

## Signal Converters Isolation Amplifiers



# Complete Catalog





## DRAGO Automation GmbH

DRAGO Automation GmbH has been manufacturing and supplying high quality signal converters and transmitter since 2002. We supply particularly durable and reliable components for automation technology, both for the standard sector and solutions to meet individual requirements.

We want our customers to be able to work with even greater economic efficiency. Our standardised DRAGO device concept and our universal measurement range conversion make it easy to use our devices in applications and they are available worldwide. Special DRAGO switching techniques, the use of DRAGO protective components and our special types of programming also make your applications especially long-lasting, safe and reliable – that's what our 5-year DRAGO warranty stands for!

Customers from all industries place their trust in us: We are always available personally with our many years of experience and know-how to give competent advice regarding your measurement technology requirements. We use innovative precision technologies for production and modern quality management so that we continuously improve ourselves for you.

Together we will find the better solution: **simple · reliable**



- Extensive product range
- Customer specific devices
- Advanced manufacturing
- Full tracking to database
- Complete storage of test data
- Certified according to ISO 9001:2008
- Made in Germany







## Application Example

### Loop-Powered Isolators

#### Short description:

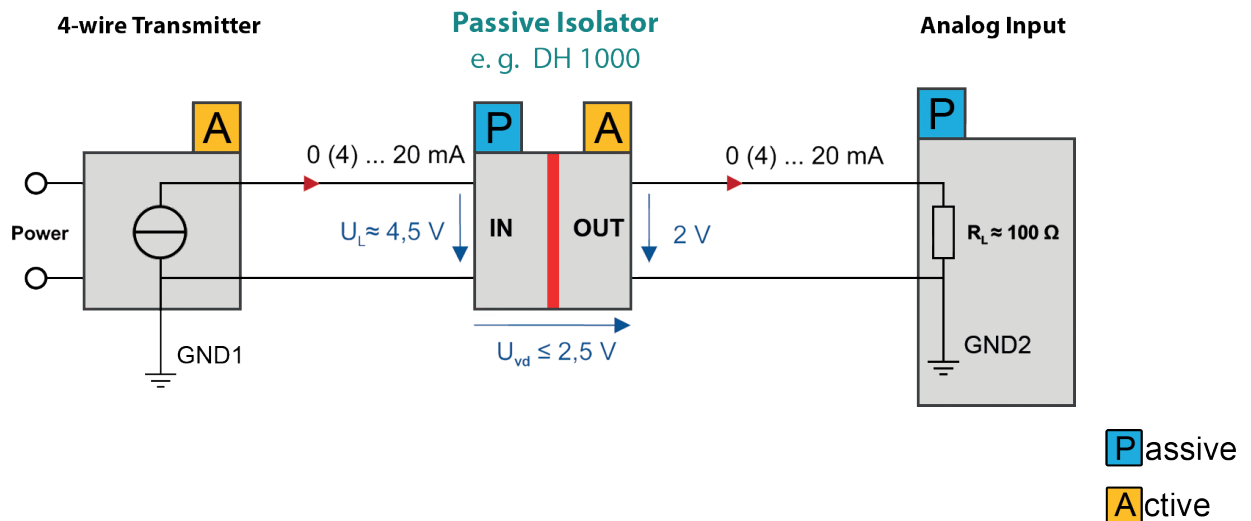
The loop-powered isolator is used for electrical isolation and processing of 0(4) to 20 mA standard signals.

The galvanic isolation guarantees reliable decoupling of the sensor circuit from the processing circuit and prevents linked measurement circuits from influencing each other. The Protective Separation with high isolation level provides protection for personnel and downstream devices against impermissibly high voltage.

#### Functioning:

The input signal is modulated and then electrically decoupled using a transformer. The isolated signal is then made available at the output, demodulated and filtered.

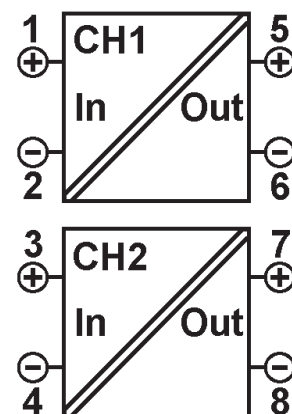
When using loop-powered Isolators, ensure that the current-driving voltage of the power source  $U_s$  is sufficient for driving the maximum current of 20 mA over the isolator with voltage drop of  $U_{vd}$  and the load  $R_L$ .



#### Applications:

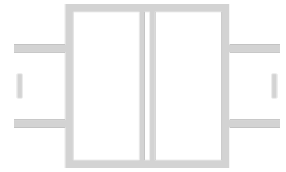
- Electrical isolation of PLC inputs
- Electrical isolation of non-isolated transmitter
- Decoupling of signals
- No power supply available at installation site

#### Terminal assignments:



# 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.

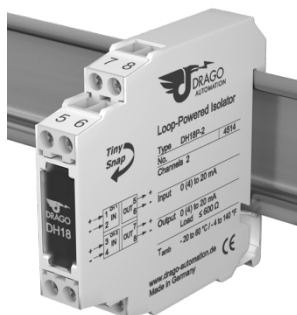
The DH 18 transfers the measuring signal to the output with a high degree of accuracy and avoids interference voltage carry-over and suppressing interferences effectively. The slim housing with 11.2 mm wide for one or two channels saves significant space on the DIN-rail.

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.

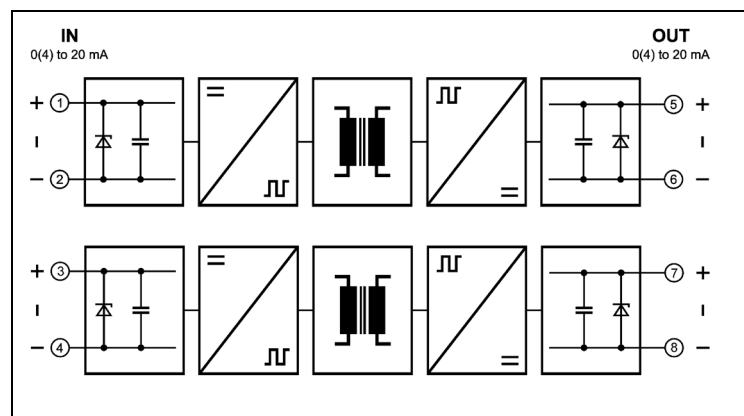
To protect both maintenance personnel as well as downstream equipment against impermissibly high voltages, the DH 18 offers Protective Separation in according to EN 61140.

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

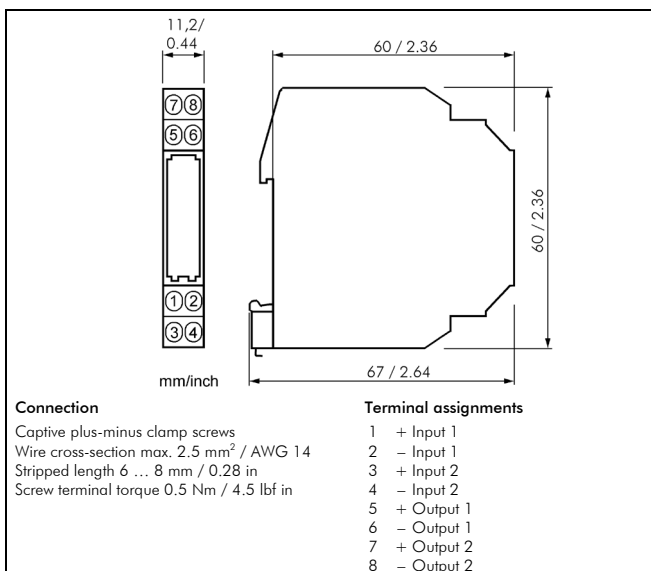
Input	
Input signal	0(4) ... 20 mA
Start-up current	< 100 $\mu$ A
Voltage drop	< 3.0 V
Overload	$\leq$ 50 mA, 15 V
Output	
Output signal	0(4) ... 20 mA
Load	< 600 $\Omega$
Cut-off frequency -3 dB	100 Hz
Response time $T_{99}$	5 ms
Residual ripple	< 10 mV <sub>rms</sub>
General Data	
Transmission error	< 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



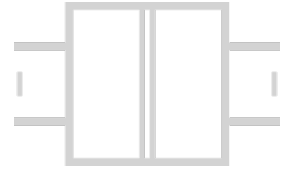
Subject to change!

## 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

# Passive Isolator DH 1000

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



The input loop-powered isolator DH 1000 provides galvanic separation for 0(4) ... 20mA standard signals, while transferring the measurement signal to the output with a high degree of accuracy.

In this way, the unit avoids interference voltage carry-over, effectively suppressing interference. The very low drop voltage of 2.0 V, a high level of accuracy and a compact design all work together to make the DH 1000 the first choice in system design.

The slim housing with 12.5 mm width for one or two channels saves space in your switch cabinet and facilitates by the practical plug-in screw terminal blocks the assembly. The DH 10X2 requires only 6.3 mm DIN-rail space per channel.

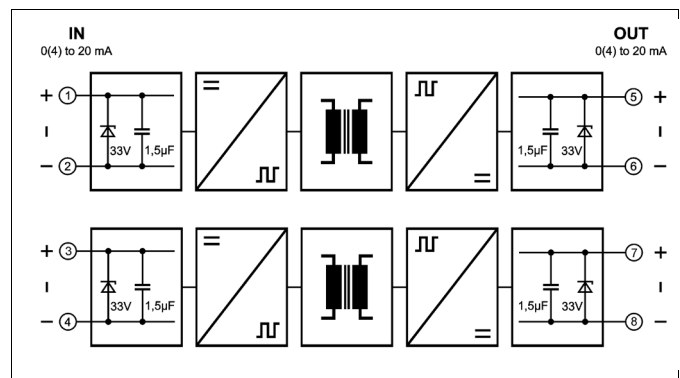
Intelligent design and their consequential avoidance of highly integrated components result in extremely long service lives and reliability without any falsification of the measurement signal.

To protect both maintenance personnel as well as downstream equipment against impermissibly high voltages, the DH 102X offers Protective Separation with a test voltage of 4 kV AC. The DH 1000 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.



- **Galvanic isolation across input and output**  
Protection against erroneous measurements due to parasitic voltages or ground loops
- **No power supply required**  
Saving costs since wiring is reduced and line influences are omitted
- **Extremely compact design, 1- and 2-channel versions**  
Only 6.3 mm DIN-rail per channel
- **High accuracy**  
No falsification of measured signal
- **Protective Separation**  
Protects service personnel and downstream devices against impermissibly high voltage
- **Maximum reliability**  
No maintenance costs
- **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

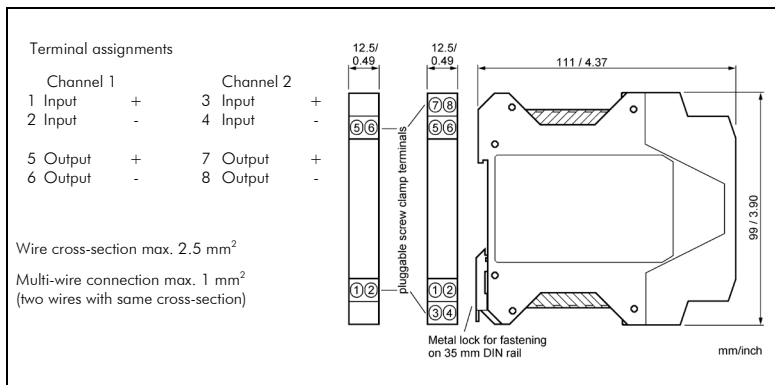
Input		
Input signal		0(4) ... 20 mA
Start-up current		< 20 μA
Voltage drop		< 2.0 V
Overload		100 mA, 30 V
Output		
Output signal		0(4) ... 20 mA
Cut-off frequency -3 dB		100 Hz at 500 Ω load
Response time T <sub>99</sub>		5 ms at 500 Ω load
Residual ripple		< 10 mV <sub>rms</sub>
General Data		
Transmission error		< 0.1 % full scale
Load error		< 0.03 % of measured value / 100 Ω load
Temperature coefficient <sup>1)</sup>		< 15 ppm/K of measured value / 100 Ω load
DH 101X	Test voltage	1.5 kV AC, 50 Hz, 1 min. all circuits against one another
DH 102X	Test voltage	4 kV AC, 50 Hz, 1 min. all circuits against one another
	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 + 70 °C (- 4 to + 158 °F) Transport and storage - 35 to + 85 °C (- 31 to + 185 °F)
EMC <sup>3)</sup>		EN 61326-1
Construction		12.5 mm (0.49") housing, protection class IP 20, mounting on 35 mm DIN rail acc. to EN 60715
Weight		Approx. 100 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



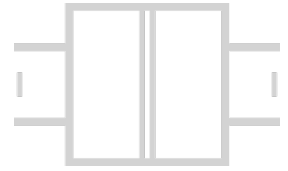
Subject to change!

## Product line

Device			Order No.
Loop-Powered Isolator	1-channel		DH 1011 AG
Loop-Powered Isolator	2-channel		DH 1012 AG
Loop-Powered Isolator	1-channel	Protective Separation, test voltage 4 kV~	DH 1021 AG
Loop-Powered Isolator	2-channel	Protective Separation, test voltage 4 kV~	DH 1022 AG

# Passive Isolator DH 11000

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



The input loop-powered isolator DH 11000 provides galvanic separation for 0(4) ... 20 mA standard signals, while transferring the measurement signal to the output with a high degree of accuracy.

The unit avoids interference voltage carry-over and effectively suppressing parasitic noise. The very low drop voltage of 2.3 V and the high level of accuracy work together to make the DH 11000 the first choice in system design.

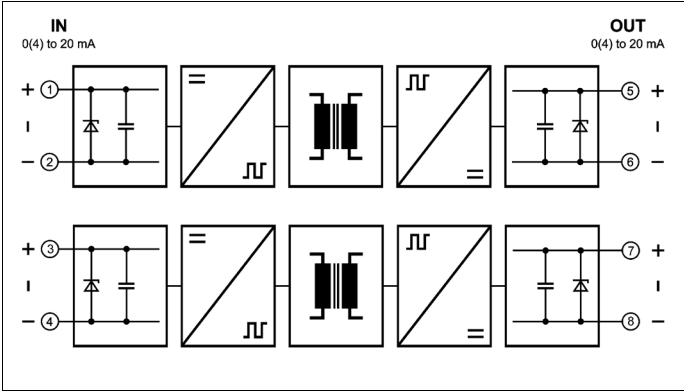
Intelligent design and their consequential avoidance of highly integrated components result in extremely long service lives and reliability - without any falsification of the measurement signal.

The DH 11000 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.

- **Galvanic isolation across input and output**  
Protection against erroneous measurements due to parasitic voltages or ground loops
- **No power supply required**  
Saving costs since wiring is reduced and line influences are omitted
- **Extremely slim design, 1- and 2-channel versions**  
Only 3.1 mm DIN-rail per channel
- **Protective Separation acc. to EN 61140**  
Protects service personnel and downstream devices against impermissibly high voltage
- **Maximum reliability**  
No maintenance costs
- **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

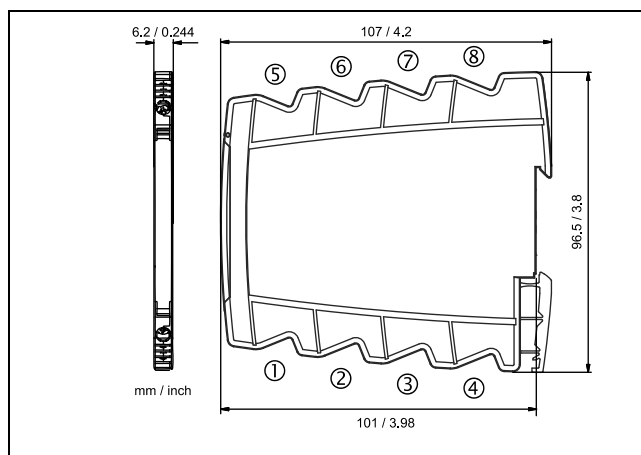
Input	
Input signal	0(4) ... 20 mA
Start-up current	< 200 $\mu$ A
Voltage drop	< 2.3 V
Overload	$\leq$ 50 mA, 30 V
Output	
Output signal	0(4) ... 20 mA
Load	600 $\Omega$
Cut-off frequency -3 dB	100 Hz
Response time $T_{99}$	5 ms
Residual ripple	< 10 mV <sub>rms</sub>
General Data	
Transmission error	< 0.1 % full scale
Load error	< 0.05 % of measured value / 100 $\Omega$ load
Temperature coefficient <sup>1)</sup>	< 100 ppm/K
Test voltage	3 kV AC, 50 Hz, 1 min. all circuits against one another
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 – 25 to + 70 °C (– 13 to + 158 °F) Transport and Storage – 40 to + 85 °C (– 40 to + 185 °F)
EMC <sup>3)</sup>	EN 61326-1
Approvals	ATEX DEMKO 16 ATEX 1685X Ex II 3 G Ex nA IIC T4 Gc IECEX IECEX UL 16.0055X Ex nA IIC T4 Gc UL E478692 USA/Canada Class I, Division 2 Groups A, B, C, D T4
Construction	6.2 mm (0.244") housing, protection class IP 20, mounting on 35 mm DIN rail acc. to EN 60715
Weight	Approx. 70 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!

## Terminal assignments

- |   |             |
|---|-------------|
| 1 | + Input I   |
| 2 | - Input I   |
| 3 | + Input II  |
| 4 | - Input II  |
| 5 | + Output I  |
| 6 | - Output I  |
| 7 | + Output II |
| 8 | - Output II |

## Connection

Captive plus-minus clamp screws  
Wire cross-section 0.5 ... 2.5 mm<sup>2</sup> / AWG 20-14  
Stripped length 8 mm / 0.3 in  
Screw terminal torque 0.6 Nm / 5 lbf in

## Product line

Device	Order No.
Loop-Powered Isolator, 1-channel	DH 11010 S
Loop-Powered Isolator, 2-channel	DH 11020 S





## Application Example Repeaters

### Short description:

The repeater power supply is used to supply and separate 2- and 3-wire transmitters and active sensor signals.

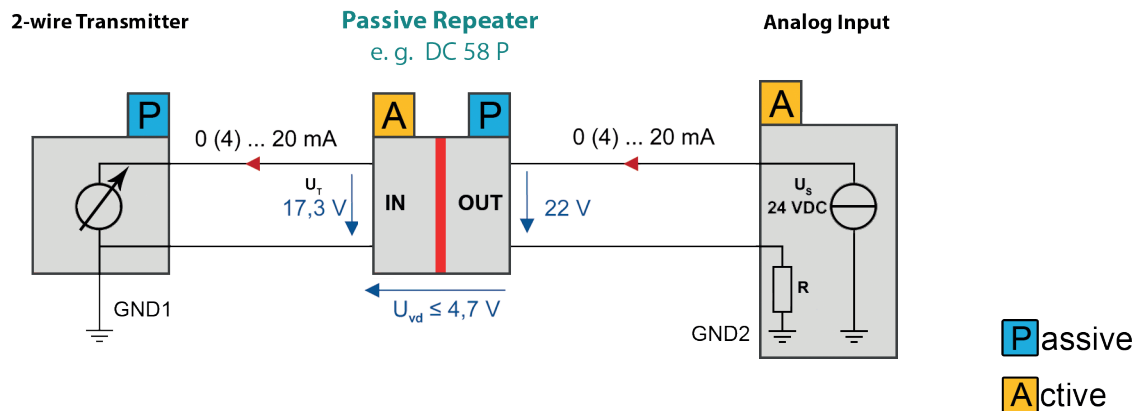
Additionally the measuring input accepts active 4 to 20 mA signals from 4-wire transmitters.

The galvanic isolation across input and output protects against erroneous measurements due to parasitic voltages or ground loops. To protect both maintenance personnel as well as downstream equipment against impermissibly high voltages, the repeater offers Protective Separation in accordance to EN 61140.

### Functioning:

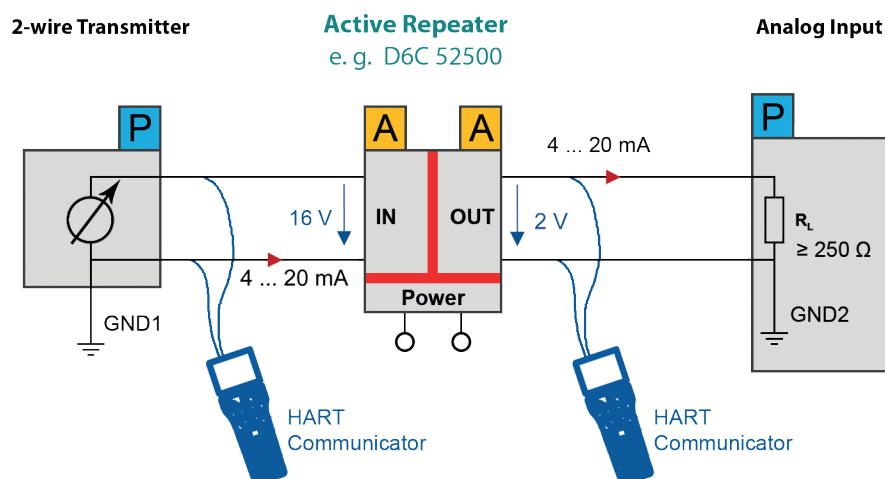
The input signal is modulated and then electrically decoupled using a transformer. The isolated signal is then made available at the output, demodulated and filtered.

Ensure that the current-driving voltage of the power source  $U_s$  is sufficient for driving the minimum transmitter voltage  $U_T$  by maximum current of 20 mA over the transmitter repeater with voltage drop of  $U_{vd}$  and the controller load  $R$ .



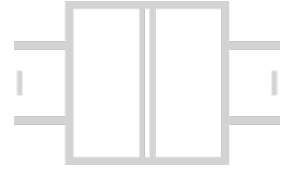
The **Repeater power supply with HART** support allows bidirectional communication with the field device from every point of the cabling. With a HART modem or HART communicator can be communicated from both the input as well as from the output with the transmitter.

The **HART protocol** uses the FSK standard to overlap a digital signal to the analog measurement value (output current of the transmitter). In this master/slave system additional digital information and commands can be communicated. By retaining the analog process measurement value existing systems can be easily upgraded with digital communication.



# 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.

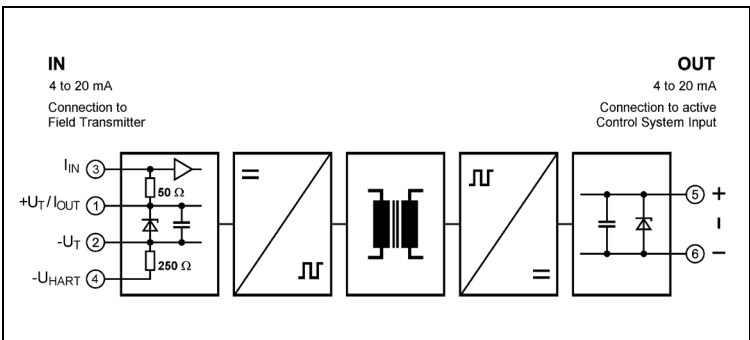
For communication with HART-Transmitters the internal 250 Ohm resistor on terminal 4 can be used. The slim housing with 11.2 mm wide saves significant space on the DIN-rail. To protect both maintenance personnel as well as downstream equipment against impermissibly high voltages, the DC 58 offers Protective 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 $\Omega$
Max. Input current	$\leq 50$ 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>	

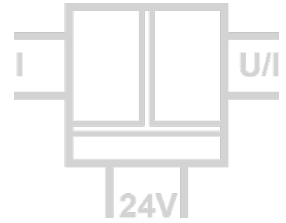
Subject to change!

## Product line

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

# Repeater Power Supply DC 52100

Powering and Isolation of  
2- and 3-wire Transmitters



The repeater power supply DC 52100 is used to supply and separate 2- and 3-wire transmitters and active sensor signals.

The repeater power supply supplies the transmitter with power and transmits the current or voltage measuring signal with high accuracy galvanic isolated to the output. Alternative the measuring input accepts active signals from 4-wire transmitters.

The input and output range of DC 52100 can be easily set by using DIP switch. Due to the calibrated range selection no further adjustment is necessary.

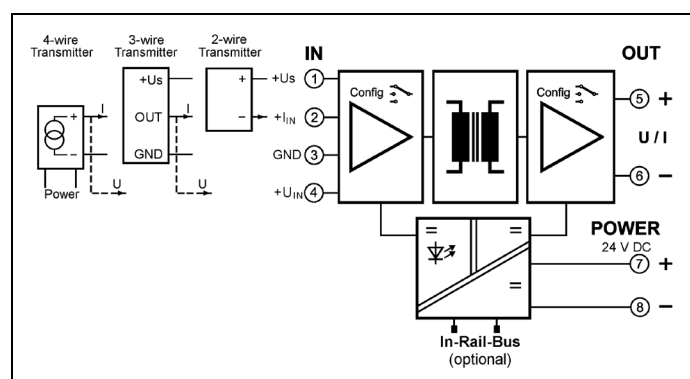
The auxiliary power can be supplied via the connection terminals or via the optional In-Rail-Bus connector. A green LED on the front of the unit has been provided to monitor the power supply.



- **Universal operation of Transmitters**  
Energization and separation of field located 2-, 3- and 4-wire transmitters with current or voltage output
- **Calibrated signal setting via DIP switch**  
Input and output range can be set by using DIP switch - high precision without any further adjustment
- **3-Port isolation**  
Protection against erroneous measurements due to parasitic voltages or ground loops
- **Extremely slim design**  
6.2 mm slim housing for a simple and space saving DIN rail mounting
- **Optional In-Rail-Bus mounting rail connector**  
allows for fast and economical installation
- **Protective Separation acc. to EN 61140**  
Protects service personnel and downstream devices against impermissibly high voltage
- **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

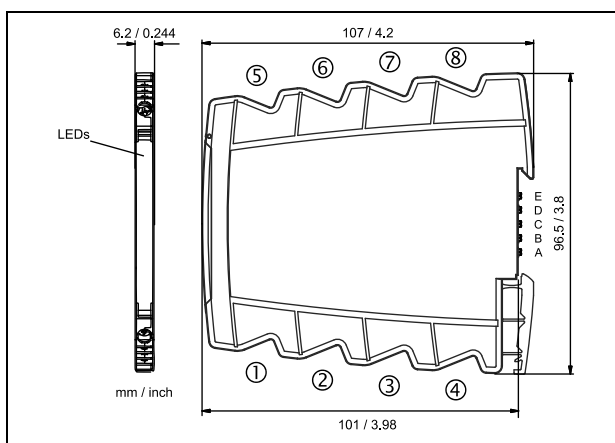
Input				
Input signal (calibrated switchable)	0 ... 20 mA	4 ... 20 mA	0 ... 10 V	2 ... 10 V
Input resistance	Current input ≤ 25 Ω		Voltage input ≥ 100 kΩ	
Overload	50 mA / 30 V			
Transmitter supply (Tx)	16 V (open circuit voltage/short circuit current < 22 V/35 mA)			
Output				
Output signal (calibrated switchable)	0 ... 20 mA	4 ... 20 mA	0 ... 10 V	2 ... 10 V
Load	Current output: ≤ 12 V (600 Ω at 20 mA)		Voltage output: ≤ 5 mA (2 kΩ at 10 V)	
Linear transmission range	−1 ... +110 %			
Residual ripple	< 10 mV <sub>rms</sub>			
General Data				
Transmission error	< 0.1 % full scale			
Temperature coefficient <sup>1)</sup>	< 100 ppm/K			
Cut-off frequency -3 dB (switchable)	5 kHz	100 Hz		
Response time T <sub>99</sub>	150 μs	7 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			
Ambient temperature	Operation	− 25 °C to + 70 °C	(− 13 to + 158 °F)	
	Transport and storage	− 40 °C to + 85 °C	(− 40 to + 185 °F)	
Power supply	24 V DC	voltage range 16.8 V ... 31.2 V DC, approx. 1.3 W		
EMC <sup>3)</sup>	EN 61326-1			
Approvals	ATEX	DEMKO 16 ATEX 1685X	Ⓢ II 3 G Ex nA IIC T4 Gc	
	IECEx	IECEx UL 16.0055X	Ex nA IIC T4 Gc	
	UL	E478692 USA/Canada	Class I, Division 2 Groups A, B, C, D T4	
Construction	6.2 mm (0.244") housing, protection class IP 20, mounting on 35 mm DIN rail acc. to EN 60715			
Weight	Approx. 70 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!

## Terminal assignments

- |   |   |
|---|---|
| 1 | + Transmitter supply voltage $U_{Tx}$       |
| 2 | + Input current                             |
| 3 | - Input GND                                 |
| 4 | + Input voltage                             |
| 5 | + Output                                    |
| 6 | - Output                                    |
| 7 | + Power supply (connected to In-Rail-Bus D) |
| 8 | - Power supply (connected to In-Rail-Bus C) |

## Connection

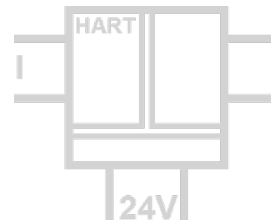
Captive plus-minus clamp screws  
 Wire cross-section 0.5 ... 2.5 mm<sup>2</sup> / AWG 20-14  
 Stripped length 8 mm / 0.3 in  
 Screw terminal torque 0.6 Nm / 5 lbf in  
 Optional power connection via In-Rail-Bus (see accessories)

## Product line

Device	Order No.
Repeater Power Supply, calibrated range selection	DC 52100 S
Repeater Power Supply, calibrated range selection, In-Rail-Bus for power supply	DC 52100 B

# Repeater Power Supply HART DC 52500

Powering and Isolation of  
SMART Transmitters with HART Communication



The Repeater Power Supply DC 52500 is used to supply and separate 2- and 3-wire SMART Transmitters and active sensor signals with HART communication.

It supplies the transmitter with power and transmits the measuring signal with high accuracy galvanic isolated to the output. Alternative the measuring input accepts active 0/4 ... 20 mA signals from 4-wire transmitters.

In addition to the analog signal, the DC 52500 also transmits data protocols for HART communication. It allows bidirectional communication with the field device from every point of the cabling.

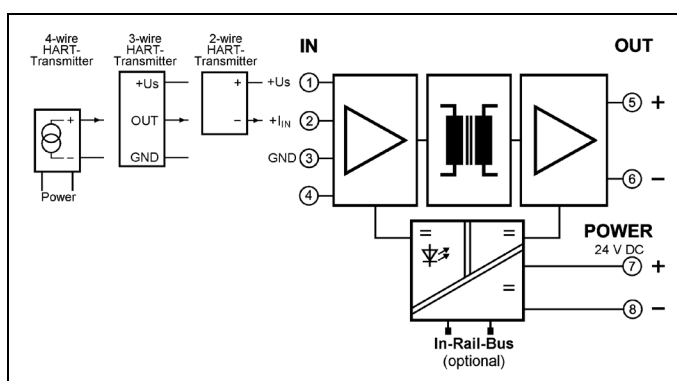
The auxiliary power can be supplied via the connection terminals or via the optional In-Rail-Bus connector. A green LED on the front of the unit has been provided to monitor the power supply.



- **Universal operation of SMART Transmitters**  
Energization and separation of field located 2-, 3- and 4-wire transmitters
- **Bidirectional HART transmission**  
HART data transfer for repeater and isolator operation
- **3-Port isolation**  
Protection against erroneous measurements due to parasitic voltages or ground loops
- **Extremely slim design**  
6.2 mm slim housing for a simple and space saving installation
- **Optional In-Rail-Bus mounting rail connector**  
allows for fast and economical installation
- **Protective Separation acc. to EN61140**  
Protects service personnel and downstream devices against impermissibly high voltage
- **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

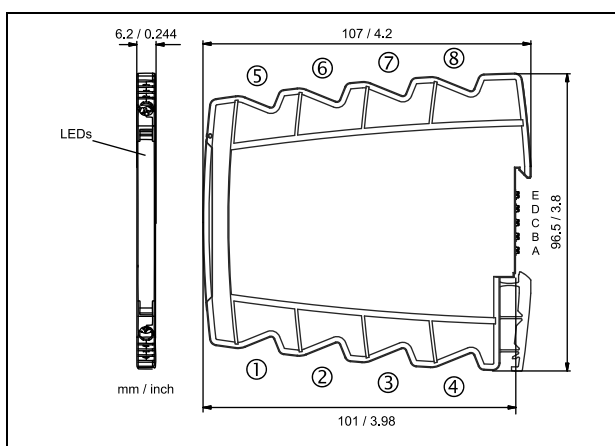
Input		
Input signal	0/4 ... 20 mA	(4 ... 20 mA with HART signal)
Input resistance	≤ 50 Ω	
Over load	50 mA / 30 V	
Transmitter supply (Tx)	16 V (open circuit voltage/short circuit current < 22 V/35 mA)	
Communication signal	Bidirectional HART transmission, internal AC impedance 250 Ω	
Output		
Output signal	0/4 ... 20 mA	(4 ... 20 mA with HART signal)
Load	0 ... 600 Ω (at 20 mA)	(230 ... 600 Ω with HART signal)
Linear transmission range	−1 ... +110 %	
Residual ripple	< 10 mV <sub>rms</sub>	
General Data		
Transmission error	< 0.1 % full scale	
Temperature coefficient <sup>1)</sup>	< 100 ppm/K	
Cut-off frequency -3 dB	100 Hz	> 2,5 kHz HART signal
Response time T <sub>99</sub>	7 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	
Ambient temperature	Operation	− 25 °C to + 70 °C (− 13 to + 158 °F)
	Transport and storage	− 40 °C to + 85 °C (− 40 to + 185 °F)
Power supply	24 V DC	voltage range 16.8 V ... 31.2 V DC, approx. 1.3 W
EMC <sup>3)</sup>	EN 61326-1	
Approvals	ATEX	DEMKO 16 ATEX 1685X
	IECEX	IECEX UL 16.0055X
	UL	E478692 USA/Canada
		Ex II 3 G Ex nA IIC T4 Gc Ex nA IIC T4 Gc Class I, Division 2 Groups A, B, C, D T4
Construction	6.2 mm (0.244") housing, protection class IP 20, mounting on 35 mm DIN rail acc. to EN 60715	
Weight	Approx. 70 g	

1) Average TC related to full scale value in specified operating temperature range, reference temperature  $23 \text{ }^{\circ}\text{C}$

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!

## Terminal assignments

1	+ Transmitter supply voltage $U_{\text{Tx}}$
2	+ Input current
3	- Input GND
4	n.c.
5	+ Output
6	- Output
7	+ Power supply (connected to In-Rail-Bus D)
8	- Power supply (connected to In-Rail-Bus C)

## Connection

Captive plus-minus clamp screws  
Wire cross-section  $0.5 \dots 2.5 \text{ mm}^2$  / AWG 20-14  
Stripped length 8 mm / 0.3 in  
Screw terminal torque  $0.6 \text{ Nm}$  / 5 lbf in  
Optional power connection via In-Rail-Bus (see accessories)

## Product line

Device	Order No.
Repeater Power Supply , bidirectional HART transmission	DC 52500 S
Repeater Power Supply , bidirectional HART transmission, In-Rail-Bus for power supply	DC 52500 B





## Application Example

### Isolation Amplifiers

#### Short description:

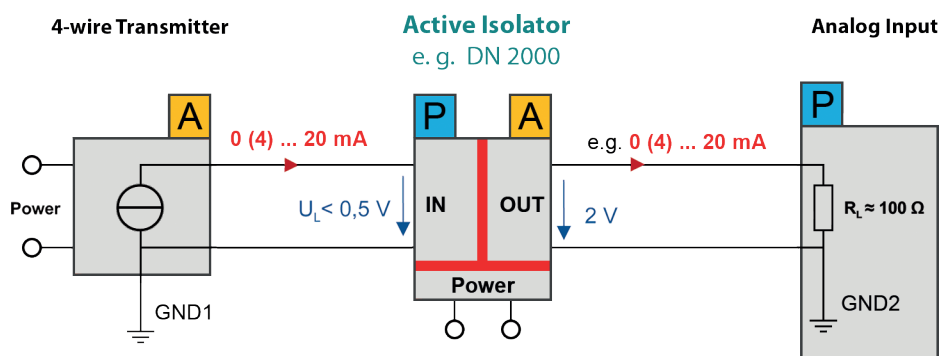
The 3-way isolation amplifier is used for electrical isolation and conversion of 0 - 20 mA, 4 - 20 mA and 0 - 10 V signals. The Zero/Span Adjustment on the front allow, if available, a fine-tuning of the measurement loop.

The 3-way isolation guarantees reliable decoupling of the sensor circuit from the processing circuit and prevents linked measurement circuits from influencing each other. The Protective Separation with high isolation level provides protection for personnel and downstream devices against impermissibly high voltage.

#### Functioning:

The input signal is modulated and then electrically decoupled using a transformer.

The isolated signal is then made available at the output, demodulated, filtered and amplified.



**P**assive  
**A**ctive

#### Applications:

- Isolation
- Conversion into another standard signal
- Signal conditioning
- Signal filtering
- Signal booster
- Decoupling

# Isolation Amplifier DN 28

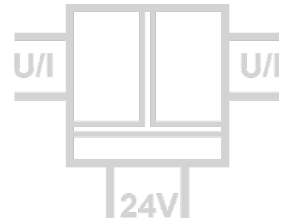
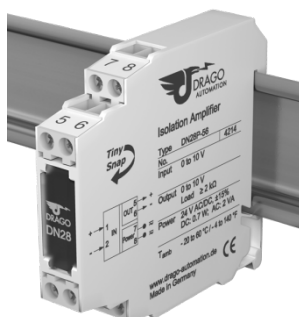
## Isolation and Conversion of Standard Signals

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.

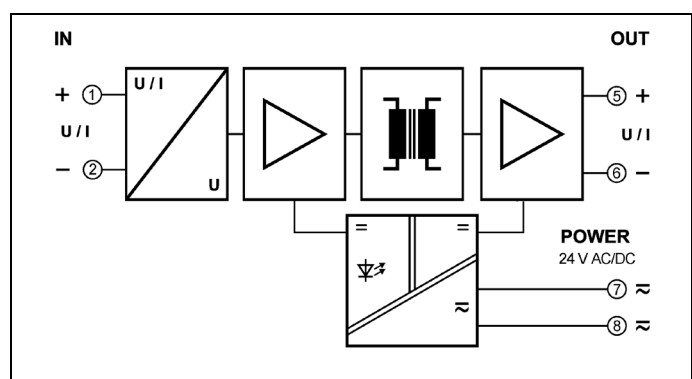
A cross-connector for the auxiliary power supply ensures fast and easy installation. The slim housing with 11.2 mm width saves significant space on the DIN-rail. If required a measuring range compensation can be performed at the Zero/Scan potentiometers behind the front cover.

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

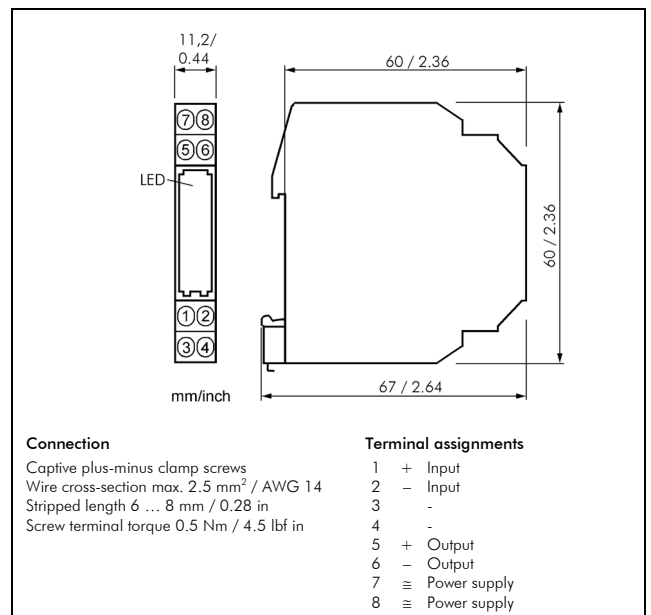
2) For applications with high working voltages, ensure there is sufficient spacing or isolation from neighboring devices and protection against electric shocks.

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

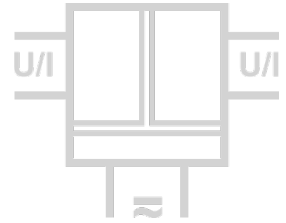
## Dimensions



Subject to change!

# Isolation Amplifier DN 2000

## Isolation and Conversion of Standard Signals



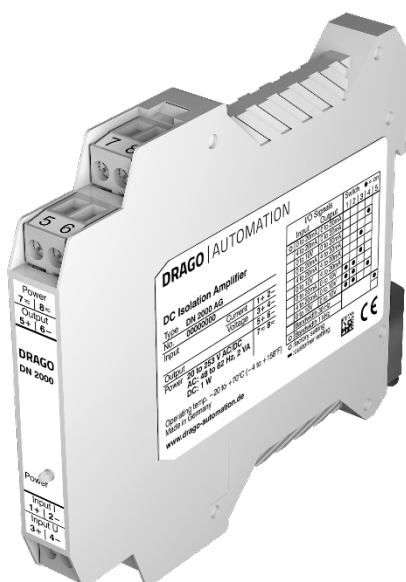
The Isolation Amplifier DN 2000 is used for isolation and conversion of 0 ... 20 mA, 4 ... 20 mA and 0 ... 10 V standard signals.

Due to the calibrated selection of the input and output ranges, the new universal power supply and the ultra-small housing the Isolation Amplifier is suitable for flexible use. The high reliability and the protective separation are further features, which ensure a safe system operation.

The desired input and output range can be easily set by using DIP switch and due to the calibrated range selection no further adjustment is necessary. Also the cut-off frequency can be adapted to the measurement task by using the DIP Switch. Alternatively, all signal combinations are also available in the form of fixed range units.

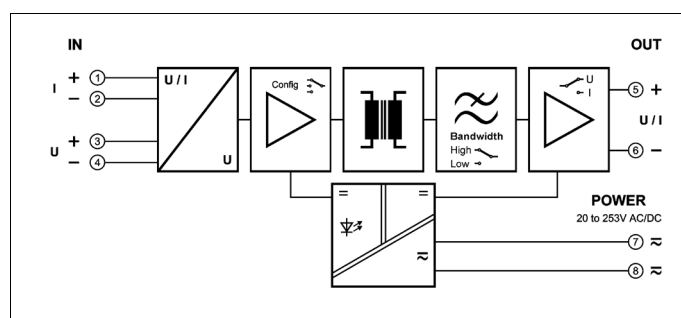
The slim housing with 12.5 mm width saves space in the switch cabinet and facilitates by the practical plug-in screw terminal blocks the assembly. A simple housing latch has been provided for range setting purposes to make all the operating elements, including those on the DIN-rail, easily accessible.

The new universal power pack for 20 ... 253 V AC/DC means the DN 2000 can be used anywhere in the world, with all mains power supplies. The unit's high efficiency contributes significantly to reducing the unit's own heat generation. This is reflected in extremely high reliability and long-term stability. A green LED on the front of the unit has been provided to monitor the power supply.



- **Calibrated signal setting**  
Input and output range can be set by using DIP switch  
- without any further adjustment
- **Universal Power Supply for 20 ... 253 V AC/DC**  
Applicable world-wide for all common supply voltages
- **3-port isolation**  
Protection against erroneous measurements due to parasitic voltages or ground loops
- **Ultra-small-sized housing**  
12.5 mm housing with plug-in screw terminal blocks
- **High accuracy**  
No falsification of measured signal
- **Protective Separation**  
Protects service personnel and downstream devices against impermissibly high voltage
- **Maximum reliability**  
No maintenance costs
- **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 (calibrated switchable)	0 ... 20 mA	4 ... 20 mA	0 ... 10 V
Input resistance	Current input	22 Ω	
	Voltage input	1 MΩ	
Input capacitance	Approx. 1 nF		
Overload	Current input	≤ 200 mA	
	Voltage input	Voltage limitation via 30 V Z-Diode, max. continuous current 30 mA	
Output			
Output signal (calibrated switchable)	0 ... 20 mA	4 ... 20 mA	0 ... 10 V
Load	Current output	≤ 12 V	(600 Ω at 20 mA)
	Voltage output	≤ 10 mA	(1 kΩ at 10 V)
Linear transmission range	- 2 ... + 110 %		
Residual ripple	< 10 mV <sub>rms</sub>		
General Data			
Transmission error	< 0.1 % full scale		
Temperature coefficient <sup>1)</sup>	< 50 ppm/K		
Cut-off frequency -3 dB	1 kHz	DN 2000 switchable to < 30 Hz	
Response time T <sub>99</sub>	0.7 ms	20 ms	
Test voltage	4 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 + 70 °C    (- 4 to + 158 °F)	
	Transport and storage	- 35 to + 85 °C    (- 31 to + 185 °F)	
Power supply	20 ... 253 V AC/DC		AC 48 ... 62 Hz, approx. 2 VA
			DC approx. 1.0 W
EMC <sup>3)</sup>	EN61326-1		
Construction	12.5 mm (0.49") housing, protection class IP 20, mounting on 35 mm DIN rail acc. to EN 60715		
Weight	Approx. 100 g		

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

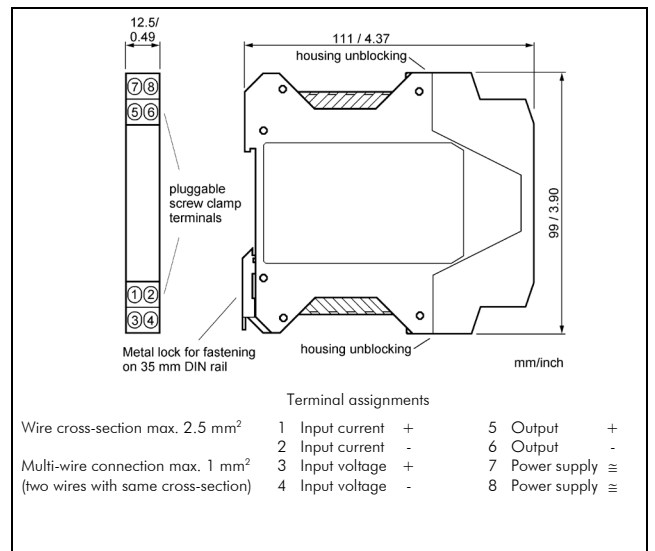
2) For applications with high working voltages, ensure there is sufficient spacing or isolation from neighboring devices and protection against electric shocks.

3) Minor deviations possible during interference

## Product line

Device			Order No.
Isolation Amplifier	calibrated range selection		DN 2000 AG
Isolation Amplifier fixed setting	Input	Output	
	0 ... 20 mA	0 ... 20 mA	DN 2012 AG
	4 ... 20 mA	0 ... 20 mA	DN 2032 AG
	0 ... 10 V	0 ... 20 mA	DN 2052 AG
	0 ... 20 mA	4 ... 20 mA	DN 2014 AG
	4 ... 20 mA	4 ... 20 mA	DN 2012 AG
	0 ... 10 V	4 ... 20 mA	DN 2054 AG
	0 ... 20 mA	0 ... 10 V	DN 2016 AG
	4 ... 20 mA	0 ... 10 V	DN 2036 AG
	0 ... 10 V	0 ... 10 V	DN 2056 AG

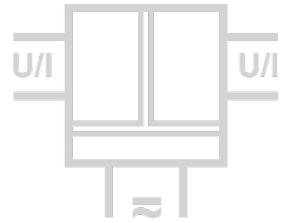
## Dimensions



Subject to change!

# Isolation Amplifier DN 2400

Isolation and Conversion of Process Signals  
in Standard Applications



The Isolation Amplifier DN 2400 is used for isolation and conversion of 0 ... 20 mA, 4 ... 20 mA and 0 ... 10 V standard signals.

Its high level of reliability and cost optimized design make the DN 2400 the first choice in its class!

Unique in its price class, the DN 2400 provides application flexibility thanks to the calibrated range selection and the new universal power pack.

The desired input and output range can be easily set by using DIP switch and due to the calibrated range selection no further adjustment is necessary.

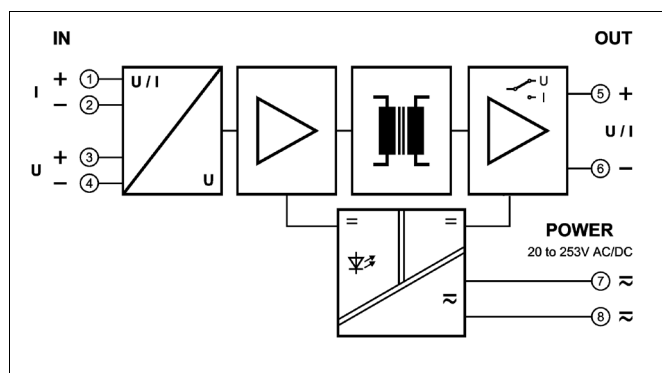
The slim housing with 12.5 mm width saves space in the switch cabinet and facilitates by the practical plug-in screw terminal blocks the assembly. For range selection a simple housing unblocking is installed which makes it possible to reach easily all control elements on the mounting rail.

In case of the new universal power pack for 20 ... 253 V AC/DC the Isolation Amplifier DN 2400 is applicable world-wide for all common supply voltages.

- **Cost optimized design**  
Economical separation for standard applications
- **Calibrated signal setting**  
Input and output range can be set by using DIP switch  
- without any further adjustment
- **Universal power pack for 20 ... 253 V AC/DC**  
Applicable world-wide for all common supply voltages
- **3-port isolation**  
Protection against erroneous measurements due to parasitic voltages or ground loops
- **Ultra-small-sized housing**  
12.5 mm housing with plug-in screw terminal blocks
- **Maximum reliability**  
No maintenance costs
- **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

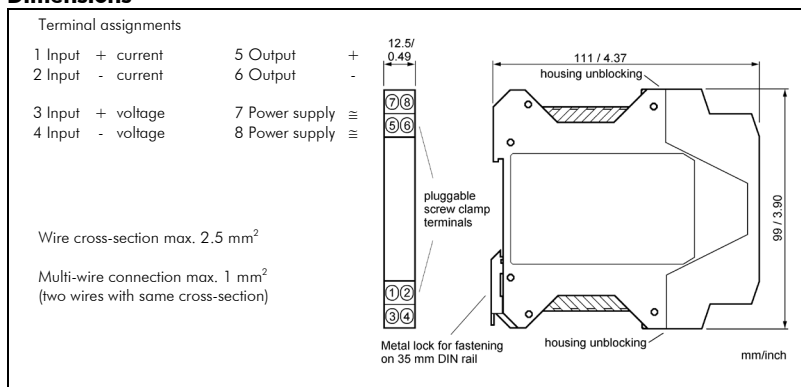
Input			
Input signal (calibrated switchable)	0 ... 20 mA	4 ... 20 mA	0 ... 10 V
Input resistance	Current input	22 Ω	
	Voltage input	1 MΩ	
Overload	Current input	≤ 200 mA	
	Voltage input	Voltage limitation via 30 V Z-Diode, max. continuous current 30 mA	
Output			
Output signal (calibrated switchable)	0 ... 20 mA	4 ... 20 mA	0 ... 10 V
Load	Current output	≤ 10 V	(500 Ω at 20 mA)
	Voltage output	≤ 10 mA	(1 kΩ at 10 V)
Residual ripple	< 20 mV <sub>rms</sub>		
General Data			
Transmission error	< 0.3 % full scale		
Temperature coefficient <sup>1)</sup>	< 150 ppm/K		
Cut-off frequency -3 dB	1 kHz		
Response time T <sub>99</sub>	0.7 ms		
Test voltage	2.5 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		
Ambient temperature	Operation	- 10 to + 60 °C (+ 14 to + 140 °F)	
	Transport and storage	- 20 to + 80 °C (- 4 to + 176 °F)	
Power supply	20 ... 253 V AC/DC	AC 48 ... 62 Hz, approx. 3 VA	
		DC approx. 1.5 W	
EMC <sup>3)</sup>	EN 61326-1		
Construction	12.5 mm (0.49") housing, protection class IP 20, mounting on 35 mm DIN rail acc. to EN 60715		
Weight	Approx. 100 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



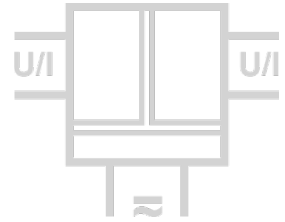
Subject to change!

## Product line

Device	Order No.
Isolation Amplifier, calibrated range selection	DN 2400 AG

# Isolation Amplifier DN 25000

## Isolation and Conversion of Standard Signals



The Isolation Amplifier DN 25000 is used for isolation and conversion of 0/4 ... 20 mA and 0/2 ... 10 V standard signals.

The input and output range of DN 25000 can be easily set by using DIP switch. Due to the calibrated range selection no further adjustment is necessary. Also the cut-off frequency can be adapted to the measurement task by using the DIP Switch.

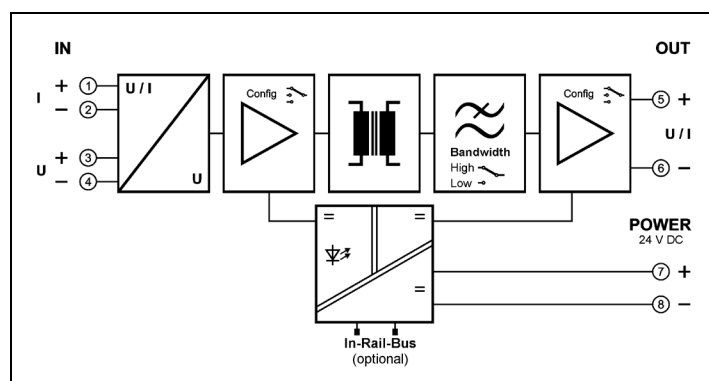
The auxiliary power can be supplied via the connection terminals or via the optional In-Rail-Bus connector. A green LED on the front of the unit has been provided to monitor the power supply.



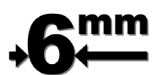
- **Calibrated signal setting via DIP switch**  
Input and output range can be set by using DIP switch – high precision without any further adjustment
- **3-Port Isolation**  
Protection against erroneous measurements due to parasitic voltages or ground loops
- **Extremely slim design**  
6.2 mm slim housing for a simple and space saving DIN rail mounting
- **Optional In-Rail-Bus mounting rail connector**  
allows fast and economical installation
- **Protective Separation acc. to EN 61140**  
Protects service personnel and downstream devices against impermissibly high voltage
- **Maximum reliability**  
No maintenance costs
- **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
(calibrated switchable)	0 ... 10 V	2 ... 10 V

Input resistance	Current input	$\leq 25 \Omega$
	Voltage input	$\geq 100 \text{ k}\Omega$
Overload	Current input	$< 50 \text{ mA}$
	Voltage input	$< 30 \text{ V}$

### Output

Output signal	0 ... 20 mA	4 ... 20 mA
(calibrated switchable)	0 ... 10 V	2 ... 10 V
Load	Current output: $\leq 12 \text{ V}$ ( $600 \Omega$ at 20 mA)	Voltage output: $\leq 5 \text{ mA}$ ( $2 \text{ k}\Omega$ at 10 V)
Linear transmission range	$-1 \dots +110 \%$	
Residual ripple	$< 10 \text{ mV}_{\text{rms}}$	

### General Data

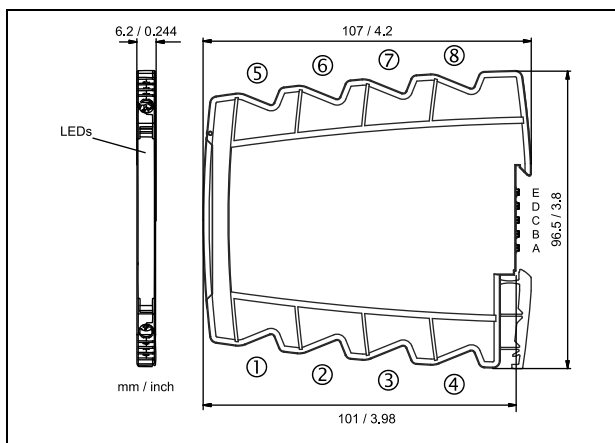
Transmission error	$< 0.1 \%$ full scale		
Temperature coefficient <sup>1)</sup>	$< 100 \text{ ppm/K}$		
Cut-off frequency -3 dB (switchable)	5 kHz	100 Hz	10 Hz
Response time $T_{99}$	150 $\mu\text{s}$	7 ms	70 ms
Test voltage	3 kV AC, 50 Hz, 1 min. Input against output against power supply		
Working 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	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	$-25 \text{ }^{\circ}\text{C}$ to $+70 \text{ }^{\circ}\text{C}$	$(-13 \text{ to } +158 \text{ }^{\circ}\text{F})$
	Transport and storage	$-40 \text{ }^{\circ}\text{C}$ to $+85 \text{ }^{\circ}\text{C}$	$(-40 \text{ to } +185 \text{ }^{\circ}\text{F})$
Power supply	24 V DC voltage range 9.6 V ... 31.2 V, approx. 0.7 W		
EMC <sup>3)</sup>	EN 61326-1		
Approvals	ATEX	DEMKO 16 ATEX 1685X	Ex II 3 G Ex nA IIC T4 Gc
	IECEX	IECEX UL 16.0055X	Ex nA IIC T4 Gc
	UL	E478692 USA/Canada	Class I, Division 2 Groups A, B, C, D T4
Construction	6.2 mm (0.244") housing, protection class IP 20, mounting on 35 mm DIN rail acc. to EN 60715		
Weight	Approx. 70 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!

## Terminal assignments

1	+ Input current
2	- Input current
3	+ Input voltage
4	- Input voltage
5	+ Output
6	- Output
7	+ Power supply (connected to In-Rail-Bus D)
8	- Power supply (connected to In-Rail-Bus C)

## Connection

Captive plus-minus clamp screws  
 Wire cross-section 0.5 ... 2.5 mm<sup>2</sup> / AWG 20-14  
 Stripped length 8 mm / 0.3 in  
 Screw terminal torque 0.6 Nm / 5 lbf in  
 Optional power connection via In-Rail-Bus (see accessories)

## Product line

Devices	Order No.
Isolation Amplifier, calibrated range selection	DN 25000 S
Isolation Amplifier, calibrated range selection, In-Rail-Bus for power supply	DN 25000 B

# 2-Channel Isolation Amplifier DN 26000

## Isolation and Conversion of Standard Signals

The 2-Channel Isolation Amplifier DN 26000 is used for isolation and conversion of 0/4 ... 20 mA and 0 ... 10 V, 0... 5 V standard signals.

Due to the extremely slim design, the space requirement is only 3 mm per channel. The input and output ranges can be selected individually for each channel via DIP switches. A readjustment is not necessary due to the calibrated measuring ranges. A signal clipping and the cut-off frequency can also be set via DIP switches.

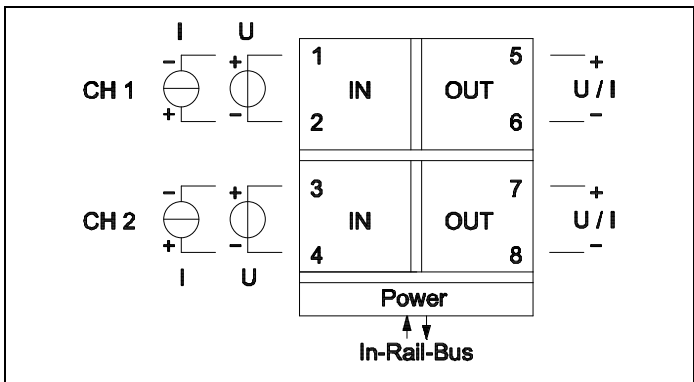
The power is supplied via the In-Rail-Bus, which ensures pre-wiring on a standard DIN rail. This significantly reduces the wiring effort. A green LED on the front of the unit has been provided to monitor the power supply.



- **Calibrated signal setting via DIP switch**  
Input and output range can be set by using DIP switch – high precision without any further adjustment
- **5-Port Isolation**  
Protection against erroneous measurements due to parasitic voltages or ground loops
- **Extremely slim design**  
6.2 mm slim housing for a simple and space saving DIN rail mounting
- **Power supply via In-Rail-connector**  
allows fast and economical installation
- **Protective Separation acc. to EN 61140**  
Protects service personnel and downstream devices against impermissibly high voltage
- **Maximum reliability**  
No maintenance costs
- **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

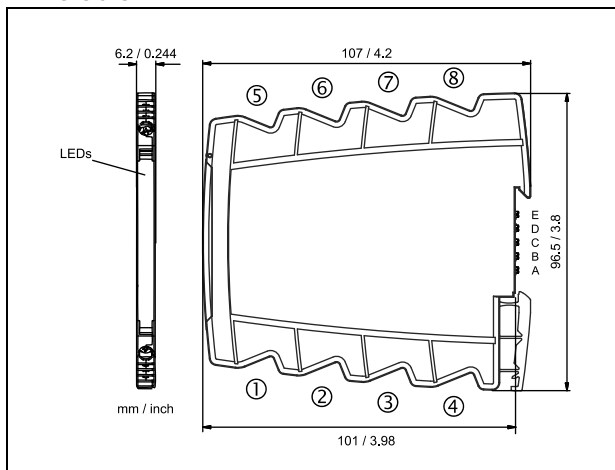
Input		
Input signal	0 ... 20 mA	4 ... 20 mA
(calibrated switchable)	0 ... 10 V	0 ... 5 V
Input resistance	Current input	≤ 25 Ω
	Voltage input	≥100 kΩ
Overload	Current input	≤ 50 mA
	Voltage input	≤ 30 V
Output		
Output signal	0 ... 20 mA	4 ... 20 mA
(calibrated switchable)	0 ... 10 V	0 ... 5 V
Load	Current output: ≤ 10 V (500 Ω at 20 mA)	Voltage output: ≤ 5 mA (2 kΩ at 10 V)
Linear transmission range	-1 ... +110 %	
Residual ripple	< 10 mV <sub>rms</sub>	
General Data		
Transmission error	< 0.1 % full scale	
Temperature coefficient <sup>1)</sup>	< 100 ppm/K	
Cut-off frequency -3 dB (switchable)	100 Hz	10 Hz
Response time T <sub>99</sub>	10 ms	55 ms
Test voltage	3 kV AC, 50 Hz, 1 min.	Inputs against outputs 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	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	- 25 °C to + 70 °C (- 13 to + 158 °F)
	Transport and storage	- 40 °C to + 85 °C (- 40 to + 185 °F)
Power supply	24 V DC via In-Rail-Bus	voltage range 16.8 V ... 31.2 V, approx. 1.1 W
EMC <sup>3)</sup>	EN 61326-1	
Construction	6.2 mm (0.244") housing, protection class IP 20, mounting on 35 mm DIN rail acc. to EN 60715	
Weight	Approx. 70 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!

### Terminal assignments

1 Input channel 1 (+U / -I)	5 Output channel 1 +
2 Input channel 1 (-U / +I)	6 Output channel 1 -
3 Input channel 2 (+U / -I)	7 Output channel 2 +
4 Input channel 2 (-U / +I)	8 Output channel 2 -
D Power supply In-Rail-Bus D +	
C Power supply In-Rail-Bus C -	

### Connection

Captive plus-minus clamp screws  
 Wire cross-section 0.5 ... 2.5 mm<sup>2</sup> / 0.5 ... 1.5 mm<sup>2</sup>  
 Stripped length 8 mm  
 Screw terminal torque 0.6 Nm  
 Power connection via In-Rail-Bus (see accessories)

Product line	Order No.
2-Channel Isolation Amplifier, screw terminals	DN 26000 B
In-Rail-Bus for power supply (see accessories)	

# Isolation Amplifier DN 240M

Isolation and Conversion of Standard Signals  
for PCB Assembling

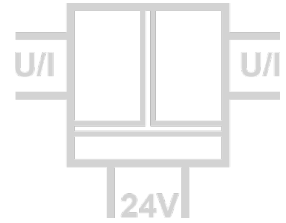
The Isolation Amplifier DN 240M is used for isolation and conversion of 0 ... 20 mA, 4 ... 20 mA and 0 ... 10 V standard signals.

Its high level of reliability and cost optimized design make the DN 240M the first choice in customer applications.

Unique in its price class, the DN 240M provides application flexibility thanks to the calibrated range.

The desired input and output range can be easily set by terminal pins and due to the calibrated range selection no further adjustment is necessary.

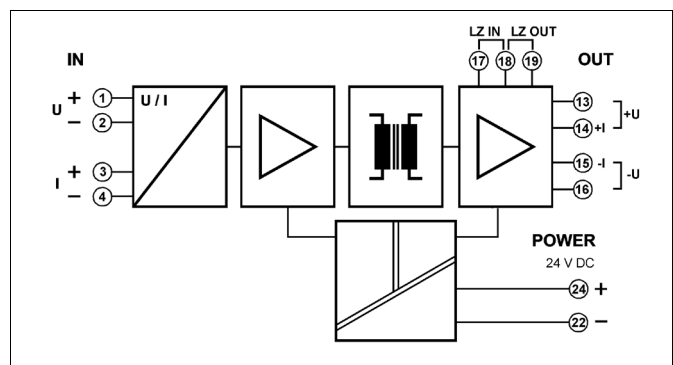
The flat module with 15.5 mm height for pcb assembling saves space in the customer application.



- **Cost optimized design**  
Economical separation for standard applications
- **Calibrated signal setting**  
Input and output range can be set by using connector pins - without any further adjustment
- **Power Supply for 24 V DC**  
Applicable for standard power supply voltages
- **3-port isolation**  
Protection against erroneous measurements due to parasitic voltages or ground loops
- **Ultra-small-sized housing**  
15.5 mm flat module for pcb assembling
- **Maximum reliability**  
No maintenance costs
- **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

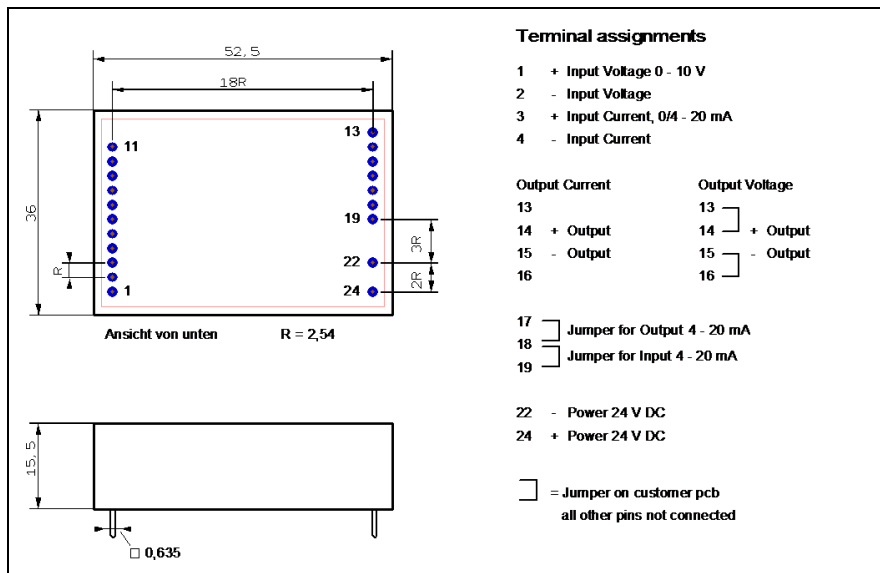
Input				
Input signal	0 ... 20 mA	4 ... 20 mA	0 ... 10 V	terminal selectable
Input resistance	Current input		22 Ω	
	Voltage input		1 MΩ	
Overload	Current input		≤ 100 mA	
	Voltage input		Voltage limitation via 30 V Z-Diode, max. continuous current 30 mA	
Output				
Output signal	0 ... 20 mA	4 ... 20 mA	0 ... 10 V	terminal selectable
Load	Current output		≤ 10 V	(500 Ω at 20 mA)
	Voltage output		≤ 10 mA	(1 kΩ at 10 V)
Residual ripple	< 20 mV <sub>rms</sub>			
General Data				
Transmission error	< 0.3 % full scale			
Temperature coefficient <sup>1)</sup>	< 150 ppm/K			
Cut-off frequency (-3 dB)	1 kHz			
Response time	0.7 ms			
Test voltage	2.5 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			
Ambient temperature	Operation		- 10 to + 60 °C	(+ 14 to + 140 °F)
	Transport and storage		- 20 to + 80 °C	(- 4 to + 176 °F)
Power supply	24 V DC, ± 10 %, approx. 1.2 W			
EMC <sup>4)</sup>	EN 61326-1			
Construction	Module for pcb assembling, 52.5 x 36 x 15.5 mm (l x w x h)			
Weight	Approx. 60 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.
Isolation Amplifier, calibrated range selection	DN 240 M





## Application Example

### Universal-Isolation Amplifiers

#### Short description:

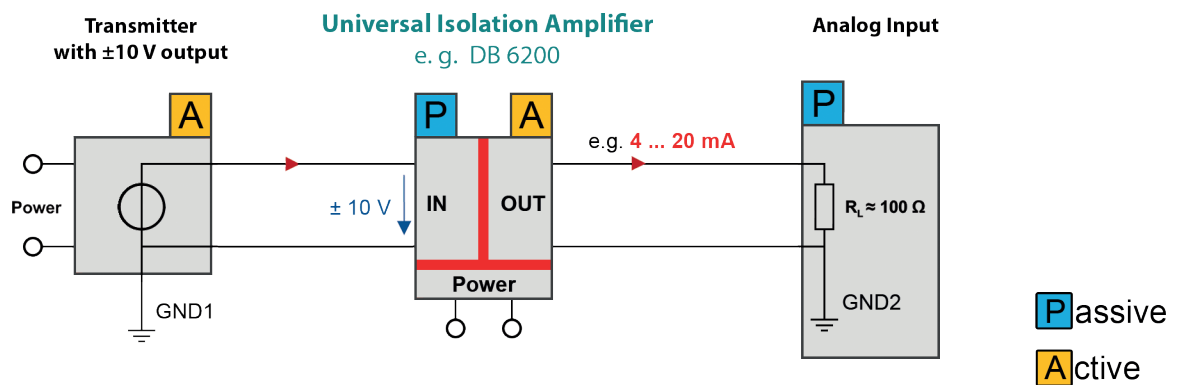
The 3-way isolation amplifier is used for electrical isolation and conversion of bipolar and unipolar process signals. The Zero/Span Adjustment on the front allows a fine-tuning of the measurement signal.

The 3-way isolation guarantees reliable decoupling of the sensor circuit from the processing circuit and prevents linked measurement circuits from influencing each other. The Protective Separation with high isolation level provides protection for personnel and downstream devices against impermissibly high voltage.

#### Functioning:

The input signal is modulated and then electrically decoupled using a transformer.

The isolated signal is then made available at the output, demodulated, filtered and amplified. Input and output signal configuration are often selected via DIP switch or the signal configuration is fixed range with the order number.



#### Low Pass Isolation Amplifier

The low pass isolation amplifier can adjust the cut-off frequency using DIP switches.

The following cut-off frequencies are adjustable:

- 10 Hz
- 1 Hz
- 0.5 Hz
- 0.1 Hz

Usage:

- Filtering of signal peaks
- Smoothing the measured value

#### Inverse Isolation Amplifier

The 3-way inverse isolation amplifier is used for electrical isolation and inverse conversion of bipolar and unipolar process signals.

Small input values result in a large output value.  
Large input values result in a low output value.

Usage:

- Compensations
- Signal inversion

#### Applications:

- Bipolar signals at the input and/or output
- Conversion of bipolar signals into standard signals
- Motion control
- Handling technology
- Transmission/Isolation of alternating signals
- Signed measured values in position or vibration sensors

# Bipolar Isolation Amplifier DB 68

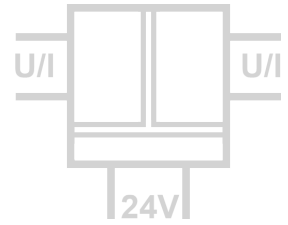
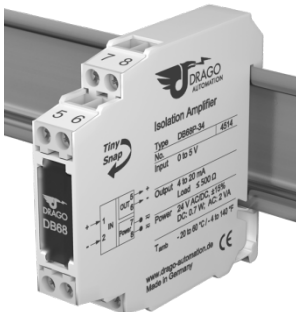
Isolation and Conversion of Fixed Range  
Bipolar and Unipolar Standard Signals

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.

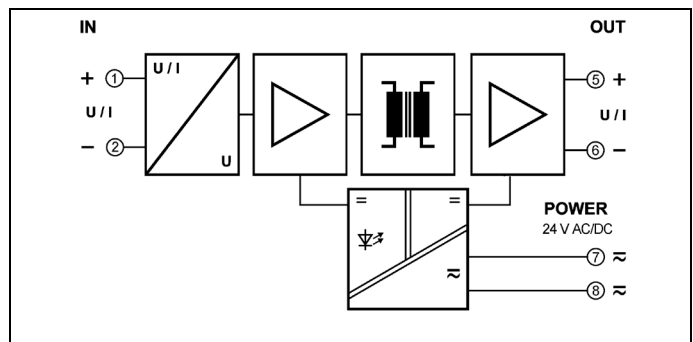
A cross-connector for the auxiliary power supply ensures fast and easy installation. The slim housing with 11.2 mm width saves significant space on the DIN-rail. If required a measuring range compensation can be performed at the Zero/Scan potentiometers behind the front cover.

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)	$\pm 10\text{ V}$	$\pm 5\text{ V}$	$\pm 20\text{ mA}$	$\pm 10\text{ mA}$
	0 ... 10 V	0 ... 5 V	0 ... 20 mA	
	2 ... 10 V	1 ... 5 V	4 ... 20 mA	
Input resistance	Voltage input	approx. 1 M $\Omega$		
	Current input	approx. 5 $\Omega$		
Overload	Voltage input	$\leq 250\text{ V}$		
	Current input	$\leq 200\text{ mA}$		
Output				
Output signal (see product line)	0 ... 10 V	0 ... 5 V	0 ... 20 mA	
	2 ... 10 V	1 ... 5 V	4 ... 20 mA	
Load	Voltage output	$\geq 2\text{ k}\Omega$		
	Current output	$\leq 500\text{ }\Omega$		
Residual ripple	$< 10\text{ mV}_{\text{rms}}$			
General Data				
Transmission error	$< 0.2\text{ }\%$ full scale			
Temperature coefficient <sup>1)</sup>	$< 0.02\text{ }\%/K$			
Zero/Span Compensation	$\pm 3\text{ }\%$			
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	Operation	$-20\text{ to }+60\text{ }^{\circ}\text{C}$		$(-4\text{ to }+140\text{ }^{\circ}\text{F})$
	Transport and storage	$-35\text{ to }+85\text{ }^{\circ}\text{C}$		$(-31\text{ to }+185\text{ }^{\circ}\text{F})$
Power supply	24 V AC/DC, $\pm 15\text{ }\%$		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

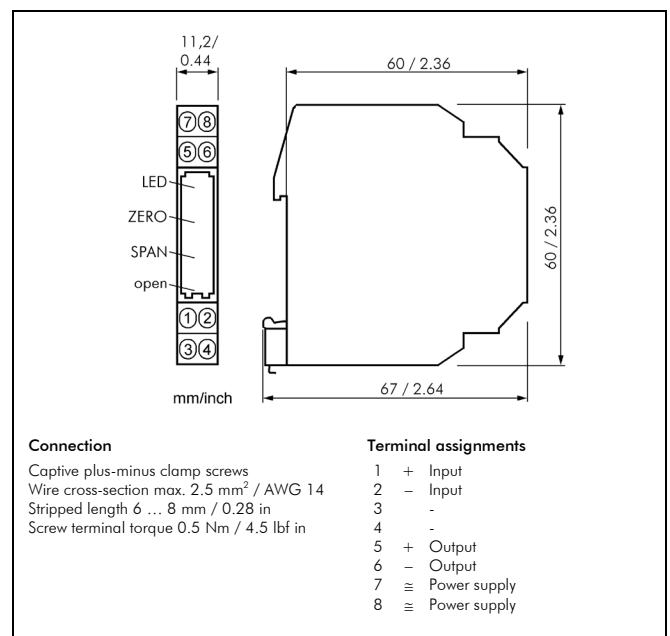
2) For applications with high working voltages, ensure there is sufficient spacing or isolation from neighboring devices and protection against electric shocks.

3) Minor deviations possible during interference

## Product line

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

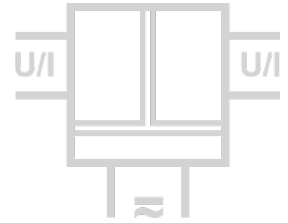
## Dimensions



Subject to change!

# Bipolar Isolation Amplifier DB 6200

Isolation and Conversion of Bipolar and Unipolar Industrial Standard Signals



The Isolation Amplifier DB 6200 is used for isolation and conversion of bipolar and unipolar industrial signals.

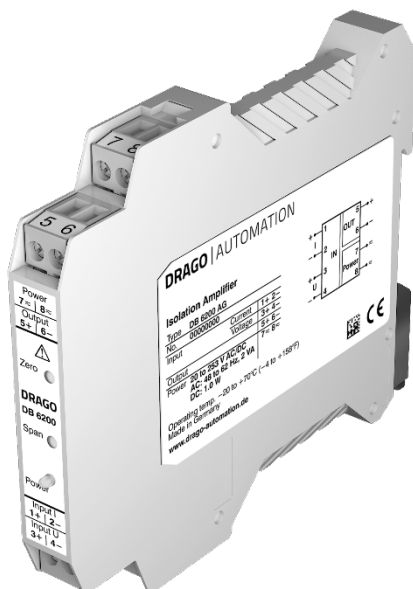
Due to the easy selection of the input and output ranges, the new universal power supply and the ultra-small housing the Isolation Amplifier is suitable for flexible use. High reliability and Protective Separation are further characteristics that make the DB 6200 unrivaled.

The order key allows you to select the desired input and output ranges to which the unit will be adjusted at the factory before delivery. These can be easily reconfigured at any time by means of DIP switch settings. Subsequent readjustment or measured range compensation can then be performed at the zero/span potentiometers on the front panel. Also the cut-off frequency can be adapted to the measurement task by using the DIP Switch.

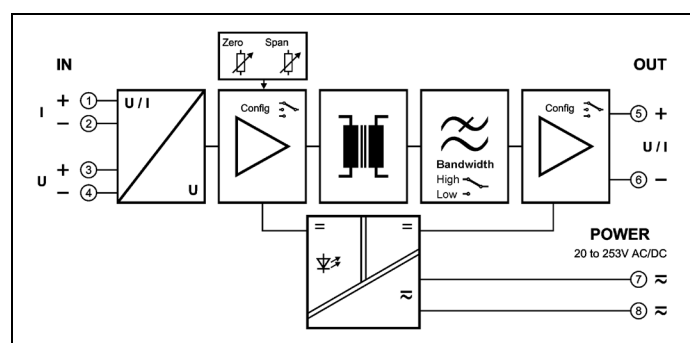
The small housing with 12.5 mm width saves space in your switch cabinet and facilitates by the practical plug-in screw terminal blocks the assembly. For range setting a simple housing unblocking is installed which makes it possible to reach easily all control elements on the mounting rail.

The new universal power pack for 20 ... 253 V AC/DC means the DB 6200 can be used anywhere in the world, with all mains power supplies. The unit's high efficiency contributes significantly to reducing the unit's own heat generation. This is reflected in extremely high reliability and long-term stability. A green LED on the front of the unit has been provided to monitor the power supply.

- **Easy selection of input and output range**  
Input and output range for unipolar and bipolar signals can be easily set by using DIP switch
- **Universal power supply for 20...253 V AC/DC**  
Applicable world-wide for all common supply voltages
- **3-port isolation**  
Protection against erroneous measurements due to parasitic voltages or ground loops
- **Ultra small sized housing**  
12.5 mm housing with plug-in screw terminal blocks
- **High bandwidth; high accuracy**  
No distortion; no falsification of measured signal
- **Protective Separation**  
Protects service personnel and downstream devices against impermissibly high voltage
- **Maximum reliability**  
No maintenance costs
- **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	Voltage			Current		
Input signals (terminal/switch selectable)	$\pm 10\text{ V}$	0 ... 10 V	2 ... 10 V	$\pm 20\text{ mA}$	0 ... 20 mA	4 ... 20 mA
	$\pm 5\text{ V}$	0 ... 5 V	1 ... 5 V	$\pm 10\text{ mA}$	0 ... 10 mA	2 ... 10 mA
Input resistance	Approx. 1 M $\Omega$			Approx. 25 $\Omega$		
Input capacitance	Approx. 1 nF			Approx. 1 nF		
Overload	Voltage limitation via 30 V Z-Diode, max. continuous current 30 mA			$\leq 200\text{ mA}$		
Output	Voltage			Current		
Output signals (switch selectable)	$\pm 10\text{ V}$	0 ... 10 V	2 ... 10 V	$\pm 20\text{ mA}$	0 ... 20 mA	4 ... 20 mA
	$\pm 5\text{ V}$	0 ... 5 V	1 ... 5 V	$\pm 10\text{ mA}$	0 ... 10 mA	2 ... 10 mA
Load	$\leq 10\text{ mA}$	(1 k $\Omega$ at 10 V)		$\leq 12\text{ V}$	(600 $\Omega$ at 20 mA)	
Linear transmission range	unipolar: - 2 ... + 110 %    bipolar: - 110 ... + 110 %					
Residual ripple	$< 10\text{ mV}_{\text{rms}}$					
General Data						
Transmission error	$< 0.1\%$ full scale					
Temperature coefficient <sup>1)</sup>	$< 100\text{ ppm/K}$					
Zero/Span compensation	$\pm 10\%$					
Cut-off frequency -3 dB (switchable)	10 kHz	30 Hz				
Response time T <sub>99</sub>	80 $\mu\text{s}$	20 ms				
Test voltage	4 kV AC, 50 Hz, 1 min.		Input against output against power supply			
Working voltage <sup>2)</sup> (Basic Insulation)	1000 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 600 V AC/DC for overvoltage category II and pollution degree 2 between all circuits					
Ambient temperature	Operation		- 20 to + 70 °C    (- 4 to + 158 °F)			
	Transport and storage		- 35 to + 85 °C    (- 31 to + 185 °F)			
Power supply	20 ... 253 V AC/DC		AC 48 ... 62 Hz, approx. 2 VA DC approx. 1.0 W			
EMC <sup>3)</sup>	EN 61326 -1					
Construction	12.5 mm (0.49") housing, protection class IP 20, mounting on 35 mm DIN rail acc. to EN 60715					
Weight	Approx. 100 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.

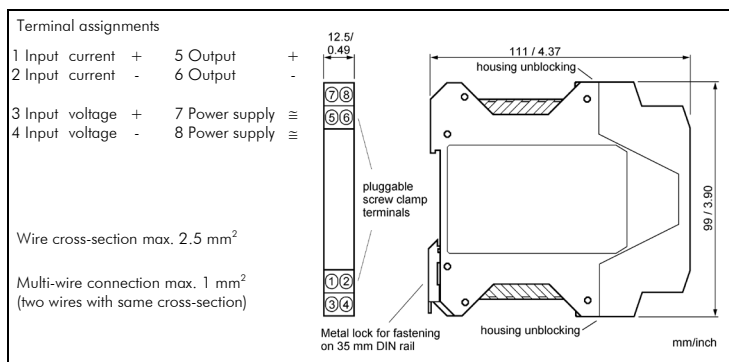
3) Minor deviations possible during interference

## Ordering Table For Factory Setting

DB 6200 AG	- XX	- YY
	Input	Output
Range	XX/YY	
$\pm 10\text{ V}$	00	$\pm 20\text{ mA}$ 06
0 ... 10 V	01	0 ... 20 mA 07
2 ... 10 V	02	4 ... 20 mA 08
$\pm 5\text{ V}$	03	$\pm 10\text{ mA}$ 09
0 ... 5 V	04	0 ... 10 mA 10
1 ... 5 V	05	2 ... 10 mA 11

Example:      Input:  $\pm 5\text{ V}$ , Output: 4 ... 20 mA  
Order No.: DB 6200 AG - 03 - 08

## Dimensions



Subject to change!

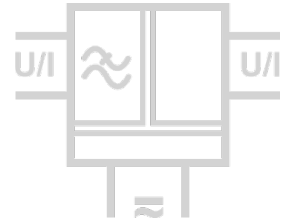
## Product line

Device	Order No.
Bipolar Isolation Amplifier, configurable	DB 6200 AG - XX - YY

If no information is given by ordering, the devices are delivered with the standard configuration: Input signal  $\pm 10\text{ V}$ , Output signal  $\pm 10\text{ V}$ .

# Filter Isolation Amplifier DB 6230

Isolation and Conversion of Industrial Signals  
with Configurable Filter Function



The Filter Isolation Amplifier DB 6230 is used for isolation and conversion of bipolar and unipolar industrial signals.

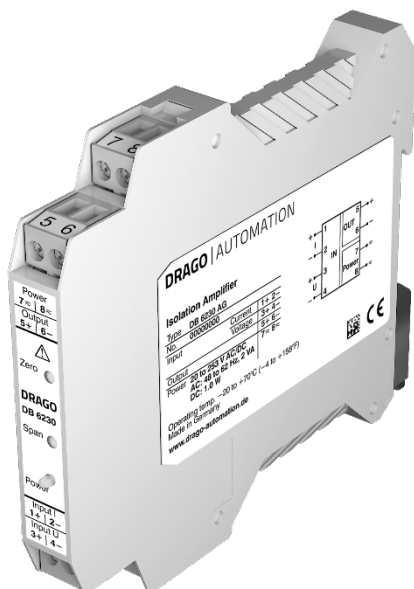
Due to the easy selection of the input and output ranges, the new universal power pack and the ultra-small housing the Isolation Amplifier is suitable for flexible use. High reliability and Protective Separation are further characteristics that make the DB 6230 unrivaled.

The order key allows you to select the desired input and output ranges to which the unit will be adjusted at the factory before delivery. These can be easily reconfigured at any time by means of DIP switch settings. Subsequent readjustment or measured range compensation can then be performed at the zero/span potentiometers on the front panel. Also the cut-off frequency can be adapted to the measurement task by using the DIP Switch.

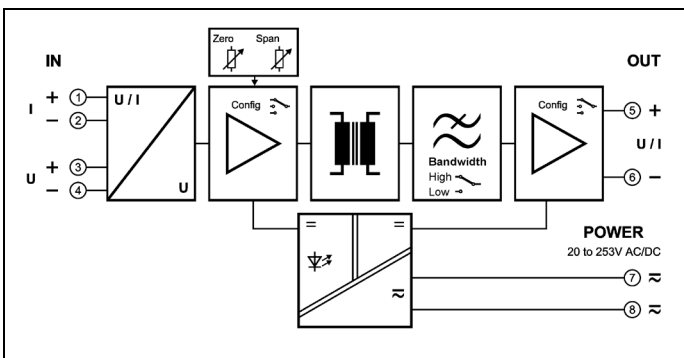
The small housing with 12.5 mm width saves space in your switch cabinet and facilitates by the practical plug-in screw terminal blocks the assembly. For range setting a simple housing unblocking is installed which makes it possible to reach easily all control elements on the mounting rail.

The new universal power pack for 20 ... 253 V AC/DC means the DB 6230 can be used anywhere in the world, with all mains power supplies. The unit's high efficiency contributes significantly to reducing the unit's own heat generation. This is reflected in extremely high reliability and long-term stability. A green LED on the front of the unit has been provided to monitor the power supply.

- **Easy selection of input and output range**  
Input and output range for unipolar and bipolar signals can be easily set by using DIP switch
- **Universal power supply for 20...253 V AC/DC**  
Applicable world-wide for all common supply voltages
- **3-port isolation**  
Protection against erroneous measurements due to parasitic voltages or ground loops
- **Ultra small sized housing**  
12.5 mm housing with plug-in screw terminal blocks
- **Selectable cut-off frequency; high accuracy**  
No distortion; no falsification of measured signal
- **Protective Separation**  
Protects service personnel and downstream devices against impermissibly high voltage
- **Maximum reliability**  
No maintenance costs
- **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		Voltage				Current			
Input signals (terminal/switch selectable)		± 10 V	0 ... 10 V		2 ... 10 V		± 20 mA	0 ... 20 mA	4 ... 20 mA
		± 5 V	0 ... 5 V		1 ... 5 V		± 10 mA	0 ... 10 mA	2 ... 10 mA
Input resistance		Approx. 1 MΩ					Approx. 25 Ω		
Input capacitance		Approx. 1 nF					Approx. 1 nF		
Overload		Voltage limitation via 30 V Z-Diode, max. continuous current 30 mA					≤ 200 mA		
Output		Voltage				Current			
Output signals (switch selectable)		± 10 V	0 ... 10 V			± 20 mA		0 ... 20 mA	
Load		≤ 10 mA	(1 kΩ at 10 V)			≤ 12 V		(600 Ω at 20 mA)	
Linear transmission range		unipolar: - 2 ... + 110 %		bipolar: - 110 ... + 110 %					
Residual ripple		< 10 mV <sub>rms</sub>							
General Data									
Transmission error		< 0.1 % of full scale							
Temperature coefficient <sup>1)</sup>		< 100 ppm/K							
Zero/Span compensation		± 10 %							
Filter function (switchable)	Cut-off frequency -3 dB	10 Hz	1 Hz	0,5 Hz	0,1 Hz				
	Response time T <sub>99</sub>	70 ms	700 ms	1.5 s	7 s				
Test voltage		4 kV AC, 50 Hz, 1 min.			Input against output against power supply				
Working voltage <sup>2)</sup> (Basic Insulation)		1000 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 600 V AC/DC for overvoltage category II and pollution degree 2 between all circuits							
Ambient temperature		Operation		- 20 to + 70 °C		(- 4 to + 158 °F)			
		Transport and storage		- 35 to + 85 °C		(- 31 to + 185 °F)			
Power supply		20 ... 253 V AC/DC			AC 48 ... 62 Hz, approx. 2 VA DC approx. 1.0 W				
EMC <sup>3)</sup>		EN 61326-1							
Construction		12.5 mm (0.49") housing, protection class IP 20, mounting on 35 mm DIN rail acc. to EN 60715							
Weight		Approx. 100 g							

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

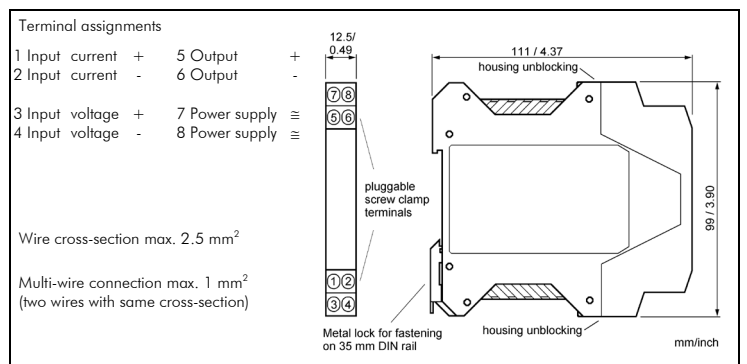
2) For applications with high working voltages, ensure there is sufficient spacing or isolation from neighboring devices and protection against electric shocks.

3) Minor deviations possible during interference

## Ordering Table For Factory Setting

DB 6230 AG	- XX	- YY
	Input	Output
Range	XX	YY
$\pm 10\text{ V}$	00	00
0 ... 10 V	01	01
2 ... 10 V	02	
$\pm 5\text{ V}$	03	
0 ... 5 V	04	
1 ... 5 V	05	
$\pm 20\text{ mA}$	06	06
0 ... 20 mA	07	07
4 ... 20 mA	08	
$\pm 10\text{ mA}$	09	
0 ... 10 mA	10	
2 ... 10 mA	11	

## Dimensions



Subject to change!

Example: Input:  $\pm 5\text{ V}$ , Output: 0 ... 20 mA, Order No.: DB 6230 AG - 03 - 07

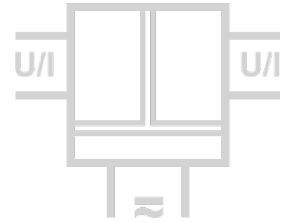
## Product line

Device	Order No.
Filter Isolation Amplifier, configurable	DB 6230 AG - XX - YY

If no information is given by ordering, the devices are delivered with the standard configuration: Input signal  $\pm 10\text{ V}$ , Output signal  $\pm 10\text{ V}$ .

# Inverse Isolation Amplifier DB 6250

Isolation and Conversion of  
Industrial Signals with Inverse Characteristic



The Inverse Isolation Amplifier DB 6250 is used for isolation and conversion of industrial signals with inverse characteristic.

Due to the easy selection of the input and output ranges, the new universal power pack and the ultra-small housing the Isolation Amplifier is suitable for flexible use. High reliability and Protective Separation are further characteristics that make the DB 6250 unrivaled.

The order key allows you to select the desired input and output ranges to which the unit will be adjusted at the factory before delivery. These can be easily reconfigured at any time by means of DIP switch settings. Subsequent readjustment or measured range compensation can then be performed at the zero/scan potentiometers on the front panel. Also the cut-off frequency can be adapted to the measurement task by using the DIP Switch.

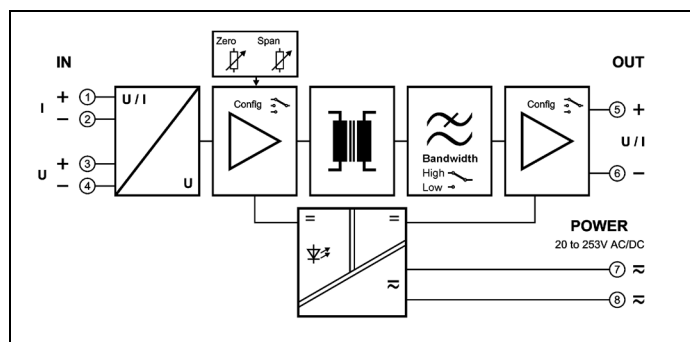
The small housing with 12.5 mm width saves space in your switch cabinet and facilitates by the practical plug-in screw terminal blocks the assembly. For range setting a simple housing unblocking is installed which makes it possible to reach easily all control elements on the mounting rail.

The new universal power pack for 20 ... 253 V AC/DC means the DB 6250 can be used anywhere in the world, with all mains power supplies. The unit's high efficiency contributes significantly to reducing the unit's own heat generation. This is reflected in extremely high reliability and long-term stability. A green LED on the front of the unit has been provided to monitor the power supply.

- **Easy realization of inverse transmission characteristic**  
Inverse characteristic for unipolar signals can be easily set by using DIP switch
- **Universal power pack for 20...253 V AC/DC**  
Applicable world-wide for all common supply voltages
- **3-port isolation**  
Protection against erroneous measurements due to parasitic voltages or ground loops
- **Ultra small sized housing**  
12.5 mm housing with plug-in screw terminal blocks
- **High bandwidth; high accuracy**  
No distortion; no falsification of measured signal
- **Protective Separation**  
Protects service personnel and downstream devices against impermissibly high voltage
- **Maximum reliability**  
No maintenance costs
- **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	Voltage	Current
Input signals	0 ... 10 V   2 ... 10 V	0 ... 20 mA   4 ... 20 mA
(terminal/switch selectable)	0 ... 5 V   1 ... 5 V	0 ... 10 mA   2 ... 10 mA
Input resistance	Approx. 1 M $\Omega$	Approx. 25 $\Omega$
Input capacitance	Approx. 1 nF	Approx. 1 nF
Overload	Voltage limitation via 30 V Z-Diode, max. continuous current 30 mA	$\leq 200$ mA
Output	Voltage	Current
Output signals, inverse characteristic	0 ... 10 V   2 ... 10 V	0 ... 20 mA   4 ... 20 mA
(switch selectable)	0 ... 5 V   1 ... 5 V	0 ... 10 mA   2 ... 10 mA
Load	$\leq 10$ mA   (1 k $\Omega$ at 10 V)	$\leq 12$ V   (600 $\Omega$ at 20 mA)
Linear transmission range	- 2 ... + 110 %	
Residual ripple	$< 10$ mV <sub>rms</sub>	
General Data		
Transmission error	$< 0.1$ % of full scale	
Temperature coefficient <sup>1)</sup>	$< 100$ ppm/K	
Zero/Span compensation	$\pm 10$ %	
Cut-off frequency -3 dB (switchable)	10 kHz   30 Hz	
Response time T <sub>99</sub>	80 $\mu$ s   20 ms	
Test voltage	4 kV AC, 50 Hz, 1 min.   Input against output against power supply	
Working voltage <sup>2)</sup> (Basic Insulation)	1000 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 600 V AC/DC for overvoltage category II and pollution degree 2 between all circuits	
Ambient temperature	Operation   - 20 to +70 °C   (- 4 to + 158 °F) Transport and storage   - 35 to +85 °C   (- 31 to + 185 °F)	
Power supply	20 ... 253 V AC/DC	AC 48 ... 62 Hz, approx. 2 VA DC approx. 1.0 W
EMC <sup>3)</sup>	EN 61326-1	
Construction	12.5 mm (0.49") housing, protection class IP 20, mounting on 35 mm DIN rail acc. to EN 60715	
Weight	Approx. 100 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.

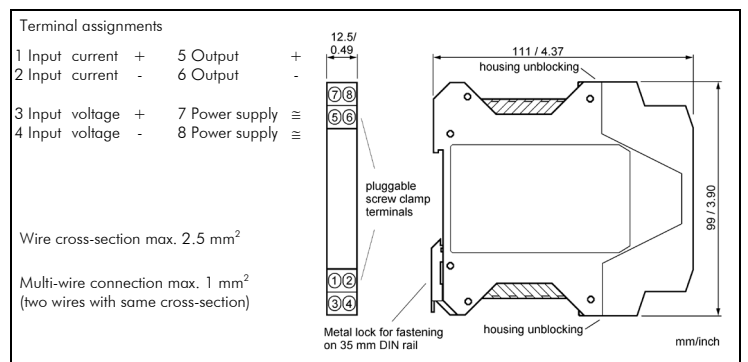
3) Minor deviations possible during interference

## Ordering Table For Factory Setting

DB 6250 AG	- XX	- YY
	Input	Output
Range	XX/YY	
0 ... 10 V	01	0 ... 20 mA   07
2 ... 10 V	02	4 ... 20 mA   08
0 ... 5 V	04	0 ... 10 mA   10
1 ... 5 V	05	2 ... 10 mA   11

Example:   Input: 0 ... 5 V, Output: 20 ... 4 mA  
Order No.: DB 6250 AG - 04 - 08

## Dimensions



Subject to change!

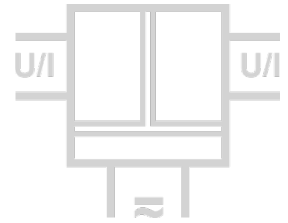
## Product line

Device	Order No.
Inverse Isolation Amplifier, configurable	DB 6250 AG - XX - YY



# Bipolar Isolation Amplifier DB 64000

Isolation and Conversion of  
Bipolar and Unipolar Industrial Standard Signals



The Bipolar Isolation Amplifier DB 64000 is used for isolation and conversion of bipolar and unipolar industrial standard signals.

The input and output range of DB 64000 can be easily set by using DIP switch. Due to the calibrated range selection no further adjustment is necessary.

A switchable compensation of the measuring range can be performed at the Zero/Span potentiometers on the front panel. Also the cut-off frequency can be adapted to the measurement task by using the DIP Switch.

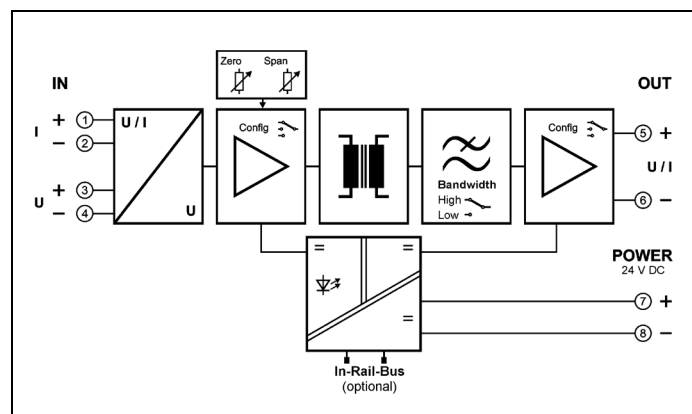
The auxiliary power can be supplied via the connection terminals or via the optional In-Rail-Bus connector. A green LED on the front of the unit has been provided to monitor the power supply.



- **Calibrated signal setting via DIP switch**  
Input and output range can be set by using DIP switch – high precision without any further adjustment
- **High bandwidth; short response time**  
No signal distortion; no falsification of measured signal
- **Switchable Zero/Span compensation**  
For readjustment of the sensor or field device
- **3-Port isolation**  
Protection against erroneous measurements due to parasitic voltages or ground loops
- **Extremely slim design**  
6.2 mm slim housing for a simple and space saving DIN rail mounting
- **Optional In-Rail-Bus mounting rail connector**  
allows for fast and economical installation
- **Protective Separation acc. to EN 61140**  
Protects service personnel and downstream devices against impermissibly high voltage
- **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

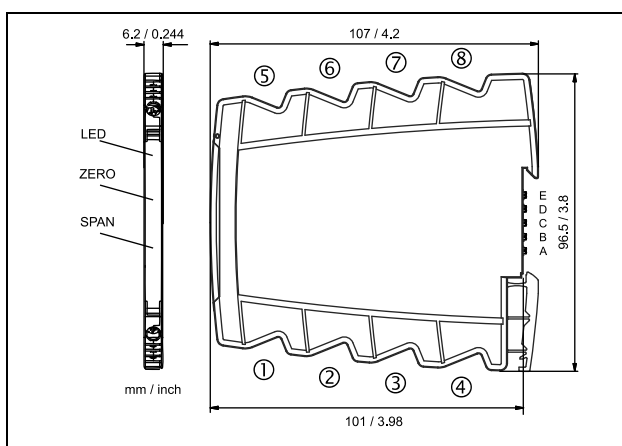
Input	Current			Voltage		
Input signal (calibrated switchable)	± 20 mA	0 ... 20 mA	4 ... 20 mA	± 10 V	0 ... 10 V	2 ... 10 V
	± 10 mA	0 ... 10 mA	2 ... 10 mA	± 5 V	0 ... 5 V	1 ... 5 V
Input resistance	≤ 25 Ω			≥ 1 MΩ		
Overload	< 50 mA			< 30 V		
Output	Current			Voltage		
Output signal (calibrated switchable)	± 20 mA	0 ... 20 mA	4 ... 20 mA	± 10 V	0 ... 10 V	2 ... 10 V
	± 10 mA	0 ... 10 mA	2 ... 10 mA	± 5 V	0 ... 5 V	1 ... 5 V
Load	≤ 12 V (600 Ω at 20 mA)			≤ 5 mA	(2 kΩ at 10 V)	
Linear transmission range	unipolar: -1 ... +110 %			bipolar: -110 ... +110 %		
Residual ripple	< 10 mV <sub>rms</sub>					
General Data						
Transmission error	< 0.1 % full scale					
Temperature coefficient <sup>1)</sup>	< 100 ppm/K					
Zero/Span compensation (switchable)	± 5 % of measuring range					
Cut-off frequency -3 dB (switchable)	8 kHz		100 Hz			
Response time T <sub>99</sub>	100 μs		7 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		- 25 °C to + 70 °C		(- 13 to + 158 °F)	
	Transport and storage		- 40 °C to + 85 °C		(- 40 to + 185 °F)	
Power supply	24 V DC		voltage range 9.6 V ... 31.2 V DC, approx. 0.8 W			
EMC <sup>3)</sup>	EN 61326-1					
Approvals	ATEX	DEMKO 16 ATEX 1685X		Ex II 3 G Ex nA IIC T4 Gc		
	IECEX	IECEX UL 16.0055X		Ex nA IIC T4 Gc		
	UL	E478692 USA/Canada		Class I, Division 2 Groups A, B, C, D T4		
Construction	6.2 mm (0.244") housing, protection class IP 20, mounting on 35 mm DIN rail acc. to EN 60715					
Weight	Approx. 70 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!

## Terminal assignments

- |   |   |
|---|---|
| 1 | + Input current                             |
| 2 | - Input current                             |
| 3 | + Input voltage                             |
| 4 | - Input voltage                             |
| 5 | + Output                                    |
| 6 | - Output                                    |
| 7 | + Power supply (connected to In-Rail-Bus D) |
| 8 | - Power supply (connected to In-Rail-Bus C) |

## Connection

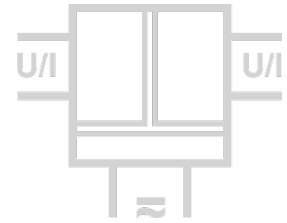
Captive plus-minus clamp screws  
Wire cross-section 0.5 ... 2.5 mm<sup>2</sup> / AWG 20-14  
Stripped length 8 mm / 0.3 in  
Screw terminal torque 0.6 Nm / 5 lbf in  
Optional power connection via In-Rail-Bus (see accessories)

## Product line

Device	Order No.
Bipolar Isolation Amplifier, calibrated range selection	DB 64000 S
Bipolar Isolation Amplifier, calibrated range selection, In-Rail-Bus for power supply	DB 64000 B

# Customer-Specific Isolation Amplifier DK 8000

Isolation and Conversion of Industrial Signals  
in Special Applications



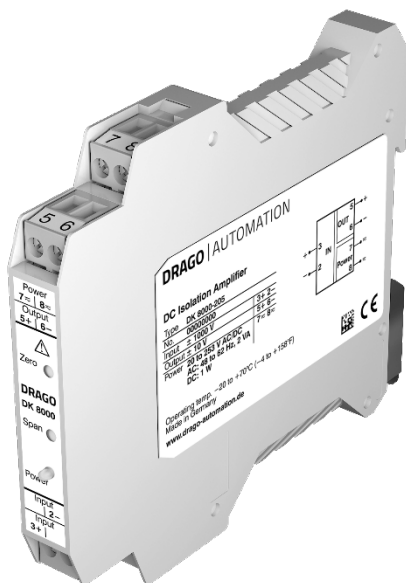
The Isolation Amplifier DK8000 is used for isolation and conversion of customer-specific industrial signals.

When it comes to individualized solutions, the know-how advantage of our development team stands ready to serve. This allows us to offer customer-specific solutions with the proverbial DRAGO quality in the shortest possible time; solutions which, as a result of individualized consultation, optimally meet all customer needs, including their economic ones.

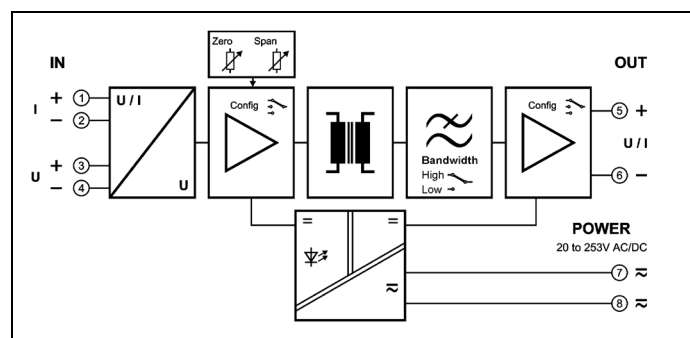
The slim housing with 12.5 mm width saves space in the switch cabinet and facilitates by the practical plug-in screw terminal blocks the assembly.

The new universal power pack for 20 ... 253 V AC/DC means the DK 8000 can be used anywhere in the world, with all mains power supplies. The unit's high efficiency contributes significantly to reducing the unit's own heat generation. This is reflected in extremely high reliability and long-term stability.

- **Customer-Specific Solutions**  
Special Input and output range on request
- **Universal Power Supply for 20 ... 253 V AC/DC**  
Applicable world-wide for all common supply voltages
- **3-Port Isolation**  
Protection against erroneous measurements due to parasitic voltages or ground loops
- **Ultra-small-sized housing**  
12.5 mm housing with plug-in screw terminal blocks
- **High accuracy**  
No falsification of measured signal
- **Protective Separation**  
Protects service personnel and downstream devices against impermissibly high voltage
- **Maximum reliability**  
No maintenance costs
- **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	Customer-specific technical data as orders (see label)	
Input resistance	Current input	approx. 25 $\Omega$ (depends on measuring range)
	Voltage input	approx. 1 M $\Omega$ (depends on measuring range)
Overload	Max. 120 % of final value	

### Output

Output signal	Customer-specific technical data as orders (see label)	
Load	Current output	$\leq 12$ V (600 $\Omega$ at 20 mA)
	Voltage output	$\leq 20$ mA (500 $\Omega$ at 10 V)
Transmission range	unipolar: - 2 ... + 110 % bipolar: - 110 ... + 110 %	
Residual ripple	< 10 mV <sub>rms</sub>	

### General Data

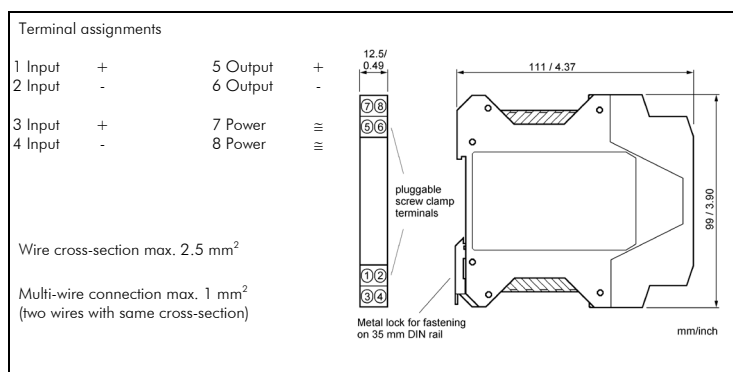
Transmission error	Typical 0.1 % full scale (max. 0.3 %, depends on measuring range)	
Temperature coefficient <sup>1)</sup>	< 100 ppm/K	
Zero/Span Adjustment	Optional	
Cut-off frequency (-3 dB)	Max. 10 kHz	
Test voltage	4 kV AC, 50 Hz, 1 min.	input against output against power supply
Working voltage <sup>2)</sup> (Basic Insulation)	1000 V AC/DC for overvoltage category II and pollution degree 2 acc. to EN 61010-1	
Ambient temperature	Operation	- 20 to + 70 °C (-4 to + 158 °F)
	Transport and storage	- 35 to + 85 °C (-31 to + 185 °F)
Power supply	20 ... 253 V AC/DC	AC 48 ... 62 Hz, approx. 2 VA
		DC approx. 1.0 W
EMC <sup>3)</sup>	EN61326 -1	
Construction	12.5 mm (0.49") housing, protection class IP 20, mounting on 35 mm DIN rail acc. to EN 60715	
Weight	Approx. 100 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.
Customer-Specific Isolation Amplifier	DK 8000 - XXX

The index number -XXX describes the signal combination and will be announced by order.





## Application Example

### Isolation Signal Splitters

#### Short description:

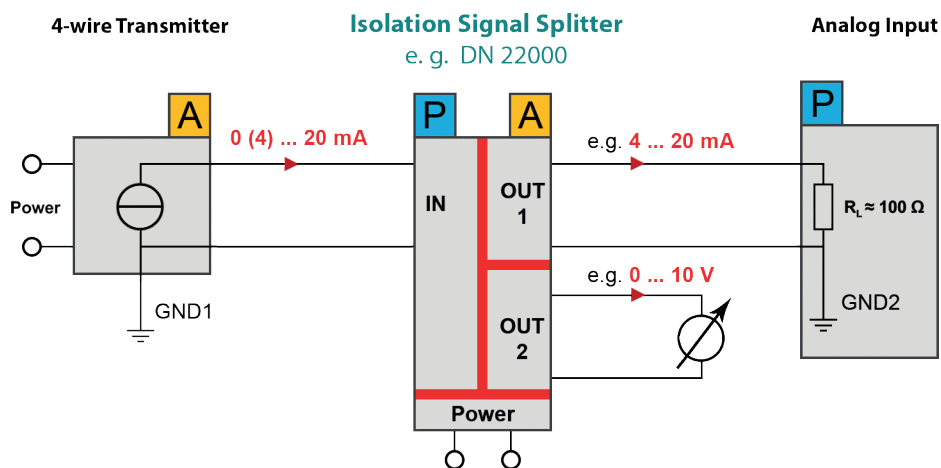
The Isolation Signal Splitter is used for isolation, conversion and distribution of 0/4 ... 20 mA and 0 ... 5/10 V standard process signals. The input signal and two output signals each can be separately selected by the Order No.

The example shows how to add a second measured value at OUT 2 in an existing 4 to 20 mA current loop. At this output, you can use the measured value as 0 to 10 V signal, the example for an easy reading display.

#### Functioning:

Das Eingangssignal und zwei potentialgetrennte Ausgangssignale können unabhängig voneinander konfiguriert werden. The ranges can be separately selected via DIP switch or by the Order No.

- Calibrated measuring ranges
- 4-port Isolation
- Protective separation acc. to EN 61140
- High accuracy



**P**assive

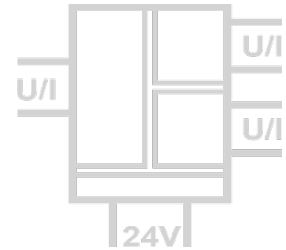
**A**ctive

#### Applications:

- Doubling of signal
- Secondary analysis
- Redundancy
- Decoupled signal branch

# Signal Splitter/Repeater DN 21000

Isolation, Conversion and Loop Supply of  
Standard Signals with 2 Outputs



The Signal Splitter/Repeater DN 21000 is used for isolation, conversion and distribution of 0/4 ... 20 mA, 0/1 ... 5 V and 0/2 ... 10 V standard signals. The measuring input can also supply the loop power for 2-wire transmitters.

The input and two isolated outputs can be easily configured by using DIP switch. Due to the calibrated range selection no further adjustment is necessary.

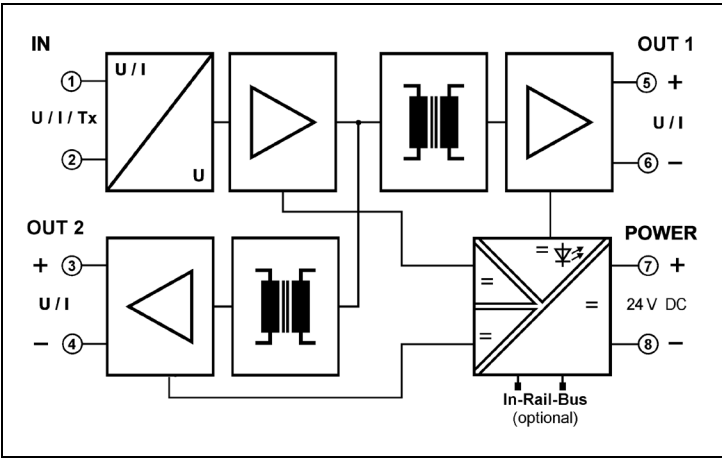
The auxiliary power can be supplied via the connection terminals or via the optional In-Rail-Bus connector. A green LED on the front of the unit has been provided to monitor the power supply.



- **Universal configurable operating**  
Signal isolator or repeater power supply for 2-wire transmitters, 2 independent outputs
- **Calibrated signal setting via DIP switch**  
Input and outputs can be set by using DIP switch – high precision without any further adjustment
- **4-Port isolation**  
Protection against erroneous measurements due to parasitic voltages or ground loops
- **Extremely slim design**  
6.2 mm slim housing for a simple and space saving DIN rail mounting
- **Optional In-Rail-Bus mounting rail connector**  
allows for fast and economical installation
- **Protective Separation acc. to EN 61140**  
Protects service personnel and downstream devices against impermissibly high voltage
- **Maximum reliability**  
No maintenance costs
- **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

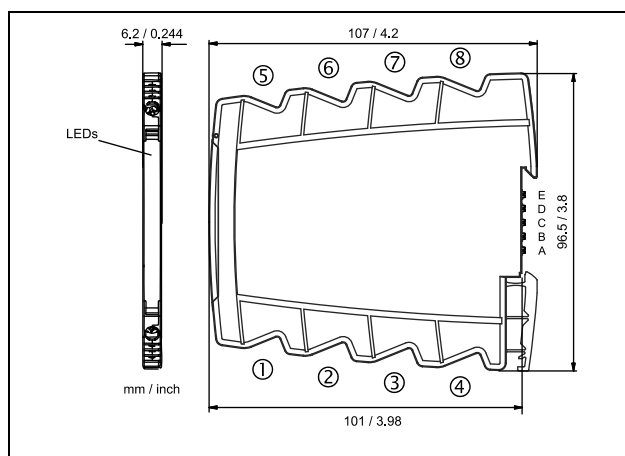
Input			
Input signal (calibrated switchable)	0 ... 20 mA	0 ... 10 V	0 ... 5 V
	4 ... 20 mA	2 ... 10 V	1 ... 5 V
Input resistance	Current input	≤ 35 Ω	
	Voltage input	≥ 100 kΩ	
Overload	Current input	< 50 mA	
	Voltage input	< 30 V	
Transmitter supply Tx (switchable)	16 V (open circuit voltage/short circuit current ≤ 22 V/35 mA)		
Output I / Output II			
Output signal (calibrated switchable)	0 ... 20 mA	0 ... 10 V	0 ... 5 V
	4 ... 20 mA	2 ... 10 V	1 ... 5 V
Load	Current output: ≤ 6 V (300 Ω at 20 mA)		Voltage output: ≤ 5 mA (2 kΩ at 10 V)
Linear transmission range	−1 ... +110 %		
Residual ripple	< 10 mV <sub>rms</sub>		
General Data			
Transmission error	< 0.1 % full scale		
Temperature coefficient <sup>1)</sup>	< 100 ppm/K		
Cut-off frequency -3 dB	5 kHz		
Response time T <sub>99</sub>	150 μs		
Test voltage	3 kV AC, 50 Hz, 1 min.		Input against Output 1 against Output 2 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	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	− 25 °C to + 70 °C	(− 13 to + 158 °F)
	Transport and storage	− 40 °C to + 85 °C	(− 40 to + 185 °F)
Power supply	24 V DC voltage range 16.8 ... 31.2 V DC, approx. 1.4 W		
EMC <sup>3)</sup>	EN 61326-1		
Approvals	ATEX	DEMKO 16 ATEX 1685X	Ex II 3 G Ex nA IIC T4 Gc
	IECEx	IECEx UL 16.0055X	Ex nA IIC T4 Gc
	UL	E478692 USA/Canada	Class I, Division 2 Groups A, B, C, D T4
Construction	6.2 mm (0.244") housing, protection class IP 20, mounting on 35 mm DIN rail acc. to EN 60715		
Weight	Approx. 70 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

Devices	Order No.
Signal Splitter/Repeater, calibrated range selection	DN 21000 S
Signal Splitter/Repeater, calibrated range selection, In-Rail-Bus for power supply	DN 21000 B

## Terminal assignments

1	Input	-I	+U	+ Loop
2	Input	+I	-U	- Loop
3	+ Output II			
4	- Output II			
5	+ Output I			
6	- Output I			
7	+ Power supply (connected to In-Rail-Bus D)			
8	- Power supply (connected to In-Rail-Bus C)			

## Connection

Captive plus-minus clamp screws  
Wire cross-section 0.5 ... 2.5 mm<sup>2</sup> / AWG 20-14  
Stripped length 8 mm / 0.3 in  
Screw terminal torque 0.6 Nm / 5 lbf in  
Optional power connection via In-Rail-Bus (see accessories)







## Application Example

### mV Shunt Isolation Amplifiers

#### Short description:

The 3-way isolation amplifier is used for electrical isolation and conversion of bipolar and unipolar shunt voltages.

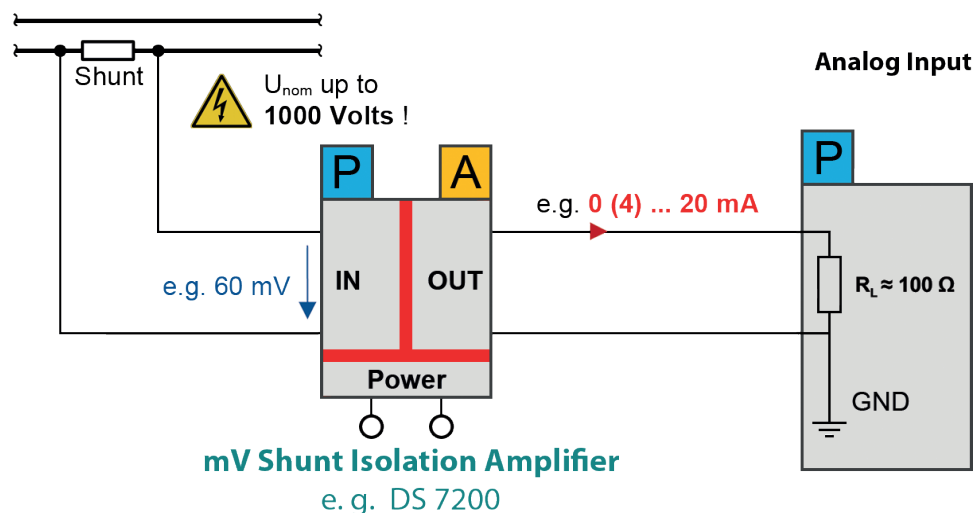
The 3-way isolation guarantees reliable decoupling of the sensor circuit from the processing circuit and prevents linked measurement circuits from influencing each other. The Protective Separation with high isolation level provides protection for personnel and downstream devices against impermissibly high voltage.

- High working voltage
- High insulation
- High cut-off frequency
- High accuracy

#### Functioning:

The input signal is modulated and then electrically decoupled using a transformer.

The isolated signal is then made available at the output, demodulated, filtered and amplified. Input and output are often selected via DIP switch or the signal combination is fixed range set with the order no. The Zero/Span Adjustment on the front allows a fine-tuning of the measurement signal and the recalibration after a range selection.



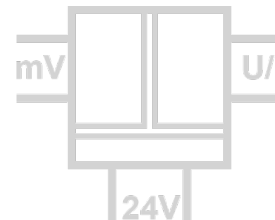
**P**assive  
**A**ctive

#### Applications:

- Photo-voltaic / wind / water
- Inverter technology
- Measurement of energy efficiency
- Energy and power control
- Energy metering

# Shunt/mV Isolation Amplifier DS 78

Isolation and Conversion of  
mV-Shunt Signals



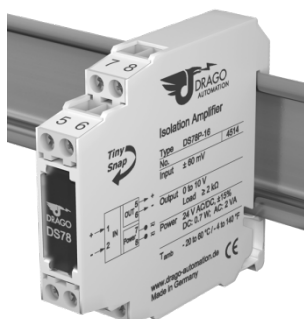
The Isolation Amplifier DS 78 is used for isolation and conversion of bipolar and unipolar mV-Signals such as those frequently used for current measuring with shunt-resistors or other applications with low sensor voltages.

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

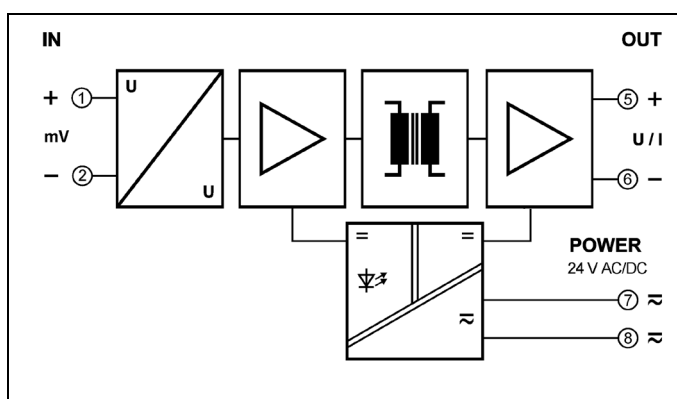
A cross-connector for the auxiliary power supply ensures fast and easy installation. The slim housing with 11.2 mm width saves significant space on the DIN-rail. If required a measuring range compensation can be performed at the Zero/Scan potentiometers behind the front cover.

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 2 ... 10 V	0 ... 5 V 1 ... 5 V	0 ... 20 mA 4 ... 20 mA	see product line	
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

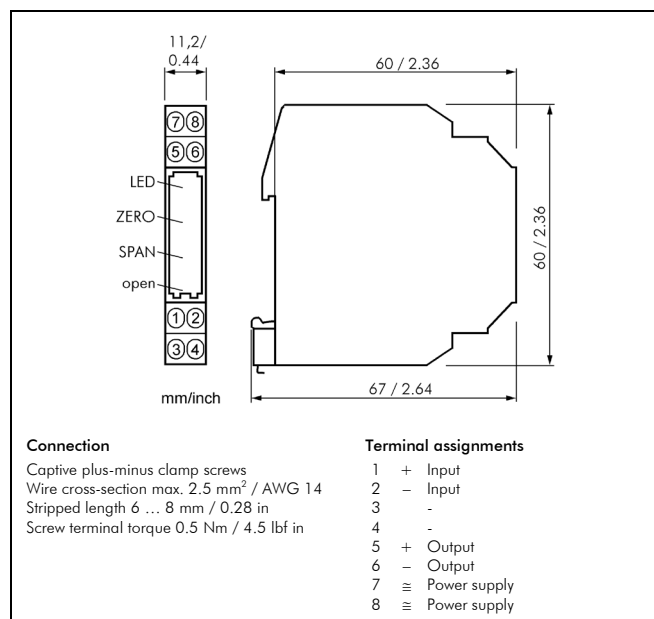
2) For applications with high working voltages, ensure there is sufficient spacing or isolation from neighboring devices and protection against electric shocks.

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	

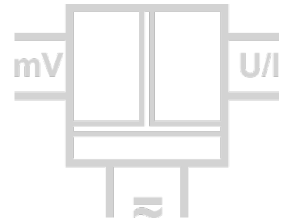
## Dimensions



Subject to change!

# Shunt/mV Isolation Amplifier DS 7200

Isolation and Conversion of  
Bipolar and Unipolar mV-Signals



The Isolation Amplifier DS 7200 is used for separation 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.

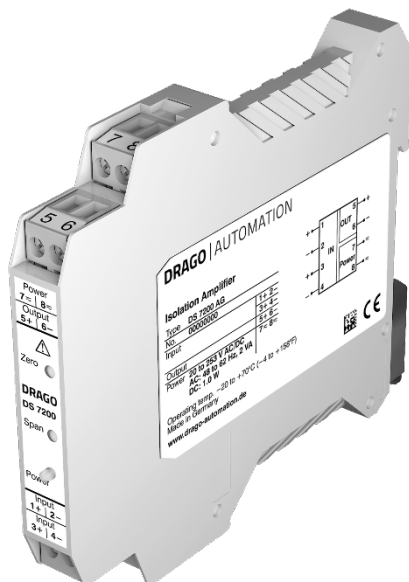
Due to the easy selection of the input and output ranges, the new universal power supply and the ultra-small housing the Isolation Amplifier is suitable for flexible use. High reliability and Protective Separation are further characteristics that make the DS 7200 unrivaled.

The order key allows you to select the desired input and output ranges to which the unit will be adjusted at the factory before delivery. These can be easily reconfigured at any time by means of DIP switch settings. Subsequent readjustment or measured range compensation can then be performed at the zero/span potentiometers on the front panel. Also the cut-off frequency can be adapted to the measurement task by using the DIP Switch.

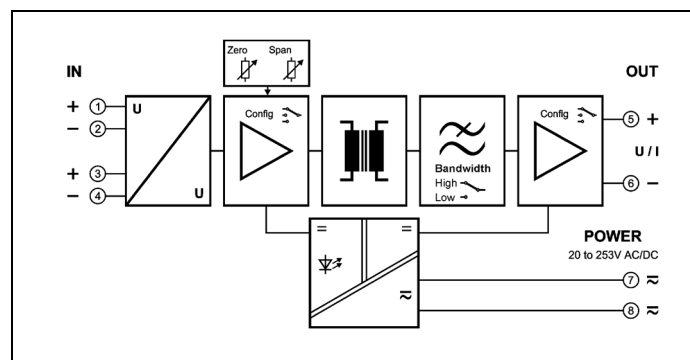
The slim housing with 12.5 mm width saves space in your switch cabinet and facilitates by the practical plug-in screw terminal blocks the assembly. For range setting a simple housing unblocking is installed which makes it possible to reach easily all control elements on the DIN-rail.

The new universal power pack for 20 ... 253 V AC/DC means the DS 7200 can be used anywhere in the world, with all mains power supplies. The unit's high efficiency contributes significantly to reducing the unit's own heat generation. This is reflected in extremely high reliability and long-term stability. A green LED on the front of the unit has been provided to monitor the power supply.

- **Easy selection of input and output range**  
Input and output range for unipolar and bipolar signals can be easily set by using DIP switch
- **Universal power supply for 20 ... 253 V AC/DC**  
Applicable world-wide for all common supply voltages
- **3-port isolation**  
Protection against erroneous measurements due to parasitic voltages or ground loops
- **Ultra-small sized housing**  
12.5 mm housing with plug-in screw terminal blocks
- **High bandwidth; high accuracy**  
No distortion; no falsification of measured signal
- **Protective Separation, 5 kV Test Voltage**  
Protects service personnel and downstream devices against impermissibly high voltage
- **Maximum reliability**  
No maintenance costs
- **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 signals (terminal/switch selectable)	± 60 mV 0 ... 60 mV	± 100 mV 0 ... 100 mV	± 150 mV 0 ... 150 mV	± 250 mV 0 ... 250 mV	± 300 mV 0 ... 300 mV	± 500 mV 0 ... 500 mV
Input resistance	> 100 kΩ					
Input capacitance	Approx. 1 nF					
Overload	< 30 V					
Output	Voltage			Current		
Output signals (switch selectable)	± 10 V ± 5 V	0 ... 10 V 0 ... 5 V	2 ... 10 V 1 ... 5 V	± 20 mA ± 10 mA	0 ... 20 mA 0 ... 10 mA	4 ... 20 mA 2 ... 10 mA
Load	≤ 10 mA (1 kΩ at 10 V)			≤ 12 V (600 Ω at 20 mA)		
Linear transmission range	Unipolar: - 2 ... + 110 %    bipolar: - 110 ... + 110 %					
Residual ripple	< 20 mV <sub>rms</sub>					
General data						
Transmission error	< 0.1 % full scale					
Temperature coefficient <sup>1)</sup>	< 100 ppm/K					
Zero/Span compensation	± 10 %					
Cut-off frequency -3 dB (switchable)	10 kHz    30 Hz					
Response time T <sub>99</sub>	80 μs    20 ms					
Test voltage	4 kV AC, 50 Hz, 1 min. 5 kV AC, 50 Hz, 1 min.		Input against output against power supply Input against output/power supply (DS7200HV only)			
Working voltage <sup>2)</sup> (Basic Insulation)	1000 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 600 V AC/DC for overvoltage category II and pollution degree 2 between all circuits					
Ambient temperature	Operation Transport and storage		- 20 to + 70 °C    ( - 4 to + 158 °F) - 35 to + 85 °C    (- 31 to + 185 °F)			
Power supply	20 ... 253 V AC/DC		AC 48 ... 62 Hz, approx. 2 VA DC approx. 1.0 W			
EMC <sup>3)</sup>	EN 61326-1					
Construction	12.5 mm (0.49") housing, protection class IP 20, mounting on 35 mm DIN rail acc. to EN 60715					
Weight	Approx. 100 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.

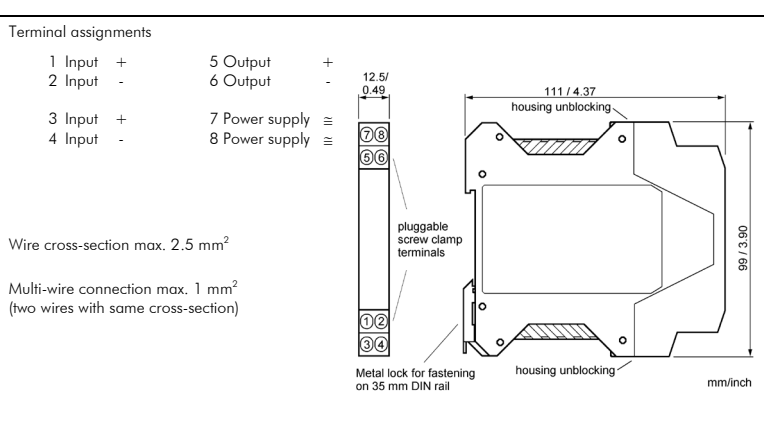
3) Minor deviations possible during interference

## Ordering Table for Factory Setting

DS 7200 AG - XX - YY			
Input	- XX	Output	- YY
± 60 mV	50	± 10 V	00
0 ... 60 mV	51	0 ... 10 V	01
± 100 mV	52	2 ... 10 V	02
0 ... 100 mV	53	± 5 V	03
± 150 mV	54	0 ... 5 V	04
0 ... 150 mV	55	1 ... 5 V	05
± 250 mV	56	± 20 mA	06
0 ... 250 mV	57	0 ... 20 mA	07
± 300 mV	58	4 ... 20 mA	08
0 ... 300 mV	59	± 10 mA	09
± 500 mV	60	0 ... 10 mA	10
0 ... 500 mV	61	2 ... 10 mA	11

Example:    Input: ± 150 mV, Output: 4 ... 20 mA  
Order No.: DS 7200 AG - 54 - 08

## Dimensions



## Product line

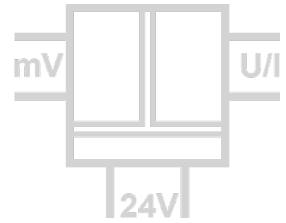
Device	Order No.
Shunt/mV Isolation Amplifier, configurable	DS 7200 AG - XX - YY
Shunt/mV Isolation Amplifier, config., 5 kV Test Voltage	DS 7200 HV - XX - YY

If no information is given by ordering, the devices are delivered with the standard configuration:  
Input signal ± 60 mV, Output signal ± 10 V.

Subject to change!

# Shunt/mV Isolation Amplifier DS 75000

Isolation and Conversion  
of Bipolar and Unipolar mV-Signals



The Isolation Amplifier DS 75000 is used for separation 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.

The input and output range of DS 75000 can be easily set by using DIP switch. Due to the calibrated range selection no further adjustment is necessary.

A switchable compensation of the measuring range can be performed at the Zero/Span potentiometers on the front panel. Also the cut-off frequency can be adapted to the measurement task by using the DIP Switch.



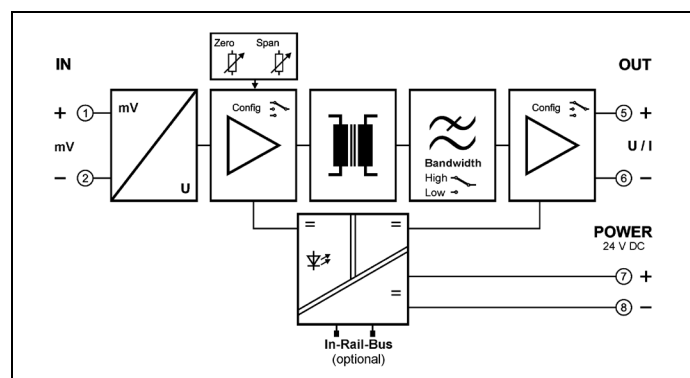
The auxiliary power can be supplied via the connection terminals or via the optional In-Rail-Bus connector. A green LED on the front of the unit has been provided to monitor the power supply.



- **Calibrated signal setting via DIP switch**  
Input and output range can be set by using DIP switch – high precision without any further adjustment
- **High bandwidth; short response time**  
No signal distortion; no falsification of measured signal
- **Switchable Zero/Span compensation**  
For readjustment of the shunt/mV signal or measuring section
- **3-Port isolation**  
Protection against erroneous measurements due to parasitic voltages or ground loops
- **Extremely slim design**  
6.2 mm slim housing for a simple and space saving DIN rail mounting
- **Optional In-Rail-Bus mounting rail connector**  
allows for fast and economical installation
- **Protective Separation acc. to EN 61140**  
Protects service personnel and downstream devices against impermissibly high voltage
- **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

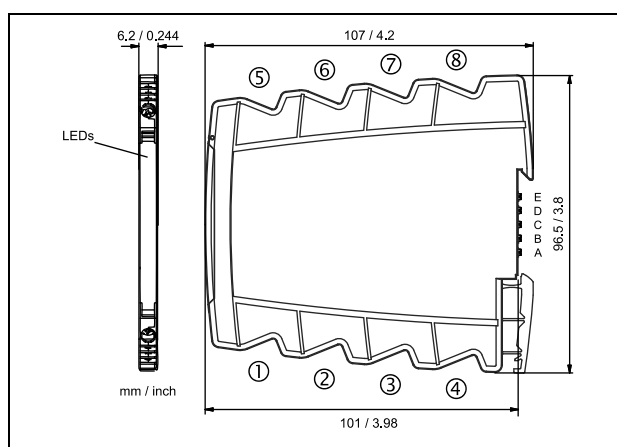
Input						
Input signals (calibrated switchable)	± 60 mV 0 ... 60 mV	± 100 mV 0 ... 100 mV	± 150 mV 0 ... 150 mV	± 250 mV 0 ... 250 mV	± 300 mV 0 ... 300 mV	± 500 mV 0 ... 500mV
Input resistance	≥ 100 kΩ					
Overload	≤ 30 V					
Output	Current			Voltage		
Output signals (calibrated switchable)	± 20 mA ± 10 mA	0 ... 20 mA 0 ... 10 mA	4 ... 20 mA 2 ... 10 mA	± 10 V ± 5 V	0 ... 10 V 0 ... 5 V	2 ... 10 V 1 ... 5 V
Load	≤ 12 V (600 Ω at 20 mA)			≤ 5 mA (2 kΩ at 10 V)		
Linear transmission range	unipolar: −1 ... +110 %		bipolar: −110 ... +110 %			
Residual ripple	< 10 mV <sub>rms</sub>					
General Data						
Transmission error	< 0.1 % full scale					
Temperature coefficient <sup>1)</sup>	< 100 ppm/K					
Zero/Span compensation (switchable)	± 5 % of measuring range					
Cut-off frequency -3 dB (switchable)	8 kHz		100 Hz			
Response time T <sub>99</sub>	100 μs		7 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		− 25 °C to + 70 °C		(− 13 to + 158 °F)	
	Transport and storage		− 40 °C to + 85 °C		(− 40 to + 185 °F)	
Power supply	24 V DC voltage range 9.6 V ... 31.2 V DC, approx. 0.8 W					
EMC <sup>3)</sup>	EN 61326-1					
Approvals	ATEX	DEMKO 16 ATEX 1685X		Ex II 3 G Ex nA IIC T4 Gc		
	IECEX	IECEX UL 16.0055X		Ex nA IIC T4 Gc		
	UL	E478692 USA/Canada		Class I, Division 2 Groups A, B, C, D T4		
Construction	6.2 mm (0.244") housing, protection class IP 20, mounting on 35 mm DIN rail acc. to EN 60715					
Weight	Approx. 70 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!

## Terminal assignments

1	+ Input
2	- Input
3	N.C.
4	N.C.
5	+ Output
6	- Output
7	+ Power supply (connected to In-Rail-Bus D)
8	- Power supply (connected to In-Rail-Bus C)

## Connection

Captive plus-minus clamp screws  
 Wire cross-section 0.5 ... 2.5 mm<sup>2</sup> / AWG 20-14  
 Stripped length 8 mm / 0.3 in  
 Screw terminal torque 0.6 Nm / 5 lbf in  
 Optional power connection via In-Rail-Bus (see accessories)

## Product line

Device	Order No.
Shunt/mV Isolation Amplifier, calibrated range selection	DS 75000 S
Shunt/mV Isolation Amplifier, calibrated range selection, In-Rail-Bus for power supply	DS 75000 B







## Application Example

### Alarm Units

#### Short description:

The Alarm Units are used to monitor limit values and control automation processes. in 0(4) ...  $\pm 20$  mA and 0 ...  $\pm 10$  V standard signal circuits. Depending on the device type can be standard signals, currents, voltages or temperatures to monitor.

Two switch channels can be separately configured by using DIP switch. The switch point and hysteresis can each be adjusted by means of their own 12-turn potentiometer located on the unit's front. Input, power supply and the outputs are protective separated.

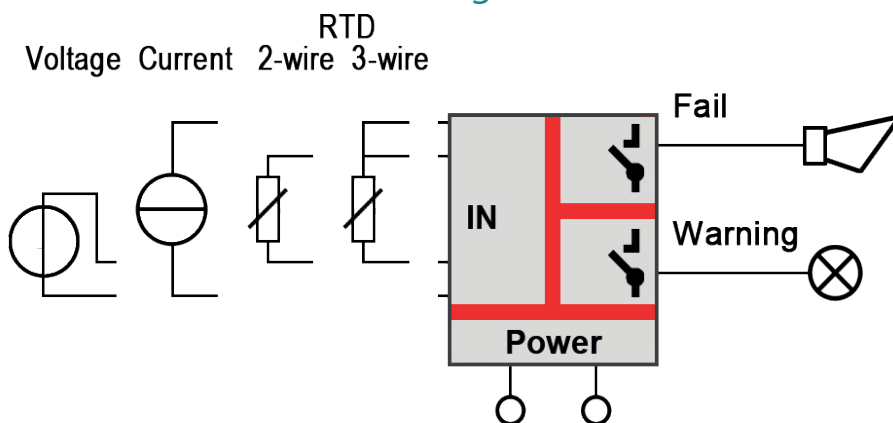
#### Functioning:

The signal on input will be compared with the adjusted limit value. Depending on setting the output relays react. The switch state is indicated by a yellow LED.

Both switch outputs can be set up as either MIN or MAX alarm. Additionally the SPDT relays can be configured as Normally-Open or Normally-Close contact, so it is possible to consider the switch state by power off. The power-detect function set Relay II under proper power conditions independent of the input signal.

### Alarm Unit

e. g. DG 3600



#### Applications:

- Power monitoring
- Limit value monitoring
- Failure control
- Safety shutdown
- Overload protection
- Temperature monitoring
- Simple two-point control
- Level control

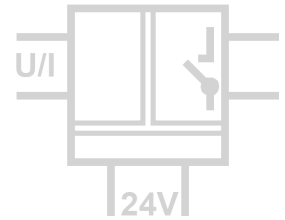
#### Variant with transistor contact:

The device types DG 3x80 are carried out on the output with two independent transistor switches. The transistor output is approved for 30 V DC and 50 mA.

- Maintenance free
- Direct connection to a PLC
- Many switching cycles
- No contact bounce

# Limit Value Monitor DG 3101

Economical Monitoring of Standard Signals  
with one Relay Output



The Limit Value Monitor DG 3101 is used to monitor measured values in 0(4) ... 20 mA and 0 ... 10 V standard signal circuits. A transmitter supply +Us is provided for the operation of 2-wire transmitters.

The switching output can be configured with the analog control electronics as MIN or MAX alarm in open-circuit or closed-circuit operation.

All setting elements are located behind the openable front cover and can also be operated when the unit is mounted. The switching point and the switching hysteresis can be adjusted with potentiometers. The monitoring state is indicated by a yellow LED.

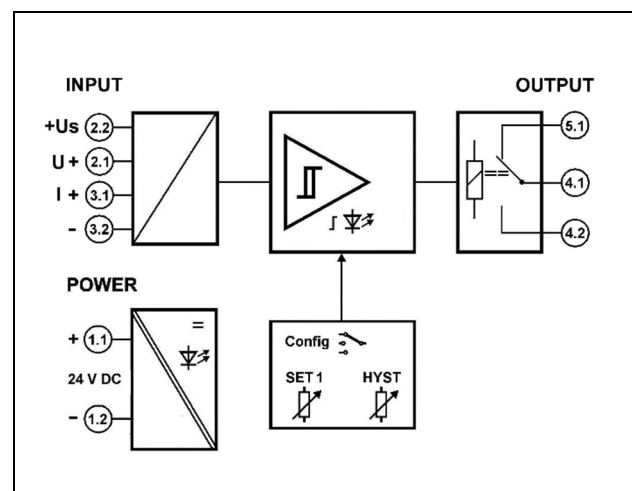
The relay changeover contact switches high power loads up to 6 A.

The Protective Separation and the 24 V DC power supply makes the DG 3101 universally applicable for all measurement and industrial applications, as well as for building automation.

- **Easy configuration on front panel**  
Operating mode switchable via DIP switch, switch point and hysteresis adjustable with potentiometer
- **Status indication by LED**  
Easy monitoring and switching point adjustment
- **True 4-port separation**  
Protection against erroneous measurements due to parasitic voltages or ground loops
- **Protective Separation acc. to EN 61010**  
Protects service personnel and downstream devices against impermissibly high voltage
- **High reliability and noise immunity**  
No microprocessor, no integrated software
- **Extremely slim design**  
12.5 mm slim housing for a simple and space saving DIN rail mounting
- **5 Years Warranty**  
Defects occurring within 5 years from delivery date shall be remedied free of charge at our plant



**Block diagram**



## Technical Data

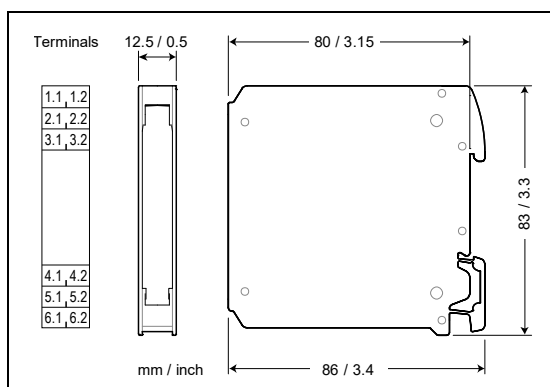
Input		
Input ranges	0(4) ... 20 mA	0 ... 10 V
Input resistance	Current input approx. 5 Ω	Voltage input approx. 120 kΩ
Overload max.	Current input 200 mA	Voltage input 300 V
Transmitter supply +Us	16 V at U <sub>Power</sub> = 24 V, (13 V ... 22 V depending on the supply voltage) current limited ≤ 30 mA	
Switch point setting	0 to 110 % with 12-turn potentiometer	
Hysteresis setting	0 to 6 % or 0 to 60 % of measuring range switchable, adjustable with potentiometer	
Output		
Contact type	1 changeover relay (SPDT)	
Switching capability AC max.	250 V / 6 A	1500 VA
Switching capability DC max.	250 V / 0.2 A	115 V / 0.3 A      30 V / 6 A
	Recommended minimum load 300 mW / 5 V / 5 mA	
Status indication	yellow LED	
Response time	approx. 20 ms	
General Data		
Switch error	< 0.2 % full scale	
Temperature coefficient <sup>1)</sup>	< 150 ppm/K	
Test voltage	4 kV AC, 50 Hz, 1 min. input against power supply against switching output	
Working voltage (Basic Insulation) <sup>2)</sup>	1000 V AC/DC for overvoltage category II and 600 V AC/DC for overvoltage category III according to DIN EN 61010 with pollution degree 2 between input, power supply and switching output.	
Protection against electrical shock <sup>2)</sup>	Protective separation according to DIN EN 61140 by reinforced insulation according to DIN EN 61010 up to 600 V AC/DC at overvoltage category II and 300 V AC/DC at overvoltage category III at pollution degree 2 between input, power supply and switching output.	
Power supply	24 V DC, ± 15 %, approx. 0.8 W	
Ambient temperature	Operation	- 20 °C to + 60 °C   (–4 to + 140 °F)
	Transport and storage	- 35 °C to + 85 °C   (–31 to + 185 °F)
EMC <sup>3)</sup>	EN 61326-1	
MTBF (acc. to EN 61709 / SN 29500)	575.4 years (T <sub>amb.</sub> 40 °C, FIT 198)	

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!

### Construction

12.5 mm (0.5") housing, protection class IP 20  
mounting on 35 mm DIN rail acc. to EN 60715  
Weight 70 g

### Connection

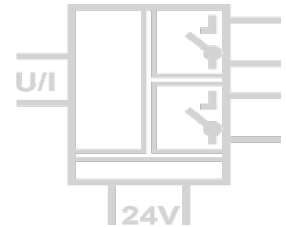
Captive plus-minus clamp screws  
Wire cross-section max. 2.5 mm<sup>2</sup> / AWG 14  
Stripped length 6 ... 8 mm / 0.28 in  
Screw terminal torque 0.8 Nm / 7 lbf in

## Product line

Device	Order No.
Limit Value Monitor with relay contact	DG 3101

# Limit Value Monitor DG 3202 / DG 3282

Monitoring of Standard Signals  
with 2 Switching Outputs



The Limit Value Monitors DG 3202 und DG 3282 are used to monitor measured values in 0(4) ... 20 mA and 0 ... 10 V standard signal circuits. A transmitter supply +Us is provided for the operation of 2-wire transmitters.

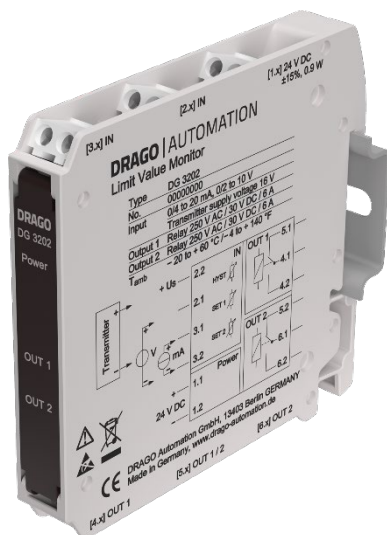
Two switching outputs can be configured simultaneously or independently of each other with the analog control electronics as MIN or MAX alarm in open-circuit or closed-circuit operation.

All setting elements are located behind the openable front cover and can also be operated when the unit is mounted. The switching points and the switching hysteresis can be adjusted with potentiometers. The monitoring states are indicated by yellow LEDs.

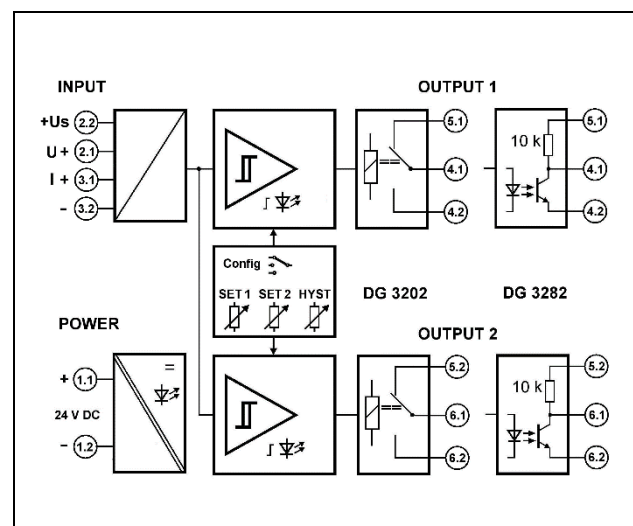
Two relay changeover contacts are available on the DG 3202. The DG 3282 is equipped with two isolated transistor switching contacts (open-collector), which can optionally work with pull-up resistors. Input, power supply and the outputs are safely galvanically isolated from each other.

The Protective Separation and the 24 V DC power supply make the DG 3202 and DG 3282 universally applicable for all measurement and industrial applications, as well as for building automation.

- **Easy configuration on front panel**  
Operating mode switchable via DIP switch, switch point and hysteresis adjustable with potentiometer
- **Status indication by LED**  
Easy monitoring and switching point adjustment
- **Relay changeover contacts with high power handling**  
or fully isolated transistor switching outputs
- **True 4-port separation**  
Protection against erroneous measurements due to parasitic voltages or ground loops
- **Protective Separation acc. to EN 61010**  
Protects service personnel and downstream devices against impermissibly high voltage
- **High reliability and noise immunity**  
No microprocessor, no integrated software
- **Extremely slim design**  
12.5 mm slim housing for a simple and space saving DIN rail mounting
- **5 Years Warranty**  
Defects occurring within 5 years from delivery date shall be remedied free of charge at our plant



Block diagram



## Technical Data

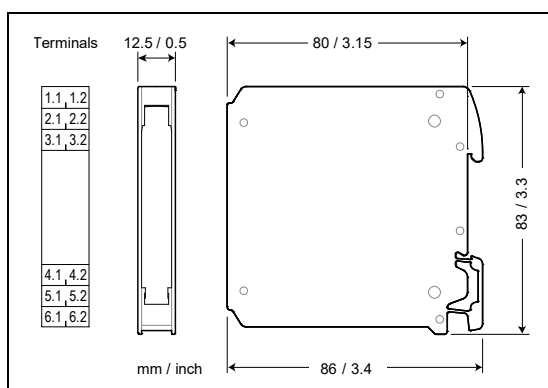
Input		
Input ranges	0(4) ... 20 mA	0 ... 10 V
Input resistance	Current input approx. 5 Ω	Voltage input approx. 120 kΩ
Overload max.	Current input 200 mA	Voltage input 300 V
Transmitter supply +Us	16 V at U <sub>POWER</sub> = 24 V, (13 V ... 22 V depending on the supply voltage) current limited ≤ 30 mA	
Switch point setting	0 to 110 % with 12-turn potentiometer, independently adjustable for each switching output	
Hysteresis setting	0 to 6 % or 0 to 60 % of measuring range switchable, adjustable with potentiometer	
Output		
DG 3202	Contact type	2 changeover relays (SPDT)
Relay	Switching capability AC max.	250 V / 6 A      1500 VA
	Switching capability DC max.	250 V / 0.2 A      115 V / 0.3 A      30 V / 6 A
	Recommended minimum load 300 mW / 5 V / 5 mA	
DG 3282	Contact type	2 transistor switches, fully isolated, optional 10 kΩ Pull-up resistor
Transistor	Switching capability	30 V DC, max. 50 mA, residual voltage < 1.5 V, not current limited
Status indication	one yellow LED per switching output	
Response time	approx. 20 ms	
General Data		
Switch error	< 0.2 % full scale	
Temperature coefficient <sup>1)</sup>	< 150 ppm/K	
Test voltage	4 kV AC, 50 Hz, 1 min. input against power supply against both switching outputs 3 kV AC, 50 Hz, 1 min. switching output 1 against switching output 2	
Working voltage (Basic Insulation) <sup>2)</sup>	1000 V AC/DC for overvoltage category II and 600 V AC/DC for overvoltage category III according to DIN EN 61010 with pollution degree 2 between input, power supply and both switching outputs. Furthermore 300 V AC/DC between output 1 and output 2.	
Protection against electrical shock <sup>2)</sup>	Protective separation according to DIN EN 61140 by reinforced insulation according to DIN EN 61010 up to 600 V AC/DC at overvoltage category II and 300 V AC/DC at overvoltage category III at pollution degree 2 between input, power supply and both switching outputs. Furthermore 300 V AC/DC between output 1 and output 2.	
Power supply	24 V DC, ± 15 %, approx. 1.0 W	
Ambient temperature	Operation	- 20 °C to + 60 °C   (–4 to + 140 °F)
	Transport and storage	- 35 °C to + 85 °C   (–31 to + 185 °F)
EMC <sup>3)</sup>	EN 61326-1	
MTBF (acc. to EN 61709 / SN 29500)	575.4 years (T <sub>amb.</sub> 40 °C, FIT 198)	

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!

### Construction

12.5 mm (0.5") housing, protection class IP 20  
mounting on 35 mm DIN rail acc. to EN 60715  
Weight 70 g

### Connection

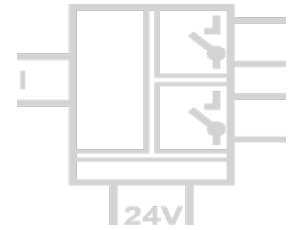
Captive plus-minus clamp screws  
Wire cross-section max. 2.5 mm<sup>2</sup> / AWG 14  
Stripped length 6 ... 8 mm / 0.28 in  
Screw terminal torque 0.8 Nm / 7 lbf in

## Product line

Device	Order No.
Limit Value Monitor with relay contacts	DG 3202
Limit Value Monitor with transistor switches	DG 3282

# Current Monitor DG 3302 / DG 3382

Monitoring of AC/DC currents up to 6 A,  
additional mV Input for external Shunt Resistor



The Current Monitors DG 3302 and DG 3382 are used to monitor limit values of AC and DC currents.

Currents up to 6 A can be monitored directly. For higher currents, external current transformers or shunt resistors (input 30/150 mV) are connected.

Two switching outputs can be configured simultaneously or independently of each other with the analog control electronics as MIN or MAX alarm in open-circuit or closed-circuit operation.

All setting elements are located behind the openable front cover and can also be operated when the unit is mounted. The switching points and the switching hysteresis can be adjusted with potentiometers. The monitoring states are indicated by yellow LEDs.

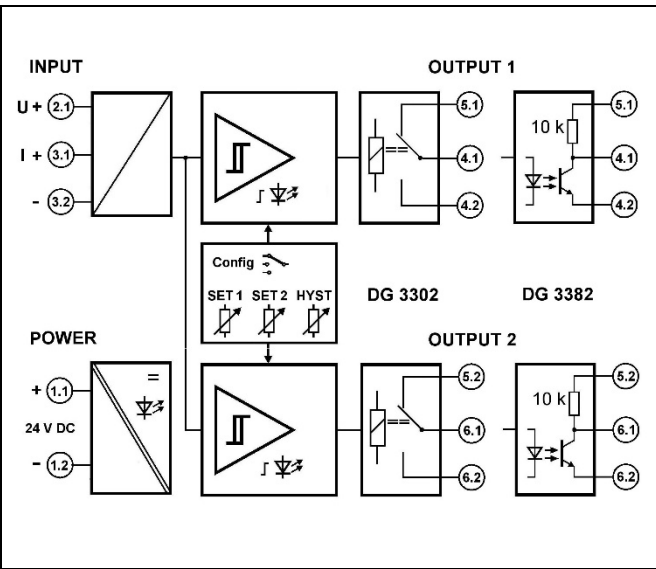
Two relay changeover contacts are available on the DG 3302. The DG 3382 is equipped with two isolated transistor switching contacts (open-collector), which can optionally work with pull-up resistors. Input, power supply and the outputs are safely galvanically isolated from each other.

The Protective Separation and the 24 V DC power supply make the DG 3302 and DG 3382 universally applicable for all measurement and industrial applications, as well as for building automation.

- **Easy configuration on front panel**  
Measuring range and operating mode switchable, switch point and hysteresis adjustable with potentiometer
- **Status indication by LED**  
Easy monitoring and switching point adjustment
- **Relay changeover contacts with high power handling**  
or fully isolated transistor switching outputs
- **True 4-port separation**  
Protection against erroneous measurements due to parasitic voltages or ground loops
- **Protective Separation acc. to EN 61010**  
Protects service personnel and downstream devices against impermissibly high voltage
- **High reliability and noise immunity**  
No microprocessor, no integrated software
- **Extremely slim design**  
12.5 mm slim housing for a simple and space saving DIN rail mounting
- **5 Years Warranty**  
Defects occurring within 5 years from delivery date shall be remedied free of charge at our plant



## Block diagram



## Technical Data

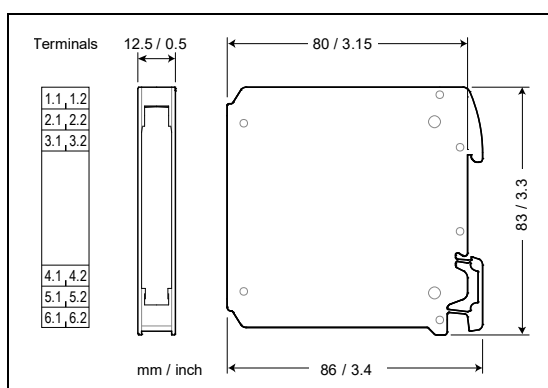
Input		Current Input	mV/Shunt Input	
Input ranges		1.2 A    6 A	30 mV	150 mV
Input resistance		0.01 Ω	> 10 kΩ	
Overload max.		10 A continuous, surge current 30 A for 1 s	30 V	
Frequency		DC o 10 to 500 Hz sinusoidal, switchable		
Switch point setting		0 to 110 % with 12-turn potentiometer, independently adjustable for each switching output		
Hysteresis setting		0 to 6 % or 0 to 60 % of measuring range switchable, adjustable with potentiometer		
Output				
DG 3402	Contact type	2 changeover relays (SPDT)		
Relay	Switching capability AC max.	250 V / 6 A	1500 VA	
	Switching capability DC max.	250 V / 0.2 A	115 V / 0.3 A	30 V / 6 A
		Recommended minimum load 300 mW / 5 V / 5 mA		
DG 3382	Contact type	2 transistor switches, fully isolated, optional 10 k Pull-up resistor		
Transistor	Switching capability	30 V DC, max. 50 mA, residual voltage < 1.5 V, not current limited		
Status indication		one yellow LED per switching output		
Response time		DC Input: approx. 20 ms	AC Input: approx. 500 ms	
General Data				
Switch error		< 0.2 % full scale		
Temperature coefficient <sup>1)</sup>		< 150 ppm/K		
Test voltage		4 kV AC, 50 Hz, 1 min. input against power supply against both switching outputs 3 kV AC, 50 Hz, 1 min. switching output 1 against switching output 2		
Working voltage (Basic Insulation) <sup>2)</sup>		1000 V AC/DC for overvoltage category II and 600 V AC/DC for overvoltage category III according to DIN EN 61010 with pollution degree 2 between input, power supply and both switching outputs. Furthermore 300 V AC/DC between output 1 and output 2.		
Protection against electrical shock <sup>2)</sup>		Protective separation according to DIN EN 61140 by reinforced insulation according to DIN EN 61010 up to 600 V AC/DC at overvoltage category II and 300 V AC/DC at overvoltage category III at pollution degree 2 between input, power supply and both switching outputs. Furthermore 300 V AC/DC between output 1 and output 2.		
Power supply		24 V DC, ± 15 %, approx. 0.7 W		
Ambient temperature		Operation	- 20 °C to + 60 °C    (–4 to + 140 °F)	
		Transport and storage	- 35 °C to + 85 °C    (–31 to + 185 °F)	
EMC <sup>3)</sup>		EN 61326-1		
MTBF (acc. to EN 61709 / SN 29500)		575.4 years (T <sub>amb.</sub> 40 °C, FIT 198)		

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!

### Construction

12.5 mm (0.5") housing, protection class IP 20  
mounting on 35 mm DIN rail acc. to EN 60715  
Weight 70 g

### Connection

Captive plus-minus clamp screws  
Wire cross-section max. 2.5 mm<sup>2</sup> / AWG 14  
Stripped length 6 ... 8 mm / 0.28 in  
Screw terminal torque 0.8 Nm / 7 lbf in

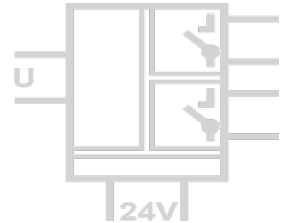
## Product line

Device	Order No.
Current Monitor with relay contacts	DG 3302
Current Monitor with transistor switches	DG 3382



# Voltage Monitor DG 3402 / DG 3482

Monitoring of AC and DC Voltages



The Voltage Monitors DG 3402 and DG 3482 are used to monitor limit values of AC and DC voltages.

Two switching outputs can be configured simultaneously or independently of each other with the analog control electronics as MIN or MAX alarm in open-circuit or closed-circuit operation.

All setting elements are located behind the openable front cover and can also be operated when the unit is mounted. The switching points and the switching hysteresis can be adjusted with potentiometers. The monitoring states are indicated by yellow LEDs.

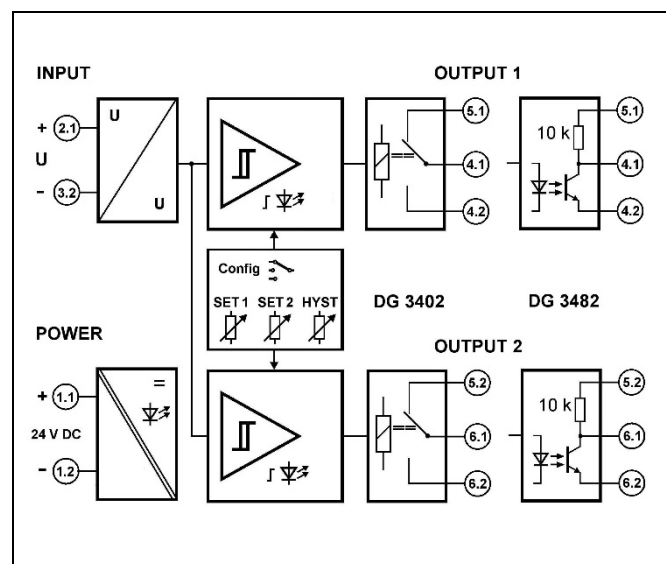
Two relay changeover contacts are available on the DG 3402. The DG 3482 is equipped with two isolated transistor switching contacts (open-collector), which can optionally work with pull-up resistors. Input, power supply and the outputs are safely galvanically isolated from each other.

The Protective Separation and the 24 V DC power supply make the DG 3402 and DG 3482 universally applicable for all measurement and industrial applications, as well as for building automation.

- **Easy configuration on front panel**  
Measuring range and operating mode switchable, switch point and hysteresis adjustable with potentiometer
- **Status indication by LED**  
Easy monitoring and switching point adjustment
- **Relay changeover contacts with high power handling**  
or fully isolated transistor switching outputs
- **True 4-port separation**  
Protection against erroneous measurements due to parasitic voltages or ground loops
- **Protective Separation acc. to EN 61010**  
Protects service personnel and downstream devices against impermissibly high voltage
- **High reliability and noise immunity**  
No microprocessor, no integrated software
- **Extremely slim design**  
12.5 mm slim housing for a simple and space saving DIN rail mounting
- **5 Years Warranty**  
Defects occurring within 5 years from delivery date shall be remedied free of charge at our plant



## Block diagram





## Technical Data

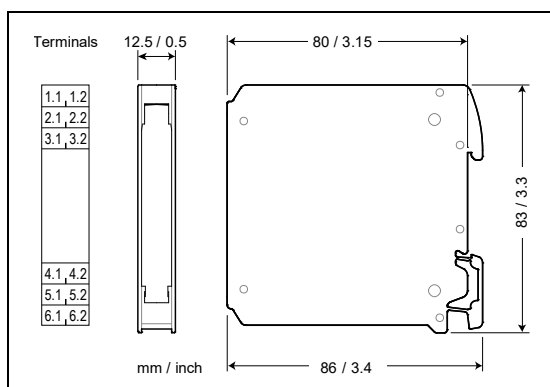
Input		
Input ranges		50 V, 100 V, 300 V, 600 V
Input resistance		1.5 MΩ
Overload max.		1000 V
Frequency		DC or 10 to 500 Hz sinusoidal, switchable
Switch point setting		0 to 110 % with 12-turn potentiometer, independently adjustable for each switching output
Hysteresis setting		0 to 6 % or 0 to 60 % of measuring range switchable, adjustable with potentiometer
Output		
DG 3402	Contact type	2 changeover relays (SPDT)
Relay	Switching capability AC max.	250 V / 6 A                      1500 VA
	Switching capability DC max.	250 V / 0.2 A            115 V / 0.3 A            30 V / 6 A
Recommended minimum load 300 mW / 5 V / 5 mA		
DG 3482	Contact type	2 transistor switches, fully isolated, optional 10 k Pull-up resistor
Transistor	Switching capability	30 V DC, max. 50 mA, residual voltage < 1.5 V, not current limited
Status indication		one yellow LED per switching output
Response time		DC Input: approx. 20 ms            AC Input: approx. 500 ms
General Data		
Switch error		< 0.2 % full scale
Temperature coefficient <sup>1)</sup>		< 150 ppm/K
Test voltage		4 kV AC, 50 Hz, 1 min. input against power supply against both switching outputs 3 kV AC, 50 Hz, 1 min. switching output 1 against switching output 2
Working voltage (Basic Insulation) <sup>2)</sup>		1000 V AC/DC for overvoltage category II and 600 V AC/DC for overvoltage category III according to DIN EN 61010 with pollution degree 2 between input, power supply and both switching outputs. Furthermore 300 V AC/DC between output 1 and output 2.
Protection against electrical shock <sup>2)</sup>		Protective separation according to DIN EN 61140 by reinforced insulation according to DIN EN 61010 up to 600 V AC/DC at overvoltage category II and 300 V AC/DC at overvoltage category III at pollution degree 2 between input, power supply and both switching outputs. Furthermore 300 V AC/DC between output 1 and output 2.
Power supply		24 V DC, ± 15 %, approx. 0.7 W
Ambient temperature		Operation                      - 20 °C to + 60 °C    ( -4 to + 140 °F) Transport and storage       - 35 °C to + 85 °C    ( -31 to + 185 °F)
EMC <sup>3)</sup>		EN 61326-1
MTBF (acc. to EN 61709 / SN 29500)		575.4 years (T <sub>amb.</sub> 40 °C, FIT 198)

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!

### Construction

12.5 mm (0.5") housing, protection class IP 20  
mounting on 35 mm DIN rail acc. to EN 60715  
Weight 70 g

### Connection

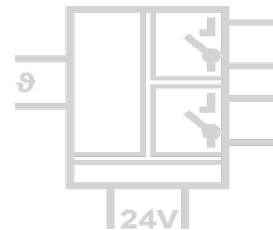
Captive plus-minus clamp screws  
Wire cross-section max. 2.5 mm<sup>2</sup> / AWG 14  
Stripped length 6 ... 8 mm / 0.28 in  
Screw terminal torque 0.8 Nm / 7 lbf in

## Product line

Device	Order No.
Voltage Monitor with relay contacts	DG 3402
Voltage Monitor with transistor switches	DG 3482

# RTD Temperature Monitor DG 3602 / DG 3632

Limit Monitoring with  
Pt, Ni, KTY and NTC Sensors



The Temperature Monitors DG 3602 and DG 3632 are used for temperature control with RTD sensors in 2-wire connection.

The sensor signal will be compared with the set limit values. In case of overshooting or undershooting, the output relays react according to the set configuration.

Two relay outputs (synchronous switching) can be configured as MIN or MAX alarm in open-circuit or closed-circuit operation with the analog control electronics.

All setting elements are located behind the openable front cover and can also be operated when the unit is mounted. The switching points and the switching hysteresis can be adjusted with potentiometers. The monitoring states are indicated by yellow LEDs.

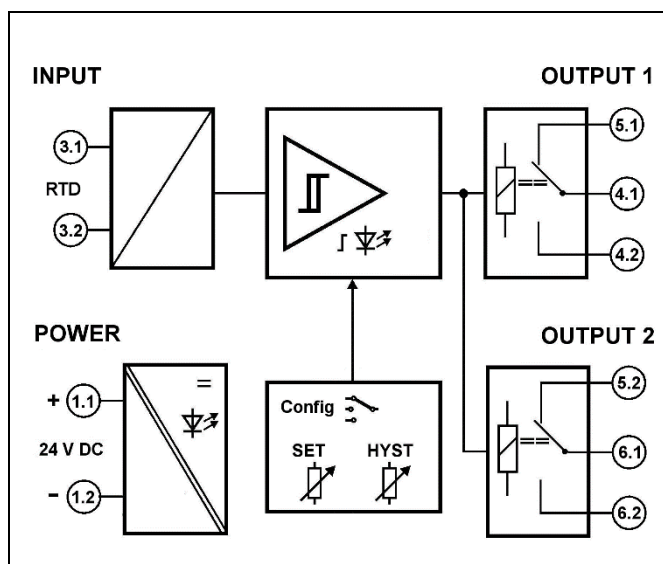
The relay changeover contacts switch high power loads up to 6 A. Input, power supply and the outputs are safely galvanically isolated from each other.

The Protective Separation and the 24 V DC power supply make the DG 3602 and DG 3632 universally applicable for all measurement and industrial applications, as well as for building automation.

- **Easy configuration on front panel**  
Measuring range and operating mode switchable, switch point and hysteresis adjustable with potentiometer
- **Status indication by LED**  
Easy monitoring and switching point adjustment
- **Relay contacts with high power handling**  
2 fully isolated changeover contacts
- **True 4-port separation**  
Protection against erroneous measurements due to parasitic voltages or ground loops
- **Protective Separation acc. to EN 61010**  
Protects service personnel and downstream devices against impermissibly high voltage
- **High reliability and noise immunity**  
No microprocessor, no integrated software
- **Extremely slim design**  
12.5 mm slim housing for a simple and space saving DIN rail mounting
- **5 Years Warranty**  
Defects occurring within 5 years from delivery date shall be remedied free of charge at our plant



Block diagram



## Technical Data

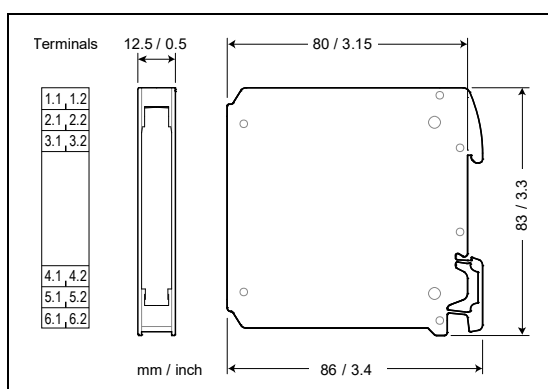
Input	DG 3602	DG3632
Input ranges (switchable)	0 ... 300 $\Omega$ / 0 ... 3 k $\Omega$	0 ... 30 k $\Omega$ / 0 ... 300 k $\Omega$
Monitoring sensors	Pt100, Pt200, Pt500, Pt1000, Ni100, Ni120, Ni500, Ni1000, KTY and further RTD	NTC Further high impedance RTD
Sensor current	$\leq 1.5$ mA / 0.15 mA	$\leq 0.2$ mA / 0.02 mA
Sensor connection	2-wire sensor connection, manual compensation of line resistances required	
Switch point setting	0 to 110 % with 12-turn potentiometer	
Hysteresis setting	0 to 6 % or 0 to 60 % of measuring range switchable, adjustable with potentiometer	
Output		
Contact type	2 isolated changeover relays (SPDT), synchronous switching	
Switching capability AC max.	250 V / 6 A	1500 VA
Switching capability DC max.	250 V / 0.2 A	115 V / 0.3 A      30 V / 6 A
Recommended minimum load	300 mW / 5 V / 5 mA	
Status indication	yellow LED	
Response time	< 50 ms	
General Data		
Switch error	< 0.2 % full scale	
Temperature coefficient <sup>1)</sup>	< 150 ppm/K	
Test voltage	4 kV AC, 50 Hz, 1 min. input against power supply against both switching outputs 3 kV AC, 50 Hz, 1 min. switching output 1 against switching output 2	
Working voltage (Basic Insulation) <sup>2)</sup>	1000 V AC/DC for overvoltage category II and 600 V AC/DC for overvoltage category III according to DIN EN 61010 with pollution degree 2 between input, power supply and both switching outputs. Furthermore 300 V AC/DC between output 1 and output 2.	
Protection against electrical shock <sup>2)</sup>	Protective separation according to DIN EN 61140 by reinforced insulation according to DIN EN 61010 up to 600 V AC/DC at overvoltage category II and 300 V AC/DC at overvoltage category III at pollution degree 2 between input, power supply and both switching outputs. Furthermore 300 V AC/DC between output 1 and output 2.	
Power supply	24 V DC, $\pm 15$ %, approx. 0.7 W	
Ambient temperature	Operation      - 20 °C to + 60 °C    (-4 to + 140 °F) Transport and storage      - 35 °C to + 85 °C    (-31 to + 185 °F)	
EMC <sup>3)</sup>	EN 61326-1	
MTBF (acc. to EN 61709 / SN 29500)	297.1 years ( $T_{amb.40$ °C, FIT 383.9)	

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!

### Construction

12.5 mm (0.5") housing, protection class IP 20  
mounting on 35 mm DIN rail acc. to EN 60715  
Weight 70 g

### Connection

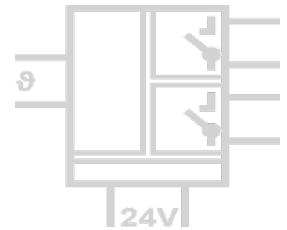
Captive plus-minus clamp screws  
Wire cross-section max. 2.5 mm<sup>2</sup> / AWG 14  
Stripped length 6 ... 8 mm / 0.28 in  
Screw terminal torque 0.8 Nm / 7 lbf in

## Product line

Device	Order No.
Temperature Monitor for low impedance sensors	DG 3602
Temperature Monitor for high impedance sensors	DG 3632

# Thermistor Motor Protection Relay DG 3802

Reliable Protection against Over-Temperature with  
Thermistor/ PTC Resistor Sensor and Bimetal Breakers



The Thermistor Motor Protection Relay DG 3802 protects motors and machines against over-temperature caused by heavy starting duties, braking, under-voltage, over-voltage and high switching frequencies.

Additional applications include monitoring the temperature of transformers, pumps, centrifuges, motor bearings, gearboxes, oil and coolants and the avoidance of thermal overload in the event of impeded cooling and high ambient temperatures.

The temperature is monitored directly at the winding using thermistors or bimetal switches. Up to 6 sensors can be connected in series. When a certain resistance is reached, the output relays switch off. Restarting takes place after cooling down via auto-reset.

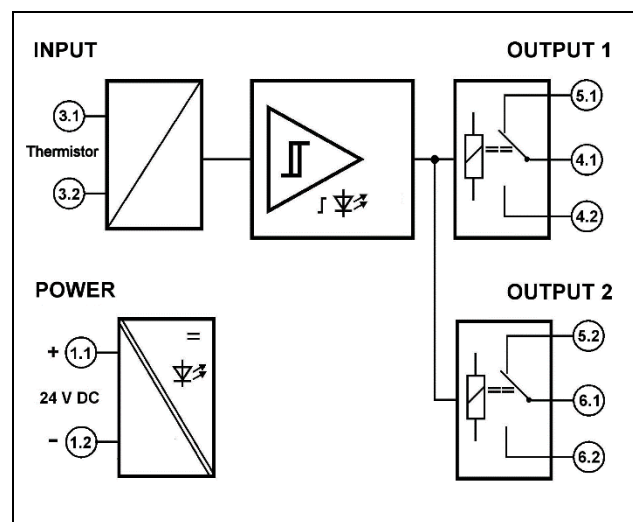
The motor protection relay works with open circuit operation and also detects broken wire in the sensor circuit. The monitoring state is indicated by a yellow LED. The relay changeover-contact switches high power loads up to 6 A.

The Protective Separation and the 24 V DC power supply makes the DG 3802 universally applicable for all measurement and industrial applications, as well as for building automation.

- **Reliable overtemperature protection**  
Up to 6 thermistors or bimetal switches, wire break detection in the sensor input
- **Fault message in closed-circuit operation**  
2 output relays not activated in the event of fault, restart via auto-reset
- **Status indication by LED**  
Easy monitoring and switching point adjustment
- **Protective 4-Port Separation acc. to EN 61010**  
Protects service personnel and downstream devices against impermissibly high voltage
- **High reliability and noise immunity**  
No microprocessor, no integrated software
- **Extremely slim design**  
12.5 mm slim housing for a simple and space saving DIN rail mounting
- **5 Years Warranty**  
Defects occurring within 5 years from delivery date shall be remedied free of charge at our plant



**Block diagram**



## Technical Data

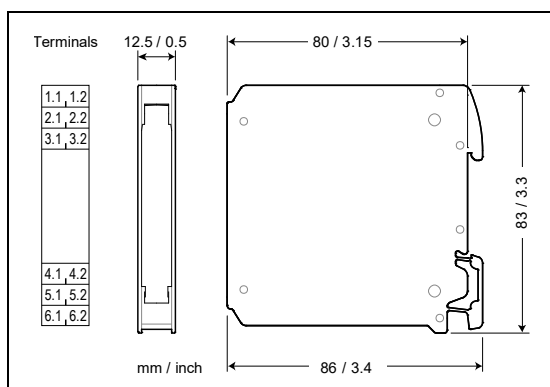
Input	
Monitoring sensors	Thermistor/ PTC Resistor Sensor and Thermal Bimetal Switches (breakers, e.g. Klixon)
Monitoring function	Over-temperature protection in open circuit operation, restart via auto-reset
Number of sensors	1 ... 6 pcs
Sensor load	$\leq 1 \text{ mA} / 1 \text{ V} / 1 \text{ mW}$
Threshold value	$\geq 3 \text{ k}\Omega$ (relays drop out)
Release value	$\leq 1,7 \text{ k}\Omega$ (relays pick up)
Output	
Contact type	2 isolated changeover relays (SPDT), synchronous switching
Switching capability AC max.	250 V / 6 A      1500 VA
Switching capability DC max.	250 V / 0.2 A      115 V / 0.3 A      30 V / 6 A
Recommended minimum load	300 mW / 5 V / 5 mA
Status indication	yellow LED
Response time	< 50 ms
General Data	
Switch error	< 5 %
Temperature coefficient <sup>1)</sup>	< 0,03 %/K
Test voltage	4 kV AC, 50 Hz, 1 min. input against power supply against both switching outputs 3 kV AC, 50 Hz, 1 min. switching output 1 against switching output 2
Working voltage (Basic Insulation) <sup>2)</sup>	1000 V AC/DC for overvoltage category II and 600 V AC/DC for overvoltage category III according to DIN EN 61010 with pollution degree 2 between input, power supply and both switching outputs. Furthermore 300 V AC/DC between output 1 and output 2.
Protection against electrical shock <sup>2)</sup>	Protective separation according to DIN EN 61140 by reinforced insulation according to DIN EN 61010 up to 600 V AC/DC at overvoltage category II and 300 V AC/DC at overvoltage category III at pollution degree 2 between input, power supply and both switching outputs. Furthermore 300 V AC/DC between output 1 and output 2.
Power supply	24 V DC, $\pm 15 \%$ , approx. 0.7 W
Ambient temperature	Operation      - 20 °C to + 60 °C    (-4 to + 140 °F) Transport and storage      - 35 °C to + 85 °C    (-31 to + 185 °F)
EMC <sup>3)</sup>	EN 61326-1
MTBF (acc. to EN 61709 / SN 29500)	361,5 years ( $T_{\text{amb.}} 40 \text{ °C}$ , FIT 315,5)

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!

### Construction

12.5 mm (0.5") housing, protection class IP 20  
mounting on 35 mm DIN rail acc. to EN 60715  
Weight 70 g

### Connection

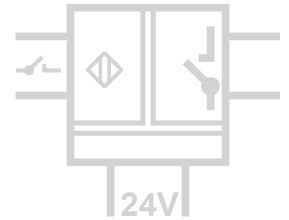
Captive plus-minus clamp screws  
Wire cross-section max. 2.5 mm<sup>2</sup> / AWG 14  
Stripped length 6 ... 8 mm / 0.28 in  
Screw terminal torque 0.8 Nm / 7 lbf in

## Product line

Device	Order No.
Thermistor Motor Protection Relay	DG 3802

# Switch Amplifier DG 31000

Input for NAMUR, SN, S0, DC sensor, Contact, V AC/DC, PNP, NPN and Push-Pull, configurable per DIP switches



The configurable switch amplifier DG 31000 is used to capture, amplify and supply of industrial binary signals. A SPST relay or optionally an isolated, passive transistor switch (Open-Collector) is available at the output.

The switching amplifier detects the status of 2- and 3-wire sensors, binary signals and AC/DC voltages und transmit the state to the switching output. The input is protected against polarity reversal and short circuit. The connected sensors can be supplied by the switching amplifier or externally.

The mode of operation and action direction can be switched with DIP switches. The device has an adjustable switch-on delay, a switch-off delay and a wiper function.

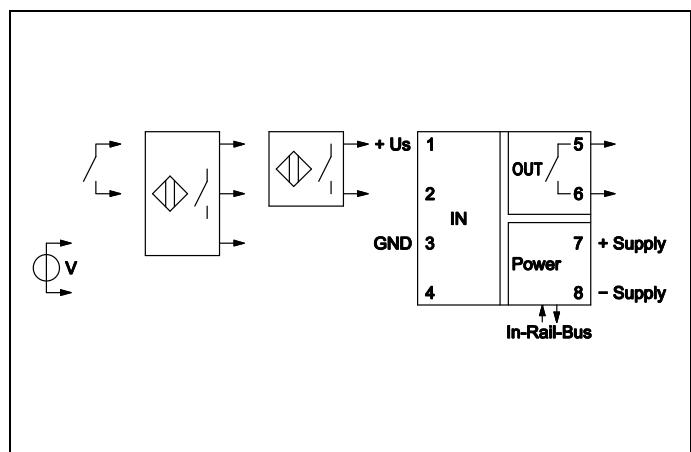
The auxiliary power can be supplied via the connection terminals or via the optional In-Rail-Bus connector. The switching status and the device status are indicated by LEDs on the front panel. If the device is operated via the In-Rail-Bus, a common fault message is available on the status line.



- **Universal Binary Input**  
for all common industrial status signals
- **Easily configurable via DIP switches**  
Sensor type, action direction and mode of operation directly selectable
- **Switchable timer functions**  
Switch-on delay, switch-off delay and wiper function
- **3-Port Isolation**  
Protection against switching errors due to parasitic voltages or ground loops
- **Extremely slim design**  
6.2 mm slim housing for a simple and space saving DIN rail mounting
- **Optional In-Rail-Bus mounting rail connector**  
Allows fast and cost-effective installation and provides a common fault message
- **Protective separation acc. to EN 61140**  
Protects service personnel and downstream devices against impermissibly high voltage
- **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)



Prinzipschaltbild



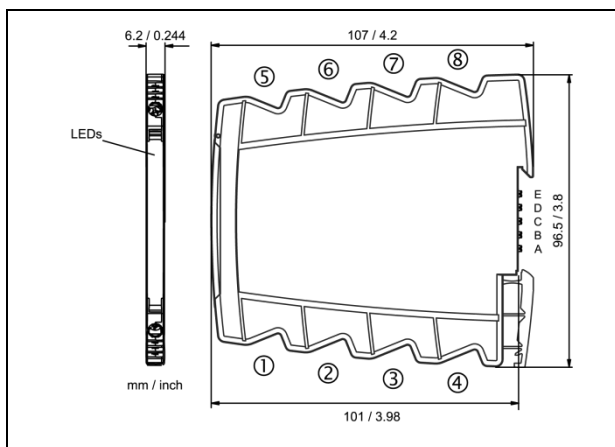
## Technical Data

Input				
2-wire Sensors	Terminal 1, 2	NAMUR / SN	S0 Sensor	DC Sensor
	Standard	EN60947-5-6	EN 62053-31, Type B	EN 60947-5-2
	Sensor supply	8 V	16 V	16 V / 25 mA (ext. < 32 V)
	Switching point L/H	1.2/2.1 mA	1.2/2.1 mA	2 mA/6 mA
	Input resistance	1 kΩ	3 kΩ	1 kΩ
Binary Signal	Terminal 1, 2, 3	NPN	PNP / Push-Pull	Mechanical Contact
	Standard	EN60947-5-2	EN60947-5-2	ON/OFF
	Sensor supply	16 V / 25 mA (ext. < 32 V)	16 V / 25 mA (ext. < 32 V)	16 V / 25 mA (ext. < 32 V)
	Switching point L/H	3/5 V	8/10 V	8/10 V
	Input resistance	3 kΩ	3 kΩ	3 kΩ
Voltage	Terminal 3, 4	0 to 300 V AC 50/60 Hz or DC		
	Switching point L/H (preferred range)	7/15 V (24 V)	40/85 V (115 V)	80/160 V (230 V) switchable (any voltage up to 300 V permitted)
	Input resistance	> 500 kΩ		
Output				
DG31000	Relay	250 V AC / 30 V DC / 2 A	Recommended minimum load 300 mW / 5 V / 5 mA	
DG31080	Transistor	36 V DC / 50 mA	galvanically isolated, not current limited	
Response time		≤ 20 ms		
Switching functions (selectable)		Make / break contact	ON delay, OFF delay or wiper: OFF, 0.5 s, 1 s, 5 s, 10 s	
Common fault message		Signal on In-Rail-Bus E (supply circuit) at device failure, cable break und short circuit		
General Data				
Test voltage		3 kV AC, 50 Hz, 1 Min.	Input against output against power supply/In-Rail-Bus	
Working voltage <sup>1)</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>1)</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: -25 °C to +70 °C (-13 to +158 °F) Transport and storage: -40 °C to +85 °C (-40 to +185 °F)		
Power supply		24 V DC	voltage range 16.8 V to 31.2 V DC, max. 1.0 W	
EMC <sup>2)</sup>		EN 61326-1		
Approvals (pending)		UL (USA/Canada) ATEX / IECEx	UL 61010, Class I, Div. 2 Zone 2 (nA)	
Construction		6.2 mm (0.244") housing, protection class IP 20, mounting on 35 mm DIN rail acc. to EN 60715		
Weight		Approx. 70 g		

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

2) Minor deviations possible during interference

## Dimensions



Subject to change!

## Terminal assignments

- |   |   |                     |
|---|---|---------------------|
| 1 | + Sensor supply                             |                     |
| 2 | + Binary input                              |                     |
| 3 | - GND input                                 |                     |
| 4 | ≈ AC/DC-voltage input                       |                     |
| 5 | ≈ Relay                                     | + Transistor output |
| 6 | ≈ Relay                                     | - Transistor output |
| 7 | + Power supply (connected to In-Rail-Bus D) |                     |
| 8 | - Power supply (connected to In-Rail-Bus C) |                     |

## Connection

Captive plus-minus clamp screws  
 Wire cross-section 0.5 to 2.5 mm<sup>2</sup> / AWG 20-14  
 Stripped length 8 mm / 0.3 in  
 Screw terminal torque 0.6 Nm / 5 lbf in  
 Optional power connection via In-Rail-Bus (see accessories)

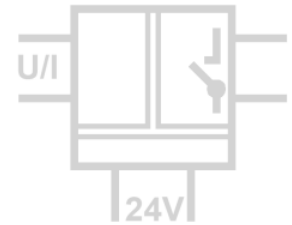
## Product line

Device	Order No.	Relay	Transistor
Switch Amplifier, configurable per DIP switch		DG 31000 S	DG 31080 S
Switch Amplifier, configurable per DIP switch, In-Rail-Bus for power supply and status message		DG 31000 B	DG 31080 B



# Limit Alarm Unit DG 35200

Monitoring of analog standard signals



The configurable Limit Alarm Switch DG 35200 is used for limit monitoring and processing of unipolar and bipolar standard signals. A SPST relay or optionally an isolated, passive transistor switch (Open-Collector) is available at the output.

The Limit Alarm Unit monitors standardized current and voltage signals, and transmits the signal to the switching output. A transmitter power supply is provided for the operation of 2-wire and 3-wire transmitters.

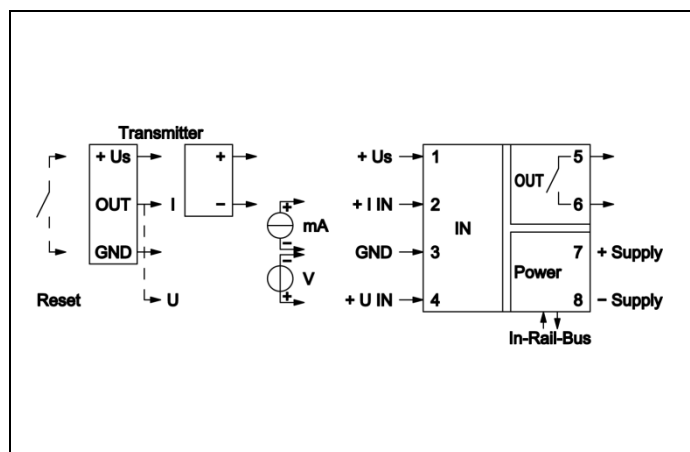
The configuration is carried out via DIP switch or USB interface. The switch point can be taught-in and corrected during operation with the front-side Teach-In buttons. The Alarm Unit has an adjustable switch-on delay, switch-off delay and a wiper function. Further settings such as memory function and window function can be programmed via USB interface.

The input is protected against polarity reversal and short circuit. The power supply can be provided via the connection terminal blocks or via the optional In-Rail-Bus. The switch status and the device status are indicated by LEDs on front panel. If the device is operated via the In-Rail-Bus, a common fault message is available on the status line.



- **Universal input for current and voltage**  
and integrated transmitter supply
- **Easy configurable via DIP switches or via USB**  
Limit point, hysteresis and mode of operation can be directly set, limit point adjust also in operation via teach-in function
- **Switchable timer and special functions**  
Switch-on delay, switch-off delay and wiper function, Memory and window functions
- **3-Port-Separation**  
Protection against switching errors due to parasitic voltages or ground loops
- **Extremely slim design**  
6.2 mm slim housing for a simple and space saving DIN rail mounting
- **Optional In-Rail-Bus mounting rail connector**  
allows for fast and economical installation
- **Protective Separation acc. to EN 61140**  
Protects service personnel and downstream devices against impermissibly high voltage
- **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)

Prinzipschaltbild







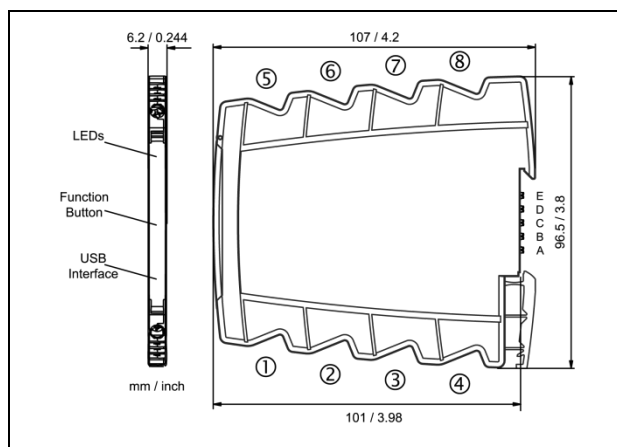
## Technical Data

Input		Current		Voltage			
Input signal		0 to 20 mA	4 to 20 mA	± 20 mA	0 to 10 V	2 to 10 V	± 10 V
		0 to 10 mA	2 to 10 mA	± 10 mA	0 to 5 V	1 to 5 V	± 5 V
		ABS 20 mA			ABS 10 V		
		4 to 20 mA/NE43 (Relay inactive outside the NAMUR range 3.6 to 22 mA)					
Input resistance		≤ 20 Ω			≥ 1 MΩ		
Overload		< 50 mA			< 30 V		
Transmitter supply (Tx)		16 V (open circuit voltage/short circuit current < 22 V/35 mA)					
Output							
DG35200	Relay	250 V AC / 30 V DC / 2 A		Recommended minimum load 300 mW / 5 V / 5 mA			
DG35280	Transistor	36 V DC / 50 mA		galvanically isolated, not current limited			
Response time		≤ 20 ms					
Switching functions (selectable)		Make / break contact		ON delay, OFF delay or wiper: OFF, 0.5 s, 1 s, 5 s, 10 s			
Common fault message		Signal on In-Rail-Bus E (supply circuit) at device failure, cable break und short circuit					
General Data							
Test voltage		3 kV AC, 50 Hz, 1 Min.		Input against output against power supply/In-Rail-Bus			
Working voltage <sup>1)</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>1)</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: -25 °C to +70 °C (-13 to +158 °F)		Transport and storage: -40 °C to +85 °C (-40 to +185 °F)			
Power supply		24 V DC		voltage range 16.8 V to 31.2 V DC,		max. 1.0 W	
EMV <sup>2)</sup>		EN 61326-1					
Approvals (pending)		UL (USA/Canada)		UL 61010, Class I, Div. 2			
		ATEX / IECEx		Zone 2 (nA)			
Construction		6.2 mm (0.244") housing, protection class IP 20, mounting on 35 mm DIN rail acc. to EN 60715					
Weight		Approx. 70 g					

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

2) Minor deviations possible during interference

## Dimensions



Subject to change!

## Terminal assignments

1	+	Transmitter supply
2	+	Current input
3	-	GND
4	+	Voltage input
5	≈	Relay + Transistor output
6	≈	Relay - Transistor output
7	+	Power supply (connected to In-Rail-Bus D)
8	-	Power supply (connected to In-Rail-Bus C)

## Connection

Captive plus-minus clamp screws  
 Wire cross-section 0.5 to 2.5 mm<sup>2</sup> / AWG 20-14  
 Stripped length 8 mm / 0.3 in  
 Screw terminal torque 0.6 Nm / 5 lbf in  
 Optional power connection via In-Rail-Bus (see accessories)

## Product line

Device	Order No.	Relay	Transistor
Limit Alarm Unit, configurable		DG 35200 S	DG 35280 S
Limit Alarm Unit, configurable, In-Rail-Bus for power supply and status message		DG 35200 B	DG 35280 B



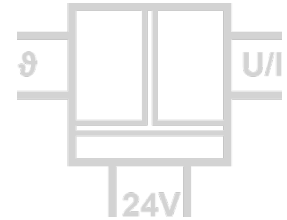


Application Example  
**Transmitters**

---

# Temperature Transmitter DT 45000

for Pt, Ni, KTY, TC, R, Potentiometer and mV Sensors,  
programmable via USB and DIP switch



The programmable Temperature Transmitter DT 45000 is used for measure industrial process signals. It converts Pt, Ni, KTY or TC sensor signals as well as poti, resistor and mV signals to isolated standard signals.

Due to the easy configuration via USB interface and the calibrated range selection per DIP switch the Transmitter is suitable for flexible use.

The Commissioning Function, switchable on front panel, generates an output reference signal for testing and adjusting of the downstream signal path. With der Teach-In Function the measuring range limits can be set during operation.

With the USB Programming-Kit DRAGOset the Transmitter can be configured and all data can be stored by a PC. In mode of programming no additionally auxiliary power is required.

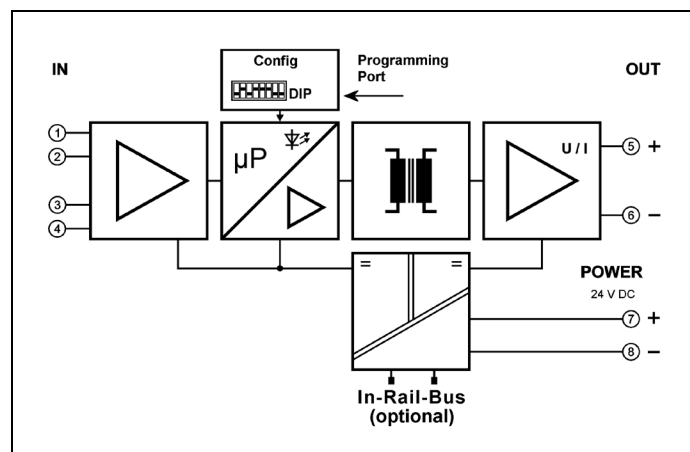
The auxiliary power can be supplied via the connection terminals or via the optional In-Rail-Bus connector. The status of power supply and sensor connection will be displayed by a LED on front.



- **Universal Measuring Input**  
for all common industrial sensor signals
- **Easy configurable via USB or DIP switches**  
complete programmable via USB interface or selectable per DIP switch
- **Switchable Service Functions**  
Simulation and Teach-In Function for an easy commissioning
- **3-port isolation**  
Protection against erroneous measurements due to parasitic voltages or ground loops
- **Extremely slim design**  
6.2 mm slim housing for a simple and space saving DIN rail mounting
- **Optional In-Rail-Bus mounting rail connector**  
allows for fast and economical installation
- **Protective Separation acc. to EN 61140**  
Protects service personnel and downstream devices against impermissibly high voltage
- **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

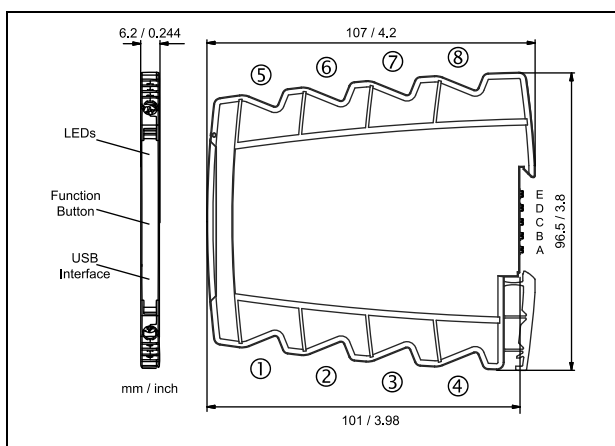
Input			
Sensor	Type	Span min.	Measuring error
Pt	Pt100, Pt200, Pt500, Pt1000	10 K	< 0.1 K + 0.05 % meas. val.
Ni	Ni100, Ni200, Ni500, Ni1000	10 K	< 0.2 K + 0.05 % meas. val.
KTY	KTY, 29 types	25 K	< 0.3 K + 0.05 % meas. val.
Resistor	0 to 5000 Ω	20 Ω	< 0.1 Ω + 0.02 % meas. val.
	Sensor current / connection	0.2 mA / 4-wire, 3-wire, 2-wire	
	Cable resistance	< 100 Ω per wire, manual compensation for 2-wire connection programmable	
Thermocouples	E, J, K, L, N, R, S, T, U / B, C, D	50 K / 100 K	< 0.3 K + 0.08 % meas. val.
Cold junction compensation	Internal, external, uncompensated, manual setting	Error of Cold junction internal < 1.5 K	
mV Input	±100 mV      ±1000 mV	5 mV / 50 mV	< 50 μV + 0.02 % meas. val.
Potentiometer	100 Ω to 50 kΩ	10 %	< 0.05 %
Output	Current	Voltage	
Output signal	0/2 ... 10 mA      0/4 ... 20 mA	0/1 ... 5 V	0/2 ... 10 V
Load	≤ 12 V      (600 Ω at 20 mA)	≤ 5 mA	(2 kΩ at 10 V)
Residual ripple	< 10 mV <sub>rms</sub>		
Transfer range	0 to 102.5 % (3.8 to 20.5 mA at output 4 to 20 mA)		Transfer characteristic rising / falling
Error signal	Sensor/wire break, error signal programmable		
General data			
Transmission error	< 0.1 % full scale		Temperature coefficient <sup>1)</sup> < 100 ppm/K
Sampling rate / Response time T <sub>99</sub>	4/s / 250 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 electric shock <sup>2)</sup>	Protective Separation by reinforced insulation acc. to EN 61010-1 up to 300 V AC/DC for overvoltage category II and contamination class 2 between input and output and power supply		
Ambient temperature	Operation -25 °C to +70 °C (-13 to +158 °F)      Transport and storage -40 °C to +85 °C (-40 to +185 °F)		
Power supply	24 V DC      voltage range 9.6 V to 31.2 V DC,    approx. 0.8 W		
EMC <sup>3)</sup>	EN 61326-1		
Approvals	ATEX      DEMKO 16 ATEX 1685X      Ex II 3 G Ex nA IIC T4 Gc IECEX      IECEX UL 16.0055X      Ex nA IIC T4 Gc UL      E478692 USA/Canada      Class I, Division 2 Groups A, B, C, D    T4		
Construction	6.2 mm (0.244") housing, protection class IP 20, mounting on 35 mm DIN rail acc. to EN 60715		
Weight	Approx. 70 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.
Temperature Transmitter, programmable via USB and DIP switch	DT 45000 S
Temperature Transmitter, programmable via USB and DIP switch, In-Rail-Bus for power supply	DT 45000 B

## Terminal assignments

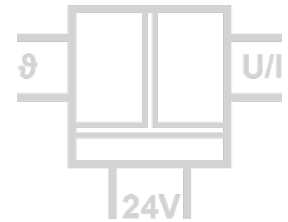
1	Input
2	Input
3	Input
4	Input
5	+ Output
6	- Output
7	+ Power supply (connected to In-Rail-Bus D)
8	- Power supply (connected to In-Rail-Bus C)

## Connection

Captive plus-minus clamp screws  
Wire cross-section 0.5 ... 2.5 mm<sup>2</sup> / AWG 20-14  
Stripped length 8 mm / 0.3 in  
Screw terminal torque 0.6 Nm / 5 lbf in  
Optional power connection via In-Rail-Bus (see accessories)

# Pt Temperature Transmitter DT 45200

Temperature Measuring with Pt Sensors,  
configurable via DIP Switch or USB



The Pt Temperature Transmitter DT 45200 is used for measure industrial process signals. It converts Pt sensor signals to isolated standard signals.

Due to the easy setting of the calibrated measuring ranges via DIP switch the Transmitter is suitable for flexible use.

With the USB Programming-Kit DRAGOset the Transmitter can be configured and all data can be stored by a PC. In mode of programming no additionally auxiliary power is required.

The Commissioning Function, switchable on front panel, generates an output reference signal for testing and adjusting of the downstream signal path.

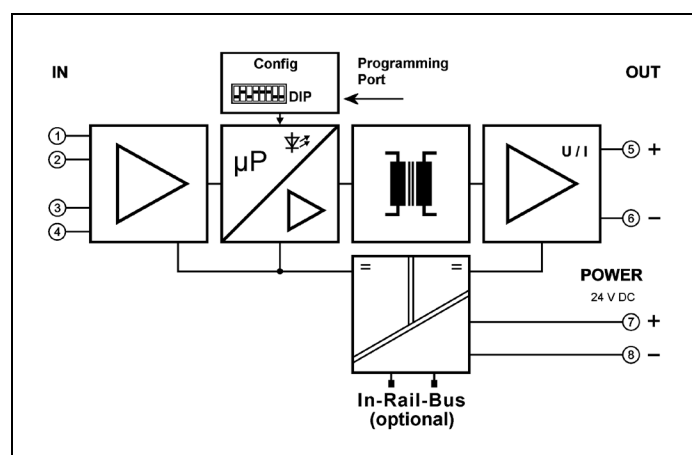
The auxiliary power can be supplied via the connection terminals or via the optional In-Rail-Bus connector. The status of power supply and sensor connection will be displayed by a LED on front.



- **Measuring input for all Pt temperature sensors**  
more than 1200 standard ranges ready to use
- **Easy configurable via DIP switches**  
or via USB interface without auxiliary power supply
- **Switchable service functions**  
for an easy commissioning
- **3-port isolation**  
Protection against erroneous measurements due to parasitic voltages or ground loops
- **Extremely slim design**  
6.2 mm slim housing for a simple and space saving DIN rail mounting
- **Optional In-Rail-Bus mounting rail connector**  
allows for fast and economical installation
- **Protective Separation acc. to EN 61140**  
Protects service personnel and downstream devices against impermissibly high voltage
- **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

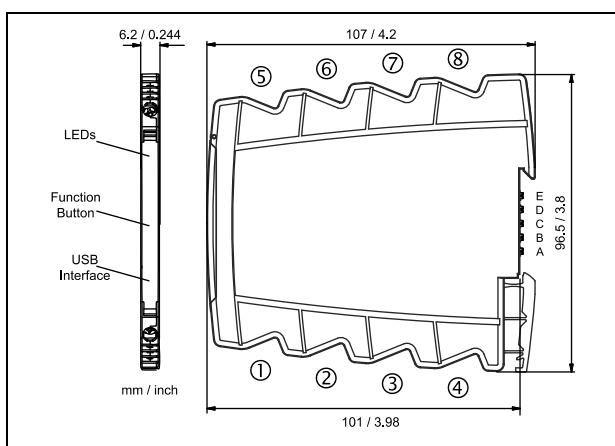
Input			
Sensor	Pt100, Pt200, Pt500, Pt1000, Pt2000 acc. IEC 60751 JPt50, JPt100 (TK3916) acc. JIS C 1604		
Measuring range	-200 to +850 °C in calibrated steps of 25 °C, configurable via DIP switch or USB interface		
Measuring span min.	25 K		
Measuring error	< 0.1 K + 0,05 % meas. val.		
Sensor connection	4-wire, 3-wire, 2-wire		
Sensor current	0.2 mA		
Cable resistance	< 100 Ω per wire at 4-wire and 3-wire connection		
Output	Current	Voltage	
Output signal	0 ... 20 mA                      4 ... 20 mA	0 ... 5 V	0 ... 10 V
Load	≤ 12 V            (600 Ω at 20 mA)	≤ 5 mA	(2 kΩ at 10 V)
Residual ripple	< 10 mV <sub>rms</sub>		
Transfer range	0 to 102.5 % (3.8 to 20.5 mA at output 4 to 20 mA)		Transfer characteristic rising / falling
Error signal	Sensor/wire break, Error signal programmable		
General data			
Transmission error	< 0.1 % full scale		
Temperature coefficient <sup>1</sup>	< 100 ppm/K		
Sampling rate / Response time T <sub>99</sub>	4/s / 250 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 electric shocks <sup>2)</sup>	Protective Separation by reinforced insulation acc. to EN 61010-1 up to 300 V AC/DC for overvoltage category II and contamination class 2 between input and output and power supply		
Ambient temperature	Operation -25 °C to +70 °C (-13 to +158 °F)            Transport and storage -40 °C to +85 °C (-40 to +185 °F)		
Power supply	24 V DC	voltage range 9.6 V to 31.2 V DC,    approx. 0.8 W	
EMC <sup>3)</sup>	EN 61326-1		
Approvals	ATEX            DEMKO 16 ATEX 1685X            Ex II 3 G Ex nA IIC T4 Gc IECEX            IECEX UL 16.0055X            Ex nA IIC T4 Gc UL                E478692 USA/Canada            Class I, Division 2 Groups A, B, C, D    T4		
Construction	6.2 mm (0.244") housing, protection class IP 20, mounting on 35 mm DIN rail acc. to EN 60715		
Weight	Approx. 70 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!

## Terminal assignments

- |   |   |
|---|---|
| 1 | + Input Pt                                  |
| 2 | + Input 3/4-Leiter                          |
| 3 | - Input 4-Leiter                            |
| 4 | - Input Pt                                  |
| 5 | + Output                                    |
| 6 | - Output                                    |
| 7 | + Power supply (connected to In-Rail-Bus D) |
| 8 | - Power supply (connected to In-Rail-Bus C) |

## Connection

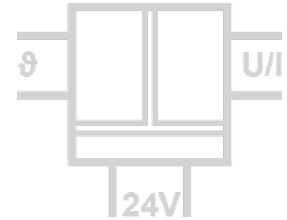
Captive plus-minus clamp screws  
Wire cross-section 0.5 ... 2.5 mm<sup>2</sup> / AWG 20-14  
Stripped length 8 mm / 0.3 in  
Screw terminal torque 0.6 Nm / 5 lbf in  
Optional power connection via In-Rail-Bus (see accessories)

## Product line

Device	Order No.
Pt Temperature Transmitter, configurable via DIP switch and USB	DT 45200 S
Pt Temperature Transmitter, configurable via DIP switch and USB, In-Rail-Bus for power supply	DT 45200 B

# Ni Temperature Transmitter DT 45400

Temperature Measuring with Ni Sensors,  
configurable via DIP Switch or USB



The Ni Temperature Transmitter DT 45400 is used for measure industrial process signals. It converts Ni sensor signals to isolated standard signals.

Due to the easy setting of the calibrated measuring ranges via DIP switch the Transmitter is suitable for flexible use.

With the USB Programming-Kit DRAGOset the Transmitter can be configured and all data can be stored by a PC. In mode of programming no additionally auxiliary power is required.

The Commissioning Function, switchable on front panel, generates an output reference signal for testing and adjusting of the downstream signal path.

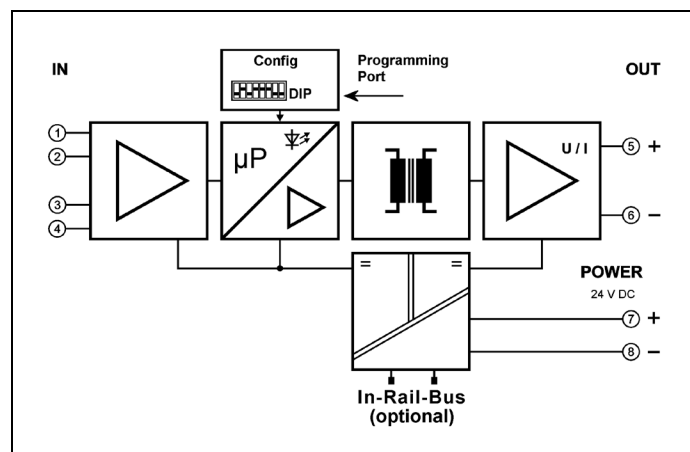
The auxiliary power can be supplied via the connection terminals or via the optional In-Rail-Bus connector. The status of power supply and sensor connection will be displayed by a LED on front.



- **Measuring input for all Ni temperature sensors**  
calibrated standard measuring ranges ready to use
- **Easy configurable via DIP switches**  
or via USB interface without auxiliary power supply
- **Switchable service functions**  
for an easy commissioning
- **3-port isolation**  
Protection against erroneous measurements due to parasitic voltages or ground loops
- **Extremely slim design**  
6.2 mm slim housing for a simple and space saving DIN rail mounting
- **Optional In-Rail-Bus mounting rail connector**  
allows for fast and economical installation
- **Protective Separation acc. to EN 61140**  
Protects service personnel and downstream devices against impermissibly high voltage
- **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

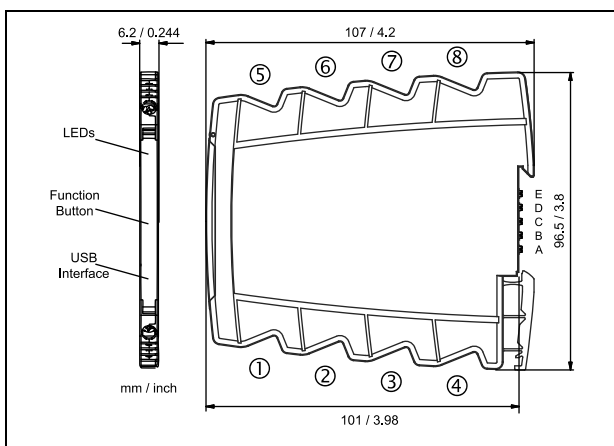
Input			
Sensor	Ni100, Ni200, Ni500, Ni1000 DIN 43760 (TK6180) Ni120 (TK6720), Ni1000 (TK5000), Ni1000 (TK6370)		
Measuring range	-50 to +250 °C in calibrated steps of 25 °C, configurable via DIP switch or USB interface		
Measuring span min.	25 K		
Measuring error	< 0.2 K + 0,05 % meas. val.		
Sensor connection	4-wire, 3-wire, 2-wire		
Sensor current	0.2 mA		
Cable resistance	< 100 Ω per wire at 4-wire and 3-wire connection		
Output	Current	Voltage	
Output signal	0 ... 20 mA                      4 ... 20 mA	0 ... 5 V	0 ... 10 V
Load	≤ 12 V    (600 Ω at 20 mA)	≤ 5 mA    (2 kΩ at 10 V)	
Residual ripple	< 10 mV <sub>rms</sub>		
Transfer range	0 to 102.5 % (3.8 to 20.5 mA at output 4 to 20 mA)		Transfer characteristic rising / falling
Error signal	Sensor/wire break, Error signal programmable		
General data			
Transmission error	< 0.1 % full scale		
Temperature coefficient <sup>1</sup>	< 100 ppm/K		
Sampling rate / Response time T <sub>99</sub>	4/s / 250 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 electric shock <sup>2)</sup>	Protective Separation by reinforced insulation acc. to EN 61010-1 up to 300 V AC/DC for overvoltage category II and contamination class 2 between input and output and power supply		
Ambient temperature	Operation -25 °C to +70 °C (-13 to +158 °F)      Transport and storage -40 °C to +85 °C (-40 to +185 °F)		
Power supply	24 V DC	voltage range 9.6 V to 31.2 V DC,    approx. 0.8 W	
EMC <sup>3)</sup>	EN 61326-1		
Approvals	ATEX      DEMKO 16 ATEX 1685X      Ex II 3 G Ex nA IIC T4 Gc IECEX      IECEX UL 16.0055X      Ex nA IIC T4 Gc UL      E478692 USA/Canada      Class I, Division 2 Groups A, B, C, D    T4		
Construction	6.2 mm (0.244") housing, protection class IP 20, mounting on 35 mm DIN rail acc. to EN 60715		
Weight	Approx. 70 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!

### Terminal assignments

- |   |   |
|---|---|
| 1 | + Input Ni                                  |
| 2 | + Input 3/4-Leiter                          |
| 3 | - Input 4-Leiter                            |
| 4 | - Input Ni                                  |
| 5 | + Output                                    |
| 6 | - Output                                    |
| 7 | + Power supply (connected to In-Rail-Bus D) |
| 8 | - Power supply (connected to In-Rail-Bus C) |

### Connection

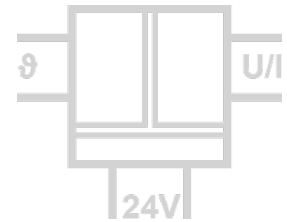
Captive plus-minus clamp screws  
Wire cross-section 0.5 ... 2.5 mm<sup>2</sup> / AWG 20-14  
Stripped length 8 mm / 0.3 in  
Screw terminal torque 0.6 Nm / 5 lbf in  
Optional power connection via In-Rail-Bus (see accessories)

### Product line

Device	Order No.
Ni Temperature Transmitter, configurable via DIP switch and USB	DT 45400 S
Ni Temperature Transmitter, configurable via DIP switch and USB, In-Rail-Bus for power supply	DT 45400 B

# KTY Temperature Transmitter DT 45600

Temperature Measuring with KTY Sensors,  
configurable via DIP Switch or USB



The KTY Temperature Transmitter DT 45600 is used for measure industrial process signals. It converts KTY sensor signals to isolated standard signals.

Due to the easy setting of the calibrated measuring ranges via DIP switch the Transmitter is suitable for flexible use.

With the USB Programming-Kit DRAGOset the Transmitter can be configured and all data can be stored by a PC. In mode of programming no additionally auxiliary power is required.

The Commissioning Function, switchable on front panel, generates an output reference signal for testing and adjusting of the downstream signal path.

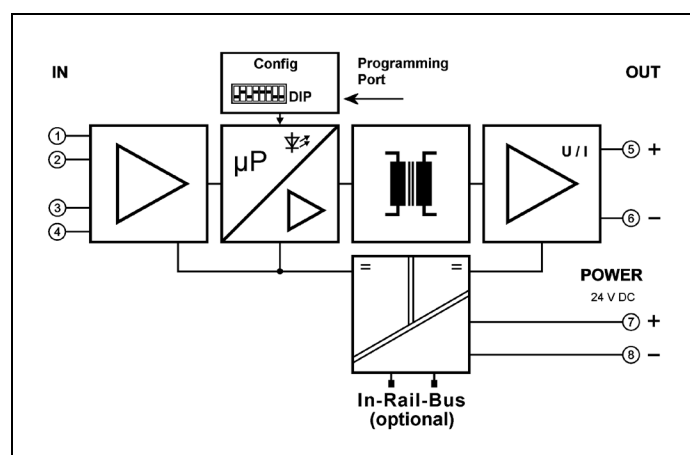
The auxiliary power can be supplied via the connection terminals or via the optional In-Rail-Bus connector. The status of power supply and sensor connection will be displayed by a LED on front.



- **Measuring input for all KTY temperature sensors**  
calibrated standard measuring ranges, ready to use
- **Easy configurable via DIP switches**  
or via USB interface without auxiliary power supply
- **Switchable service functions**  
for an easy commissioning
- **3-port isolation**  
Protection against erroneous measurements due to parasitic voltages or ground loops
- **Extremely slim design**  
6.2 mm slim housing for a simple and space saving DIN rail mounting
- **Optional In-Rail-Bus mounting rail connector**  
allows for fast and economical installation
- **Protective Separation acc. to EN 61140**  
Protects service personnel and downstream devices against impermissibly high voltage
- **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

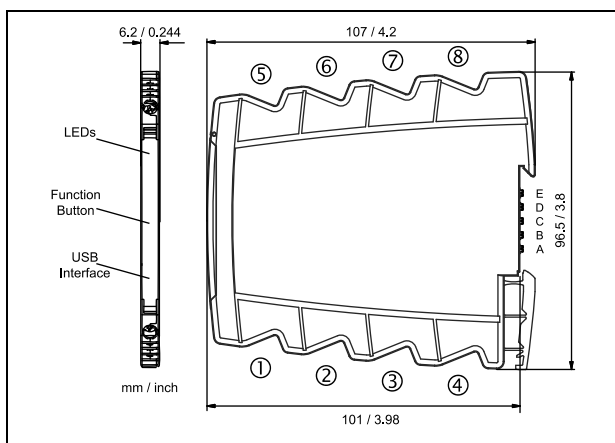
Input			
Sensor	KT100, KT110, KT130, KT210, KT230, KTY10-5, KTY10-6, KTY10-62, KTY10-7, KTY11-5, KTY11-6, KTY11-7, TY13-5, KTY13-6, KTY13-7, KTY16-6, KTY19-6M, KTY19-6Z, KTY21-5, KTY21-6, KTY21-7, KTY23-5, KTY23-6, KTY23-7, KTY81-110, KTY81-120, KTY81-121, KTY81-122, KTY81-210, KTY81-220, KTY81-221, KTY81-222, KTY81-250, KTY81-251, KTY81-252, KTY82-110, KTY82-120, KTY82-121, KTY82-122, KTY82-150, KTY82-151, KTY82-152, KTY82-210, KTY82-220, KTY82-221, KTY82-222, KTY82-250, KTY82-251, KTY82-252, KTY83-110, KTY83-120, KTY83-121, KTY83-122, KTY83-150, KTY83-151, KTY83-152, KTY84-130, KTY84-150, KTY84-151, KTY84-152, ST-13, ST-15, ST-16, ST-20M, ST-20Z		
Messbereich	calibrated steps of 25 °C in complete sensor measuring ranges, configurable via DIP switch or USB interface		
Measuring span min.	25 K		
Measuring error	< 0.3 K + 0,05 % meas. val.		
Sensor connection	3-wire, 2-wire		
Sensor current	0,2 mA		
Cable resistance	< 100 Ω per wire at 3-wire connection		
Output	Current	Voltage	
Output signal	0 ... 20 mA                      4 ... 20 mA	0 ... 5 V                      0 ... 10 V	
Load	≤ 12 V                      (600 Ω at 20 mA)	≤ 5 mA                      (2 kΩ at 10 V)	
Residual ripple	< 10 mV <sub>rms</sub>		
Transfer range	0 to 102.5 % (3.8 to 20.5 mA at output 4 to 20 mA)		Transfer characteristic rising / falling
Error signal	Sensor/wire break, Error signal programmable		
General data			
Transmission error	< 0.1 % full scale		
Temperature coefficient <sup>1</sup>	< 100 ppm/K		
Sampling rate / Response time T <sub>99</sub>	4/s / 250 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 electric shock <sup>2)</sup>	Protective Separation by reinforced insulation acc. to EN 61010-1 up to 300 V AC/DC for overvoltage category II and contamination class 2 between input and output and power supply		
Ambient temperature	Operation -25 °C to +70 °C (-13 to +158 °F)                      Transport and storage -40 °C to +85 °C (-40 to +185 °F)		
Power supply	24 V DC	voltage range 9.6 V to 31.2 V DC,    approx. 0.8 W	
EMC <sup>3)</sup>	EN 61326-1		
Approvals	ATEX                      DEMKO 16 ATEX 1685X                      Ex II 3 G Ex nA IIC T4 Gc IECEX                      IECEX UL 16.0055X                      Ex nA IIC T4 Gc UL                      E478692 USA/Canada                      Class I, Division 2 Groups A, B, C, D    T4		
Construction	6.2 mm (0.244") housing, protection class IP 20, mounting on 35 mm DIN rail acc. to EN 60715		
Weight	Approx. 70 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



### Product line

Device	Order No.
KTY Temperature Transmitter, configurable via DIP switch and USB	DT 45600 S
KTY Temperature Transmitter, configurable via DIP switch and USB, In-Rail-Bus for power supply	DT 45600 B

Subject to change!

### Terminal assignments

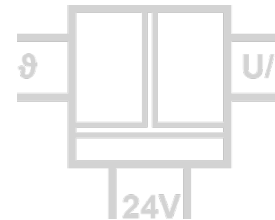
- 1 + Input KTY
- 2 + Input 3-wire
- 3
- 4 - Input KTY
- 5 + Output
- 6 - Output
- 7 + Power supply (connected to In-Rail-Bus D)
- 8 - Power supply (connected to In-Rail-Bus C)

### Connection

Captive plus-minus clamp screws  
Wire cross-section 0.5 ... 2.5 mm<sup>2</sup> / AWG 20-14  
Stripped length 8 mm / 0.3 in  
Screw terminal torque 0.6 Nm / 5 lbf in  
Optional power connection via In-Rail-Bus (see accessories)

# TC Temperature Transmitter DT 45800

Temperature Measuring with Thermocouple Sensors,  
configurable via DIP Switch or USB



The TC Temperature Transmitter DT 45800 is used for measure industrial process signals. It converts Thermocouple sensor signals to isolated standard signals.

Due to the easy setting of the calibrated measuring ranges via DIP switch the Transmitter is suitable for flexible use.

With the USB Programming-Kit DRAGOset the Transmitter can be configured and all data can be stored by a PC. In mode of programming no additionally auxiliary power is required.

The Commissioning Function, switchable on front panel, generates an output reference signal for testing and adjusting of the downstream signal path.

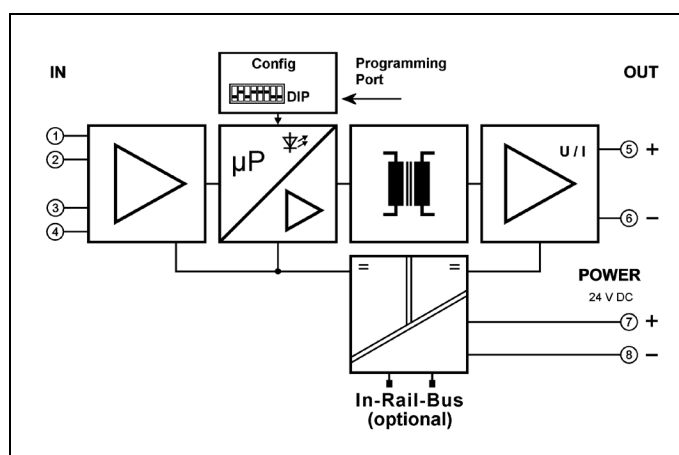
The auxiliary power can be supplied via the connection terminals or via the optional In-Rail-Bus connector. The status of power supply and sensor connection will be displayed by a LED on front.



- **Measuring input for all TC temperature sensors**  
more than 1800 standard ranges ready to use
- **Easy configurable via DIP switches**  
or via USB interface without auxiliary power supply
- **Switchable service functions**  
for an easy commissioning
- **3-port isolation**  
Protection against erroneous measurements due to parasitic voltages or ground loops
- **Extremely slim design**  
6.2 mm slim housing for a simple and space saving DIN rail mounting
- **Optional In-Rail-Bus mounting rail connector**  
allows for fast and economical installation
- **Protective Separation acc. to EN 61140**  
Protects service personnel and downstream devices against impermissibly high voltage
- **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

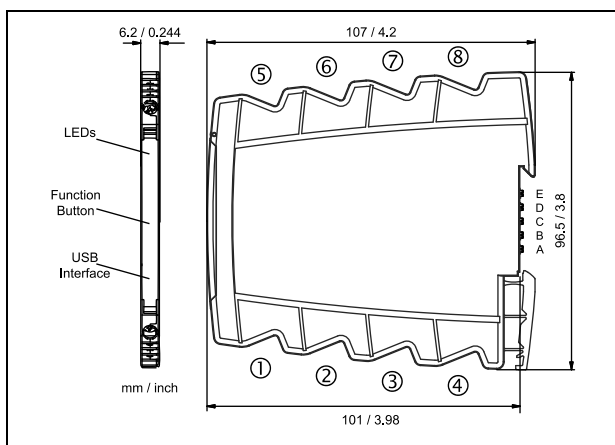
Input						
Thermocouple	Sensor	Standard	Measuring range	Span min.	Measuring error	
Type K	NiCr-Ni	IEC 584	-200 to +1350 °C	50 K	< 0.3 K + 0.08 % meas. Val.	
Type J	Fe-CuNi	IEC 584	-200 to +1200 °C	50 K	< 0.3 K + 0.08 % meas. Val.	
Type A	W5Re-W20Re	GOST 8.585	0 to +2500 °C	100 K	< 0.3 K + 0.08 % meas. Val.	
Type B	Pt30Rh-Pt6Rh	IEC 584	+250 to +1800 °C	100 K	< 0.3 K + 0.08 % meas. Val.	
Type C	W5Re-W26Re	ASTM E988	0 to +2300 °C	100 K	< 0.3 K + 0.08 % meas. Val.	
Type D	W3Re-W25Re	ASTM E988	0 to +2300 °C	100 K	< 0.3 K + 0.08 % meas. Val.	
Type E	NiCr-CuNi	IEC 584	-200 to +1000 °C	50 K	< 0.3 K + 0.08 % meas. Val.	
Type L	Fe-CuNi	DIN 43710	-200 to +900 °C	50 K	< 0.3 K + 0.08 % meas. Val.	
Type N	NiCrSi-NiSi	IEC 584	-200 to +1300 °C	50 K	< 0.3 K + 0.08 % meas. Val.	
Type R	Pt13Rh-Pt	IEC 584	-50 to +1700 °C	50 K	< 0.3 K + 0.08 % meas. Val.	
Type S	Pt10Rh-Pt	IEC 584	-50 to +1700 °C	50 K	< 0.3 K + 0.08 % meas. Val.	
Type T	Cu-CuNi	IEC 584	-200 to +400 °C	50 K	< 0.3 K + 0.08 % meas. Val.	
Type U	Cu-CuNi	DIN 43710	-200 to +600 °C	50 K	< 0.3 K + 0.08 % meas. Val.	
Cold junction compensation	Internal / OFF		Error of Cold junction compensation < 1.5 K			
Output	Current		Voltage			
Output signal	0 to 20 mA                      4 to 20 mA		0 to 5 V		0 to 10 V	
Load	≤ 12 V      (600 Ω at 20 mA)		≤ 5 mA      (2 kΩ at 10 V)			
Residual ripple	< 10 mV <sub>rms</sub>					
Transfer range	0 to 102.5 % (3.8 to 20.5 mA at output 4 to 20 mA)		Transfer characteristic rising / falling			
Error signal	Sensor/wire break, error signal programmable					
General data						
Transmission error	< 0.1 % full scale		Temperature coefficient <sup>1)</sup> < 100 ppm/K			
Sampling rate / Response time T <sub>99</sub>	4/s / 250 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 electric shocks <sup>2)</sup>	Protective Separation by reinforced insulation acc. to EN 61010-1 up to 300 V AC/DC for overvoltage category II and contamination class 2 between input and output and power supply					
Ambient temperature	Operation -25 °C to +70 °C (-13 to +158 °F)		Transport and storage -40 °C to +85 °C (-40 to +185 °F)			
Power supply	24 V DC	voltage range 9.6 V to 31.2 V DC,    approx. 0.8 W				
EMC <sup>3)</sup>	EN 61326-1					
Approvals	ATEX	DEMKO 16 ATEX 1685X	Ex II 3 G Ex nA IIC T4 Gc			
	IECEX	IECEX UL 16.0055X	Ex nA IIC T4 Gc			
	UL	E478692 USA/Canada	Class I, Division 2 Groups A, B, C, D    T4			
Construction	6.2 mm (0.244") housing, protection class IP 20, mounting on 35 mm DIN rail acc. to EN 60715					
Weight	Approx. 70 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

- 1
- 2 + Input TC
- 3 - Input TC
- 4
- 5 + Output
- 6 - Output
- 7 + Power supply (connected to In-Rail-Bus D)
- 8 - Power supply (connected to In-Rail-Bus C)

### Connection

Captive plus-minus clamp screws  
Wire cross-section 0.5 ... 2.5 mm<sup>2</sup> / AWG 20-14  
Stripped length 8 mm / 0.3 in  
Screw terminal torque 0.6 Nm / 5 lbf in  
Optional power connection via In-Rail-Bus (see accessories)

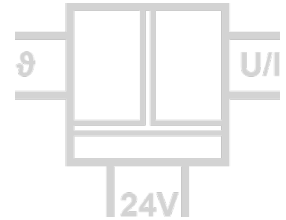
Subject to change!

### Product line

Device	Order No.
TC Temperature Transmitter, configurable via DIP switch and USB	DT 45800 S
TC Temperature Transmitter, configurable via DIP switch and USB, In-Rail-Bus for power supply	DT 45800 B

# 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**

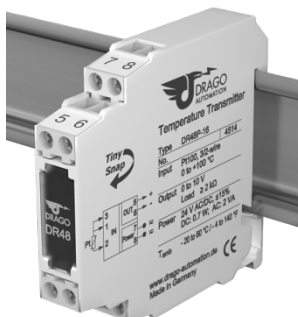
Protects service personnel and downstream devices against impermissibly high voltage

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

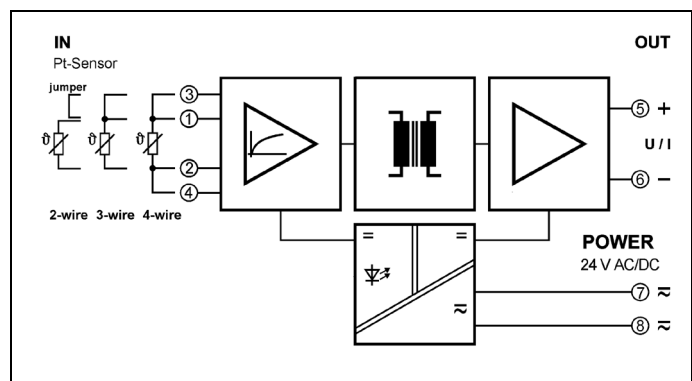
Universally applicable for all measurement and industrial applications

- **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	DR 44 DR 48 DR 49	Type Pt100 Pt100 Pt1000	Connection 4-wire 3-wire, 2-wire with bridge terminal 1 to 3 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 4 to 20 mA	0 to 5 V 1 to 5 V	0 to 10 V 2 to 10 V	see order information
Load	Current output Voltage output	≤ 500 Ω ≥ 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.

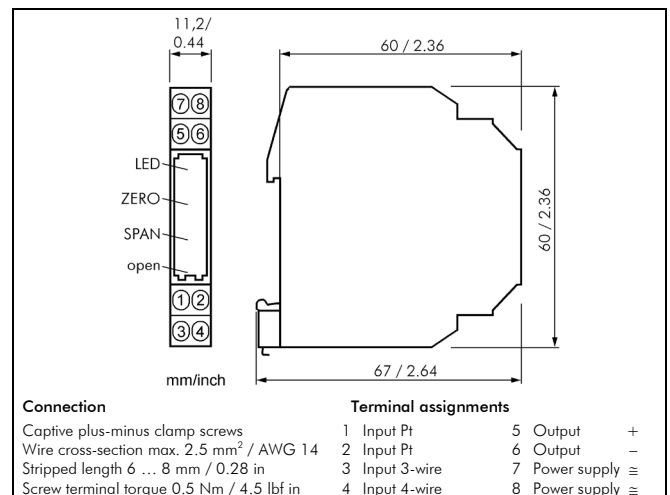
3) Minor deviations possible during interference

### 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



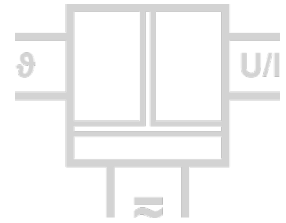
### Extended Measuring Range Table

from \ to	-50	0	50	100	150	200	250	300	350	400	450 °C
-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



# Temperature Transmitter DR 4700

Temperature Measuring  
with Pt100/Pt1000-Sensors



The Temperature Transmitter DR 4700 converts the Pt sensor signal on input to temperature linear standard signal 0/4 ... 20 mA or 0 ... 5/10 V.

The configuration of the measuring input and the output can be easily switched with DIP switches. The zero/span potentiometers on the front panel provide easy range adjustment. After changing the standard factory setting, the measuring range must be recalibrated with a Pt simulator.

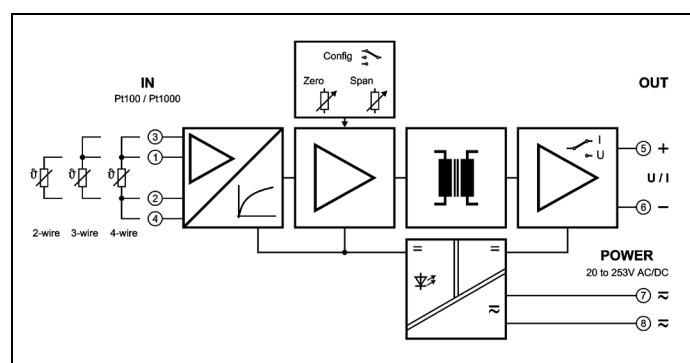
The small housing with 12.5 mm width saves space in your switch cabinet and facilitates by the practical plug-in screw terminal blocks the assembly. For range setting a simple housing unblocking is installed which makes it possible to reach easily all control elements on the mounting rail.

The universal power pack for 20 ... 253 V AC/DC means the DR 4700 can be used anywhere in the world, with all mains power supplies. The unit's high efficiency contributes significantly to reducing the unit's own heat generation. This is reflected in extremely high reliability and long-term stability.

- **Easy measuring range adjustment**  
from -100 °C to +600 °C via potentiometer on the front panel
- **Extensive configuration options**  
Measurement range, type of sensor, sensor connection and output signal can be set by using DIP switch
- **Universal power supply for 20...253 V AC/DC**  
Applicable world-wide for all common supply voltages
- **3-Port Isolation**  
Protection against erroneous measurements due to parasitic voltages or ground loops
- **Ultra small sized housing**  
12.5 mm housing with plug-in screw terminal blocks
- **Protective Separation acc. to EN 61140**  
Protects service personnel and downstream devices against impermissibly high voltage
- **Maximum reliability**  
Highest long-term stability and accuracy
- **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	Pt100 / Pt1000		switchable	
Sensor connection	2-wire, 3-wire, 4-wire			
Measuring range	Zero	-100 °C, -50 °C, 0 °C, 50 °C switchable with Potentiometer ZERO 0 ... 50 °C adjustable		
	Span	50 K, 100 K, 200 K, 300 K, switchable with Potentiometer SPAN 100 ... 200 % of span adjustable		
Sensor wire resistance	< 25 Ω per wire			
Sensor current	1 mA / 0.1 mA			
Sensor diagnostic	Sensor / wire break			
Output				
Output signal	0 ... 20 mA 4 ... 20 mA	0 ... 5 V 1 ... 5 V	0 ... 10 V 2 ... 10 V	switchable
Load	Current output Voltage output	≤ 12 V (600 Ω at 20 mA) ≤ 5 mA (2 kΩ at 10 V)		
Residual ripple	< 10 mV <sub>rms</sub>			
Sensor break action	Current output Voltage output	≥ 22 mA ≥ 11 V		
General Data				
Linearity	< 0.2 % of measuring span			
Temperature coefficient <sup>1)</sup>	< 150 ppm/K			
Calibration	Max of 0.1 °C or 0.1 % of measuring span			
Response time T <sub>99</sub>	20 ms			
Test voltage	4 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 Transport and storage	- 10 to + 60 °C (+ 14 to + 140 °F) - 20 to + 80 °C (- 4 to + 176 °F)		
Power supply	20 ... 253 V AC/DC	AC 48 ... 62 Hz, approx. 3 VA DC approx. 1.5 W		
EMC <sup>3)</sup>	EN 61326 -1			
Construction	12.5 mm (0.49") housing, protection class IP 20, mounting on 35 mm DIN rail acc. to EN 60715			
Weight	Approx. 100 g			

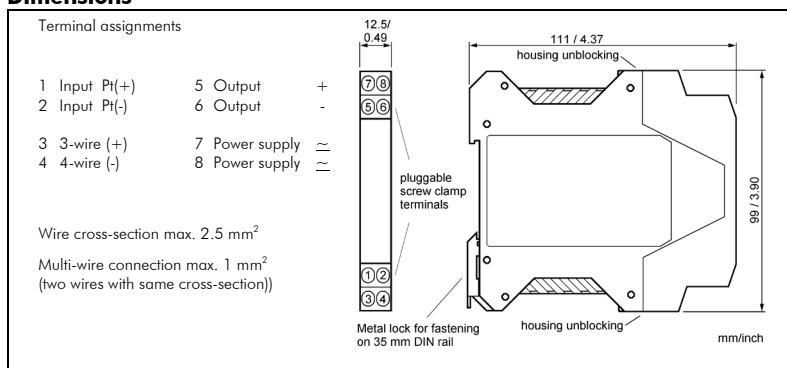
1) Average TC related to full scale value in specified operating temperature range, reference temperature 23 °C

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

Factory setting: Input: Pt100, 4-wire, Output: 0 ... 20 mA

## Dimensions



Subject to change!

## Product line

Device	Order No.
Temperature Transmitter, configurable (0 ... 100 °C pre adjusted)	DR 4700 AG

# Resistance Transmitter DR 41

## Measuring of Resistors with Fixed Setting

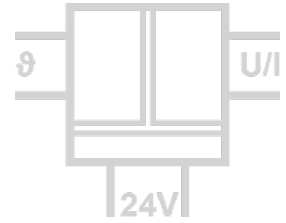
The Resistance Transmitter DR 41 converts the sensor resistance value to a standard signal and makes it galvanic isolated available on output.

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

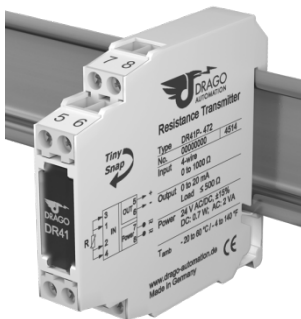
A cross-connector for the auxiliary power supply ensures fast and easy installation. The slim housing with 11.2 mm width saves significant space on the DIN-rail. If required a measuring range compensation can be performed at the Zero/Scan potentiometers behind the front cover.

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

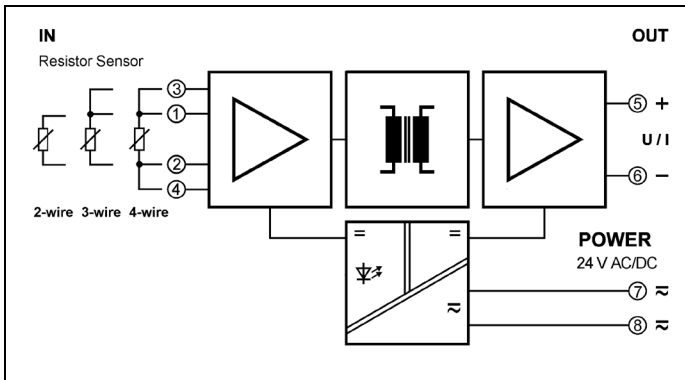
Protective Separation and the 24 V AC/DC power supply make the DR 41 universally applicable for all measurement and industrial applications, as well as for building automation.



- **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

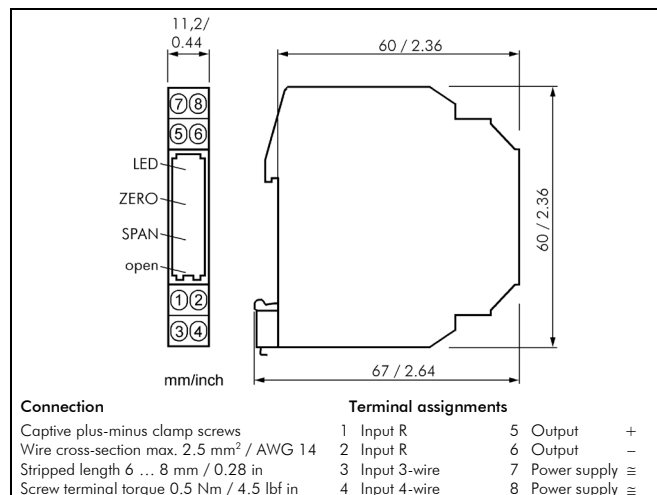
2) For applications with high working voltages, ensure there is sufficient spacing or isolation from neighboring devices and protection against electric shocks.

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 $\Omega$	2
	0 ... 50 $\Omega$	3
	0 ... 100 $\Omega$	4
	0 ... 200 $\Omega$	5
	0 ... 500 $\Omega$	6
	0 ... 1000 $\Omega$	7
	0 ... 2000 $\Omega$	8
	0 ... 5000 $\Omega$	9
	0 ... 10 k $\Omega$	A
	0 ... 20 k $\Omega$	B
	0 ... 50 k $\Omega$	C
	0 ... 100 k $\Omega$	D
	0 ... 200 k $\Omega$	E
	0 ... 500 k $\Omega$	F
	0 ... 1 M $\Omega$	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!

# Potentiometer Transmitter DR 4310

## Isolation and Conversion of Potentiometer Position Signals

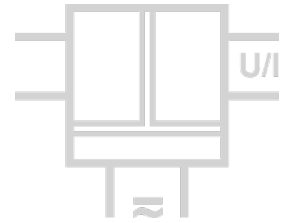
The Potentiometer Transmitter DR 4310 is used for isolation and conversion of potentiometer position signals.

Due to the easy configuration, the new universal power pack and the ultra-small housing the Isolation Amplifier is suitable for flexible use.

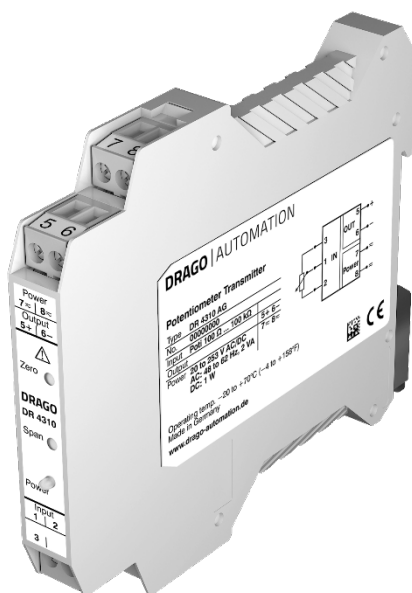
The ratiometric measuring method allows the acquisition of potentiometer signals without range selection. Unipolar and bipolar output signals can be selected with a DIP switch. Subsequent readjustment or measured range compensation can then be performed at the zero/scan potentiometers on the front panel.

The small housing with 12.5 mm width saves space in your switch cabinet and facilitates by the practical plug-in screw terminal blocks the assembly. For range setting a simple housing unblocking is installed which makes it possible to reach easily all control elements on the mounting rail.

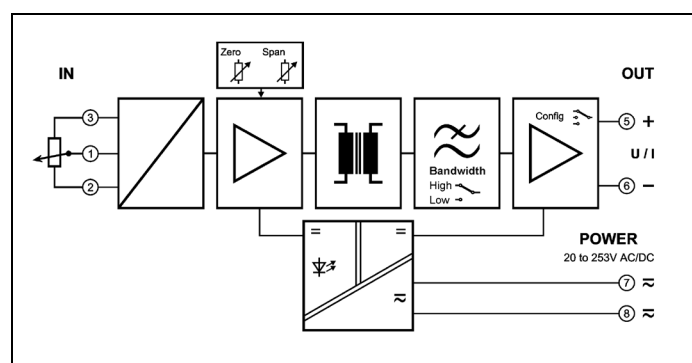
The new universal power pack for 20 ... 253 V AC/DC means the DR 4310 can be used anywhere in the world, with all mains power supplies. The unit's high efficiency contributes significantly to reducing the unit's own heat generation. This is reflected in extremely high reliability and long-term stability. A green LED on the front of the unit has been provided to monitor the power supply.



- **Easy configuration**  
Conversion of potentiometric position signals without range selection
- **Universal power supply for 20...253 V AC/DC**  
Applicable world-wide for all common supply voltages
- **3-port isolation**  
Protection against erroneous measurements due to parasitic voltages or ground loops
- **Ultra small sized housing**  
12.5 mm housing with plug-in screw terminal blocks
- **High bandwidth; high accuracy**  
No distortion; no falsification of measured signal
- **Protective Separation**  
Protects service personnel and downstream devices against impermissibly high voltage
- **Maximum reliability**  
No maintenance costs
- **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

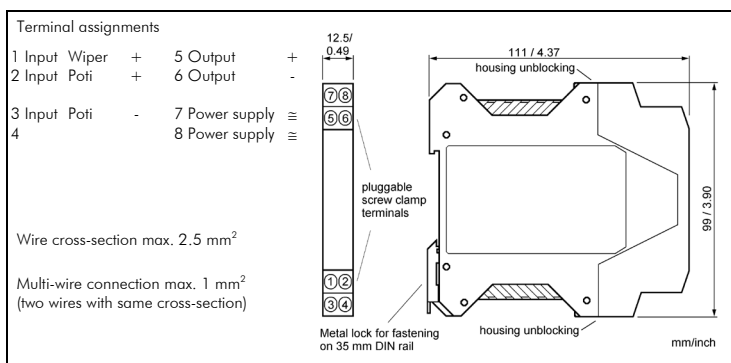
Input	
Input signals	Potentiometer 100 $\Omega$ ... 100 k $\Omega$
Sensor supply	1.2 V (limited to max. 5 mA)
Potentiometer connection	3 wire connection
Input resistance wiper contact	> 10 M $\Omega$
Output	
Output signals (switch selectable)	Voltage
	Current
	$\pm 10$ V    0 ... 10 V    2 ... 10 V $\pm 20$ mA    0 ... 20 mA    4 ... 20 mA
	$\pm 5$ V    0 ... 5 V    1 ... 5 V $\pm 10$ mA    0 ... 10 mA    2 ... 10 mA
Load	$\leq 10$ mA (1 k $\Omega$ at 10 V) $\leq 12$ V (600 $\Omega$ at 20 mA)
Linear transmission range	Unipolar: - 2 ... + 110 %    bipolar: - 110 ... + 110 %
Residual ripple	< 10 mV <sub>rms</sub>
General Data	
Transmission error	< 0.1 % full scale
Temperature coefficient <sup>1)</sup>	< 100 ppm/K
Zero/Span compensation	Start value: 0 - 20 %; End value: 80 - 100 % Minimum span: 80 %
Cut-off frequency -3 dB (switchable)	10 kHz    30 Hz
Response time T <sub>99</sub>	80 $\mu$ s    20 ms
Test voltage	4 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 + 70 °C    (- 4 to + 158 °F) Transport and storage    - 35 to + 85 °C    (- 31 to + 185 °F)
Power supply	20 ... 253 V AC/DC    AC 48 ... 62 Hz, approx. 2 VA DC approx. 1.0 W
EMC <sup>3)</sup>	EN 61326-1
Construction	12.5 mm (0.49") housing, protection class IP 20, mounting on 35 mm DIN rail acc. to EN 60715
Weight	Approx. 100 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

Devices	Order No.
Potentiometer Transmitter, configurable	DR 4310 AG



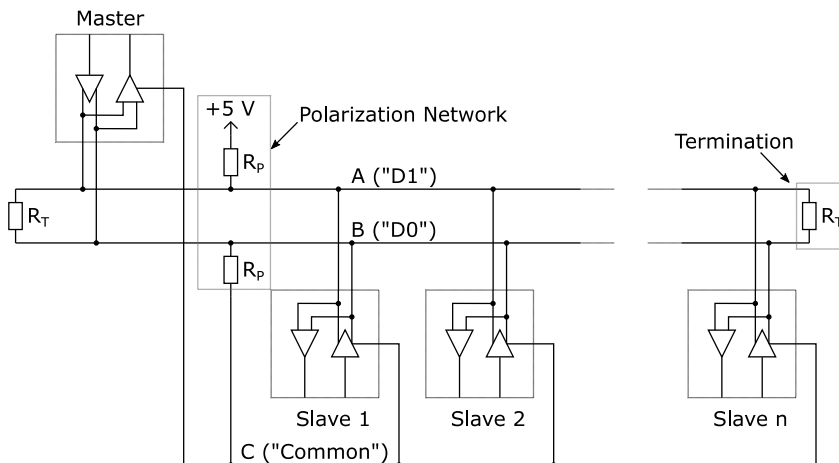


## Application Example Modbus RTU I/O Modules

With the DMB series DRAGO Automation offers different analog and digital input options. The Modbus interface with RTU protocol on the RS485 physical layer enables robust communication in rough industrial environment. Because of their 1/8 unit load transceivers it is possible to connect 247 Drago DMB series devices as Modbus slaves with one master without the need for repeater.

### RS485 Network for Modbus

The Modbus network is based on a 2-wire RS485 (EIA-485, TIA-485):



Typical values (recommendation of the Modbus organisation):

$$R_T = 120 \, \Omega$$

$$R_p = 450 \text{ to } 650 \, \Omega$$

(often switchable in Modbus master)

According to the Modbus Organization the devices are connected via 2 data lines and a third common line:

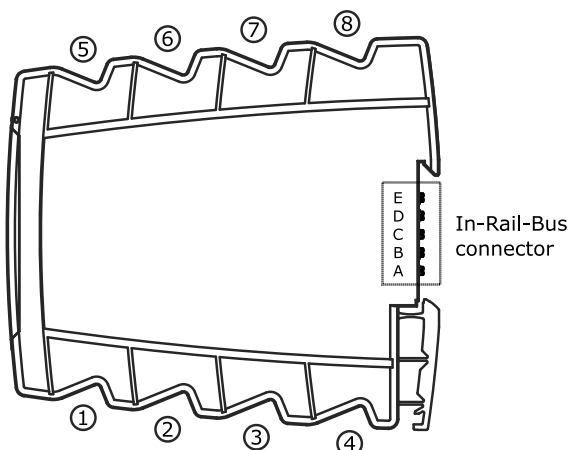
D0	(referred as „B“ in EIA / TIA-485)
D1	(referred as „A“ in EIA / TIA-485)
COMMON	(referred as „C“ in EIA / TIA-485)

The two terminating resistors  $R_T$  prevent reflections on the data lines. The optimum resistance value depends on the wave resistance of the cable used. The polarization network  $R_p$  is required to ensure appropriate potentials when none of the devices is transmitting and thus lines D0 and D1 are undefined (high-impedance).

Links: [Modbus specification](#)  
[MODBUS over serial line - specification and implementation guide](#)

### Modbus connection via In-Rail-Bus connector

The connection to the power supply and Modbus is made directly via the **In-Rail-Bus connector** (A-E) in the DIN rail. Third-party devices without In-Rail-Bus can be connected via the power terminal (order no. DZU 1401, DZU 1402). The single-channel DRAGO DMB devices also output the Modbus signals via terminals 5, 6 and 8.

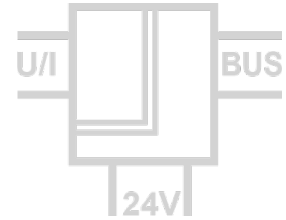


RS485 (Modbus) signal name	In-Rail-Bus connector	Optional Modbus clamps
D1 (A)	A	5
D0 (B)	B	6
COMMON (C)	C	8

# Standard Signal AI Module

## DMB 96100

Measuring input for Standard Signals, Modbus RTU



The Modbus Standard Signal AI Module is used for electrical isolated conversion of unipolar standard voltage and current signals. A transmitter power supply is provided for the operation of 2-wire and 3-wire transmitters.

All parameters can be set via the Modbus RTU interface and via a programming socket behind the front panel. A free PC configuration software also offers extended setting options and extensive diagnostic functions during operation. A subset of the most common settings is also available via DIP switches.

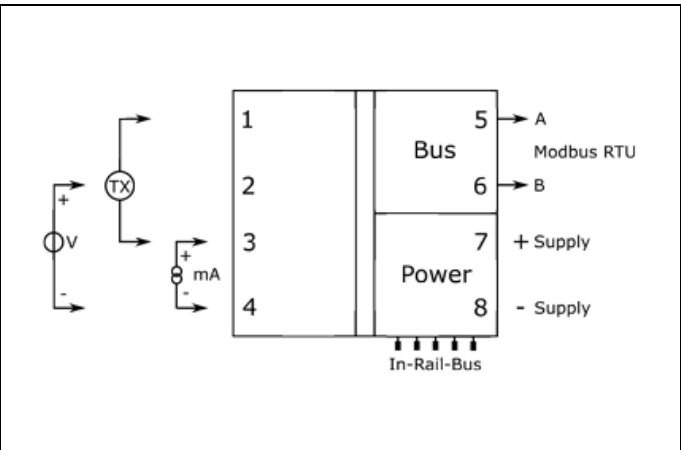
The measuring value can be read over the Modbus RTU (RS485) interface.

The 2-way isolation guarantees reliable decoupling of the sensor circuit from the processing circuit and the auxiliary power circuit. Auxiliary power and Modbus RTU can be connected via the connection terminals or via the In-Rail-Bus connector (see accessories).

- **Input for industrial standard signals**  
current and voltage signals and transmitter supply
- **In-Rail-Bus Connector for Modbus and Power Supply**  
allows fast and economical installation
- **Protective Separation up to 300 V AC/DC**  
test voltage 3 kV
- **Easy configurable**  
via DIP switches or Modbus interface
- **Freely scalable**  
up to 247 DRAGO modules in one Modbus segment
- **Extremely slim design**  
6.2 mm slim housing for a simple and space saving DIN rail mounting
- **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

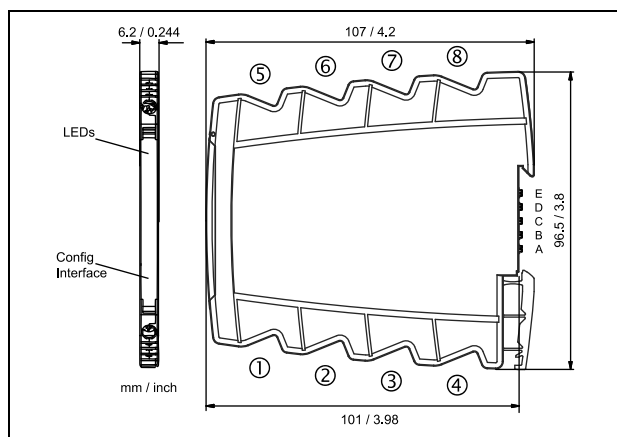
Input	Voltage	Current
Input signal	0 to 10 V	0 to 20 mA
Input resistance	$\geq 100\text{ k}\Omega$	$\leq 25\ \Omega$
Overload	$\leq 30\text{ V}$	$\leq 50\text{ mA}$
Transmitter supply	16 V (open circuit/short circuit < 22 V / 35 mA)	
Modbus		
Protocol	Modbus RTU (RS485)	
Module addressing	1 to 247	
Response delay	1 to 1000 ms	
Baud rate	300, 600, 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200	
Configuration	Parity: Even, Odd, None 2 stop bits, None 1 stop bit	
Connectivity	Up to 247 DRAGO Modbus devices without additional repeater (1/8 Load)	
Indication	Yellow LED on front panel	
Measuring range	0 to 115 %	
General Data		
Measuring error	< 0.1 % full scale	
Temperature coefficient <sup>1)</sup>	< 100 ppm/K	
Resolution	14 bit	
Sampling rate	up to 100/s (a moving average filter with a width of 10 samples is applied internal)	
Test voltage	3 kV AC, 50 Hz, 1 min.                      Input against Modbus/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 dangerous body currents <sup>2)</sup>	Protective Separation by reinforced insulation acc. to DIN EN 61010-1 up to 300 V AC/DC for overvoltage category II and contamination class 2 between input and Modbus/power supply	
Ambient temperature	Operation: -25 °C to +70 °C (-13 to +158 °F)    Transport and storage: -40 °C to +85 °C (-40 to +185 °F)	
Power supply	24 V DC                      voltage range 16.8 V to 31.2 V DC,                      max. 1.3 W	
EMC <sup>3)</sup>	EN 61326-1	
Construction	6.2 mm (0.244") housing, protection type: IP 20, mounting on 35 mm DIN rail acc. to EN 60715	
Weight	Approx. 70 g	

1) Average TC related to full scale 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!

## Terminal assignments

1	+ Transmitter Supply Tx	
2	+ Input U	
3	+ Input I	
4	- Input GND	
5	Modbus A	(connected to In-Rail-Bus A)
6	Modbus B	(connected to In-Rail-Bus B)
7	+ Power supply	(connected to In-Rail-Bus D)
8	- Power supply	(connected to In-Rail-Bus C)

## Connection

Captive plus-minus clamp screws  
Wire cross-section 0.5 ... 2.5 mm<sup>2</sup> / AWG 20-14  
Stripped length 8 mm / 0.3 in  
Screw terminal torque 0.6 Nm / 5 lbf in  
Optional power connection via In-Rail-Bus (see accessories)

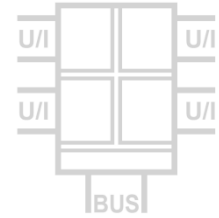
## Product line

Device	Order No.
Modbus Standard Signal AI Module	DMB 96100 B

# 4 Channel AI Module

## DMB 96200

4 Fully Isolated Analog Inputs, Modbus RTU



The Modbus 4 Channel AI Module provides four fully isolated, independently configurable inputs. Each input can be configured as either a current input or a voltage input. Various filter functions can be used to suppress interferences.

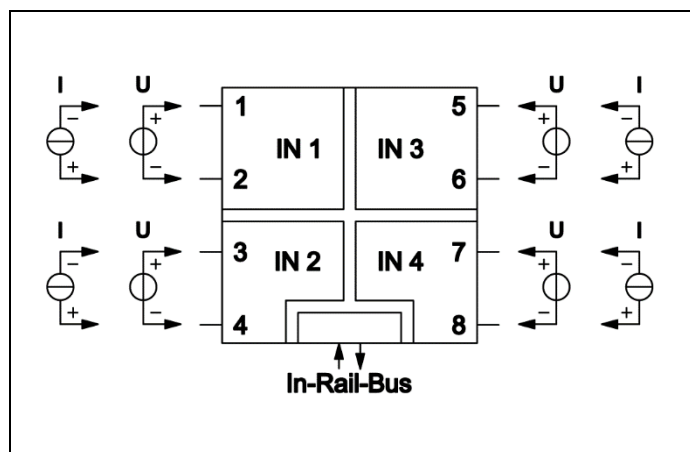
All parameters can be set via the Modbus RTU interface and via a programming socket behind the front panel. A free PC configuration software also offers extended setting options and extensive diagnostic functions during operation. A subset of the most common settings is also available via DIP switches.

The 5 port isolation ensures reliable decoupling of the inputs from each other and from the processing circuit and the power supply. Power supply and Modbus RTU are connected via the rear-mounted In-Rail-Bus connection (see Accessories).



- **Acquisition of 4 industrial standard signals**  
individually configurable as current or voltage input
- **4 galvanic isolated inputs**  
protection against erroneous measurements due to parasitic voltages or ground loops
- **Protective 5 port separation up to 300 V AC/DC**  
Test voltage 3 kV
- **Fast signal acquisition**  
high measuring rate, short processing times
- **In-Rail-Bus connector for Modbus and Power Supply**  
allows fast and economical installation
- **Freely scalable**  
up to 247 DRAGO Module in one Modbus segment
- **Extremely slim design**  
6.2 mm slim housing for a simple and space saving DIN rail mounting
- **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

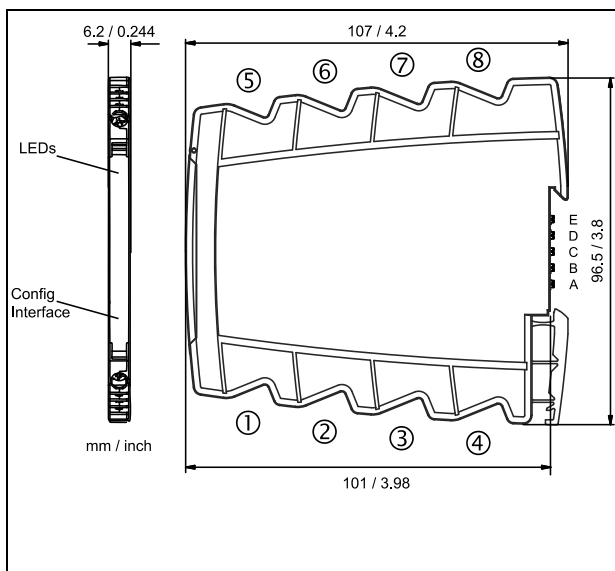
Input	Voltage	Current
Input signal	0 to 10 V 4 channels, common selectable via DIP switch, individual configurable by software	0 to 20 mA
Input resistance	≥ 100 kΩ	≤ 25 Ω
Overload	≤ 30 V	≤ 100 mA
Modbus		
Protocol	Modbus RTU (RS485)	
Module addressing	1 to 247	
Baud rate	300, 600, 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200	
Configuration	Parity: Even, Odd, None 2 stop bits, None 1 stop bit	Response delay: 1 to 1000 ms
Connectivity	Up to 247 DRAGO Modbus devices without additional repeater (1/8 Load)	
General Data		
Measuring error	< 0.1 % full scale	
Temperature coefficient <sup>1)</sup>	< 100 ppm/K	
Resolution	14 bit	
Test voltage	3 kV AC, 50 Hz, 1 min. All channels against each other and against Modbus/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 dangerous body currents <sup>1)</sup>	Protective Separation by reinforced insulation acc. to DIN EN 61010-1 up to 300 V AC/DC for overvoltage category II and contamination class 2 between input and Modbus/power supply	
Ambient temperature	Operation: -25 °C to +70 °C (-13 to +158 °F) Transport and storage: -40 to 85 °C (-40 to +185 °F)	
Power supply	24 V DC	voltage range 16.8 V to 31.2 V DC, max. 1.0 W
EMC <sup>2)</sup>	EN 61326-1	
Construction	6.2 mm (0.244") housing, protection type: IP 20, mounting on 35 mm DIN rail acc. to EN 60715	
Weight	Approx. 70 g	

1) Average TC related to full scale value in specified operating temperature range, reference temperature  $23^\circ\text{C}$

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!

## Terminal assignments

1	+ U	- I	Channel 1
2	- U	+ I	
3	+ U	- I	Channel 2
4	- U	+ I	
5	+ U	- I	Channel 3
6	- U	+ I	
7	+ U	- I	Channel 4
8	- U	+ I	

A	Modbus A
B	Modbus B
C	- Power supply
D	+ Power supply

## Connection

Captive plus-minus clamp screws  
Wire cross-section  $0.5$  to  $2.5 \text{ mm}^2$  / AWG 20-14  
Stripped length  $8 \text{ mm}$  /  $0.3 \text{ in}$   
Screw terminal torque  $0.6 \text{ Nm}$  /  $5 \text{ lbf in}$   
Optional power connection via In-Rail-Bus (see accessories)

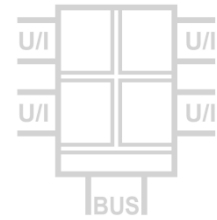
## Product line

Device	Order No.
Modbus 4 Channel AI Module	DMB 96200 B

# 4 Channel 2AI/2AO Module

## DMB 96400

4 Fully Isolated Analog I/O Channels, Modbus RTU



The Modbus 4 Channel Analog Module provides four fully isolated, independently configurable channels.

Two inputs can be configured as current or voltage inputs. In addition, these can be configured as digital inputs or digital outputs (open collector).

Two outputs can be configured as current or voltage outputs. In addition, these can be configured as digital outputs (active logic 0/10 V).

All parameters can be set via the Modbus RTU interface and via a programming socket behind the front panel. A free PC configuration software also offers extended setting options and extensive diagnostic functions during operation. A subset of the most common settings is also available via DIP switches.

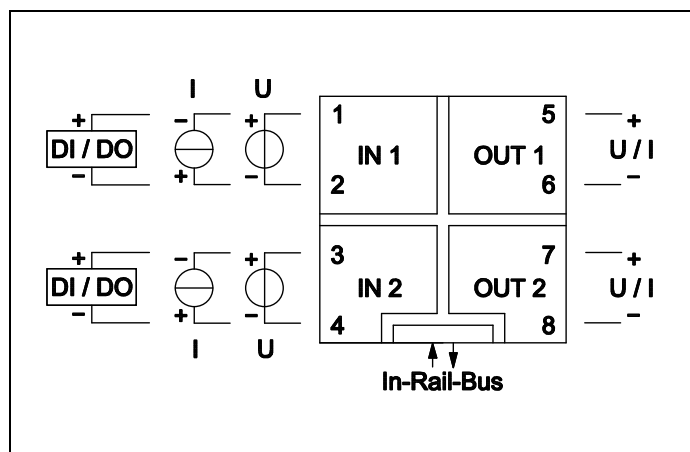
The 5 port isolation ensures reliable decoupling of the channels from each other and from the processing circuit and the power supply. Power supply and Modbus RTU are connected via the rear-mounted In-Rail-Bus connection (see Accessories).



- **Processing of 4 industrial standard signals**  
individually configurable as current or voltage signal
- **4 galvanic isolated I/O ports**  
protection against erroneous measurements due to parasitic voltages or ground loops
- **Protective 5 port separation up to 300 V AC/DC**  
Test voltage 3 kV
- **Fast signal acquisition**  
high measuring rate, short processing times
- **In-Rail-Bus connector for Modbus and Power Supply**  
allows fast and economical installation
- **Freely scalable**  
up to 247 DRAGO Module in one Modbus segment
- **Extremely slim design**  
6.2 mm slim housing for a simple and space saving DIN rail mounting
- **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



6mm

## Technical Data

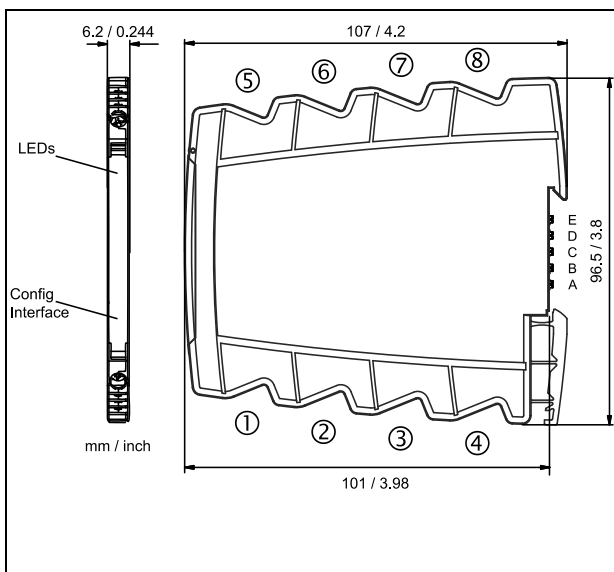
Input	Voltage	Current
Input signal	0 ... 10 V	0 ... 20 mA
Input resistance	≥ 100 kΩ	≤ 25 Ω
Overload	≤ 30 V	≤ 100 mA
Additional function	DI: 12/24 V (L < 2.0 V    H > 8.4 V) DO: Open collector switching output, ≤ 30 V / ≤ 100 mA (drop voltage < 2V)	
Output	Voltage	Current
Output signal	0 ... 10 V	0 ... 20 mA
	0 to 20 mA	
Load	≤ 5 mA (2 kΩ at 10 V)	≤ 12 V (600 Ω at 20 mA)
Residual ripple	< 10 mVrms	
Additional function	DO: active switching output 0/10 V	
Modbus		
Protocol	Modbus RTU (RS485)	
Module addressing	1 to 247	
Baud rate	300, 600, 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200	
Configuration	Parity: Even, Odd, None 2 stop bits, None 1 stop bit                      Response delay: 1 to 1000 ms	
Connectivity	Up to 247 DRAGO Modbus devices without additional repeater (1/8 Load)	
General Data		
Measuring error	< 0.1 % full scale	
Temperature coefficient <sup>1)</sup>	< 100 ppm/K	
Resolution	14 bit	
Test voltage	3 kV AC, 50 Hz, 1 min.      All channels against each other and against Modbus/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 dangerous body currents <sup>1)</sup>	Protective Separation by reinforced insulation acc. to DIN EN 61010-1 up to 300 V AC/DC for overvoltage category II and contamination class 2 between input and Modbus/power supply	
Ambient temperature	Operation: -25 °C to +70 °C (-13 to +158              Transport and storage: -40 to 85 °C (-40 to +185 °F) °F)	
Power supply	24 V DC	voltage range 16.8 V to 31.2 V DC,              max. 1.0 W
EMC <sup>2)</sup>	EN 61326-1	
Construction	6.2 mm (0.244") housing, protection type: IP 20, mounting on 35 mm DIN rail acc. to EN 60715	
Weight	Approx. 70 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

1	+ U	- I	Input 1
2	- U	+ I	
3	+ U	- I	Input 2
4	- U	+ I	
5	+ U	+ I	Output 1
6	- U	- I	
7	+ U	+ I	Output 2
8	- U	- I	
A	Modbus A		
B	Modbus B		
C	-	Power supply	
D	+	Power supply	

## Connection

Captive plus-minus clamp screws  
Wire cross-section 0.5 to 2.5 mm<sup>2</sup> / AWG 20-14  
Stripped length 8 mm / 0.3 in  
Screw terminal torque 0.6 Nm / 5 lbf in  
Optional power connection via In-Rail-Bus (see accessories)

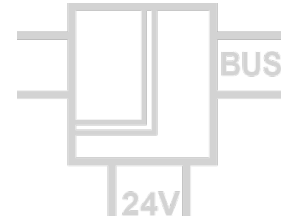
## Product line

Device	Order No.
Modbus 4 Channel 2AI/2AO Module	DMB 96400 B

Subject to change!

# Universal AI/DI Module DMB 96500

Universal Measuring Input, Modbus RTU



The Modbus Universal AI/DI Module is intended to be used with a wide range of industrial sensors.

All parameters can be set via the Modbus RTU interface and via a programming socket behind the front panel. A free PC configuration software also offers extended setting options and extensive diagnostic functions during operation. A subset of the most common settings is also available via DIP switches.

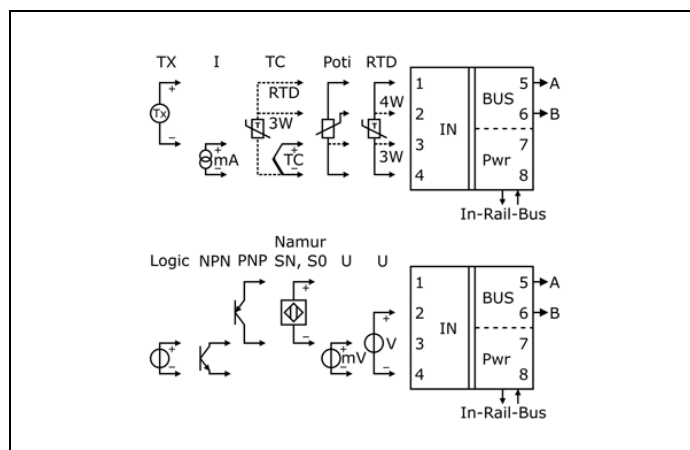
The measuring value can be read over the Modbus RTU (RS485) interface.

The 2-way isolation guarantees reliable decoupling of the sensor circuit from the Processing circuit and the auxiliary power circuit. Auxiliary power and Modbus RTU can be connected via the connection terminals or via the In-Rail-Bus connector (see accessories).



- **High performance measuring input for all industrial sensors:**  
Pt, Ni, TC, KTY, mA, V, mV,  $\Omega$ , Pot, Hz, PWM
- **Uni-/Bipolar and TRMS capture**  
of current and voltage
- **Easy configurable**  
by DIP switch or USB interface
- **15 programmable user-specific settings**  
directly selectable via DIP switches
- **Freely scalable**  
up to 247 DRAGO modules in one Modbus segment
- **Protective Separation up to 300 V AC/DC**  
test voltage 3 kV
- **Highest accuracy**  
measuring resolution up to 24 bit
- **In-Rail-Bus Connector for Modbus and Power Supply**  
allows fast and economical installation
- **Extremely slim**  
only 6.2 mm installation width
- **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 / input signal	Measuring error	TC <sup>1)</sup>	Sensor / input signal	Measuring error	TC <sup>1)</sup>
Pt100, Pt1000, JPt100	0.1 K + 0.05 % m.v.	0.02 K/°C	Ni100, Ni120, Ni200	0.1 K + 0.05 % m.v.	0.02 K/°C
Pt200	0.3 K + 0.05 % m.v.	0.02 K/°C	Ni500	0.5 K + 0.05 % m.v.	0.02 K/°C
Pt500, Pt2000, Pt1000 (IEC 60751), JPt50	0.2 K + 0.05 % m.v.	0.02 K/°C	Ni1000	0.25 K + 0.05 % m.v.	0.02 K/°C
KTY (66 types)	0.1 K + 0.05 % m.v.	0.02 K/°C			
Measuring rate Pt, Ni, KTY	4 /s				
Resistor / Pot 500Ω, 5kΩ, 20kΩ, 100kΩ	0.05 % full scale		100 ppm/K		
Measuring rate Resistor / Pot	25 /s				
Connection /Sensor current /Cable resistance	2-, 3-, 4-wire / 0.2 mA, 10 μA / < 100 Ω, programmable for 2-wire				
TC sensor type A, C, D, R, S	0.5 K + 0.08 % m.v.	0.1 K/°C			
TC sensor type B	0.5 K + 0.08 % m.v.	0.15 K/°C			
TC sensor type E, J, K, L, N, T, U	0.5 K + 0.08 % m.v.	0.05 K/°C			
Measuring rate	4 /s				
Cold junction compensation	internal, external Pt100 / PT1000, programmable, uncompensated				
Current ±1 mA, ±20 mA, ±100 mA	0.05 % full scale	100 ppm/K			
Voltage ±1 V, ±10 V, ±100 V, ±300 V	0.05 % full scale	100 ppm/K			
mV-Shunt ±50 mV, ±100 mV, ±500 mV	0.05 % full scale	100 ppm/K			
Measuring rate Current / Voltage	100 /s				
Input resistance	Voltage: > 100 kΩ, Current: < 55 Ω				
Measuring modes	DC, Average, RMS	Additional measuring error in RMS mode (40 Hz to 500 Hz): 2 % m.v.			
Frequency ≤ 1 Hz to ≤ 200 kHz	0.1 % full scale	100 ppm/K			
PWM ≤ 1 Hz to ≤ 10 kHz (1 to 99 %)	0.1 % full scale	100 ppm/K			
Input signal	NAMUR, SN, NPN, PNP, Push-Pull, SO-Switch type B				
Push-Pull level /NPN pullup /PNP pulldown	3.3 to 5 V / 3.2 kΩ / 11 kΩ, always active				
Modbus					
Protocol	Modbus RTU (RS485)				
Module addressing	1 to 247				
Baud rate	300, 600, 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200				
Configuration	Parity: Even, Odd, None 2 stop bits, None 1 stop bit	Response delay: 1 to 1000 ms			
Connectivity	Up to 247 DRAGO Modbus devices without additional repeater (1/8 Load)				
General Data					
Test voltage	3 kV AC, 50 Hz, 1 min., Input against Modbus/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 dangerous body currents <sup>2)</sup>	Protective Separation by reinforced insulation acc. to EN 61010-1 up to 300 V AC/DC for overvoltage category II and contamination class 2 between input and Modbus/power supply.				
Ambient temperature	Operation: -25 °C to +70 °C	Transport and storage: -40 °C to +85 °C			
Power supply	24 V DC	Voltage range 16.8 V to 31.2 V DC, max. 1.3 W			
EMC <sup>3)</sup>	EN 61326-1				
Construction	6.2 mm (0.244") housing, protection type: IP 20, mounting on 35 mm DIN rail acc. to EN 60715				
Weight	Approx. 70 g				

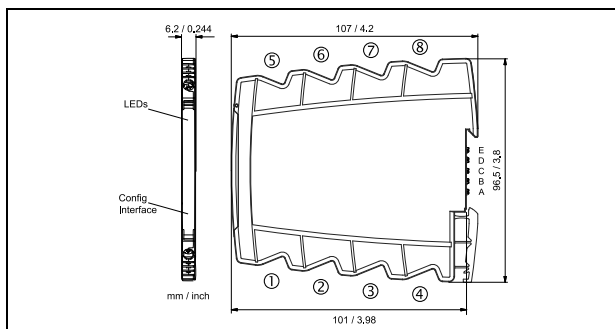
1) Average TC in specified operating temperature range, given in units of display error [K] per change in ambient temperature [°C]

Subject to change!

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

1	RTD / R / Pot / TX+ / NAMUR+	
2	RTD / R / Pot / U+	
3	RTD / R / Pot / TX- / I+ / TC+	
4	RTD / R / Pot / U- / I- / TC-	
5	Modbus A	(connected to In-Rail-Bus A)
6	Modbus B	(connected to In-Rail-Bus B)
7	+ Power supply	(connected to In-Rail-Bus D)
8	- Power supply	(connected to In-Rail-Bus C)

### Connection

Captive plus-minus clamp screws  
Wire cross-section 0.5 ... 2.5 mm<sup>2</sup> / AWG 20-14  
Stripped length 8 mm / 0.3 in  
Screw terminal torque 0.6 Nm / 5 lbf in  
Optional power connection via In-Rail-Bus (see accessories)

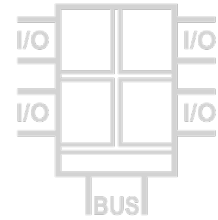
### Product line

Device	Order No.
Modbus Universal AI/DI Module	DMB 96500 B



# 4 Channel DI/DO Module DMB 96700

4 independent controllable digital I/O channels, Modbus RTU



The Modbus 4-channel DI/DO module provides four independently configurable inputs/outputs. The inputs can be used either as a binary, frequency or counter input with three selectable input levels. The open collector outputs are usable as binary, frequency, pulse or PWM outputs. Various time functions can be used to set the switching behaviour.

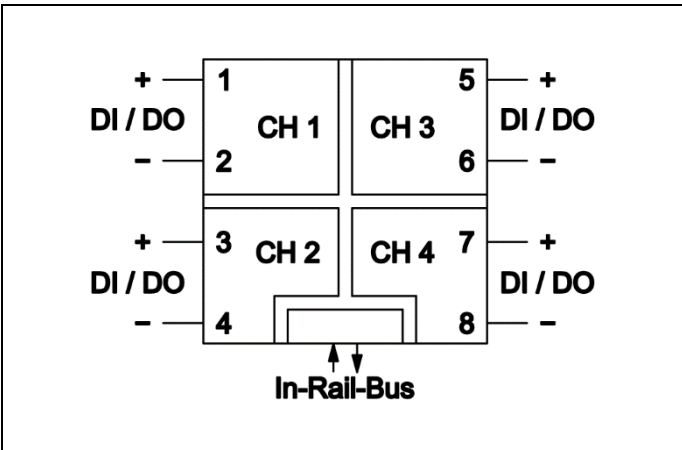
All parameters can be set via the Modbus RTU interface and via a programming socket behind the front panel. A free PC configuration software also offers extended setting options and extensive diagnostic functions during operation. A subset of the most common settings is also available via DIP switches.

The 5 port isolation ensures reliable decoupling of the inputs/outputs from each other and from the processing circuit and the power supply. Power supply and Modbus RTU are connected via the rear-mounted In-Rail-Bus connection (see Accessories).

- **4 independent controllable Channels**  
programmable as digital input or output
- **Extensive programmable operating functions**  
programmable switch-ON and switch-OFF behavior
- **Protective 5 port separation up to 300 V AC/DC**  
test voltage 3 kV
- **Status indication**  
indication of operation status for each I/O channel
- **In-Rail-Bus Connector for Modbus and Power Supply**  
allows fast and economical installation
- **Freely scalable**  
up to 247 DRAGO modules in one Modbus segment
- **Extremely slim design**  
6.2 mm slim housing for a simple and space saving DIN rail mounting
- **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







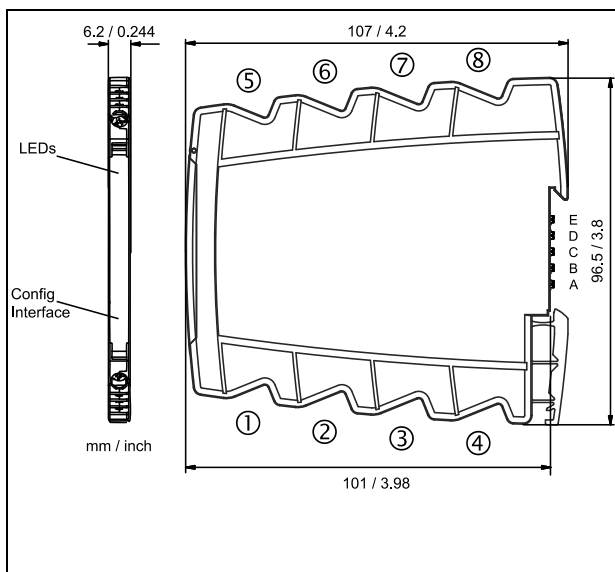
## Technical Data

Input		
Input level	5 V, 12 V, 24 V	Input resistance: 4 kΩ
Input voltage	< 32 V DC	
Functions	Binary Frequency: 0.1 Hz to 1 kHz Counter: 16 / 32 Bit	Min. pulse width: 0.5 ms
Output		
Output type	Open collector	
Max. voltage / current	32 V DC, 100 mA	
Residual voltage	< 1.5 V DC	
Functions	Binary Frequency: 0.1 Hz to 1 kHz Pulse: 1 to 60000 /min PWM: 10 to 90 %	Min. pulse width: min. 0.3 ms , programmable Basic frequency: 500 Hz
Modbus		
Protocol	Modbus RTU (RS485)	
Module addressing	1 to 247	
Baud rate	300, 600, 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200	
Configuration	Parity: Even, Odd, None 2 stop bits, None 1 stop bit	Response delay: 1 to 1000 ms
Connectivity	Up to 247 DRAGO Modbus devices without additional repeater (1/8 Load)	
General Data		
Indication	Yellow LED for each channel on front panel	
Test voltage	3 kV AC, 50 Hz, 1 min. All channels against each other and against Modbus/power supply	
Protection against dangerous body currents <sup>1)</sup>	Protective Separation by reinforced insulation acc. to DIN EN 61010-1 up to 300 V AC/DC for overvoltage category II and contamination class 2 between input and Modbus/power supply	
Ambient temperature	Operation: -25 °C to +70 °C (-13 to +158 °F) Transport and storage: -40 °C to +85 °C (-40 to +185 °F)	
Power supply	24 V DC	voltage range 16.8 V to 31.2 V DC, max. 0.5 W
EMC <sup>2)</sup>	EN 61326-1	
Construction	6.2 mm (0.244") housing, protection type: IP 20, mounting on 35 mm DIN rail acc. to EN 60715	
Weight	Approx. 70 g	

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

2) Minor deviations possible during interference

## Dimensions



Subject to change!

## Terminal assignments

- 1 + Channel 1
- 2 - Channel 1
- 3 + Channel 2
- 4 - Channel 2
- 5 + Channel 3
- 6 - Channel 3
- 7 + Channel 4
- 8 - Channel 4

- A Modbus A
- B Modbus B
- C - Power supply
- D + Power supply

## Connection

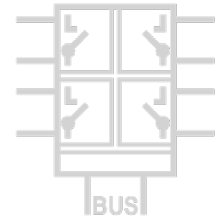
Captive plus-minus clamp screws  
Wire cross-section 0.5 ... 2.5 mm<sup>2</sup> / AWG 20-14  
Stripped length 8 mm / 0.3 in  
Screw terminal torque 0.6 Nm / 5 lbf in  
Optional power connection via In-Rail-Bus (see accessories)

## Product line

Device	Order No.
Modbus 4 Channel DI/DO Module	DMB 96700 B

# 4 Channel Relay Module DMB 96800

4 independent power relays, Modbus RTU



The Modbus 4-channel relay module can be used to switch four electrically isolated relays via a Modbus interface. Various time functions can be used to influence the switching behavior.

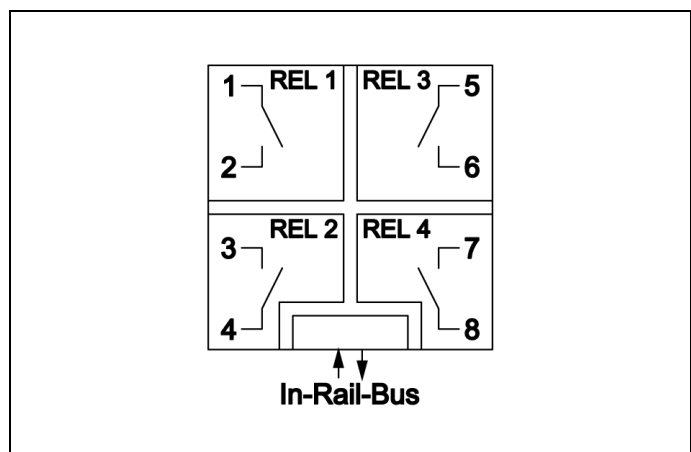
All parameters can be set via the Modbus RTU interface and via a programming socket behind the front panel. A free PC configuration software also offers extended setting options and extensive diagnostic functions during operation. A subset of the most common settings is also available via DIP switches.

The 5 port isolation guarantees reliable decoupling of the outputs from each other and from the processing circuit and the auxiliary power circuit. Power supply and Modbus RTU are connected via the rear-mounted In-Rail-Bus connection (see Accessories).



- **4 independent power relays**  
250 V AC / 30 V DC / 2 A
- **Extensive programmable operating functions**  
programmable switch-ON and switch-OFF behavior
- **Protective 5-way separation up to 300 V AC/DC**  
Test voltage 3 kV
- **Status indication**  
indication of operation status for each relay
- **In-Rail-Bus Connector for Modbus and Power Supply**  
allows fast and economical installation
- **Freely scalable**  
up to 247 DRAGO modules in one Modbus segment
- **Extremely slim design**  
6.2 mm slim housing for a simple and space saving DIN rail mounting
- **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





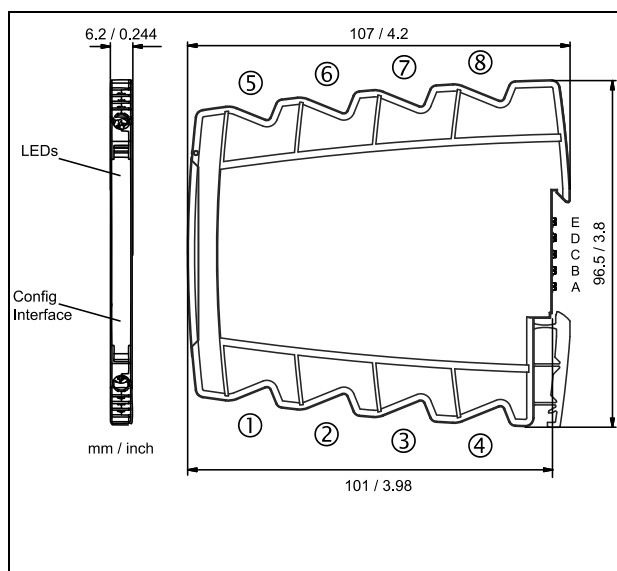
## Technical Data

<b>Output</b>	
Relay 1, 2, 3, 4	250 V AC / 30 V DC / 2 A
Indication	Yellow LED for each channel on front panel
<b>Modbus</b>	
Protocol	Modbus RTU (RS485)
Module addressing	1 to 247
Response delay	1 to 1000 ms
Baud rate	300, 600, 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200
Configuration	Parity: Even, Odd, None 2 stop bits, None 1 stop bit
Connectivity	Up to 247 DRAGO Modbus devices without additional repeater (1/8 Load)
Indication	Yellow LED on front panel
<b>General Data</b>	
Test voltage	3 kV AC, 50 Hz, 1 Min. All relays against each other and against Modbus/power supply
Protection against dangerous body currents <sup>1)</sup>	Protective Separation by reinforced insulation acc. to DIN EN 61010-1 up to 300 V AC/DC for overvoltage category II and contamination class 2 between input and Modbus/power supply
Ambient temperature	Operation: -25 °C to +70 °C (-13 to +158 °F) Transport and storage: -40 °C to +85 °C (-40 to +185 °F)
Power supply	24 V DC Voltage range 16.8 V to 31.2 V DC, max. 0.7 W
EMC <sup>2)</sup>	EN 61326-1
Construction	6.2 mm (0.244") housing, protection type: IP 20, mounting on 35 mm DIN rail acc. to EN 60715
Weight	Approx. 70 g

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

2) Minor deviations possible during interference

## Dimensions



Subject to change!

## Terminal assignments

1	Relay 1
2	Relay 1
3	Relay 2
4	Relay 2
5	Relay 3
6	Relay 3
7	Relay 4
8	Relay 4
A	Modbus A
B	Modbus B
C	– Power supply
D	+ Power supply

## Connection

Captive plus-minus clamp screws  
 Wire cross-section 0.5 ... 2.5 mm<sup>2</sup> / AWG 20-14  
 Stripped length 8 mm / 0.3 in  
 Screw terminal torque 0.6 Nm / 5 lbf in  
 Optional power connection via In-Rail-Bus (see accessories)

## Product line

Device	Order No.
Modbus 4 Channel Relay Module	DMB 96800 B





## Software

DRAGO offers PC software for the control and programming (parameterization) of DRAGO devices. With the program **DRAGOModbus**, you control and manage your devices from our Modbus series, with **DRAGOset** you set measuring transducer, amplifiers and functional signal converters.



### DRAGOModbus

Modbus programming and diagnostic program

#### Program functions

- Program for programming DRAGO Modbus devices
- Functions for device diagnostic
- Clear setting of all device properties
- Programming even with installed devices
- Wiring instructions depending on your settings
- Optionally via front interface, Modbus RTU or Modbus TCP (gateway required)

#### System requirements

- Windows 10, 64-Bit
- USB connection for interface cable DZU 1201 or USB/RS485 converter



### DRAGOset

Programming and diagnostics program

#### Program functions

- One program for programming and diagnostic functions for all digitally adjustable DRAGO devices with interface
- Clear setting of all device features
- Quickly distribute your specific factory setting
- Programming without additional equipment cabling
- Diagnostic functions of the device and the integration into your system
- Documentation of your measuring point
- Tips for wiring depending on your settings

#### System requirements

- PC with Windows XP, Vista, 7, Windows 8.1 or Windows 10
- USB interface for interface cable DZU 1201



## In-Rail-Bus



### DZU 1401 / DZU 1402

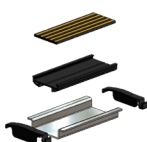
Power terminal for installations with In-Rail-Bus system

The 6.2 mm wide Power Terminals DZU 1401 and DZU 1402 are used for supplying the In-Rail-Bus DIN rail connector with supply voltage up to 32 V DC.

The Power Terminal DZU1401 for standard applications with 4.5 A output current is able to power up to 120 signal converter.

The Power Terminal DZU1402 with two separate and reverse polarity protected voltage inputs allow a redundant voltage supply and a maximum current of 3 A. The status of the power supply of both voltage inputs will be displayed each by a LED on front. A green LED lights up when there is supply voltage on the voltage input. A red LED indicates reversed polarity.

	DZU 1401	DZU 1402
Supply voltage	$\leq 32 \text{ V DC}$	$\leq 32 \text{ V DC}$
Input current	$\leq 4.5 \text{ A}$	$\leq 3 \text{ A}$
Recommended fuse	5 A Slow-blow	3.15 A Slow-blow
Drop voltage	$\leq 0.2 \text{ V}$	$\leq 0.5 \text{ V}$
Operating and fault indication	–	LED green / red
Feeding	2 inputs, directly coupled to In-Rail-Bus	2 redundant inputs, decoupled via diodes
Approvals	–	ATEX, IECEx, UL
Construction	6.2 x 96 x 107 mm	



### In-Rail-Bus Accessories

5-wire bus system for DIN rail

DIN rail profile and bus length, see table (Complete kit without DIN rail)

Description	Order No.		
Length	120 mm	250 mm	500 mm
In-Rail-Bus for DIN rail 35 x 7.5 mm	DZU 1410	DZU 1411	DZU 1412
In-Rail-Bus for DIN rail 35 x 15 mm	DZU 1420	DZU 1421	DZU 1422
Carrier rail cover	–	DZU 1431	–

Other lengths up to 500 mm on request



### DZU 1439

Safety caps right/left as a spare part  
(The kits includes safety caps)

Description	Order No.
Safety caps right/left	DZU 1439



## Accessories and spare parts



### DZU 1201

Programming interface for transmitters and Mod-bus devices

System Requirements

- PC with Windows XP, Vista or Windows 7, 8, 10
- USB interface



Description	Order No.
Programming interface for transmitters	DZU 1201



### DZU 0801

Cross-connector (2 pcs.) for looping through the power supply for up to 10 Tiny Snap, splittable



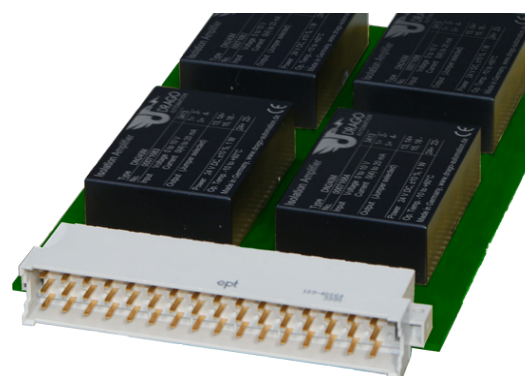
Description	Order No.
Cross-connectors (2 pcs.)	DZU 0801



### DZU 1120

Europa card for DN 240M, rack module for the construction of up to 4 channels

Settings using solder bridges



Description	Order No.
Europa card for DN 240M (without modules)	DZU 1120

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

- Comprehensive product range
- Customer-specific special solutions
- Individual consulting and support
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- Certification according to ISO9001
- 5 years warranty
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[www.drago-automation.de](http://www.drago-automation.de)