OBSOLETE

Intrinsically safe repeater power supply
For applications in hazardous areas
Model IS Barrier

Applications

- Chemical, petrochemical industry
- Oil, natural gas
- Machine building

Special features

- Input 0/4 ... 20 mA, supplying and non-supplying
- Suitable for SIL 2 per IEC 61508/IEC 61511
- Bidirectional HART® signal transmission

Intrinsically safe repeater power supply model IS barrier

Description

The model IS barrier intrinsically safe repeater power supply has been designed for applications in combination with intrinsically safe 4 ... 20 mA sensors.
By using different connection terminals, 2-wire as well as 4-wire transmitters can be connected.

The analogue measured value is transmitted to the non-hazardous area, galvanically isolated from the hazardous area. On the output side, the repeater power supply can be operated as supplying or non-supplying.

The test sockets contained in the COMBICON connectors enable the direct connection of HART® communicators.

The repeater power supply has been tested for operation with the following WIKA products:

- LH-20
- IL-10
- IS-3
- IS-20
- IS-21
- IPT-1x
- DPT-1x
- UPT-2x
- T24
- T32

In intrinsically safe circuits, the repeater power supply enables the safe operation of these products. A template to create the proof of intrinsic safety can be found at www.wika.com.

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Input

Input
Active current input, intrinsically safe

Input signal, current
4 ... 20 mA

Current limitation
25 mA

Transmitter power supply
> DC 16 V (for 20 mA)
> DC 15.3 V (for 22.5 mA)

Under and overload signal range
0 ... 24 mA (extended transmission range for diagnostics)

Output

Output
Current output (active and passive)
Transfer 1 : 1 to input signal

Under and overload signal range
0 ... 24 mA (extended transmission range for diagnostics)

Load
< 1,000 Ω at 20 mA
< 825 Ω at 24 mA

Output ripple
< 20 mV_{eff}

Behaviour in the event of an error in accordance with NE43
0 mA (cable break in input)
≥ 22.5 mA (cable short circuit in input)

Galvanic isolation

Input / Output / Voltage supply
Insulation voltage: 300 V_{eff}
Overvoltage category II
Pollution degree 2
Safe isolation in accordance with EN 61010-1: 50 Hz, 1 min.
Test voltage: 2.5 kV

Input / Output
Voltage peak value in accordance with EN 60079-11: 375 V

Input / Voltage supply
Voltage peak value in accordance with EN 60079-11: 375 V

Voltage supply

Power supply
Nominal voltage: DC 24 V
Voltage range: DC 19.2 ... 30 V

Max. current supply
< 76 mA (DC 24 V / 20 mA / 1,000 Ω)
< 55 mA (DC 24 V / 20 mA / 250 Ω)

Dissipation loss

Output, active:	< 1.1 W (DC 24 V / 20 mA / 1,000 Ω)
	< 0.95 W (DC 24 V / 20 mA / 250 Ω)
Output, passive:	< 1.2 W (DC 24 V / 20 mA / 0 Ω)

Power consumption (output active)
< 1.8 W (20 mA / 1,000 Ω)
< 1.3 W (20 mA / 250 Ω)

Accuracy specifications

Transmission error
< 0.05 % of end value (typ.)
< 0.10 % of end value (max.)

Temperature coefficient
< 0.004 %/K (typ.)
< 0.01 %/K (max.)

Step response (10 ... 90 %)
< 200 µs (with step 4 mA ... 20 mA, load 600 Ω)
< 600 µs (with step 0 mA ... 20 mA, load 600 Ω)

Operating conditions

Ingress protection
IP 20

Overvoltage category
II

Flammability class in accordance with UL 94
V0

Pollution degree
2

Permissible ambient temperatures
Operation: -20 ... +60 °C
Storage: -40 ... +80 °C

Permissible humidity
10 ... 95 % (no condensation)

Mounting position
as required

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Materials

Case
PA 66-FR, anthracite grey (RAL 7016)

Electrical connections

Diameter of the test socket
2 mm

Wire cross-section
Rigid wire 0.2 ... 2.5 mm²
Flexible wire 0.2 ... 2.5 mm²
AWG 24 ... 14

Stripped length
7 mm

Tightening torque
0.5 ... 0.6 Nm

Reverse polarity protection
yes

HART® communication

Supported protocols
HART®

Signal bandwidth
corresponding to HART® specification

Safety-related data in accordance with ATEX

Operating mode
Supply isolated amplifier

Max. output voltage U_0
DC 25.2 V

Max. output current I_0
93 mA

Max. output power P_0
587 mW

Group
(Max. external inductance L_0 / Max. external capacitance C_0)
IIB: 4 mH / 820 nF
IIC: 2 mH / 107 nF

Maximum voltage U_m
AC 253 V / DC 125 V

Ignition protection types

ATEX
- II (1) G [Ex ia Ga] IIC/IIB
- II (1) D [Ex ia Da] IIC
- II 3 (1) G Ex nA [ia Ga] IIC/IIB T4 Gc
- I (M1) [Ex ia Ma] I

IECEx
- [Ex ia Ga] IIC/IIB
- [Ex ia Da] IIIC
- Ex nA [ia Ga] IIC/IIB T4 Gc
- [Ex ia Ma] I

cULus
- UL 61010 Listed
- Class I, Div. 2, Groups A, B, C, D T4
- Class I, Div. 2, Groups IIC, IIB, IIA T4
- Associated apparatus for use in Class I, Division 1, Groups A,B,C,D
- Associated apparatus for use in Class II, Div.1 Groups E,F,D
- Associated apparatus for use in Class III, Division 1
- Associated apparatus for use in Class I, Zone 0,1,2, Groups IIC,IIB,IIA

Dimensions in mm

W x H x D: 12.5 x 99 x 114.5 mm (without connection terminals)

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Approvals

Logo	Description	Country
CE Ex	**EC declaration of conformity** ■ EMC directive 2004/108/EC, interference immunity in accordance with EN 61000-6-2 During the interference, small deviations can occur Radiated emission in accordance with EN 61000-6-4 ■ ATEX directive 94/9/EC II (1) G [Ex ia Ga] IIC/IIB II (1) D [Ex ia Da] IIC II 3 (1) G Ex nA [ia Ga] IIC/IIB T4 Gc I (M1) [Ex ia Ma] I	European Community
IEC IECEx	**IECEx** Hazardous areas ■ [Ex ia Ga] IIC/IIB ■ [Ex ia Da] IIIC ■ Ex nA [ia Ga] IIC/IIB T4 Gc ■ [Ex ia Ma] I	IECEx member states
c UL us LISTED	**UL** Safety (e.g. electr. safety, overpressure, ...) Hazardous areas ■ Class I, Div. 2, Groups A, B, C, D T4 ■ Class I, Div. 2, Groups IIC, IIB, IIA T4 ■ Associated apparatus for use in Class I, Division 1, Groups A,B,C,D ■ Associated apparatus for use in Class II, Div.1 Groups E,F,D ■ Associated apparatus for use in Class III, Division 1 ■ Associated apparatus for use in Class I, Zone 0,1,2, Groups IIC,IIB,IIA	USA and Canada

Manufacturer‘s information and certifications

Logo	Description
SIL	**SIL 2** Functional safety

Approvals and certificates, see website

Ordering information
Order number 14117118

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