

# Intrinsically safe repeater power supply

## For applications in hazardous areas

### Model IS Barrier

WIKA data sheet AC 80.14

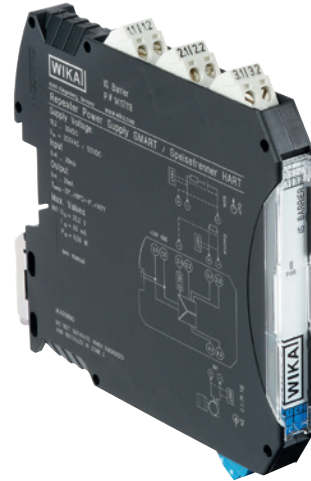


#### Applications

- 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 WIKA 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](http://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  $\Omega$  at 20 mA

< 825  $\Omega$  at 24 mA

### Output ripple

< 20 mV<sub>eff</sub>

### 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<sub>eff</sub>

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  $\Omega$ )

< 55 mA (DC 24 V / 20 mA / 250  $\Omega$ )

### Dissipation loss

Output, active: < 1.1 W (DC 24 V / 20 mA / 1,000  $\Omega$ )

< 0.95 W (DC 24 V / 20 mA / 250  $\Omega$ )

Output, passive: < 1.2 W (DC 24 V / 20 mA / 0  $\Omega$ )

### Power consumption (output active)

< 1.8 W (20 mA / 1,000  $\Omega$ )

< 1.3 W (20 mA / 250  $\Omega$ )

## 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  $\mu$ s (with step 4 mA ... 20 mA, load 600  $\Omega$ )

< 600  $\mu$ s (with step 0 mA ... 20 mA, load 600  $\Omega$ )

## 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 mm<sup>2</sup>

Flexible wire 0.2 ... 2.5 mm<sup>2</sup>

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
	<b>EC declaration of conformity</b> <ul style="list-style-type: none"> <li>■ 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</li> <li>■ 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</li> </ul>	European Community
	<b>IECEX</b> Hazardous areas <ul style="list-style-type: none"> <li>■ [Ex ia Ga] IIC/IIB</li> <li>■ [Ex ia Da] IIC</li> <li>■ Ex nA [ia Ga] IIC/IIB T4 Gc</li> <li>■ [Ex ia Ma] I</li> </ul>	IECEX member states
	<b>UL</b> Safety (e.g. electr. safety, overpressure, ...) <p>Hazardous areas</p> <ul style="list-style-type: none"> <li>■ Class I, Div. 2, Groups A, B, C, D T4</li> <li>■ Class I, Div. 2, Groups IIC, IIB, IIA T4</li> <li>■ Associated apparatus for use in Class I, Division 1, Groups A,B,C,D</li> <li>■ Associated apparatus for use in Class II, Div.1 Groups E,F,D</li> <li>■ Associated apparatus for use in Class III, Division 1</li> <li>■ Associated apparatus for use in Class I, Zone 0,1,2, Groups IIC,IIB,IIA</li> </ul>	USA and Canada

## Manufacturer's information and certifications

Logo	Description
	<b>SIL 2</b> Functional safety

Approvals and certificates, see website

### Ordering information

Order number 14117118

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