

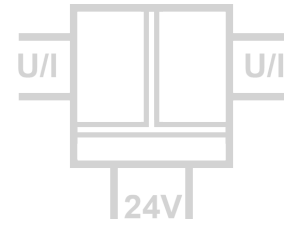


**Signal Converters  
 Isolation Amplifiers**

# Tiny Snap Series

# Bipolar Isolation Amplifier DB 68

Isolation and Conversion of Fixed Range Bipolar and Unipolar Standard Signals



The Isolation Amplifier DB 68 is used for isolation and conversion of bipolar and unipolar standard signals.

For applications where one signal combination only is used, the Isolation Amplifier DB 68 offers a cost-effective alternative.

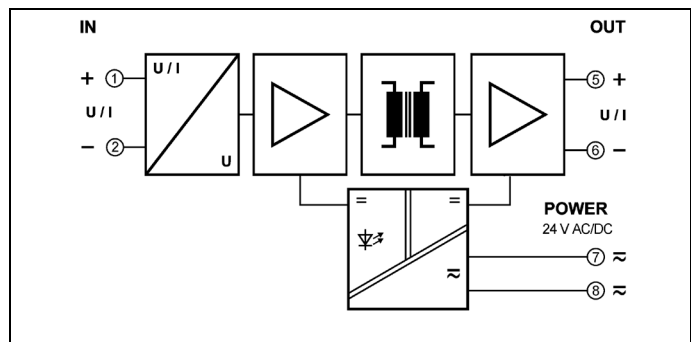
A cross-connector for the auxiliary power supply ensures fast and easy installation. The slim housing with 11.2 mm width saves significant space on the DIN-rail. If required a measuring range compensation can be performed at the Zero/Scan potentiometers behind the front cover.

Analog signal processing guarantees precise measured values with short response times and outstanding signal reproduction at the output. Protective Separation and the 24 V AC/DC power supply make the DB 68 universally applicable for all measurement and industrial applications, as well as for building automation.

- **Cost optimized design**  
Economical separation for standard applications
- **Only 60 mm installation depth, 11.2 mm wide**  
Can be installed in economical standard terminal boxes
- **Fixed ranges, easy to use**  
Ready to use without any settings or adjustments
- **Zero/Scan compensation on front panel**  
for readjustment of sensor signal or measuring equipment
- **True 3-port separation**  
Protection against erroneous measurements due to parasitic voltages or ground loops
- **Protective Separation acc. to EN 61140**  
Protects service personnel and downstream devices against impermissibly high voltage
- **Unlimited use with 24 V AC/DC power supply**  
Universally applicable for all measurement and industrial applications
- **5 Years Warranty**  
Defects occurring within 5 years from delivery date shall be remedied free of charge at our plant (carriage and insurance paid by sender)



Block diagram





## Technical Data

Input													
Input signal (see product line)	<table border="0"> <tr> <td><math>\pm 10\text{ V}</math></td> <td><math>\pm 5\text{ V}</math></td> <td><math>\pm 20\text{ mA}</math></td> <td><math>\pm 10\text{ mA}</math></td> </tr> <tr> <td>0 ... 10 V</td> <td>0 ... 5 V</td> <td>0 ... 20 mA</td> <td></td> </tr> <tr> <td>2 ... 10 V</td> <td>1 ... 5 V</td> <td>4 ... 20 mA</td> <td></td> </tr> </table>	$\pm 10\text{ V}$	$\pm 5\text{ V}$	$\pm 20\text{ mA}$	$\pm 10\text{ mA}$	0 ... 10 V	0 ... 5 V	0 ... 20 mA		2 ... 10 V	1 ... 5 V	4 ... 20 mA	
$\pm 10\text{ V}$	$\pm 5\text{ V}$	$\pm 20\text{ mA}$	$\pm 10\text{ mA}$										
0 ... 10 V	0 ... 5 V	0 ... 20 mA											
2 ... 10 V	1 ... 5 V	4 ... 20 mA											
Input resistance	<table border="0"> <tr> <td>Voltage input</td> <td>approx. 1 M<math>\Omega</math></td> </tr> <tr> <td>Current input</td> <td>approx. 5 <math>\Omega</math></td> </tr> </table>	Voltage input	approx. 1 M $\Omega$	Current input	approx. 5 $\Omega$								
Voltage input	approx. 1 M $\Omega$												
Current input	approx. 5 $\Omega$												
Overload	<table border="0"> <tr> <td>Voltage input</td> <td><math>\leq 250\text{ V}</math></td> </tr> <tr> <td>Current input</td> <td><math>\leq 200\text{ mA}</math></td> </tr> </table>	Voltage input	$\leq 250\text{ V}$	Current input	$\leq 200\text{ mA}$								
Voltage input	$\leq 250\text{ V}$												
Current input	$\leq 200\text{ mA}$												
Output													
Output signal (see product line)	<table border="0"> <tr> <td>0 ... 10 V</td> <td>0 ... 5 V</td> <td>0 ... 20 mA</td> </tr> <tr> <td>2 ... 10 V</td> <td>1 ... 5 V</td> <td>4 ... 20 mA</td> </tr> </table>	0 ... 10 V	0 ... 5 V	0 ... 20 mA	2 ... 10 V	1 ... 5 V	4 ... 20 mA						
0 ... 10 V	0 ... 5 V	0 ... 20 mA											
2 ... 10 V	1 ... 5 V	4 ... 20 mA											
Load	<table border="0"> <tr> <td>Voltage output</td> <td><math>\geq 2\text{ k}\Omega</math></td> </tr> <tr> <td>Current output</td> <td><math>\leq 500\text{ }\Omega</math></td> </tr> </table>	Voltage output	$\geq 2\text{ k}\Omega$	Current output	$\leq 500\text{ }\Omega$								
Voltage output	$\geq 2\text{ k}\Omega$												
Current output	$\leq 500\text{ }\Omega$												
Residual ripple	$< 10\text{ mV}_{\text{rms}}$												
General Data													
Transmission error	$< 0.2\%$ full scale												
Temperature coefficient <sup>1)</sup>	$< 0.02\%$ /K												
Zero/Span Compensation	$\pm 3\%$												
Cut-off frequency -3 dB	500 Hz												
Response time T <sub>99</sub>	$< 2\text{ ms}$												
Test voltage	3 kV AC, 50 Hz, 1 min.      input against output against power supply												
Working voltage <sup>2)</sup> (Basic Insulation)	600 V AC/DC for overvoltage category II and pollution degree 2 acc. to EN 61010-1												
Protection against electrical shock <sup>2)</sup>	Protective separation according to EN 61140 by reinforced insulation in accordance with EN 61010-1 up to 300 V AC/DC for overvoltage category II and pollution degree 2 between all circuits												
Ambient temperature	<table border="0"> <tr> <td>Operation</td> <td>- 20 to + 60 °C      (- 4 to + 140 °F)</td> </tr> <tr> <td>Transport and storage</td> <td>- 35 to + 85 °C      (- 31 to + 185 °F)</td> </tr> </table>	Operation	- 20 to + 60 °C      (- 4 to + 140 °F)	Transport and storage	- 35 to + 85 °C      (- 31 to + 185 °F)								
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Transport and storage	- 35 to + 85 °C      (- 31 to + 185 °F)												
Power supply	<table border="0"> <tr> <td>24 V AC/DC, <math>\pm 15\%</math></td> <td>AC: 48 ... 62 Hz, approx. 2 VA</td> </tr> <tr> <td></td> <td>DC: approx. 0.7 W</td> </tr> </table>	24 V AC/DC, $\pm 15\%$	AC: 48 ... 62 Hz, approx. 2 VA		DC: approx. 0.7 W								
24 V AC/DC, $\pm 15\%$	AC: 48 ... 62 Hz, approx. 2 VA												
	DC: approx. 0.7 W												
EMC <sup>3)</sup>	EN 61326-1												
Construction	11.2 mm (0.44") housing, protection class: IP 20, mounting on 35 mm DIN rail acc. to EN 60715												
Weight	Approx. 50 g												

1) Average TC related to full scale value in specified operating temperature range, reference temperature 23 °C

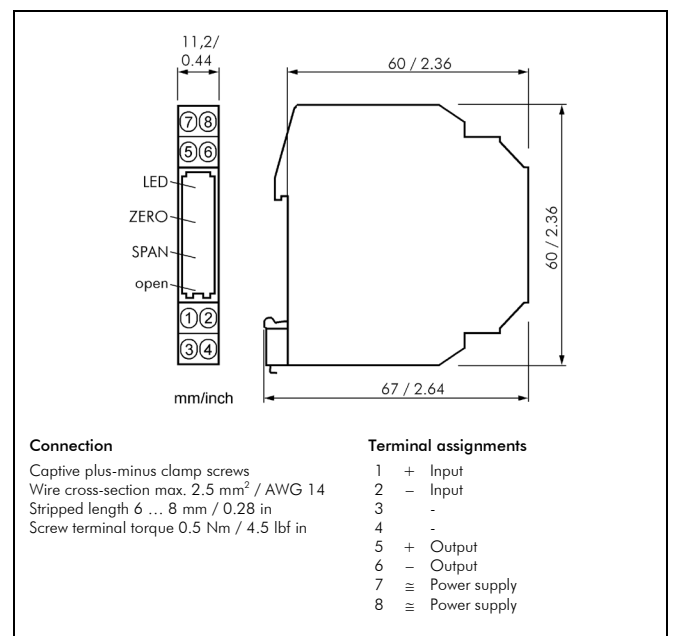
2) For applications with high working voltages, ensure there is sufficient spacing or isolation from neighboring devices and protection against electric shocks.

3) Minor deviations possible during interference

## Product line

Device	Order No.
Bipolar Isolation Amplifier	DB 68 P - X X
	↓
Input	
0 ... 10 V	0
2 ... 10 V	6
$\pm 10\text{ V}$	1
0 ... 5 V	3
1 ... 5 V	7
$\pm 5\text{ V}$	2
0 ... 20 mA	8
4 ... 20 mA	9
$\pm 20\text{ mA}$	4
$\pm 10\text{ mA}$	5
Output	
0 ... 10 V	6
2 ... 10 V	7
0 ... 5 V	5
1 ... 5 V	8
0 ... 20 mA	2
4 ... 20 mA	4
cross-connector (2 pcs.)	for looping through the power supply for up to 10 units, splittable DZU 0801

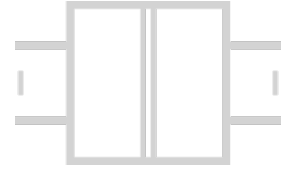
## Dimensions



Subject to change!

# Passive Transmitter Repeater DC 58

Powering and Isolation of 2-wire transmitters



The **Passive Transmitter Repeater DC 58** is used for **powering of 2-wire transmitters and isolation of 4 ... 20 mA standard signals.**

The 24 V power from the control system is transferred to the 2-wire transmitter with low voltage drop. The transmitter loop current is available galvanic isolated on output of the DC58. Additionally the measuring input accepts active 4 ... 20 mA signals from 4-wire transmitters.

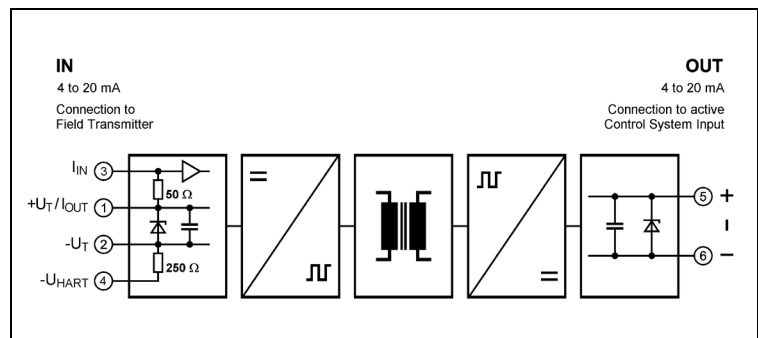
For communication with HART-Transmitters the internal 250 Ohm resistor on terminal 4 can be used. The slim housing with 11.2 mm wide saves significant space on the DIN-rail. To protect both maintenance personnel as well as downstream equipment against impermissibly high voltages, the DC 58 offers Protective Separation according to EN 61140.

The DC 58 requires no additional power supply since the auxiliary power is obtained from the current loop without distorting it. This not only saves costs during installation, but also increases reliability.

- **Cost optimized design**  
Economical solution for standard applications
- **Only 60 mm installation depth, 11.2 mm wide**  
Can be installed in economical standard terminal boxes
- **Galvanic isolation across input and output**  
Protection against erroneous measurements due to parasitic voltages or ground loops
- **Protective Separation acc. to EN 61140**  
Protects service personnel and downstream devices against impermissibly high voltage
- **No power supply required**  
Saving costs since wiring is reduced and line influences are omitted
- **5 Years Warranty**  
Defects occurring within 5 years from delivery date shall be remedied free of charge at our plant (carriage and insurance paid by sender)



Block diagram





## Technical Data

Input	
Input signal	4 ... 20 mA
Operating current range	2 ... 23 mA
Transmitter Repeater operating	
Transmitter voltage drop	Approx. 4.7 V (Approx. 9.7 V with HART resistor, terminal 4)
Short circuit current	< 35 mA
Isolator operating	
Input resistor	50 Ω
Max. Input current	≤ 50 mA
Output	
Output signal	4 ... 20 mA
Supply voltage	15 ... 30 V DC
Residual ripple	< 10 mV <sub>rms</sub>
General Data	
Transmission error	< 0.1 % full scale
Supply voltage influence	< 0.01 % FS / V (deviation from 24 V)
Temperature coefficient <sup>1)</sup>	< 0.01 %/K
Cut-off frequency -3 dB	500 Hz
Response time T <sub>99</sub>	2 ms
Test voltage	3 kV AC, 50 Hz, 1 min. input against output
Working voltage (Basic Insulation) <sup>2)</sup>	600 V AC/DC for overvoltage category II and pollution degree 2 acc. to EN 61010 -1
Protection against electrical shock <sup>2)</sup>	Protective separation according to EN 61140 by reinforced insulation in accordance with EN 61010 -1 up to 300 V AC/DC for overvoltage category II and pollution degree 2
Ambient temperature	Operation - 20 to + 60 °C (- 4 to + 140 °F) Transport and storage - 35 to + 85 °C (- 31 to + 185 °F)
EMC <sup>3)</sup>	EN 61326 -1
Construction	11.2 mm (0.44") housing, protection class: IP 20, mounting on 35 mm DIN rail acc. to EN 60715
Weight	Approx. 50 g

1) Average TC related to full scale value in specified operating temperature range, reference temperature 23 °C

2) For applications with high working voltages, ensure there is sufficient spacing or isolation from neighboring devices and protection against electric shocks.

3) Minor deviations possible during interference

## Dimensions

Terminal assignments	
Input	
Transmitter Repeater	1+ 2-
HART Repeater	1+ 4-
Isolation Amplifier	3+ 1-
Output	
	5+ 6-
Wire cross-section max. 2.5 mm <sup>2</sup>	

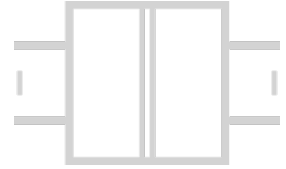
Subject to change!

## Product line

Device	Order No.
Transmitter Repeater DC 58 P	DC 58 P

# Passive Isolator DH 18

Separation of 0(4) ... 20 mA Standard Signals



The input loop-powered isolator DH 18 is used for the electrical isolation of 0(4) ... 20 mA standard signals.

The DH 18 transfers the measuring signal to the output with a high degree of accuracy and avoids interference voltage carry-over and suppressing interferences effectively. The slim housing with 11.2 mm wide for one or two channels saves significant space on the DIN-rail.

Intelligent design and their consequential avoidance of highly integrated components result in extremely long service lives and reliability without any falsification of the measurement signal.

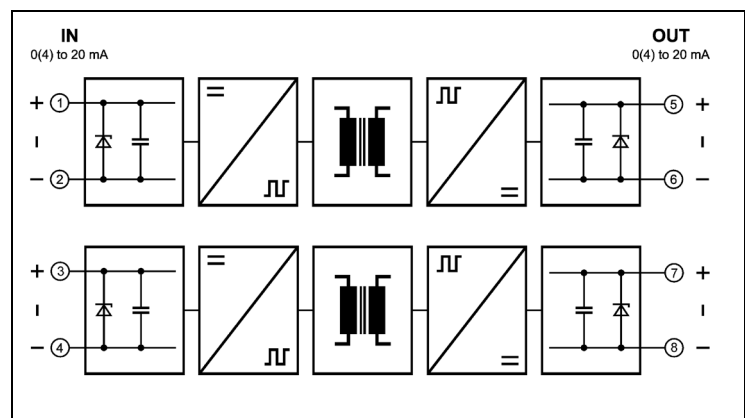
To protect both maintenance personnel as well as downstream equipment against impermissibly high voltages, the DH 18 offers Protective Separation in according to EN 61140.

The DH 18 requires no additional power supply since the auxiliary power is obtained from the input signal without distorting it. This not only saves costs during installation, but also increases reliability.

- **1- and 2-channel versions**  
Economical separation for standard applications
- **Only 60 mm installation depth, 11.2 mm wide**  
Can be installed in economical standard terminal boxes
- **Galvanic isolation across input and output**  
Protection against erroneous measurements due to parasitic voltages or ground loops
- **High reliability and long-term stability**  
New APT technology for signal processing
- **Protective Separation acc. to EN 61140**  
Protects service personnel and downstream devices against impermissibly high voltage
- **No power supply required**  
Saving costs since wiring is reduced and line influences are omitted
- **5 Years Warranty**  
Defects occurring within 5 years from delivery date shall be remedied free of charge at our plant (carriage and insurance paid by sender)



Block diagram





## Technical Data

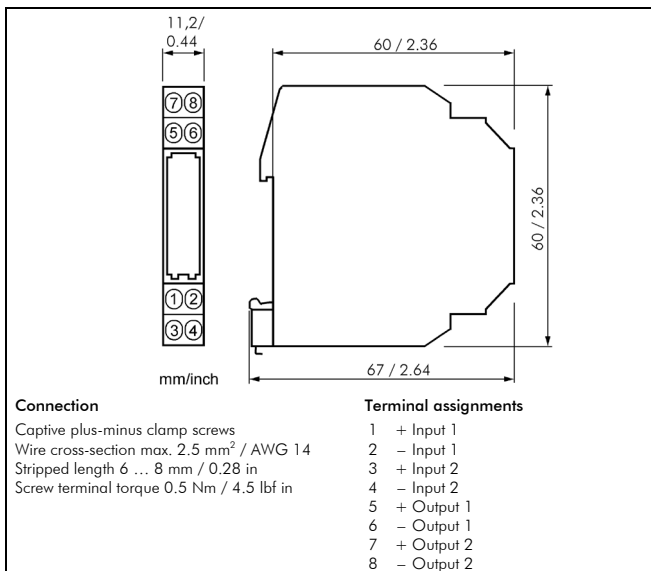
Input	
Input signal	0(4) ... 20 mA
Start-up current	< 100 $\mu$ A
Voltage drop	< 3.0 V
Overload	$\leq$ 50 mA, 15 V
Output	
Output signal	0(4) ... 20 mA
Load	< 600 $\Omega$
Cut-off frequency -3 dB	100 Hz
Response time $T_{99}$	5 ms
Residual ripple	< 10 mV <sub>rms</sub>
General Data	
Transmission error	< 0.1 % full scale
Load error	< 0.05 % of measured value / 100 $\Omega$ load
Temperature coefficient <sup>1)</sup>	< 0.004 %/K of measured value / 100 $\Omega$ load
Test voltage	3 kV, 50 Hz all circuits against one another
Working voltage (Basic Insulation) <sup>2)</sup>	600 V AC/DC for overvoltage category II and pollution degree 2 acc. to EN 61010-1
Protection against electrical shock <sup>2)</sup>	Protective separation according to EN 61140 by reinforced insulation in accordance with EN 61010-1 up to 300 V AC/DC for overvoltage category II and pollution degree 2 between all circuits
Ambient temperature	Operation - 20 to + 60 °C (-4 to + 140 °F) Transport and storage - 35 to + 85 °C (-31 to + 185 °F)
EMC <sup>3)</sup>	EN 61326-1
Construction	11.2 mm (0.44") housing, protection class: IP 20, mounting on 35 mm DIN rail acc. to EN 60715
Weight	Approx. 50 g

1) Average TC related to full scale value in specified operating temperature range, reference temperature 23 °C

2) For applications with high working voltages, ensure there is sufficient spacing or isolation from neighboring devices and protection against electric shocks.

3) Minor deviations possible during interference

## Dimensions



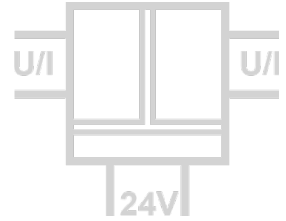
Subject to change!

## Product line

Device		Order No.
Loop-powered isolator	DH 18 P 1-channel	DH 18 P - 1
Loop-powered isolator	DH 18 P 2-channel	DH 18 P - 2

# Isolation Amplifier DN 28

Isolation and Conversion of Standard Signals



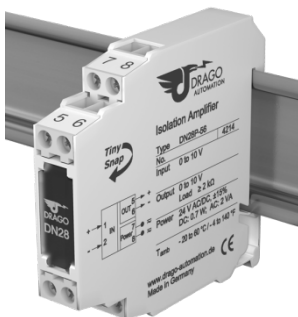
The Isolation Amplifier DN 28 is used for isolation and conversion of 0 ... 20 mA, 4 ... 20 mA and 0 ... 10 V standard signals.

For applications where one signal combination only is used, the Isolation Amplifier DN 28 offers a cost-effective alternative.

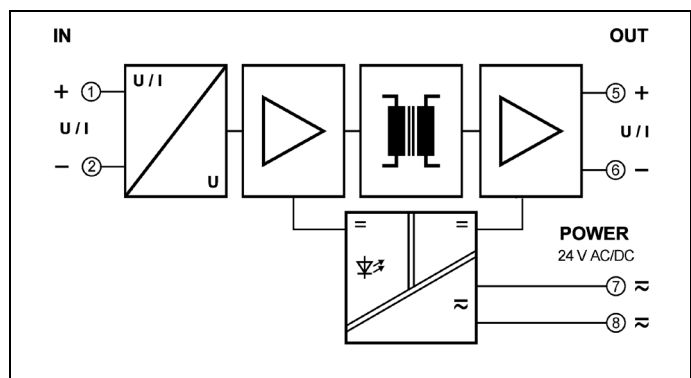
A cross-connector for the auxiliary power supply ensures fast and easy installation. The slim housing with 11.2 mm width saves significant space on the DIN-rail. If required a measuring range compensation can be performed at the Zero/Scan potentiometers behind the front cover.

Analog signal processing guarantees precise measured values with short response times and outstanding signal reproduction at the output. Protective Separation and the 24 V AC/DC power supply make the DN 28 universally applicable for all measurement and industrial applications, as well as for building automation.

- **Cost optimized design**  
Economical separation for standard applications
- **Only 60 mm installation depth, 11.2 mm wide**  
Can be installed in economical standard terminal boxes
- **Fixed ranges, easy to use**  
Ready to use without any settings or adjustments
- **True 3-port separation**  
Protection against erroneous measurements due to parasitic voltages or ground loops
- **Protective Separation acc. to EN 61140**  
Protects service personnel and downstream devices against impermissibly high voltage
- **Unlimited use with 24 V AC/DC power supply**  
Universally applicable for all measurement and industrial applications
- **5 Years Warranty**  
Defects occurring within 5 years from delivery date shall be remedied free of charge at our plant (carriage and insurance paid by sender)



Block diagram







## Technical Data

Input	
Input signal	0 ... 20 mA    4 ... 20 mA    0 ... 10 V    see product line
Input resistance	Current input    approx. 5 Ω
	Voltage input    approx. 1 MΩ
Overload	Current input    ≤ 200 mA
	Voltage input    ≤ 250 V
Output	
Output signal	0 ... 20 mA    4 ... 20 mA    0 ... 10 V    see product line
Load	Current output    ≤ 500 Ω
	Voltage output    ≥ 2 kΩ
Residual ripple	< 10 mV <sub>rms</sub>
General Data	
Transmission error	< 0.2 % full scale
Temperature coefficient <sup>1)</sup>	< 0.02 % /K
Cut-off frequency -3 dB	200 Hz
Response time T <sub>99</sub>	3.5 ms
Test voltage	3 kV AC, 50 Hz, 1 min.    input against output against power supply
Working voltage (Basic Insulation) <sup>2)</sup>	600 V AC/DC for overvoltage category II and pollution degree 2 acc. to EN 61010-1
Protection against electrical shock <sup>2)</sup>	Protective separation according to EN 61140 by reinforced insulation in accordance with EN 61010-1 up to 300 V AC/DC for overvoltage category II and pollution degree 2 between all circuits
Ambient temperature	Operation    - 20 to + 60 °C    ( - 4 to + 140 °F)
	Transport and storage    - 35 to + 85 °C    ( - 31 to + 185 °F)
Power supply	24 V AC/DC, ± 15 %    AC 48 ... 62 Hz, approx. 2 VA
	DC approx. 0.7 W
EMC <sup>3)</sup>	EN 61326-1
Construction	11.2 mm (0.44") housing, protection class: IP 20, mounting on 35 mm DIN rail acc. to EN 60715
Weight	Approx. 50 g

1) Average TC related to full scale value in specified operating temperature range, reference temperature 23 °C

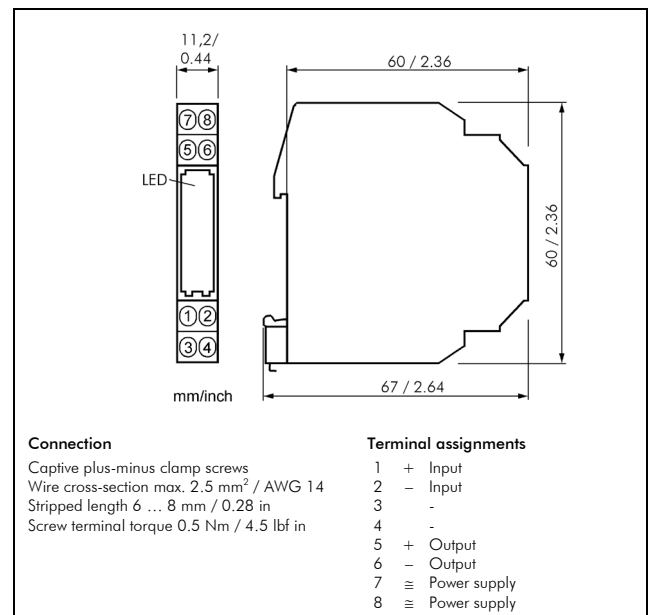
2) For applications with high working voltages, ensure there is sufficient spacing or isolation from neighboring devices and protection against electric shocks.

3) Minor deviations possible during interference

## Product line

Device	Order No.
Isolation Amplifier    DN 28 P	
Input    Output	
0 ... 20 mA    0 ... 20 mA	DN 28 P - 12
4 ... 20 mA    0 ... 20 mA	DN 28 P - 32
0 ... 10 V    0 ... 20 mA	DN 28 P - 52
0 ... 20 mA    4 ... 20 mA	DN 28 P - 14
4 ... 20 mA    4 ... 20 mA	DN 28 P - 12
0 ... 10 V    4 ... 20 mA	DN 28 P - 54
0 ... 20 mA    0 ... 10 V	DN 28 P - 16
4 ... 20 mA    0 ... 10 V	DN 28 P - 36
0 ... 10 V    0 ... 10 V	DN 28 P - 56
cross-connector (2 pcs.)    for looping through the power supply for up to 10 Tiny Snap, splittable	DZU 0801

## Dimensions



Subject to change!

# Resistance Transmitter DR 41

## Measuring of Resistors with Fixed Setting

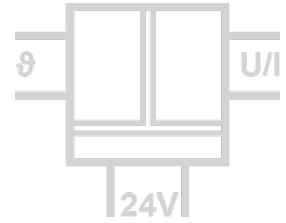
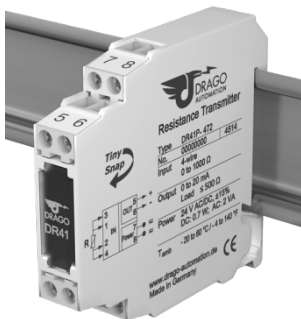
The Resistance Transmitter DR 41 converts the sensor resistance value to a standard signal and makes it galvanic isolated available on output.

For applications where one measuring range only is used, the Resistance Transmitters DR 41 offers a cost-effective alternative.

A cross-connector for the auxiliary power supply ensures fast and easy installation. The slim housing with 11.2 mm width saves significant space on the DIN-rail. If required a measuring range compensation can be performed at the Zero/Scan potentiometers behind the front cover.

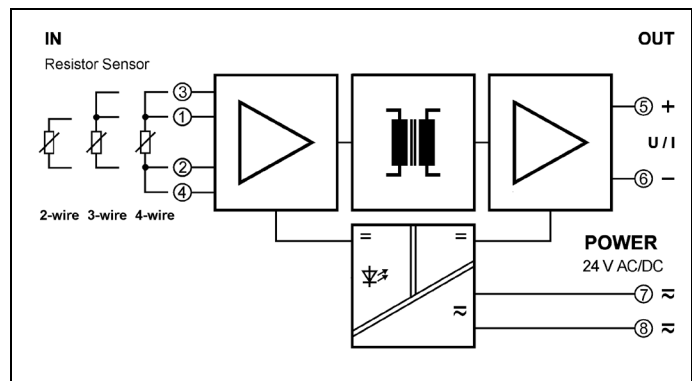
Analog signal processing guarantees precise measured values with short response times and outstanding signal reproduction at the output.

Protective Separation and the 24 V AC/DC power supply make the DR 41 universally applicable for all measurement and industrial applications, as well as for building automation.



- **Cost optimized resistance measuring**  
in 2-, 3- and 4-wire sensor connection
- **Only 60 mm installation depth, 11.2 mm wide**  
Can be installed in economical standard terminal boxes
- **Fixed ranges, easy to use**  
Ready to use without any settings or adjustments
- **Zero/Scan compensation on front panel**  
for readjustment of sensor and measuring equipment or line compensation at 2-wire sensor connection
- **True 3-port separation**  
Protection against erroneous measurements due to parasitic voltages or ground loops
- **Protective Separation acc. to EN 61140**  
Protects service personnel and downstream devices against impermissibly high voltage
- **Unlimited use with 24 V AC/DC power supply**  
Universally applicable for all measurement and industrial applications
- **5 Years Warranty**  
Defects occurring within 5 years from delivery date shall be remedied free of charge at our plant (carriage and insurance paid by sender)

Block diagram





## Technical Data

Input				
Measuring range	Fixed ranges within 20 Ω ... 1 MΩ			see product line
Sensor connection	2-wire, 3-wire, 4-wire sensor connection			see product line
Sensor wire resistance	< 25 Ω / wire, maximum 5 % of final value at 2-wire connection			
Sensor current	0.1 μA ... 5 mA, depends on measuring range			
Output				
Output signal	0 to 20 mA 4 to 20 mA	0 to 5 V 1 to 5 V	0 to 10 V 2 to 10 V	see product line
Load	Current output ≤ 500 Ω Voltage output ≥ 2 kΩ			
Residual ripple	< 10 mV <sub>rms</sub>			
General Data				
Transmission error	< 0.2 % full scale			
Temperature coefficient <sup>1)</sup>	< 0.025 %/K			
Zero/Span compensation	± 5 %			
Response time T <sub>99</sub>	< 2 ms			
Test voltage	3 kV AC, 50 Hz, 1 min.			input against output against power supply
Working voltage <sup>2)</sup> (Basic Insulation)	600 V AC/DC for overvoltage category II and pollution degree 2 acc. to EN 61010-1			
Protection against electrical shock <sup>2)</sup>	Protective separation according to EN 61140 by reinforced insulation in accordance with EN 61010-1 up to 300 V AC/DC for overvoltage category II and pollution degree 2 between all circuits			
Ambient temperature	Operation - 20 to + 60 °C (- 4 to + 140 °F) Transport and storage - 35 to + 85 °C (- 31 to + 185 °F)			
Power supply	24 V AC/DC, ± 15 %		AC: 48 to 62 Hz, approx. 2 VA,	DC: approx. 0.7 W
EMC <sup>3)</sup>	EN 61326-1			
Construction	11.2 mm (0.44") housing, protection class: IP 20, mounting on 35 mm DIN rail acc. to EN 60715			
Weight	Approx. 50 g			

1) Average TC related to full scale value in specified operating temperature range, reference temperature 23 °C

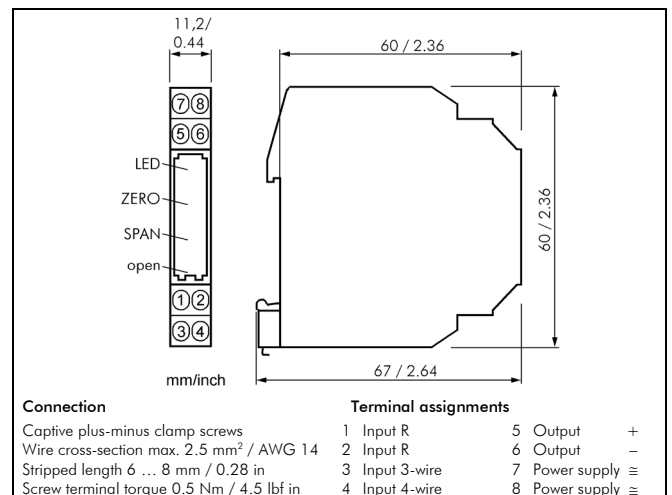
2) For applications with high working voltages, ensure there is sufficient spacing or isolation from neighboring devices and protection against electric shocks.

3) Minor deviations possible during interference

## Product line

Device	Sensor connection	Order No.
Resistance	2-wire connection	DR 41 P - 2 X X
Transmitter	3-wire connection	DR 41 P - 3 X X
	4-wire connection	DR 41 P - 4 X X
		↓
Input	0 ... 20 Ω	2
	0 ... 50 Ω	3
	0 ... 100 Ω	4
	0 ... 200 Ω	5
	0 ... 500 Ω	6
	0 ... 1000 Ω	7
	0 ... 2000 Ω	8
	0 ... 5000 Ω	9
	0 ... 10 k Ω	A
	0 ... 20 k Ω	B
	0 ... 50 k Ω	C
	0 ... 100 k Ω	D
	0 ... 200 k Ω	E
	0 ... 500 k Ω	F
	0 ... 1 M Ω	G
Output	0 ... 20 mA	2
	4 ... 20 mA	4
	0 ... 5 V	5
	1 ... 5 V	8
	0 ... 10 V	6
	2 ... 10 V	7
Cross-connector (2 pcs)	for looping through the power supply for up to 10 units, splittable	DZU 0801

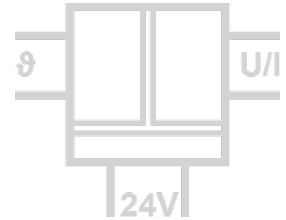
## Dimensions



Subject to change!

# Temperature Transmitter DR 44 / DR 48 / DR 49

Temperature Measuring  
with Pt100/Pt1000-Sensors



The Temperature Transmitters DR 44, DR 48 and DR 49 convert the sensor signal on input to temperature linear standard signal and makes it galvanic isolated available on output.

For applications where one measuring range only is used, the Temperature Transmitters DR 44, DR 48 und DR 49 offers a cost-effective alternative.

A cross-connector for the auxiliary power supply ensures fast and easy installation. The slim housing with 11.2 mm width saves significant space on the DIN-rail. If required a measuring range compensation can be performed at the Zero/Scan potentiometers behind the front cover.

Analog signal processing guarantees precise measured values with short response times and outstanding signal reproduction at the output.

Protective Separation and the 24 V AC/DC power supply make the Temperature Transmitters DR 44, DR 48 und DR 49 universally applicable for all measurement and industrial applications, as well as for building automation.

- **Cost optimized design**

Economical temperature measuring for standard applications with 2-wire or 3-wire connection, DR 44 for Pt100 with 4-wire connection

- **Only 60 mm installation depth, 11.2 mm wide**

Can be installed in economical standard terminal boxes

- **Fixed ranges, easy to use**

Ready to use without any settings or adjustments

- **Zero/Span compensation on front panel**

for readjustment of sensor signal or measuring equipment

- **True 3-port separation**

Protection against erroneous measurements due to parasitic voltages or ground loops

- **Protective Separation acc. to EN 61140**

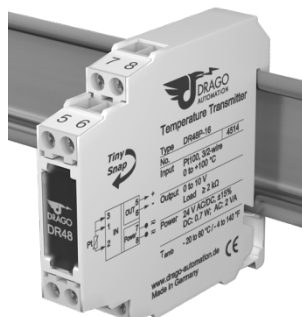
Protects service personnel and downstream devices against impermissibly high voltage

- **Unlimited use with 24 V AC/DC power supply**

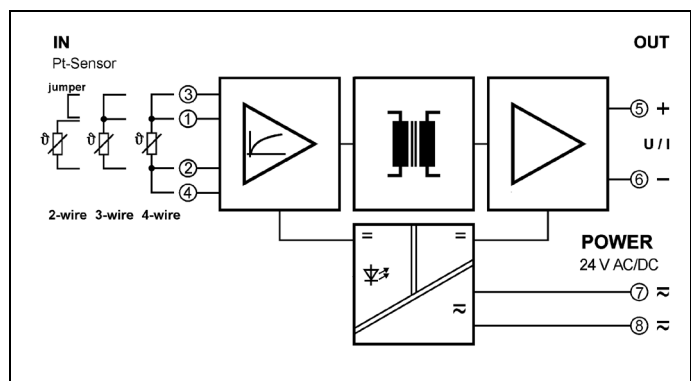
Universally applicable for all measurement and industrial applications

- **5 Years Warranty**

Defects occurring within 5 years from delivery date shall be remedied free of charge at our plant (carriage and insurance paid by sender)



Block diagram





## Technical Data

Input					
Sensor		Type	Connection		
	DR 44	Pt100	4-wire		
	DR 48	Pt100	3-wire, 2-wire with bridge terminal 1 to 3		
	DR 49	Pt1000	3-wire, 2-wire with bridge terminal 1 to 3		
Measuring range	Fixed ranges within - 100 to + 450 °C			see order information	
Measuring error	< 0.1 K + 0.05 % of span				
Sensor wire resistance	25 Ω / wire at 4- and 3-wire sensor connection				
Sensor current	1 mA		0.1 mA		
Output					
Output signal	0 to 20 mA		0 to 5 V	0 to 10 V	see order information
	4 to 20 mA		1 to 5 V	2 to 10 V	
Load	Current output		≤ 500 Ω		
	Voltage output		≥ 2 kΩ		
Residual ripple	< 10 mV <sub>rms</sub>				
General Data					
Transmission error	< 0.1 % full scale				
Temperature coefficient <sup>1)</sup>	< 0.025 %/K				
Zero/Span compensation	± 3 %				
Response time T <sub>99</sub>	< 2 ms				
Test voltage	3 kV AC, 50 Hz, 1 min.		input against output against power supply		
Working voltage <sup>2)</sup> (Basic Insulation)	600 V AC/DC for overvoltage category II and pollution degree 2 acc. to EN 61010-1				
Protection against electrical shock <sup>2)</sup>	Protective separation according to EN 61140 by reinforced insulation in accordance with EN 61010-1 up to 300 V AC/DC for overvoltage category II and pollution degree 2 between all circuits				
Ambient temperature	Operation		- 20 to + 60 °C (- 4 to + 140 °F)		
	Transport and storage		- 35 to + 85 °C (- 31 to + 185 °F)		
Power supply	24 V AC/DC, ± 15 %		AC: 48 to 62 Hz, approx. 2 VA,		DC: approx. 0.7 W
EMC <sup>3)</sup>	EN 61326-1				
Construction	11.2 mm (0.44") housing, protection class: IP 20, mounting on 35 mm DIN rail acc. to EN 60715				
Weight	Approx. 50 g				

1) Average TC related to full scale value in specified operating temperature range, reference temperature 23 °C

2) For applications with high working voltages, ensure there is sufficient spacing or isolation from neighboring devices and protection against electric shocks.

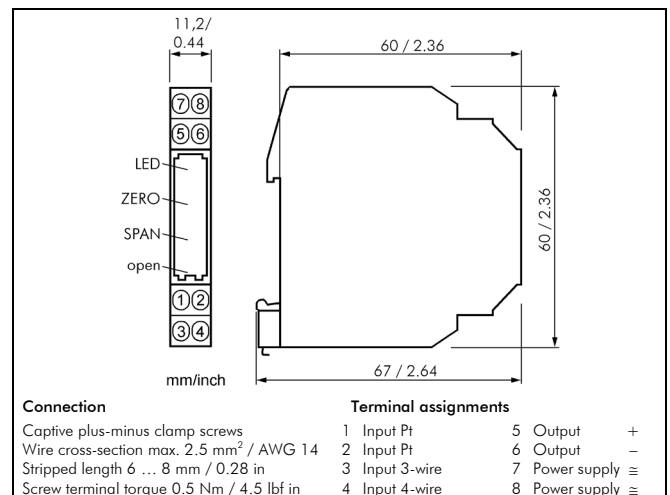
3) Minor deviations possible during interference

## Product line

Devices		Order No.	
Temperature-Transmitter	Pt100, 4-wire	DR 44 P - X	X
	Pt100, 2/3-wire	DR 48 P - X	X
	Pt1000, 2/3-wire	DR 49 P - X	X
		↓	
Input	0 to + 50 °C	0	
	0 to + 100 °C	1	
	0 to + 200 °C	2	
	0 to + 300 °C	3	
	0 to + 400 °C	4	
	- 50 to + 150 °C	5	
	- 50 to + 100 °C	6	
	- 50 to + 50 °C	7	
	Further input ranges see extended measuring range table	?	
Output	0 to 20 mA	2	
	4 to 20 mA	4	
	0 to 5 V	5	
	1 to 5 V	8	
	0 to 10 V	6	
	2 to 10 V	7	
cross-connector (2 pcs.)	for looping through the power supply for up to 10 units, splittable	DZU 0801	

Subject to change!

## Dimensions

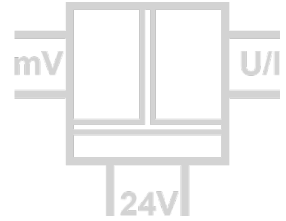


## Extended Measuring Range Table

to	-50	0	50	100	150	200	250	300	350	400	450 °C
from -100 °C	Q	R	S	T	U	V	W	Y			
-50 °C		8	7	6	5	9	A	B	C		
0 °C			0	1	D	2	E	3	F	4	
+50 °C				G	H	J	K	L	M	N	P

# Shunt/mV Isolation Amplifier DS 78

## Isolation and Conversion of mV-Shunt Signals



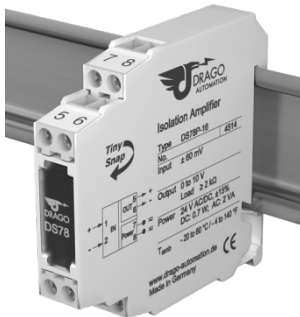
The Isolation Amplifier DS 78 is used for isolation and conversion of bipolar and unipolar mV-Signals such as those frequently used for current measuring with shunt-resistors or other applications with low sensor voltages.

For applications where one signal combination only is used, the Isolation Amplifier DS 78 offers a cost-effective alternative.

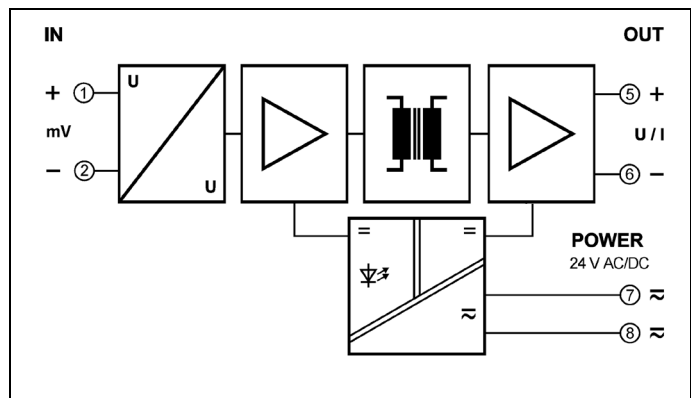
A cross-connector for the auxiliary power supply ensures fast and easy installation. The slim housing with 11.2 mm width saves significant space on the DIN-rail. If required a measuring range compensation can be performed at the Zero/Scan potentiometers behind the front cover.

Analog signal processing guarantees precise measured values with short response times and outstanding signal reproduction at the output. Protective Separation and the 24 V AC/DC power supply make the DS 78 universally applicable for all measurement and industrial applications, as well as for building automation.

- **Cost optimized design**  
Economical separation for standard applications
- **Only 60 mm installation depth, 11.2 mm wide**  
Can be installed in economical standard terminal boxes
- **Fixed ranges, easy to use**  
Ready to use without any settings or adjustments
- **Zero/Scan compensation on front panel**  
for readjustment of sensor signal or measuring equipment
- **True 3-port separation**  
Protection against erroneous measurements due to parasitic voltages or ground loops
- **Protective Separation acc. to EN 61140**  
Protects service personnel and downstream devices against impermissibly high voltage
- **Unlimited use with 24 V AC/DC power supply**  
Universally applicable for all measurement and industrial applications
- **5 Years Warranty**  
Defects occurring within 5 years from delivery date shall be remedied free of charge at our plant (carriage and insurance paid by sender)



Block diagram





## Technical Data

Input	
Input signal	0 ... 60 mV ± 60 mV    0 ... 100 mV ± 100 mV    0 ... 150 mV ± 150 mV    0 ... 300 mV ± 300 mV    see product line
Input resistance	> 100 kΩ
Overload	< 30 V
Output	
Output signal	0 ... 10 V    0 ... 5 V    0 ... 20 mA    see product line 2 ... 10 V    1 ... 5 V    4 ... 20 mA
Load	Voltage output ≥ 2 kΩ Current output ≤ 500 Ω
Residual ripple	< 10 mV <sub>rms</sub>
General Data	
Transmission error	< 0.2 % full scale
Temperature coefficient <sup>1)</sup>	< 0.02 % /K
Cut-off frequency -3 dB	500 Hz
Response time T <sub>99</sub>	2 ms
Test voltage	3 kV AC, 50 Hz, 1 min.    input against output against power supply
Working voltage <sup>2)</sup> (Basic Insulation)	600 V AC/DC for overvoltage category II and pollution degree 2 acc. to EN 61010-1
Protection against electrical shock <sup>2)</sup>	Protective separation according to EN 61140 by reinforced insulation in accordance with EN 61010-1 up to 300 V AC/DC for overvoltage category II and pollution degree 2 between all circuits
Ambient temperature	Operation    - 20 to + 60 °C    (- 4 to + 140 °F) Transport and storage    - 35 to + 85 °C    (- 31 to + 185 °F)
Power supply	24 V AC/DC, ± 15 %    AC 48 ... 62 Hz, approx. 2 VA DC approx. 0.7 W
EMC <sup>3)</sup>	EN 61326-1
Construction	11.2 mm (0.44") housing, protection class: IP 20, mounting on 35 mm DIN rail acc. to EN 60715
Weight	Approx. 50 g

1) Average TC related to full scale value in specified operating temperature range, reference temperature 23 °C

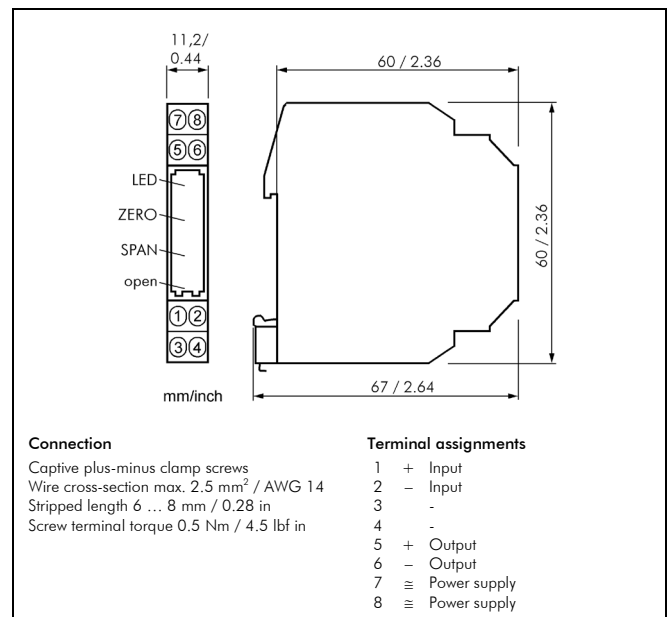
2) For applications with high working voltages, ensure there is sufficient spacing or isolation from neighboring devices and protection against electric shocks.

3) Minor deviations possible during interference

## Product line

Device	Order No.
Shunt/mV Isolation Amplifier	DS 78 P - X X
	↓
Input	
0 ... 60 mV	0
± 60 mV	1
0 ... 100 mV	2
± 100 mV	3
0 ... 150 mV	4
± 150 mV	5
0 ... 300 mV	6
± 300 mV	7
	↓
Output	
0 ... 10 V	6
2 ... 10 V	7
0 ... 5 V	5
1 ... 5 V	8
0 ... 20 mA	2
4 ... 20 mA	4
cross-connector (2 pcs.)	for looping through the power supply for up to 10 units, splittable    DZU 0801

## Dimensions



Subject to change!

### **Our performance—your advantage**

- Comprehensive product range
- Customer-specific special solutions
- Individual consulting and support
- Most modern production technology
- Certification according to ISO9001
- 5 years warranty
- Made in Germany

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