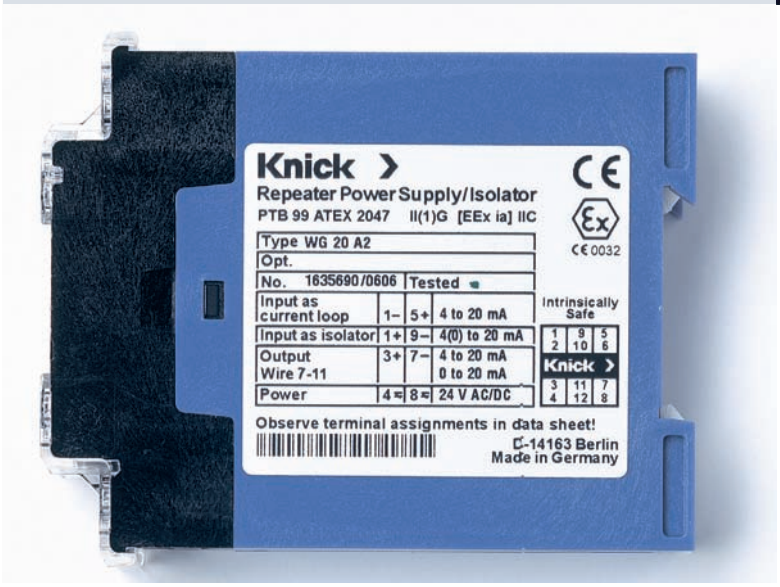
Modular Housings for Hazardous Areas

Knick

WG 20

For transmission of 0(4) ... 20-mA signals from hazardous areas or supply of intrinsically safe 2-wire transmitters.



The Task

The WG 20 power supply/isolator is used to supply intrinsically safe 2-wire transmitters. It supplies the transmitter with power and transmits the measurement signal to the output with high accuracy.

The Advantages

The WG 20 provides Safe Isolation and high insulation from the input to the output and to the power supply.

The Technology

An additional measurement current input allows use as a highly accurate standard-signal isolator in hazardous areas.

High supply voltage, good hazardous area ratings and the simple LiveZero (4...20 mA) / Dead Zero (0...20 mA) switching allow universal applications.

The WG 20 achieves an extraordinarily high transmission accuracy for hazardous-area applications.

The control range of the measuring circuit extends to the negative values and allows strictly linear transmission also in the zero range.

The encapsulation technique allows maximum operating safety, long-time stability, and disruptive strength even under extreme conditions.

Warranty
5 years!

Defects occurring within 5 years from delivery are remedied free of charge at our works (carriage and insurance paid by sender).

Repeater Power Supplies

Knick

The Facts

Universal use for 2-wire transmitters or as standard-signal isolators
Low stockkeeping costs with many application possibilities

Safe Isolation according to EN 61140
Protection of maintenance staff and subsequent devices against non-permitted high voltages

3-port isolation
Protection against incorrect measurements or damage to the equipment due to parasitic voltages

High transmission accuracy
Exact transmission of measured values

Explosion protection according to ATEX
Trouble-free use in hazardous areas

Output 0 ... 20 mA or 4 ... 20 mA, switchable
Universal adaptation to the following devices

Measuring circuit with linear zero crossing
No transmission loss in the zero range

Modular housing 22.5 mm
Straightforward installation due to compact design

5-year warranty

Product Line

Devices	Order No.
WG 20	WG 20 A2

Power supply

24 V AC/DC

WG 20

Specifications

Operation as a repeater power supply

Input (current loop)	4 ... 20 mA, intrinsically safe
Output	4 ... 20 mA/0 ... 20 mA, switchable [1]
Current loop	Intrinsically safe supply voltage 20 V, constant for 0 ... 22 mA, floating, resistant to continuous short-circuit, current limited to 30 mA, residual ripple < 10 mV_{pp}

Operation as isolation amplifier

Input [2]	0 ... 20 mA, intrinsically safe	4 ... 20 mA, intrinsically safe
Output	0 ... 20 mA	4 ... 20 mA/0 ... 20 mA, switchable [1]
Overload capacity (at input)	≤ 300 mA, limited by diode ≤ 1 V, 13 ohms	
Input voltage drop	≤ 300 mV	

Output data

Load	≤ 12 V
Offset	< 10 µA
Residual ripple at output	≤ 10 mV_{pp}

Transmission behavior

Transmission error (at output)	0.1% meas. val.
Cutoff frequency	1 kHz, –3 dB
Temperature coefficient (at output)	≤ 1 µA/K (reference temperature 23 °C)

Power supply

Power supply	24 V AC/DC AC –15 % +10 %, 48 ... 62 Hz, approx. 3.3 VA	DC –15% +20%, approx. 2.2 W

1) Additional error at output 10 µA
2) Transmission of negative signals up to approx. 3% full scale

Specifications *(continued)*

Isolation

Galvanic isolation	3-port isolation between input, output and power supply
Test voltage	4 kV AC (current loop, input / output / power supply)
Working voltages (basic insulation)	1000 V AC/DC current loop, input against output and power supply 800 V AC/DC output against power supply with overvoltage category II and pollution degree 2 according to EN 61010-1. For applications with high working voltages, you should ensure there is sufficient spacing or isolation from neighboring devices and protection against electric shocks. For hazardous area applications the maximum working voltage is 250 V.
Protection against electric shock	Safe Isolation according to EN 61140 by reinforced insulation in accordance with EN 61010-1. Working voltages with overvoltage category II and pollution degree 2: up to up to 600 V AC/DC across current loop, input, and output / power supply, as well as 250 V AC/DC across output and power supply. For applications with high working voltages, you should ensure there is sufficient spacing or isolation from neighboring devices and protection against electric shocks. For hazardous area applications the maximum working voltage is 250 V.

Standards and approvals

Explosion protection	II (1) G [EEx ia] IIC current loop, input intrinsically safe, PTB 99 ATEX 2047, for further details see certificates of conformity at our website: www.knick.de
EMC	89/336/EEC directive [3)]

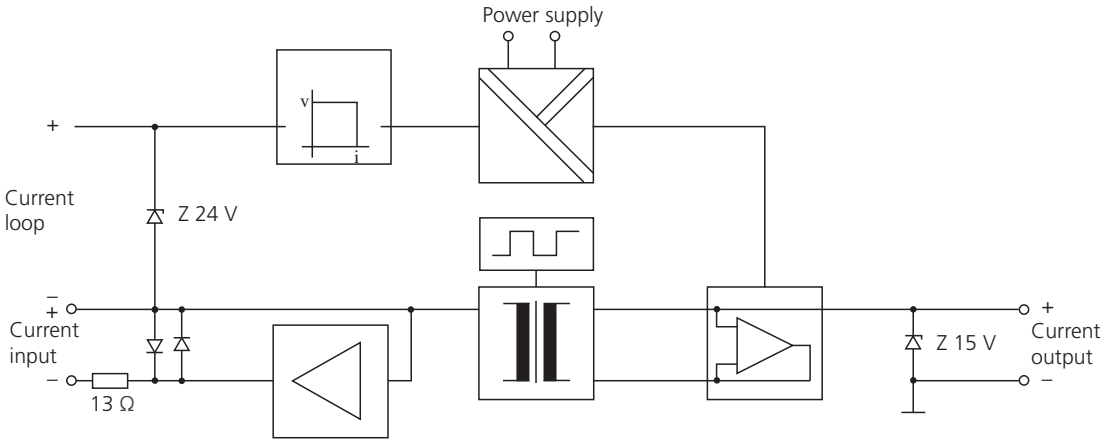
Other data

Ambient temperature	Operation: –10 ... +60 °C Transport and storage: –30 ... +80 °C
Design	Modular housing, width 22.5 mm, screw terminals See dimension drawings for further measurements
Ingress protection	Housing IP 40, terminals IP 20
Mounting	With snap-on mounting for 35 mm top hat rail according to EN50022 or M4 screw mounting, see dimension drawings for conductor cross section
Weight	Approx. 250 g

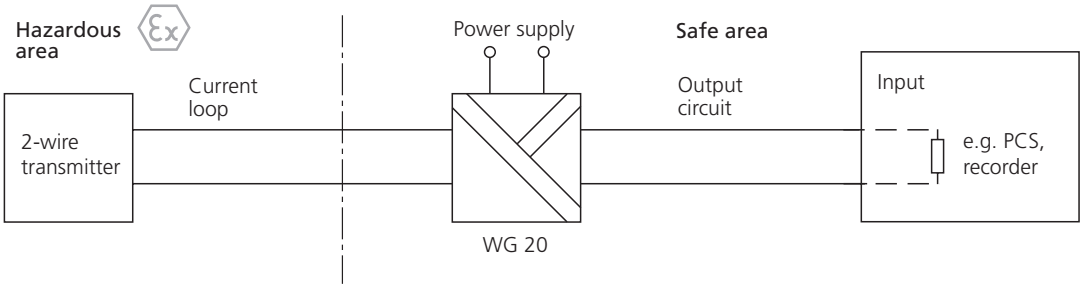
3) Deviations are possible while there is interference

WG 20

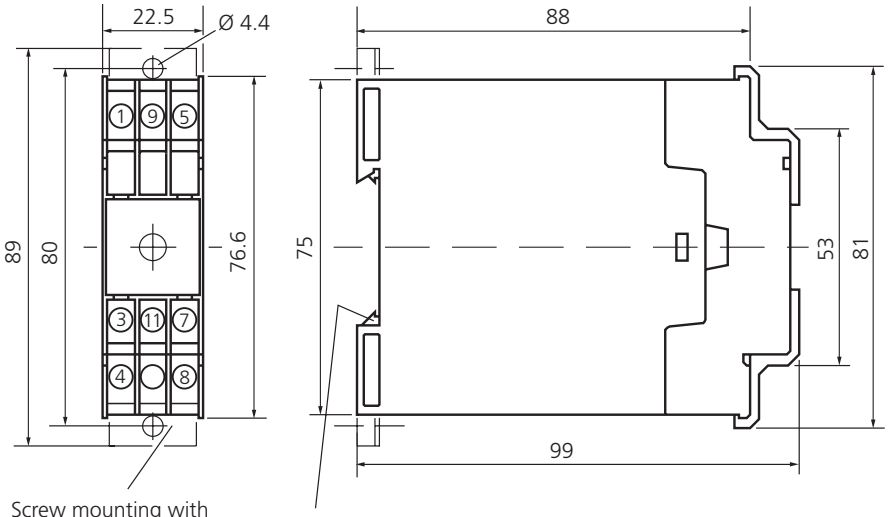
Block Diagram



Application Example



Dimension Drawings and Terminal Assignments



Screw mounting with extending lugs

Snap-on mounting for 35 mm top-hat rail (EN 50022)

M3x8 connecting screws with self-releasing clamping pieces, max. conductor cross-section 2x.1.5 mm² solid or 2x1.0 mm² stranded wire with ferrule

1 Current loop –; Input +
5 Current loop +
9 Input –

3 Output +
7 Output –; jumper
11 Jumper (for output 0 ... 20 mA: jumper 7–11)

4 Power supply ≈
8 Power supply ≈

All dimensions in mm!