

# Modular Housings for Hazardous Areas

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**WG 21**



**For supply of intrinsically safe 2-wire transmitters and SMART transmitters.**

## The Task

The WG 21 repeater power supply is used to supply intrinsically safe 2-wire transmitters. It supplies the transmitter with power and transmits the measurement signal to the output galvanically isolated and with high accuracy.

In addition to the analog signal, the WG 21 also optionally transmits data protocols for SMART transmitters (HART®). It allows bidirectional communication with the field device from every point of the cabling.



## The Advantages

The WG 21 provides Safe Isolation and high insulation between the input, output, and power supply.

## The Technology

The high supply voltage, the good hazardous area ratings and the broad-range power supply allow universal use. Cables 1400 m in length can therefore be used without any problems.

Thanks to a new transformer transmission technique, the WG 21 achieves an extraordinarily high transmission accuracy for hazardous-area applications.

The encapsulation provides maximum operating safety, long-term stability, and disruptive strength even under extreme ambient conditions.



# Repeater Power Supplies

Isolation Amplifiers  
Transmitters

Indicators

Process Analytics

Portable Meters

Laboratory Meters

Sensors

Fittings



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## ■ The Facts

### SMART transmission

(Optional) bidirectional point-to-point transmission of digital data according to HART® specification

### High supply voltage and good hazardous area ratings

Universal use

### Broad-range power supply

Just 2 versions for all mains voltages

### 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

### Modular housing 22.5 mm

Straightforward installation due to compact design

### 5-year warranty

HART® is a registered trademark of the HART Communication Foundation

Warranty  
**5 years!**

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



# Modular Housings for Hazardous Areas

## WG 21

### ■ Product Line

Devices	Order No.
WG 21	WG 21 A7
<b>Power supply</b>	
90 ... 253 V AC	
24 V AC/DC	336
<b>Options</b>	
Transmission of data protocols for SMART transmitters (HART®)	470

### ■ Specifications

#### Input data

Current loop Intrinsicly safe supply voltage  $\geq 18$  V, constant for 0 ... 22 mA, floating, current limited to approx. 30 mA; residual ripple 10 mV

#### Output data

Output 4 ... 20 mA<sup>1)</sup>

Load  $\leq 13$  V

Offset  $< 20$   $\mu$ A

Residual ripple at output  $< 10$  mV

#### Transmission behavior

Transmission error 0.2 % meas. val.

Response time  $< 10$  ms

Temperature coefficient  $< 0.5$   $\mu$ A/K + 0.005 %/K meas. val. (average TC), (reference temperature 23 °C)

Communication (Option 470) Bidirectional transmission of FSK signals according to the HART® specification between output and current loop

#### Power supply

Power supply 90 ... 253 V AC, 48 ... 62 Hz, approx. 3 VA

Option 336: 24 V AC/DC AC: -15 % +10 %, 48 ... 500 Hz, approx. 3 VA  
DC: -15 % +20%, approx. 2 W

1) Linear transmission of 3.6 ... 22 mA

### Specifications (continued)

#### Isolation

Galvanic isolation	3-port isolation between input, output and power supply
Test voltage	4 kV AC (current loop against output and power supply) 3 kV AC (power supply against output)
Working voltages (basic insulation)	1000 V AC/DC current loop against output and power supply, 600 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. Permitted working voltage for other overvoltage categories and pollution degrees on request. 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. 600 V AC/DC working voltage with overvoltage category II and pollution degree 2, 300 V AC/DC current loop against output and power supply, output against 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.

#### Standards and approvals

Explosion protection	II (1) G [EEx ia] IIC PTB 01 ATEX 2059 current loop intrinsically safe For further details see certificates of conformity at our website: <a href="http://www.knick.de">www.knick.de</a>
EMC <sup>2)</sup>	89/336/EEC directive, EN 61326, NAMUR NE 21

#### Other data

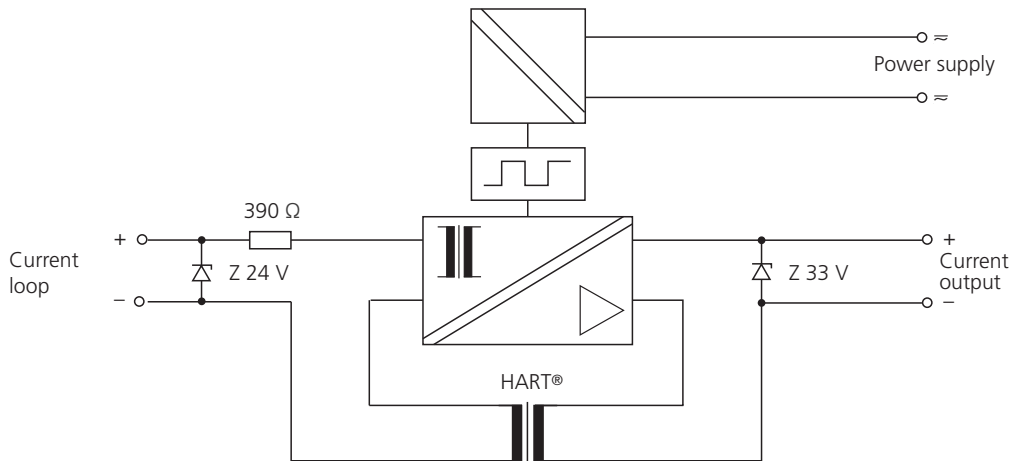
Ambient temperature	Operation: -10 ... +60 °C Transport and storage: -30 ... +80 °C
Design	Modular housing, width 22.5 mm, screw terminals See dimension drawings for further measurements
Ingress protection	Housing IP 40, terminals IP 20
Mounting	With snap-on mounting for 35 mm top hat rail according to EN 50022 See dimension drawings for conductor cross section
Weight	Approx. 250 g

<sup>2)</sup> Slight transmission errors are possible while there is interference

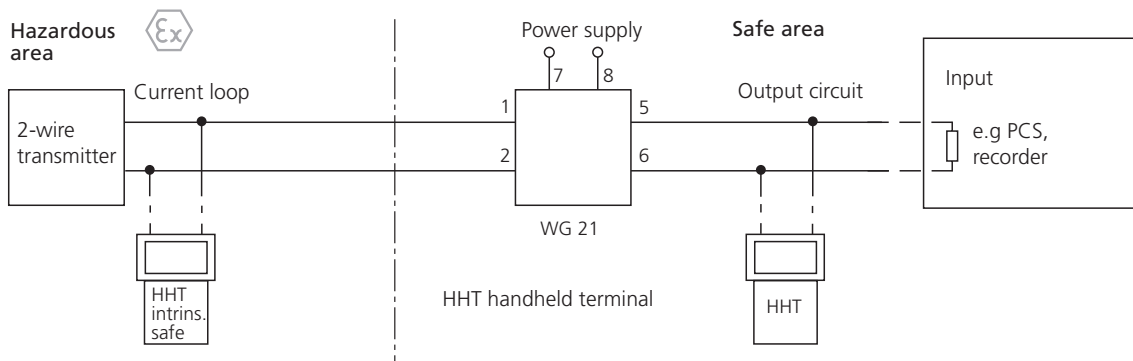
# Modular Housings for Hazardous Areas

## WG 21

### ■ Block Diagram



### ■ Application Example



HART® communication between transmitter and HHT at intrinsically safe current loop.

The communication signals are also transmitted to the non-intrinsically safe output circuit. A HART® resistor of 390 Ω is integrated in the WG 21.

HART® communication between transmitter and PCS, HHT at non-intrinsically safe output circuit.

The communication signals are transmitted bidirectionally via the WG 21. A minimum load resistance of 230 Ω is required. It should be added if necessary.

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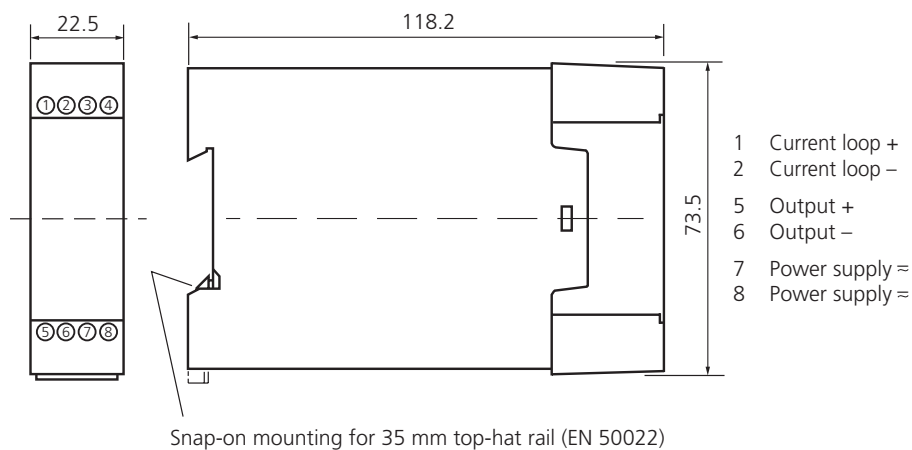
Laboratory Meters

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### ■ Dimension Drawings and Terminal Assignments



Captive M3x8 clamping screws, box terminals with self-releasing wire protection

Max. conductor cross-section 1 x 4 mm<sup>2</sup> solid  
1 x 2.5 mm<sup>2</sup> stranded wire with ferrule  
2 x 1.5 mm<sup>2</sup> stranded wire with ferrule

Installation, commissioning, and maintenance may only be carried out by trained personnel!

All dimensions in mm!