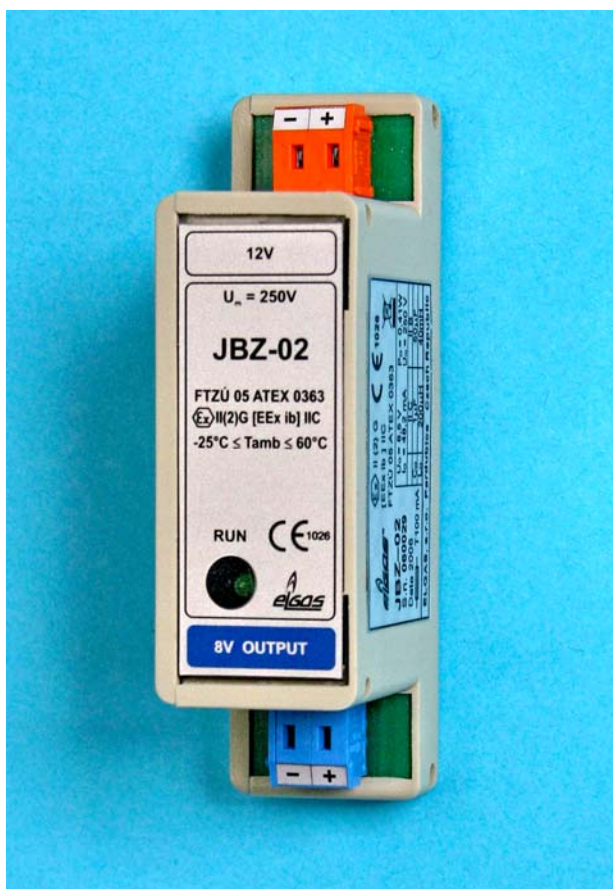


JBZ-02

Intrinsically safe power supply

Technical description

Instructions for use and installation



june 2006

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1 Technical description

Intrinsically safe power supply JBZ-02 serves as power supply for gas volume conversion device ELCOR-2 and microELCOR-2 and also for datalogger DATCOM-2¹ (further more only device). From the point of using in hazardous area is intrinsically safe power supply designed as associated apparatus which has to be placed outside of the hazardous area. Intrinsically safe power supply JBZ-02 is powered with direct voltage 12 V.

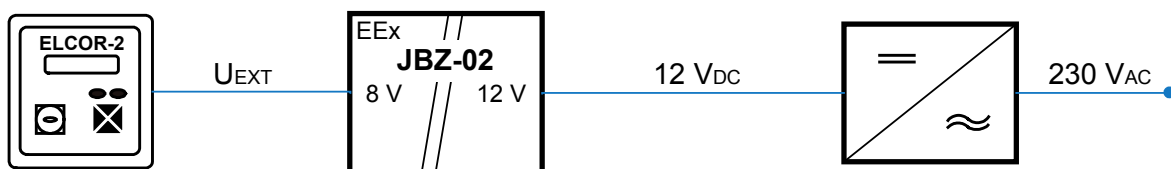
Intrinsically safe power supply JBZ-02 is manufactured into plastic box and assembly is on DIN bar 35 mm into distributor. Clamps with maximum cross-section 1,5 mm² are determined for connection of the cables .

Intrinsically safe power supply may power only one device ELCOR-2 or microELCOR-2 or DATCOM-2. Intrinsically safe power supply JBZ-02 should be used for external power supply of the device when operates under increased energetic consumption (for example: in case of often communication with the device and computer, etc.). JBZ-02 has to be used in case that the device (ELCOR-2, DATCOM-2) evaluates input signals of NAMUR type (HF pulse input, binary input).

Intrinsically safe power supply is manufactured in two variants, basic variant JBZ-02 and variant JBZ-02/A for power supply only from accumulator.

1.1 Basic variant JBZ-02

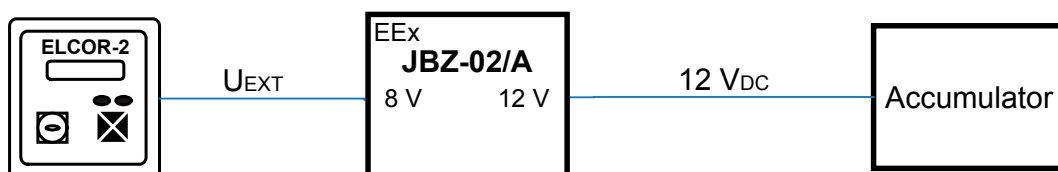
Basic variant is determined for systems which are powered from network voltage ($U_m = 250V$). JBZ-02 may also be powered from not back-up mains source or from the source which is back-up with accumulator, charged with mains charger, etc.



Basic variant (JBZ-02) has got galvanic separation between input circuit and intrinsically safe output circuit.

1.2 Variant JBZ-02/A

Manufacturing variant JBZ-02/A has got decreased consumption with comparison to basic variant. Using of JBZ-02/A is for systems which are powered



¹ Intrinsically safe power supply JBZ-02 may not be used for power supply of previous series of electronic datalogger DATCOM which was manufactured from 1998 to 2005.

from accumulator only. Accumulator may also be charged with solar panel ($U_m = 60V$).

This manufacturing variant does not have galvanic separation between input circuit and intrinsically safe output circuit (negative clamps of input and output are mutually interconnected).

Attention: Variant JBZ-02/A (intrinsically safe power supply) must not be powered from power supplies derived from network voltage 230 V. Also must not be powered from accumulator which is powered with network charger.

2 Operation of the device

2.1 Indication of operation

Intrinsically safe power supply does not require any special service. Green LED diode (located on the front cover) will switch on after connection of feeding. In case that LED diode will not switch on, it is necessary to check following: whether power supply is 'ON', check the polarity of connected input voltage or also state of the fuse may be checked.

2.2 Maintenance

Current fuse (F1) is a part of the device which is determined for purposes of intrinsic safety and also protects input circuits of power supply against overcurrent. Intrinsically safe power supply will not operate whenever the fuse is re-melted – decreasing of output voltage, green LED diode is not switched on. In such case is necessary to change the fuse with regards to keep type and value of the fuse which is marked on the printed circuit board.

Fuse is removable from the holder and is available after opening of assembling box. Before opening of the box is necessary to remove sealing of the manufacturer. Assembling box may be opened with a flat tool (such as screwdriver) by help of are separated both parts of the cover. During such operation is necessary to pay attention that intrinsically safe power supply is not mechanically damaged.

Table: Recommended types of fuses (different manufacturers)

Manufacturer	JBZ-02	JBZ-02/A
	T100mA/250V	T50mA/250V
Littelfuse	TR5 (372 0100 041)	TR5 (372 0050 041)
Schurter	MST250 (0034.6605)	MST250 (0034.6602)
Omega	MT785110	MT785050

3 Technical data


Mechanical parameters

plastic box	for assembly on DIN bar
dimensions (width x height x length)	27 x 42 x 96 mm (height without holder)
weight	0,06 kg
clamps	for connection of cables 1,5 mm ²

Environment

ambient temperature	-25 °C to +60 °C
storing temperature	-40 °C to +85 °C
protection class	IP20 (according to EN 60 529)
humidity	0 % to 95 % relative, without condensation

Non-hazardous variant

classification	 II(2)G [EEx ib] IIC
ATEX approval	FTZU 05 ATEX 0363
max. value of voltage Um	250 V (variant JBZ-02) 60 V (variant JBZ-02/A)
classification of environment	- non-hazardous area - normal environment (according to EN 33 2000-3)

Voltage (clamps 12 V)

range of supply voltage	12 V -10% / +25%
current consumption (off-load)	typically 27 mA at 14 V (JBZ-02) typically 2 mA (JBZ-02/A)
current consumption (short circuit on output)	max. 90 mA (JBZ-02) max. 55 mA (JBZ-02/A)
max. length of the cable	30 m ²⁾

Output of source (clamps 8V OUTPUT)

voltage off-load	typically 8,2 V
current limitation	typically 46 mA
max. length of the cable	30 m ^{1) 2)}
galvanic separation	1500 V (only for variant JBZ-02)
<i>Parameters of intrinsic safety</i>	
maximum output voltage U _o	8,5 V
maximum output current I _o	48,2 mA
maximum output power P _o	410 mW
maximum outer capacity C _o	1 μF (for gas grouping IIC) 50 μF (for gas grouping IIB)
maximum outer inductance L _o	200 μH (for gas grouping IIC) 40 mH (for gas grouping IIB)

- 1) Inductance and capacity of the cable (depends on used length and type of the cable) has to be in accordance with parameters of hazardous system.
- 2) see cabling

4 Cabling

It is not recommended to use cables with small cross-section regarding to cable resistance for cables with length longer than 5 m. Cable resistance may cause unwanted decrease on voltage in long distance. Recommended type of the cable is mentioned in the following table:

<i>marking</i>	<i>type</i>	<i>cross-section of the cable</i>	<i>inductance</i>	<i>capacity</i>	<i>resistance of cable</i>	<i>manufacturer</i>
Unitronic LiYCY 2x0.75	2 cable shielded	0,75 mm ²	0,65 mH/km	160 nF/km	27 R/km	Lappkabel Stuttgart

5 Packing

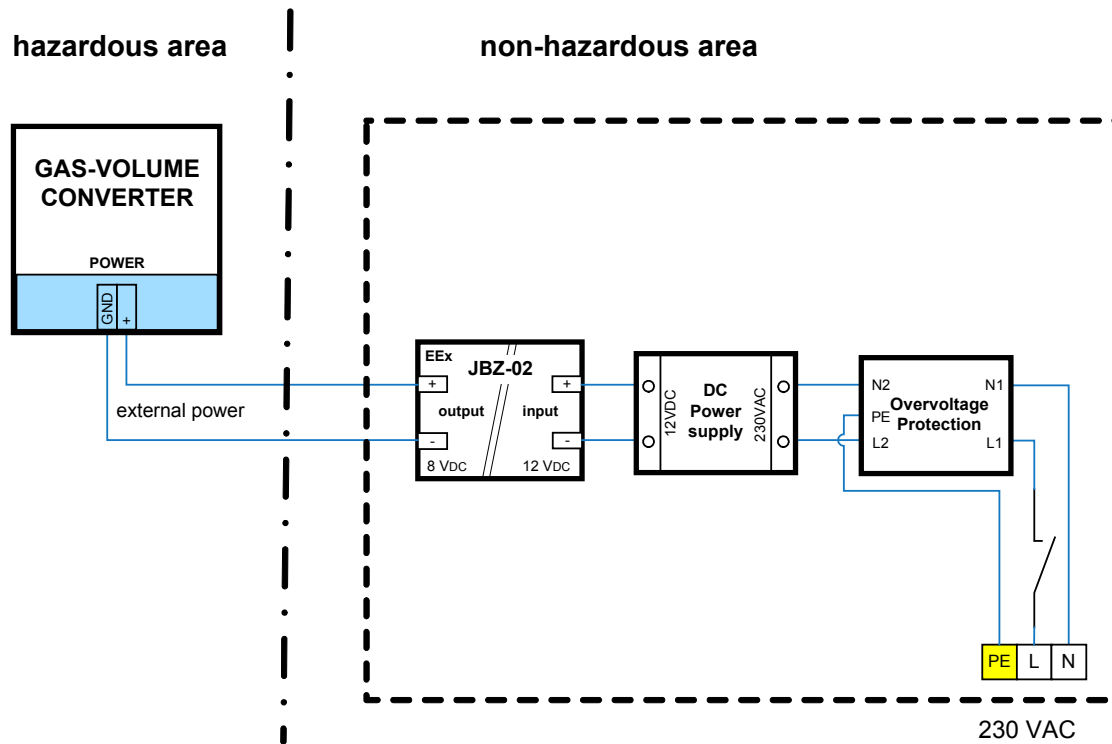
Delivery of each intrinsically safe power supply contains following items:

Intrinsically safe power supply JBZ-02 (JBZ-02/A)	1 pc
Fuse for spare	1 pc
Instructions for use and installation	1 pc

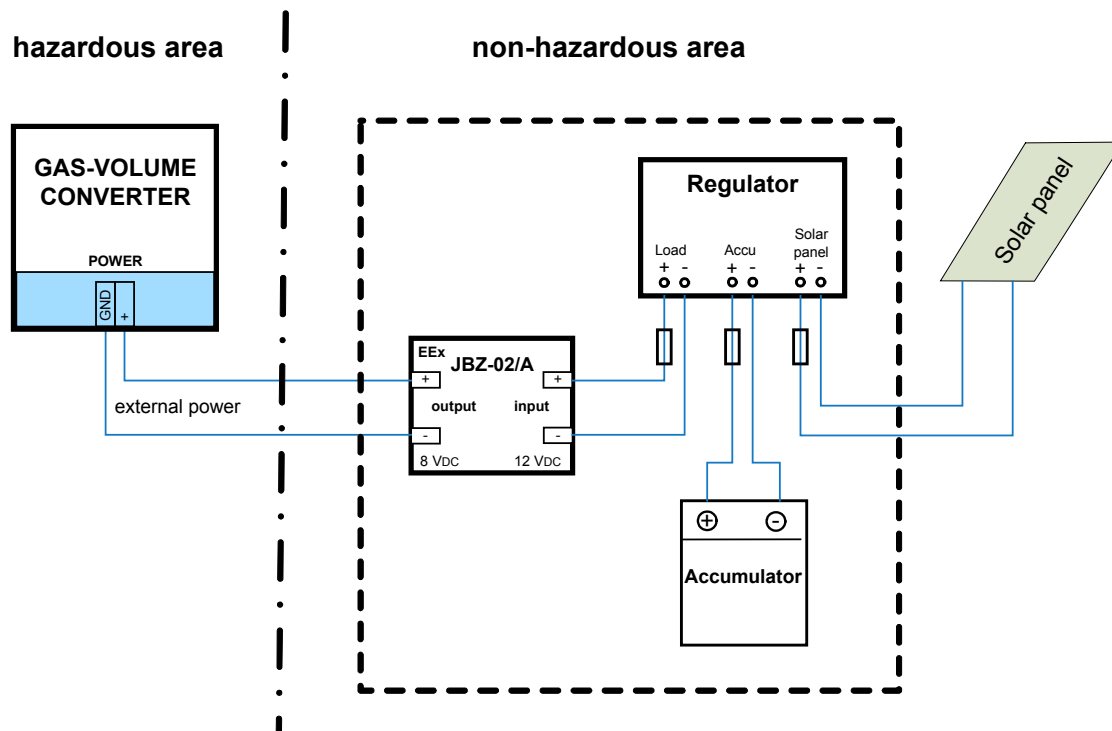
6 Warranty

Warranty period is specified by agreement or according to guarantee conditions of company Elgas, s. r. o. Typical warranty period is 24 months [4].

7 Example of external power supply connection to corrector



Picture no. 1 JBZ-02 with gas volume conversion device
(from mains power supply 230V without back-up)



Picture no. 2 JBZ-02/A with gas volume conversion device
(power supply from accumulator with charging from solar panel)

8 Literature

- [1] EN 50014:1997 +A1:1999 +A2:1999 +Z1:2004
Electrical apparatus for potentially explosive atmospheres - General requirements
- [2] EN 50020 ed-3:2002
Electrical apparatus for potentially explosive atmospheres - Intrinsic safety „i“
- [3] ES Certificate of type FTZU 05 ATEX 0363
- [4] Guarantee conditions of Elgas, s. r. o. company

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