

Intrinsically safe repeater power supply

For applications in hazardous areas

Model IS Barrier

WIKAI data sheet AC 80.14



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 WIKAI products:

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

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.

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 μ s (with step 4 mA ... 20 mA, load 600 Ω)

< 600 μ s (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

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] IIC

■ 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)

Approvals

Logo	Description	Country
 	EC declaration of conformity <ul style="list-style-type: none"> ■ 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 <ul style="list-style-type: none"> 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
	IECEx Hazardous areas <ul style="list-style-type: none"> ■ [Ex ia Ga] IIC/IIB ■ [Ex ia Da] IIC ■ Ex nA [ia Ga] IIC/IIB T4 Gc ■ [Ex ia Ma] I 	IECEx member states
	UL Safety (e.g. electr. safety, overpressure, ...) Hazardous areas <ul style="list-style-type: none"> ■ 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 2 Functional safety

Approvals and certificates, see website

Ordering information

Order number 14117118

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