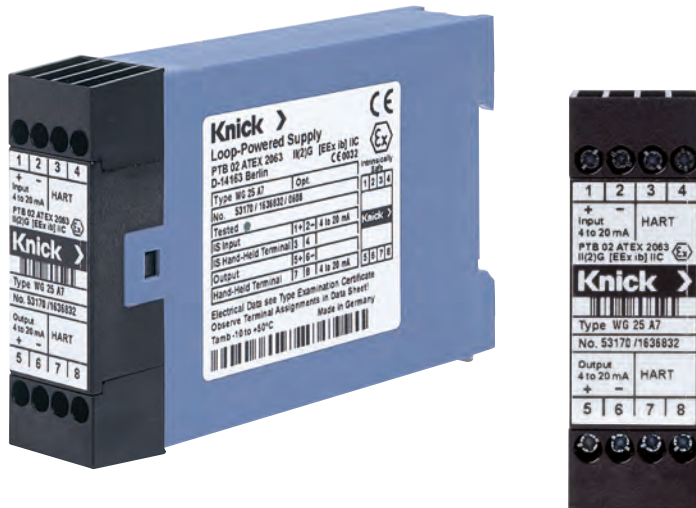# WG 25

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

The Task
The passive WG 25 repeater power supply is loop-powered. It is used for galvanic hazardous-area separation of a 2-wire supply line and transmits both 4 ... 20 mA and HART signals in both directions. With a voltage drop of just 4.2 V, the WG 25 uses the supply optimally so that all common 2-wire transmitters can be connected.

The Advantages
Compared with active repeater power supplies, it has considerable price and reliability advantages.

Multi-channel systems, for example, require only one central, safe-area power supply that does not even need protective separation.

The Technology
Using Knick TransShield technology, the WG 25 has specifications that were previously not available in passive repeater power supplies:

– Extremely high reliability, MTTF of over 300 years
– Protective separation, transient protection
– 10 kV test voltage (optional)
– High electromagnetic compatibility
– Extremely low residual ripple and common-mode interference
– Outstanding pulse formation
– HART transmission
– Hazardous/safe area separation

WG 25

Facts and Features

- **Affordable**
  Good price due to omission
  of integrated power supply

- **No mains supply required**
  Cost savings due to lower wiring
  effort, no mains influences

- **Low power losses**
  No unnecessary heating
  in the enclosure

- **Protective separation**
  according to EN 61140
  Protection of maintenance staff
  and downstream devices against
  excessively high voltages

- **HART transmission**
  Bidirectional point-to-point
  transmission of digital data
  according to the HART specification

- **EMC tested**
  RFI suppressed and surge proof,
  reliable operation even with
  electromagnetic interference

- **Maximum reliability**
  No maintenance work, therefore the
  related costs are not incurred

- **5-year warranty**

5 Year Warranty!

ProLine
Interface Technology

Loop-Powered Supplies (Ex)
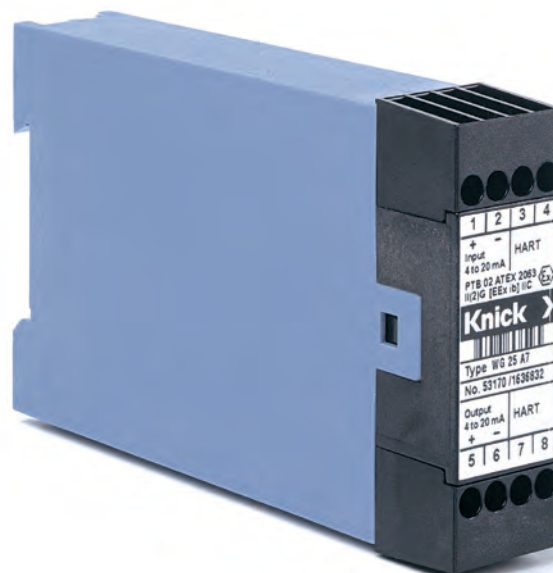
Product Line

Devices
Devices	Order no.
WG 25	**WG 25 A7**

Power supply
None, supply from input signal

Options
Options	Order no.
Increased test voltage 10 kV AC	**471**

Specifications

Input data
Input (current loop)	4 … 20 mA (transmission possible up to 22 mA), intrinsically safe
Supply voltage	≥ 17 V, short-circuit proof, see "Supply voltage" diagram
Min. operating current	< 1 mA
Input short-circuit current	≤ 28 mA
Voltage drop	< 4.2 V at 20 mA and supply ≤ 20 V, see "Supply voltage" diagram

Output data
Output	4 … 20 mA, 1:1 transmission (22 mA)
Overload capacity	50 mA, 30 V (corresponds to a 600-ohm load)
Offset	< 20 µA
Residual ripple V_{rms}	< 1.5 mV/mA

Transmission behavior
Transmission error	0.2 % meas. val.
Supply voltage influence	< 15 µA/V
HART attenuation	< 10 dB

Isolation
Test voltage	4.4 kV AC 10 kV AC with option 471
Working voltages (basic insulation)	1000 V AC/DC, 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. Up to 600 V AC/DC working voltage with overvoltage category II and pollution degree 2 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. The maximum working voltage for use in hazardous areas is 250 V.

WG 25

Specifications *(continued)*

Standards and approvals

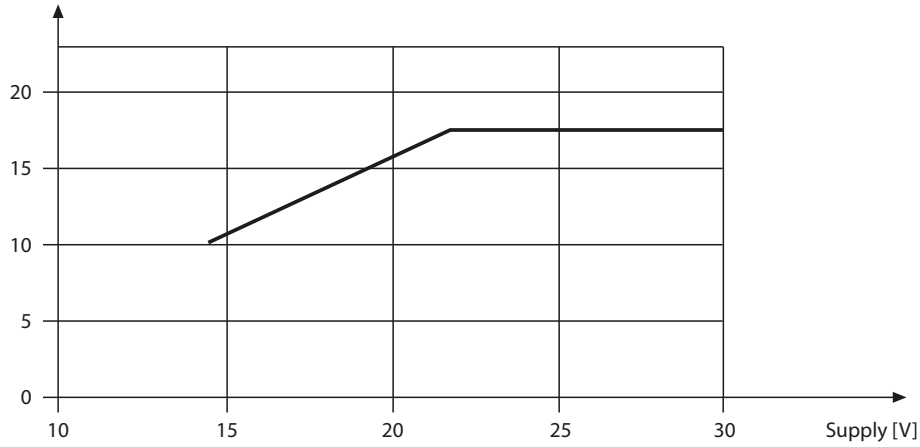|	
Explosion protection	II (2) G [EEx ib] IIC PTB 02 ATEX 2063
	See certificates of conformity for further specifications
EMC	EN 61326-1, NAMUR NE 21
RoHS conformity	According to directive 2011/65/EU

Further data

Ambient temperature	Operation: −10 … +50 °C
	Transport and storage: −30 … +80 °C
Ambient conditions	Indoor use[1]
	Relative humidity 5 … 95 %, no condensation; max. altitude 2000 m (air pressure: 790 … 1060 hPa)[2]
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^2 solid
	1 x 2.5 mm^2 stranded with ferrule
	2 x 1.5 mm^2 stranded with ferrule
	Only trained and qualified personnel may perform installation, commissioning, and maintenance!
Weight	Approx. 120 g

[1] Closed, weather-protected operating areas (stationary operation), water and wind-driven precipitation (rain, snow, hail, etc.) excluded
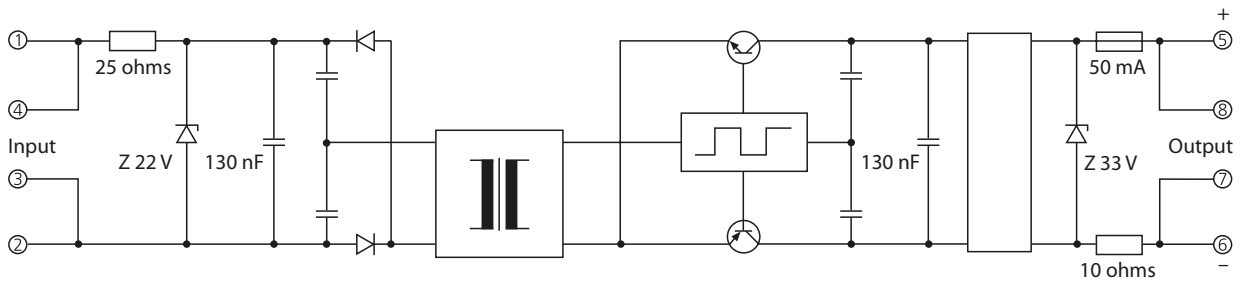[2] Lower air pressure reduces the allowable working voltages.

Supply Voltage Versus Supply

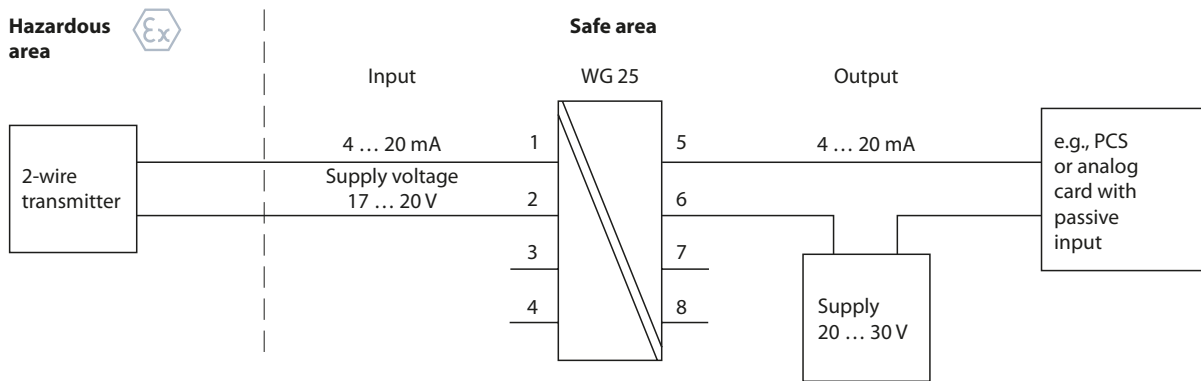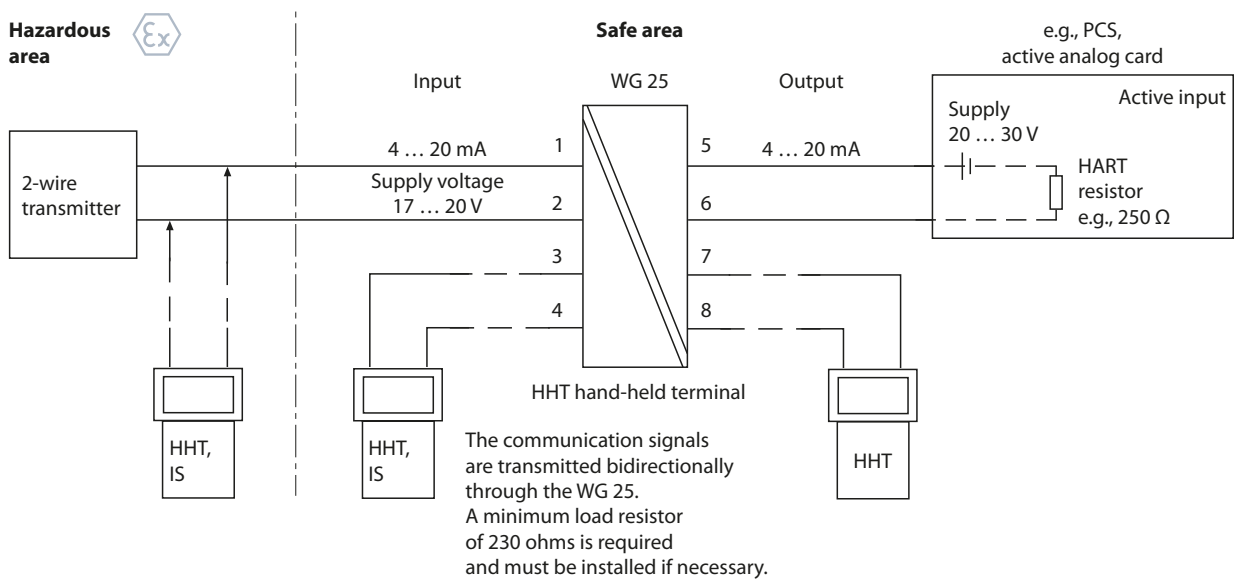Supply voltage at the 2-wire transmitter [V]

WG 25

Block Diagram

Typical Applications
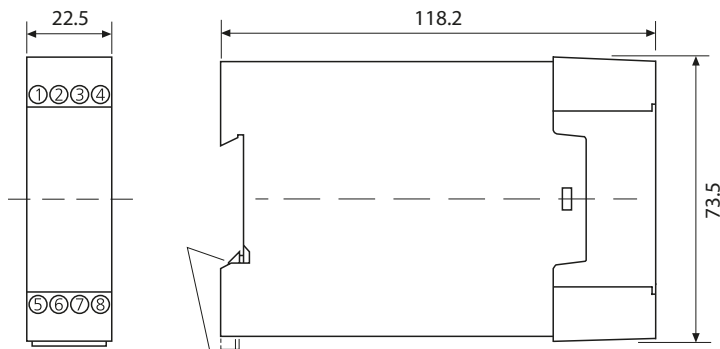
Without HART Ccommunication

Hazardous area ⟨Ex⟩

Safe area

Input WG 25 Output

2-wire transmitter

4 … 20 mA 1 5 4 … 20 mA

Supply voltage 17 … 20 V 2 6

3 7

4 8

Supply 20 … 30 V

e.g., PCS or analog card with passive input

With HART Ccommunication

Hazardous area ⟨Ex⟩

Safe area

e.g., PCS, active analog card

Input WG 25 Output

2-wire transmitter

4 … 20 mA 1 5 4 … 20 mA

Supply voltage 17 … 20 V 2 6

3 7

4 8

Supply 20 … 30 V Active input

HART resistor e.g., 250 Ω

HHT, IS

HHT, IS

HHT

HHT hand-held terminal

The communication signals are transmitted bidirectionally through the WG 25.
A minimum load resistor of 230 ohms is required and must be installed if necessary.

WG 25

Dimension Drawing and Terminal Assignments

22.5

118.2

73.5

①②③④

⑤⑥⑦⑧

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

Terminal assignments

1   Input +
2   Input –

3   HHT Ex
4   HHT Ex

5   Output +
6   Output –

7   HHT
8   HHT

Captive terminal screws M 3 x 8
Box-type terminals with
self-raising wire protection,
max. conductor cross section:
    1 x 4 mm^2 solid
    1 x 2.5 mm^2 stranded with ferrule
    2 x 1.5 mm^2 stranded with ferrule

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

All dimensions in mm