immediate vicinity of the device, must be easily accessible and be marked as the disconnecting device. As over current protection apparatus can be used a circuit breaker with C characteristic and nominal current max 2 A. The device may be installed only by qualified personnel. Screw terminals are used to connect wires with cross-section of 0.5 to 1.5 mm². Mains power terminals must be at least 8 mm from the metal panel. A F80 mA / 230 V thermal fuse is installed in the mains power supply. The fuse can be replaced only by manufacturer and the user may not replace this fuse. The device must be installed in accordance with the corresponding harmonized standards. Upon connection of the mains power to the terminals, the device is ready for operation.

4.1.2 Electrical connections



- * 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 Ω.

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 intrinsically safe transmitter

Input signal:

4 (0) to 20 mA

Output signal:

4 (0) to 20 mA, max. 600 Ω

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_{STP} input and output circuits against power supply circuit

2500 V_{STP} output circuit against input or transmitter powering circuit

Special conditions for safe use of intrinsically safe circuit

Protection:

Ⓔ II (1)G [Ex ia Ga] IIC and II (1)D [Ex ia Da] IIIC
according to EN 60079-11:2012 and EN 60079-0:2012

Certificate:

EC-Type Examination Certificate FTZÚ 02 ATEX 0146X

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 60079-11:2012 following parameters can be used

C_o < 1400 nF a L_o < 20 mH.

Terminals U and N:

U_m = 250 V

Terminals 4 and 5:

U_m = 250 V

5.2 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 (see 4.1.1) 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.

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

6. Ordering information

6.1 Ordering table

Type	Description
• 119 030	Intrinsically safe isolator and stabilized power supply ZS-030 ([Ex ia Ga] IIC, [Ex ia Da] IIIC, 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
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

Example of order: 119 0300

• ... Ex stock version

7. Appendix

7.1 Declaration of conformity



JSP Industrial Controls

Power Supplies – PA9070EN – 2019/04

EU DECLARATION OF CONFORMITY

We, JSP, s.r.o.
Raisova 547, 506 01 Jičín, Czech Republic
VAT No. CZ49286684

declare under our sole responsibility that

The Product: Circuit Isolator and Stabilized Power Supply ZS-030

Type/Model: All versions

is under the conditions specified in the manual in conformity with the following standards:

Czech Standards	European Standards
ČSN EN 61326-1:2013	EN 61326-1:2013
ČSN EN 60079-0:2013	EN 60079-0:2012
ČSN EN 60079-11:2012	EN 60079-11:2012
ČSN EN 61010-1:2011	EN 61010-1:2010

and following directives:

Czech Directives	European Directives
117/2016 Sb. as amended	2014/30/EU as amended
116/2016 Sb. as amended	2014/34/EU as amended
118/2016 Sb. as amended	2014/35/EU as amended
481/2012 Sb. as amended	2011/65/EU as amended

Physical Technical Testing Institute (FTZÚ), Notified Body No. 1026, Registration No. (VAT) CZ00577880, Pikartská 7, 716 07 Ostrava - Radvanice, Czech Republic, tested the product and issued: EC-Type Examination Certificate No. FTZÚ 02 ATEX 0146X, Date of Issue 30.06.2002 with Amendment No.3, Date of Issue 14.06.2017 and Quality Assurance Notification No. FTZÚ 02 ATEX Q011.

No changes of the product were required to enable compliance with the above updated standards.

Place of Issue: Jičín

Name and Signature of the Manufacturer's Representative: Ing. Vladimír Frýba

Date of Issue: 12.04.2019

Function: Production Director



JSP Industrial Controls

JSP, s.r.o. | Raisova 547, 506 01 Jičín, Czech Republic
+420 493 760 811 | export@jsp.cz | www.jsp.cz

Your Supplier: