

**ProLine** Interface Technology

### Repeater Power Supplies (Ex)

### WG 21

For powering intrinsically safe 2-wire transmitters and SMART transmitters.





#### The Task

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

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

#### The Advantages

The WG 21 provides protective separation and high isolation 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 for universal use. Cables up to 1400 m in length can be used without any problems.

Thanks to a new transformer-based 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.



### WG 21

#### **Facts and Features**

- SMART transmission
  (Optional) Bidirectional point-topoint transmission of digital data according to the HART specification
- High supply voltage and good hazardous area ratings Universal use
- Broad-range power supply
  Just 2 versions for all mains voltages
- Protective separation according to EN 61140
   Protection of maintenance staff and subsequent devices against excessively 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 Easy use in hazardous areas
- 22.5 mm modular housing
  Straightforward installation due to compact design
- 5-year warranty







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#### **Product Line**

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

#### Specifications

Input data	
Current loop	Intrinsically safe supply voltage ≥ 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	≤13 V
Offset	
Residual ripple at output	<10 mV
Transmission behavior Transmission error	
Response time T <sub>90</sub>	<10 ms
Temperature coefficient	<0.5 μA/K +0.005 %/K meas. val. (average TC), (reference temperature 23 °C)
Communication (Option 470)	Bidirectional transmission of FSK signals between output and current loop according to HART specification
Power supply	
Power supply	90 253 V AC, 48 62 Hz, approx. 3 VA
Opt. 336:	24 V AC/DC AC: –15 % +10 %, 48 500 Hz, approx. 3 VA



### WG 21

#### **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 across current loop and output / power supply, 600 V AC/DC across output and power supply with overvoltage category II and pollution degree 2 according to EN 61010-1 For applications with high working voltages, take measures to prevent accidental contact and make sure that there is sufficient distance or insulation between adjacent devices. Allowable working voltage for other overvoltage categories and pollution degrees on request. The maximum working voltage for use in hazardous areas is 250 V.	
Protection against electric shock	Protective separation to EN 61140 by reinforced insulation according to EN 61010-1. 600 V AC/DC working voltage with overvoltage category II and pollution degree 2, 300 V AC/DC across current loop and output / power supply, across output and power supply For applications with high working voltages, take measures to prevent accidental contact and make sure that there is sufficient distance or insulation between adjacent devices.	
Standards and approvals		
Explosion protection	ll (1) G [EEx ia] IIC PTB 01 ATEX 2059, intrinsically safe current loop See certificates of conformity for further specifications	
EMC <sup>2)</sup>	EN 61326-1, NAMUR NE 21	
RoHS conformity	According to directive 2011/65/EU	
Further data		
Ambient temperature	Operation:-10 +60 °CTransport and storage:-30 +80 °C	
Ambient conditions	Indoor use <sup>3)</sup> Relative humidity 5 95 %, no condensation; max. altitude 2000 m (air pressure: 790 1060 hPa) <sup>4)</sup>	
Design	Modular housing, 22.5 mm wide, screw terminals; see dimension drawings for further measurements	
Tightening torque	0.6 Nm	
Ingress protection	Housing: IP 40, terminals: IP 20	
Mounting	With snap-on mounting for 35 mm DIN rail according to EN 60715	
Connection	Captive terminal screws M 3 x 8 ; box-type terminals with self-raising wire protection, max. conductor cross section: 1 x 4 mm <sup>2</sup> solid 1 x 2.5 mm <sup>2</sup> stranded with ferrule 2 x 1.5 mm <sup>2</sup> stranded with ferrule Only trained and gualified personnel may perform installation, commissioning, and maintenance!	
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 $^{1)}$  Linear transmission from 3.6  $\ldots$  22 mA

<sup>2)</sup> Low transmission errors possible while there is interference
 <sup>3)</sup> Closed, weather protected operating areas (stationary operation), water and wind-driven precipitation (rain, snow, hail, etc.) excluded
 <sup>4)</sup> Lower air pressure reduces the allowable working voltages.



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#### **Typical Application**



230 ohms is required and must be installed if necessary.



### WG 21

#### **Dimension Drawing and Terminal Assignments**



Snap-on mounting on 35-mm DIN rail to EN 60715

#### **Terminal assignments**

- Current loop + 1
- Current loop -2
- 5 Output +
- 6 Output -
- Power supply AC/DC Power supply AC/DC 7
- 8

Captive terminal screws M 3 x 8 Box-type terminals with self-raising wire protection, max. conductor cross section: 1 x 4 mm<sup>2</sup> solid

- $1 \times 2.5 \text{ mm}^2$  stranded with ferrule 2 x 1.5 mm<sup>2</sup> stranded with ferrule

Only trained and qualified personnel may perform installation, commissioning, and . maintenance!