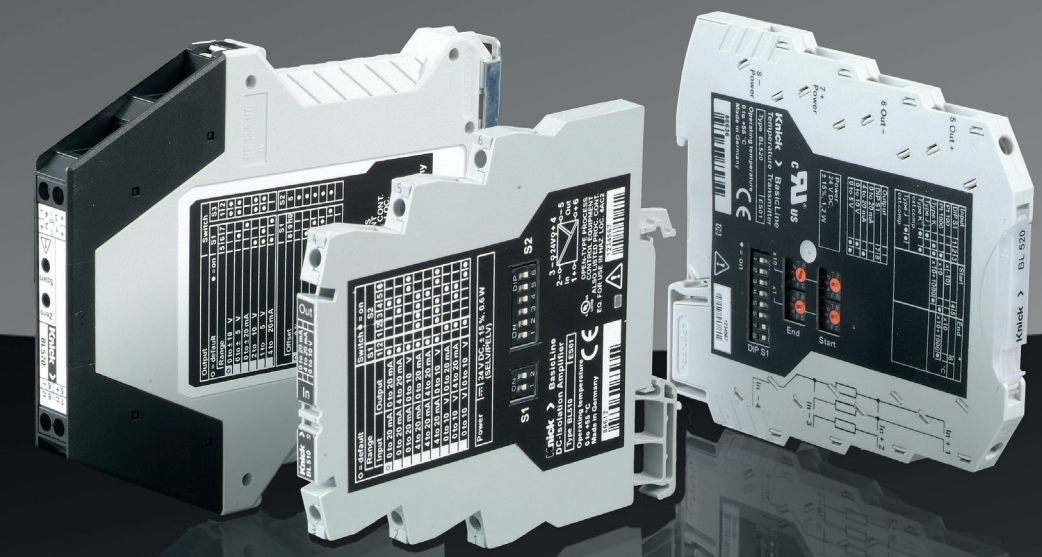
The Art of Measuring.

Knick

Product Overview

Interface Technology

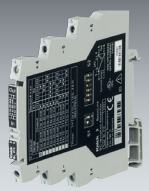


BasicLine

BasicLine – When "very good" is good enough.

Contents

Product Overview

				
	BasicLine BL 570 **Universal Isolators**	BasicLine BL 513 **Isolators for Standard Signals**	BasicLine BL 510 **Isolators for Standard Signals**	BasicLine BL 560 **Repeater Power Supplies**
Input	0 ... 20 mV / 200 V 0 ... 100 µA / 100 mA unipolar / bipolar	0 … 20 mA 4 … 20 mA 0 … 10 V	0 … 20 mA 4 … 20 mA 0 … 10 V	4 … 20 mA
Meas. error	< 0.25 % full scale	< 0.3 % full scale	<0.3 % full scale	< 0.25 % full scale
Test voltage	1.5 kV AC	1.5 kV AC	0.51 kV AC	0.51 kV AC
Working voltage	300 V AC/DC	300 V AC/DC	150 V AC/DC	150 V AC/DC
Power supply	24 V DC / 100 ... 230 V AC	24 V DC / 100 ... 230 V AC	24 V DC	24 V DC
Further functions	Calibrated range selection	Calibrated range selection	Calibrated range selection	Supply voltage 16.5 V
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	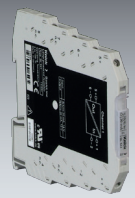			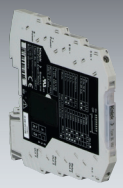
	BasicLine BL 541 / 542 **Loop-Powered Isolators for Standard Signals**	BasicLine BL 530 **Signal Doublers**	BasicLine BL 520 **Temperature Transmitters**	BasicLine BL 550 **Set-Point Alarm Relays**
Input	0 … 20 mA 4 … 20 mA (1 or 2 channels)	0 … 20 mA 4 … 20 mA	Resistance thermo-meters Pt100 / Pt1000 Thermocouples Type J and K	0 … 20 mA 4 … 20 mA 0 ... 10 V
Accuracy	< 0.2 % full scale	< 0.3 % full scale	< approx. 0.2 % full scale	Relay output: 1 changeover contact 240 V AC, 2 A
Test voltage	1.5 kV AC	1.5 kV AC	1.5 kV AC	1.5 kV AC
Working voltage	300 V AC/DC	300 V AC/DC	300 V AC/DC	50 V AC/DC
Power supply	Loop-powered	24 V DC	24 V DC	24 V DC
Further functions	Low voltage drop	2 outputs 0/4 ... 20 mA 4-port isolation, 2 x 400 / 800 ohms output load	Calibrated range selection, automatic recognition of 2-, 3-, 4-wire connection	Adjustable hysteresis and delay
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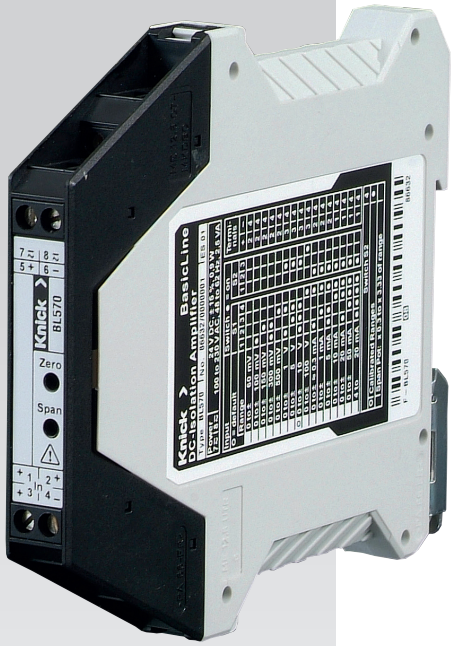
Universal Isolators



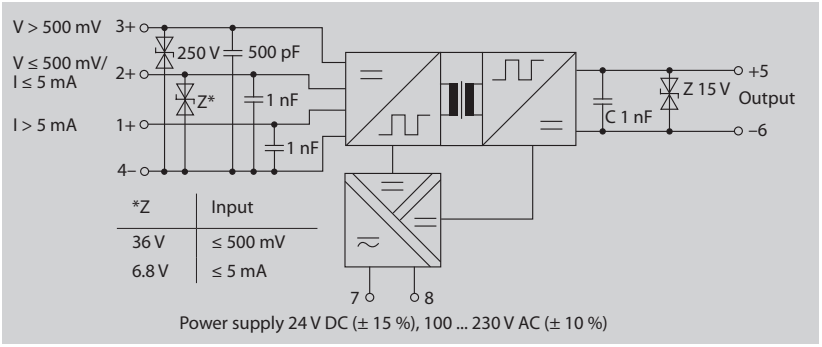
BasicLine BL 570

An isolator as versatile as its applications

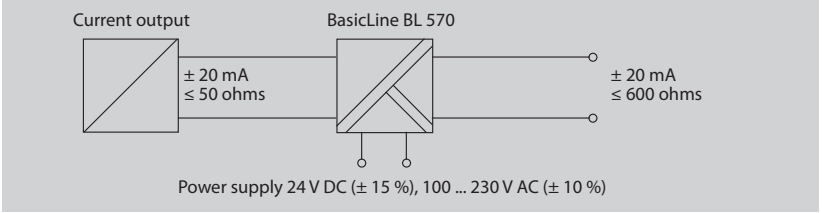
Facts

- Universal DC voltage and current measurement
- 480 switchable calibrated ranges without readjustment
- Voltage range anywhere between ± 20 mV and ± 200 V, individually adjustable
- Currents up to 100 mA are measured directly; higher currents via external shunt resistor
- Adjustable range offset
- Universal power adapter for 24 V DC supply or 100 ... 230 V mains supply
- 3-port isolation protects against incorrect measurements or damage
- Maximum reliability
- CE compliant and UL approved
- 3-year warranty
- Perfect price-performance ratio

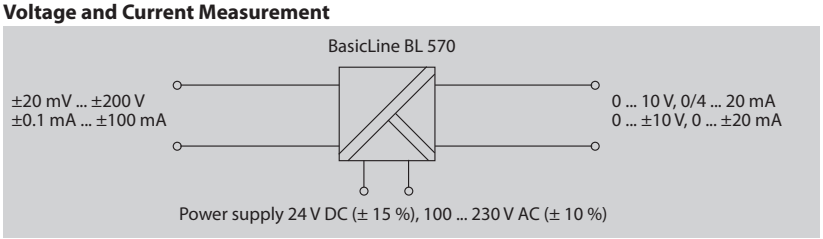
Block Diagram



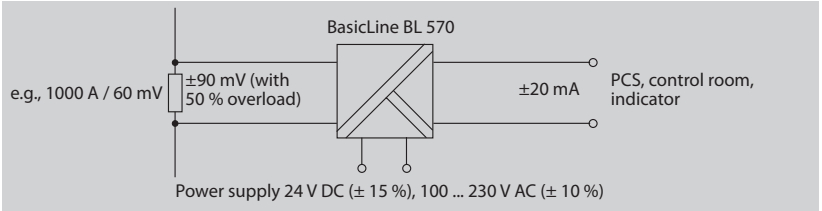
Electrical Isolation



Voltage and Current Measurement



Simple Current Measurement



Input ranges	Output	Power supply
(±) 20 mV …(±) 200 V (±) 100 µA … (±) 100 mA	0 ... 20 mA / 0 ... 5 V / 0 ... 10 V ± 20 mA / ± 5 V / ± 10 V 4 ... 20 mA, 1 ... 5 V ; 2 ... 10 V	24 V DC or 100 ... 230 V AC mains supply

Product Line

Device	Input	Output	Order No.
BasicLine BL 570 Input and output adjustable	0 … ±20 mV/200 V 0 … ±0.1 mA/100 mA	0 … 20 mA, 4 … 20 mA 0 … 10 V, 0 … ±10 V 0 … ±20 mA	**BL 570**

Accessories		Download
BasicSoft SW 113	Adjustment tool for the BasicLine BL 570 universal isolator	**www.knick-international.com**

Specifications

Input

Voltage	(±) 20 mV ... (±) 200 V		
	Calibrated steps	60 mV, 100 mV, 150 mV, 300 mV, 500 mV, 1 V, 5 V, 10 V, 100 V, uni-/bipolar	
Current	(±) 0.1 mA ... (±)100 mA		
	Calibrated steps	1 mA, 5 mA, 10 mA, 20 mA, 50 mA, uni-/bipolar and 4 … 20 mA[1]	
Input resistance	Current input	≤ 5 mA	approx. 100 ohms
		> 5 mA	approx. 5 ohms
	Voltage input		approx. 1 Mohm
Overload capacity	Current input	≤ 5 mA	≤ 60 mA
		> 5 mA	≤ 300 mA
	Voltage input	≤ 500 mV	Suppressor diode 36 V, ≤ 20 mA
		> 500 mV	Suppressor diode 250 V, ≤ 3 mA

Output

Ranges	0…20 mA / 0…5 V / 0…10 V, ±20 mA / ±5 V / ±10 V / 4...20 mA, 1...5 V ; 2...10 V, calibrated switching	
Offset	–100 %, –50 %, 0 %, 50 %, 100 % output span, calibrated	
Load	Output current	≤ 12 V (600 ohms at 20 mA)
	Output voltage	≤ 10 mA (1 kohm at 10 V)
Residual ripple	< 10 mV_{rms}	

Transmission behavior

ZERO pot	± 25 % output span adjustable
SPAN pot	0.33 … 3.30 x final value of input range (max. V_{in} = 200 V)
Gain error	< 0.25 % full scale (DC)
Cutoff frequency	> 100 Hz
Temperature coefficient[2]	< 0.005 %/K full scale

Power supply

Power supply	24 V DC (± 15%); 0.9 W / 100 ... 230 V AC (± 10%), 48 ... 62 Hz, 2.5 VA

Isolation

Galvanic isolation	3-port isolation between input, output and power supply
Test voltage	1.5 kV AC
Working voltage	300 V AC/DC (basic insulation) with overvoltage category II / pollution degree 2 according to EN 61010-1.

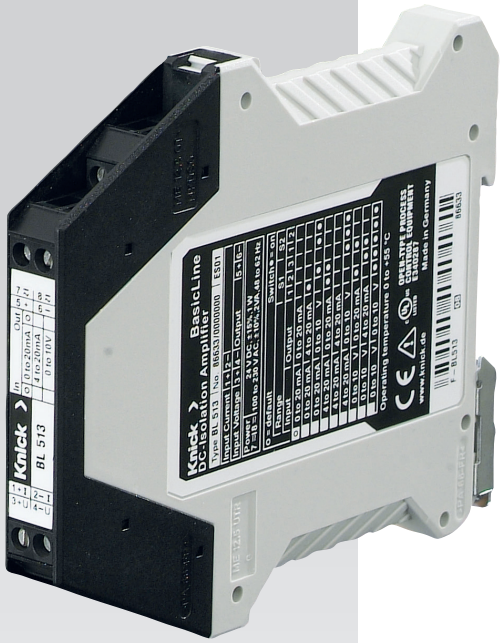
Standards and approvals

Conformity	CE compliant
EMC [3]	Product standard EN 61326
Approval	UL Listed, File No. E340287, Standard: UL 61010-1 and CAN/CSA C22.2 No. 61010-1

Further data

Ambient conditions	Stationary operation, weatherproof, relative humidity 5 ... 95 %, no condensation, max. altitude 2000 m, water or wind-driven precipitation (rain, hail, snow) excluded	
Ambient temperature	Operation: 0 ... +55 °C	Transport, storage: –25 ... +85 °C
Housing	Modular housing, screw terminals, IP 20 protection	
Mounting	35-mm mounting rail, EN 60715	
Dimensions	12.5 mm x 111 mm x 99 mm	
Wire cross-section	Max. 2.5 mm^2, 24-14 AWG	
Weight	Approx. 150 g	

1) 4 ... 20 mA input: Offset switching not calibrated
2) Average TC in specified operating temperature range, reference temperature 23 °C
3) Slight deviations are possible while there is interference



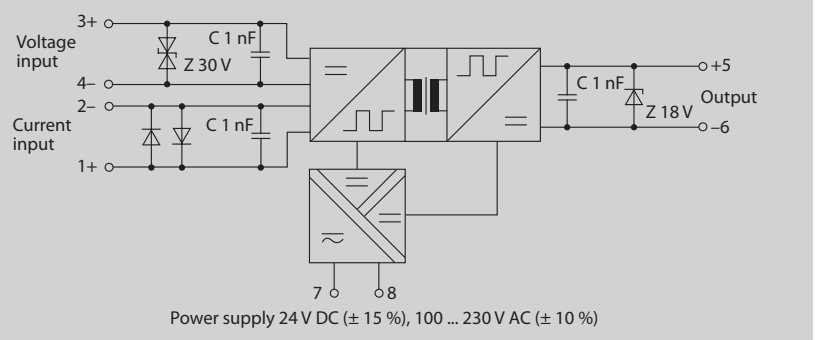
BasicLine BL 513

The mains-powered isolator for standard signals

Facts

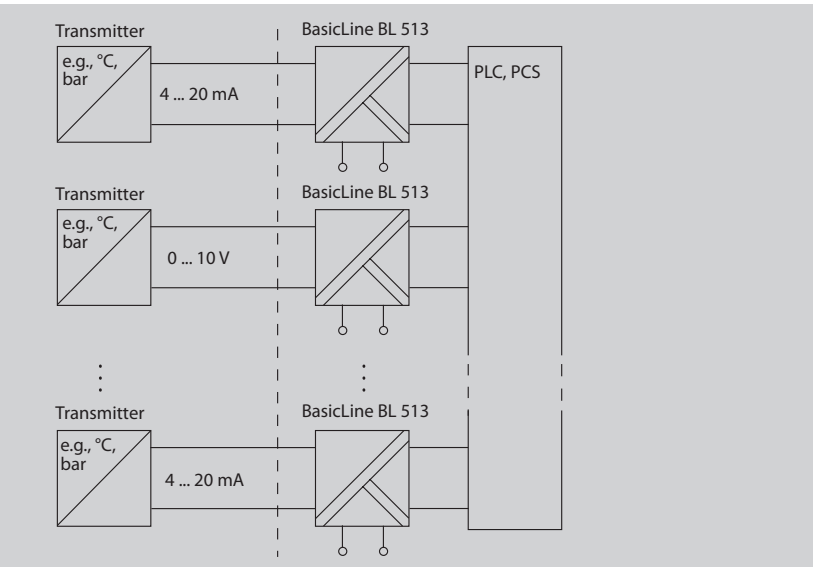
- Universal power adapter for 24 V DC supply or 100 ... 230 V mains supply
- Galvanic 3-port isolation prevents measurement errors
- Exemplary signal transmission for standard applications
- Conversion of one standard signal to another one, as required
- Calibrated range selection without complicated manual adjustments
- Easy configuration using DIP switches – protected against accidental adjustment
- CE compliant and UL approved
- 3-year warranty
- Perfect price-performance ratio

Block Diagram

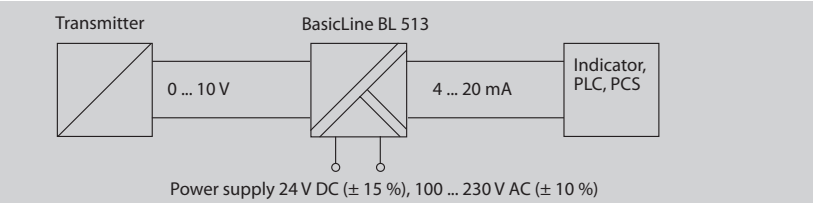


Power supply 24 V DC (± 15 %), 100 ... 230 V AC (± 10 %)

Reliable Measurement due to Galvanic Isolation Between Field Level and Control Level



Signal Conversion, e.g. Voltage to Current, for Interference-Free Transmission over Long Distances



Power supply 24 V DC (± 15 %), 100 ... 230 V AC (± 10 %)

Input ranges	Output	Power supply
0 … 20 mA	0 … 20 mA	24 V DC or
4 ... 20 mA	4 ... 20 mA	100 ... 230 V AC mains supply
0 ... 10 V	0 ... 10 V	

Product Line

Device	Input	Output	Order No.
BasicLine BL 513 with calibrated switching of input and output	0 … 20 mA 4 … 20 mA 0 ... 10 V	0 … 20 mA 4 … 20 mA 0 … 10 V	**BL 513**

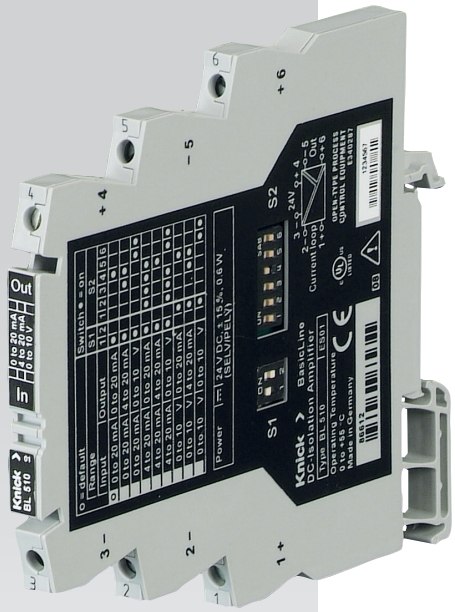
Specifications

Input		
Voltage	0 ... 20 mA, 4 ... 20 mA, 0 ... 10 V calibrated switching	
Input resistance	Current input	Approx. 500 mV at 20 mA
	Voltage input	Approx. 1 Mohm
Overload capacity	Current input	≤ 300 mA
	Voltage input	Suppressor diode 30 V, max. 20 mA
Output		
Outputs	0 ... 20 mA, 4 ... 20 mA, 0 ... 10 V calibrated switching	
Load	Output current	≤ 10 V (500 ohms at 20 mA)
	Output voltage	≤ 10 mA (1 kohm at 10 V)
Residual ripple	< 20 mV_{rms}	
Transmission behavior		
Gain error	< 0.3 % full scale (DC)	
Cutoff frequency	> 100 Hz	
Temperature coefficient[1)]	0.015 %/K full scale	
Power supply		
Power supply	24 V DC (± 15%); 1 W 100 ... 230 V AC (± 10%), 48 ... 62 Hz, 2 VA	
Isolation		
Galvanic isolation	3-port isolation between input, output and power supply	
Test voltage	1.5 kV AC	
Working voltage	300 V AC/DC (basic insulation) with overvoltage category II / pollution degree 2 according to EN 61010-1	
Standards and approvals		
Conformity	CE compliant	
EMC [2)]	Product family standard: EN 61326	
Approval	UL Listed, File No. E340287, Standard: UL 61010-1 and CAN/CSA C22.2 No. 61010-1	
Further data		
Ambient conditions	Stationary operation, weatherproof, relative humidity 5 ... 95 %, no condensation, max. altitude 2000 m, water or wind-driven precipitation (rain, hail, snow) excluded	
Ambient temperature	Operation: 0 ... +55 °C	Transport, storage: –25 ... +85 °C
Housing	Modular housing, screw terminals, IP 20 protection	
Mounting	35-mm mounting rail, EN 60715	
Dimensions	12.5 mm x 111 mm x 99 mm	
Wire cross-section	Max. 2.5 mm^2, 24-14 AWG	
Weight	Approx. 150 g	

1) Average TC in specified operating temperature range, reference temperature 23 °C

2) Slight deviations are possible while there is interference

Isolators for Standard Signals



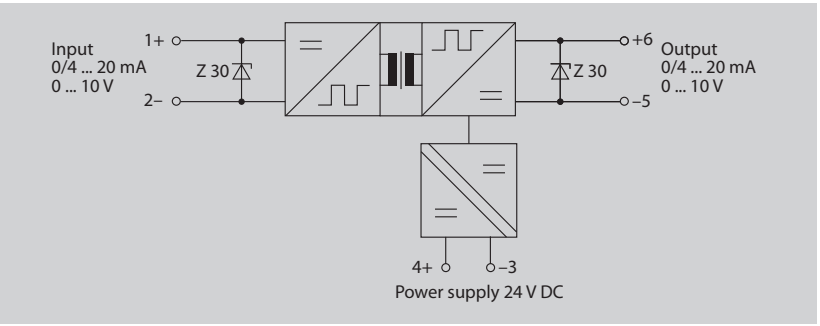
BasicLine BL 510

The compact isolator for standard signals

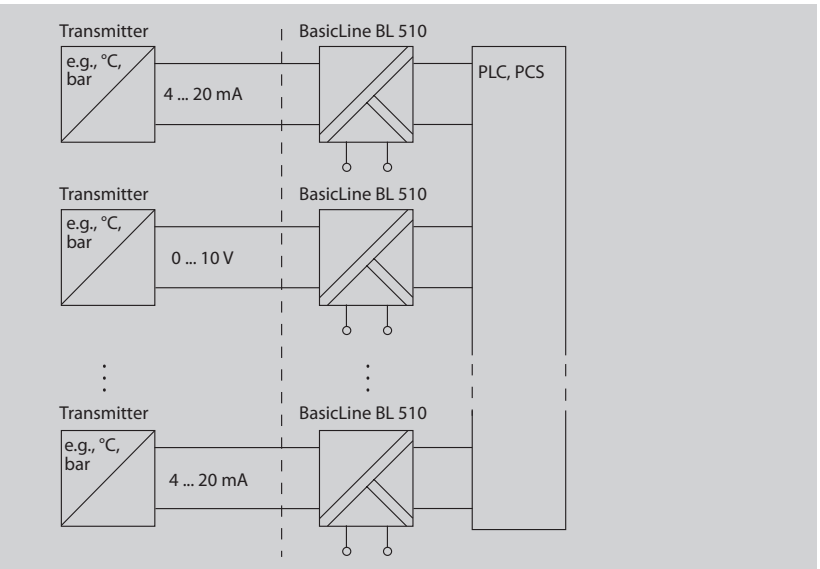
Facts

- Straightforward galvanic isolation in standard applications
- Conversion of one standard signal to another one, as required
- Galvanic 3-port isolation prevents measurement errors
- 6-mm housing requires minimal space
- Long service life, in particular due to its low power dissipation
- Calibrated range selection without complicated manual adjustments
- Easy configuration using DIP switches accessible from the outside
- CE compliant and UL approved
- 3-year warranty
- Perfect price-performance ratio

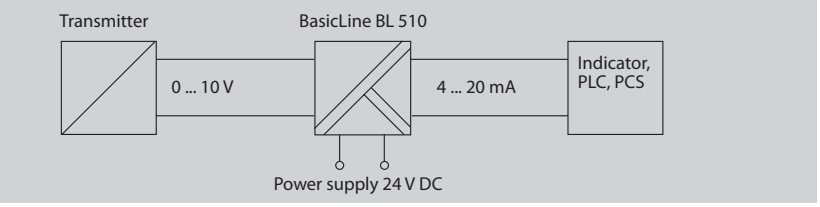
Block Diagram



Reliable Measurement due to Galvanic Isolation Between Field Level and Control Level



Signal Conversion, e.g. Voltage to Current, for Interference-Free Transmission over Long Distances



Input ranges	Output	Power supply
0 … 20 mA	0 … 20 mA	24 V DC
4 ... 20 mA	4 ... 20 mA	
0 ... 10 V	0 ... 10 V	

Product Line

Device	Input	Output	Order No.
BasicLine BL 510 with calibrated switching of input and output	0 … 20 mA 4 … 20 mA 0 ... 10 V	0 … 20 mA 4 … 20 mA 0 … 10 V	**BL 510**

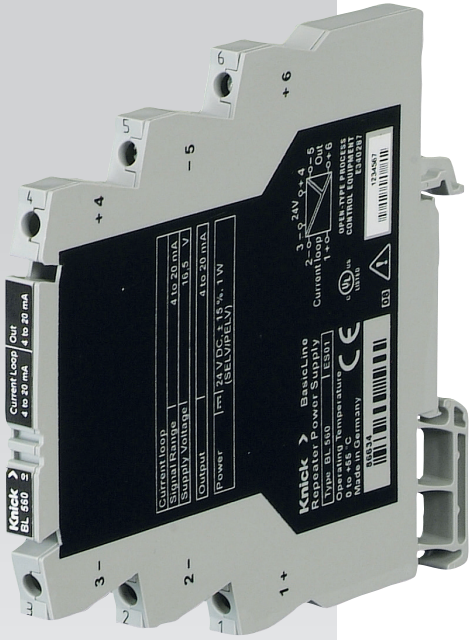
Specifications

Input		
Voltage	0 ... 20 mA, 4 ... 20 mA, 0 ... 10 V calibrated switching	
Resistance	Current input	< 0.1 V at 20 mA (< 5 ohms), open output or power failure: approx. 350 mV
	Voltage input	Approx. 100 kohms
Overload capacity	Current input	< 100 mA
	Voltage input	Suppressor diode 30 V, < 3 mA
Output		
Outputs	0 ... 20 mA, 4 ... 20 mA, 0 ... 10 V calibrated switching	
Load	Output current	≤ 10 V (≤ 500 ohms at 20 mA)
	Output voltage	≤1 mA (≥ 10 kohms at 10 V)
Residual ripple	< 10 mV_{rms}	
Transmission behavior		
Gain error	< 0.3 % full scale (DC) Additional error in live-zero operation 20 µA or 10 mV	
Cutoff frequency	> 100 Hz	
Temperature coefficient[1)]	0.01 %/K full scale	
Power supply		
Power supply	24 V DC (± 15%), 0.6 W	
Isolation		
Galvanic isolation	3-port isolation between input, output and power supply	
Test voltage	0.51 kV AC	
Working voltage	150 V AC/DC (basic insulation) with overvoltage category II / pollution degree 2 according to EN 61010-1	
Standards and approvals		
Conformity	CE compliant	
EMC [2)]	Product family standard: EN 61326	
Approval	UL Listed, File No. E340287, Standard: UL 61010-1 and CAN/CSA C22.2 No. 61010-1	
Further data		
Ambient conditions	Stationary operation, weatherproof, relative humidity 5 ... 95 %, no condensation, max. altitude 2000 m, water or wind-driven precipitation (rain, hail, snow) excluded	
Ambient temperature	Operation: 0 ... +55 °C	Transport, storage: -25 ... +85 °C
Housing	Modular housing, screw terminals, IP 20 protection	
Mounting	35-mm mounting rail, EN 60715	
Dimensions	6.1 mm x 98 mm x 88 mm	
Wire cross-section	Max. 2.5 mm^2, 24-14 AWG	
Weight	Approx. 50 g	

1) Average TC in specified operating temperature range, reference temperature 23 °C

2) Slight deviations are possible while there is interference

Repeater Power Supplies



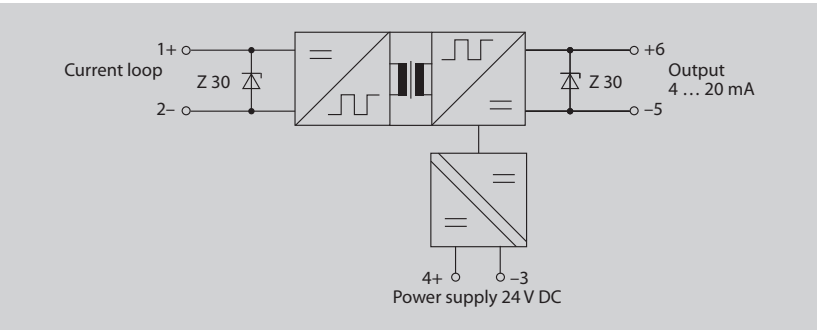
BasicLine BL 560

Repeater power supply for 2-wire sensors, in a 6-mm housing

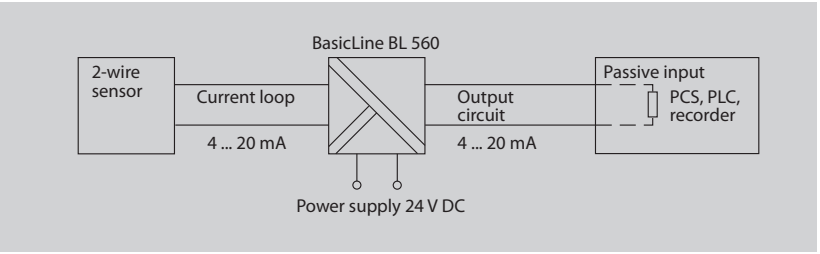
Facts

- For supply and signal decoupling of 2-wire sensors in safe areas
- Suitable for the most loop-powered transmitters / 2-wire sensors
- 16.5 V supply voltage
- Galvanically isolated, active current output with full 500-ohm load
- No problems caused by channel-to-channel coupling through the power supply
- 6-mm housing requires minimal space
- Highest reliability
- Short-circuit-proof
- CE compliant and UL approved
- 3-year warranty
- Perfect price-performance ratio

Block Diagram



Galvanically Isolated Supply of 2-Wire Sensors



Input (current loop)	Output	Power supply
4 … 20 mA (16.5 V)	4 … 20 mA	24 V DC

Product Line

Device	Input	Output	Order No.
BasicLine BL 560	4 … 20 mA	4 … 20 mA	**BL 560**

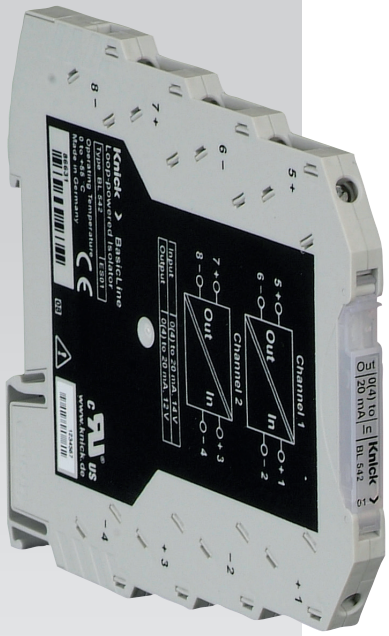
Specifications

Input data	
Current loop	4 ... 20 mA Supply voltage 16.5 V, constant for 3 ... 22 mA, current limited to max. 25 mA
Residual ripple	< 10 mV_{rms}
Output data	
Range	4 ... 20 mA
Signal in case of short circuit at input	22... 25 mA
Signal in case of open input	< 3 mA
Load	≤ 10 V (≤ 500 ohms at 20 mA)
Residual ripple	< 10 mV_{rms}
Transmission behavior	
Gain error	< 0.25 % full scale (DC)
Cutoff frequency	> 30 Hz
Temperature coefficient[1)]	0.01 %/K full scale
Power supply	
Power supply	24 V DC (± 15 %), approx. 1.2 W
Isolation	
Galvanic isolation	3-port isolation between input, output and power supply
Test voltage	0.51 kV AC current loop against output/power supply
Working voltage	150 V AC/DC (basic insulation) with overvoltage category II / pollution degree 2 according to EN 61010-1
Standards and approvals	
Conformity	CE compliant
EMC [2)]	Product family standard: EN 61326
Approval	UL Listed, File No. E340287, Standard: UL 61010-1 and CAN/CSA C22.2 No. 61010-1
Further data	
Ambient conditions	Stationary operation, weatherproof, relative humidity 5 ... 95 %, no condensation, max. altitude 2000 m, water or wind-driven precipitation (rain, hail, snow) excluded
Ambient temperature	Operation: 0 ... +55 °C Transport, storage: –25 ... +85 °C
Housing	Modular housing, screw terminals, IP 20 protection
Mounting	35-mm mounting rail, EN 60715
Dimensions	6.1 mm x 98 mm x 88 mm
Wire cross-section	Max. 2.5 mm^2, 24-14 AWG
Weight	Approx. 50 g

1) Average TC in specified operating temperature range, reference temperature 23 °C

2) Slight deviations are possible while there is interference

Loop-Powered Isolators for Standard Signals



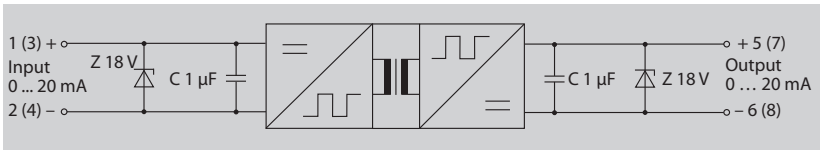
BasicLine BL 541 / 542

Extremely compact, accurate, reliable – the loop-powered isolators

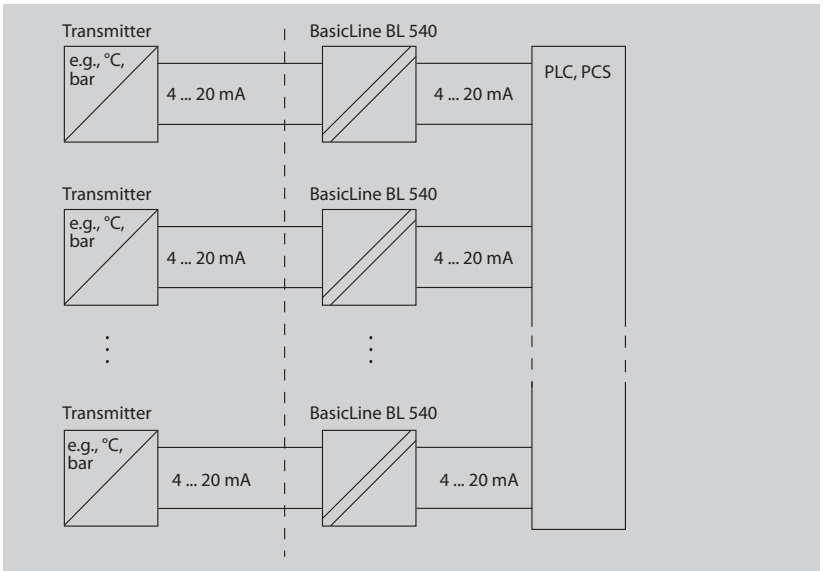
Facts

- Loop-powered: a separate power supply is not required
- Wiring effort reduced by 1/3
- Full-fledged, galvanicaly isolated 1:1 transmission of 20mA signals
- 2 channels on 6-mm mounting rail: it couldn't be more compact
- 1- and 2-channel versions avaliable
- 0.2% full scale accuracy
- Low voltage drop of 1.7 V
- CE compliant and UL approved
- 3-year warranty
- Perfect price-performance ratio

Block Diagram



Preventing System Malfunctions by Isolating Analog Interference Signals



Input ranges	Output	Power supply
0 … 20 mA	0 … 20 mA	Not necessary
4 ... 20 mA	4 ... 20 mA	Loop-powered

Product Line

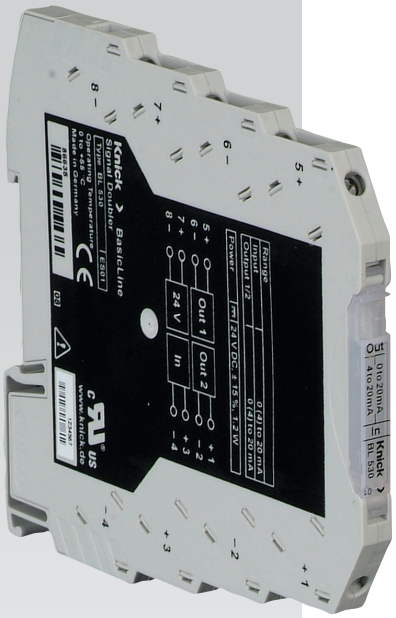
Device		Order No.
BasicLine BL 541	1 channel	**BL 541**
BasicLine BL 542	2 channels	**BL 542**

Specifications

Input data	
Range	0(4) ... 20 mA / max. 18 V
Operating current	Approx. 150 µA
Voltage drop	Approx. 1.7 V at 20 mA
Overload capacity	Suppressor diode 18 V, max. 30 mA
Output data	
Range	0(4) ... 20 mA / max. 12 V
Load	600 ohms at 20 mA
Residual ripple	< 10 mV_{rms}
Transmission behavior	
Gain error	< 0.2 % full scale (DC)
Load error	0.05 % meas. val. per 100 ohms
Cutoff frequency	> 100 Hz
Temperature coefficient[1)]	< 0.002%/K of meas.val.
Power supply	
Power supply	Not required, loop-powered
Isolation	
Galvanic isolation	Protective separation between input and output
Test voltage	1.5 kV AC
Working voltage	300 VAC/DC, CAT II, pollution degree 2, EN 61010-1
Standards and approvals	
Conformity	CE compliant
EMC [2)]	Product family standard: EN 61326
Approval	UL Recognized Components File-No. E220033, Standards: UL 508 and CAN/CSA 22.2 No. 14-95
Further data	
Ambient conditions	Stationary operation, weatherproof, relative humidity 5 ... 95 %, no condensation, max. altitude 2000 m, water or wind-driven precipitation (rain, hail, snow) excluded
Ambient temperature	Operation: 0 ... +55 °C Transport, storage: –25 ... +85 °C
Housing	Modular housing, screw terminals, IP 20 protection
Mounting	35-mm mounting rail, EN 60715
Dimensions	6.1 mm x 101 mm x 93 mm
Wire cross-section	Max. 2.5 mm^2, 24-14 AWG
Weight	Approx. 50 g

1) Average TC in specified operating temperature range, reference temperature 23 °C
2) Slight deviations are possible while there is interference

Signal Doublers



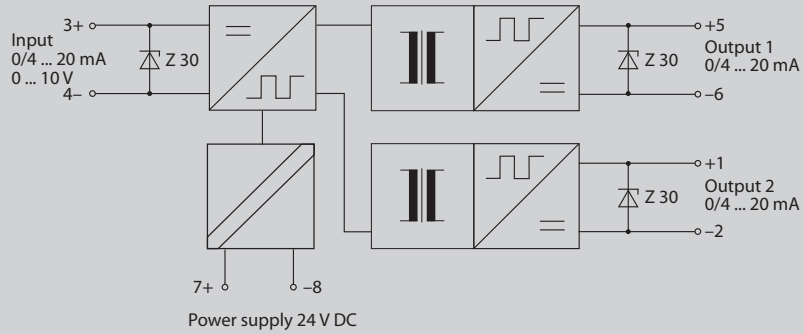
BasicLine BL 530

The load and signal doubler with high output power

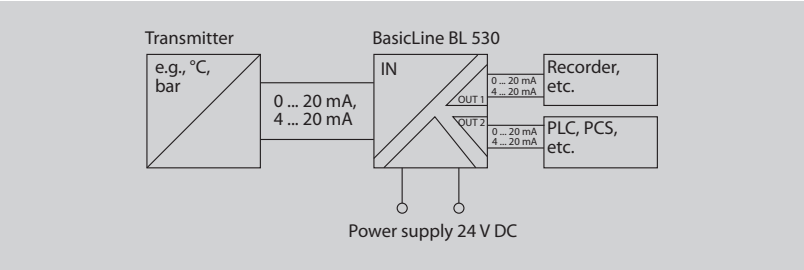
Facts

- Flexible input, two galvanically isolated 20-mA current outputs
- Both current outputs with a high load of 400 ohms
- 800 ohms load with outputs connected in series
- 6-mm housing requires minimal space
- Galvanic 4-port isolation prevents measurement errors
- Exemplary signal transmission for standard applications
- CE compliant and UL approved
- 3-year warranty
- Perfect price-performance ratio

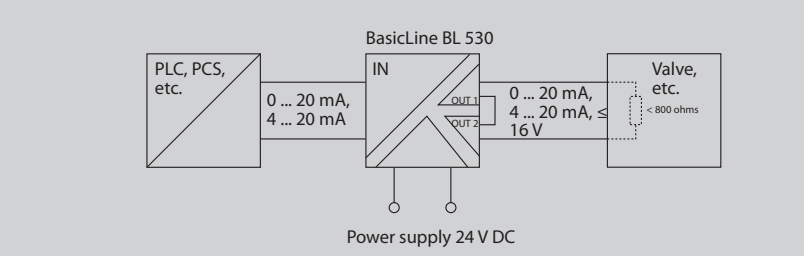
Block Diagram



Signal Doubling



Load Increase



Input ranges	Output	Power supply
0 … 20 mA 4 ... 20 mA	0 … 20 mA 4 ... 20 mA	24 V DC

Product Line

Device	Input	2 outputs	Order No.
BasicLine BL 530	0 … 20 mA, 4 … 20 mA	0 … 20 mA, 4 … 20 mA	**BL 530**

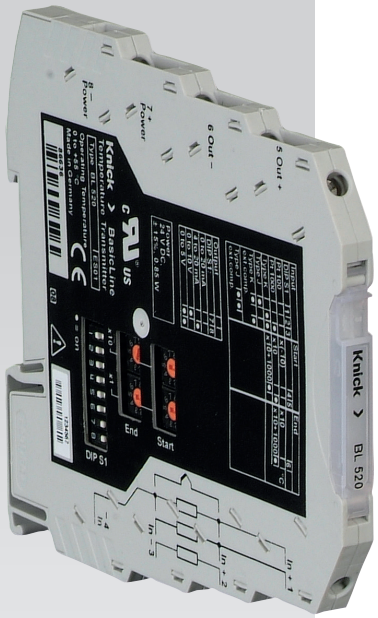
Specifications

Input data	
Range	0 ... 20 mA, 4 ... 20 mA
Load	< 0.1 V at 20 mA (< 5 ohms), power failure: approx. 350 mV
Overload capacity	Self-resetting overcurrent protection (PTC characteristic) Suppressor diode 30 V, < 3 mA
Output data	
Range	0 ... 20 mA, 4 ... 20 mA
Load	≤ 8 V (≤ 400 ohms at 20 mA), ≤ 16 V (both outputs in series)
Residual ripple	< 10 mV_{rms}
Transmission behavior	
Gain error	< 0.3 % full scale (DC)
Cutoff frequency	> 100 Hz
Temperature coefficient[1)]	0.01%/K full scale
Power supply	
Power supply	24 V DC (± 15%), 1.2 W
Isolation	
Galvanic isolation	4-port isolation between input, outputs and power supply
Test voltage	1.5 kV AC
Working voltage	300 V AC/DC (basic insulation) with overvoltage category II / pollution degree 2 according to EN 61010-1.
Standards and approvals	
Conformity	CE compliant
EMC [2)]	Product family standard: EN 61326
Approval	UL Recognized Components File-No. E220033, Standards: UL 508 and CAN/CSA 22.2 No. 14-95
Further data	
Ambient conditions	Stationary operation, weatherproof, relative humidity 5 ... 95 %, no condensation, max. altitude 2000 m, water or wind-driven precipitation (rain, hail, snow) excluded
Ambient temperature	Operation: 0 ... +55 °C Transport, storage: –25 ... +85 °C
Housing	Modular housing, screw terminals, IP 20 protection
Mounting	35-mm mounting rail, EN 60715
Dimensions	6.1 mm x 101 mm x 93 mm
Wire cross-section	Max. 2.5 mm^2, 24-14 AWG
Weight	Approx. 50 g

1) Average TC in specified operating temperature range, reference temperature 23 °C

2) Slight deviations are possible while there is interference

Temperature Transmitters



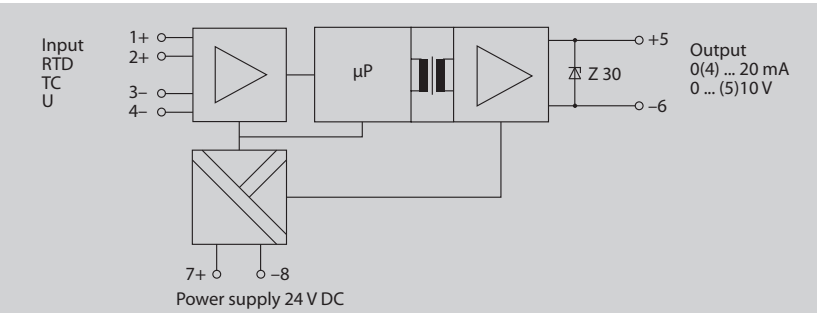
BasicLine BL 520

The temperature transmitter with range selection in plain text

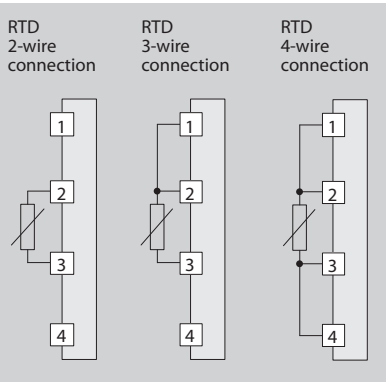
Facts

- Flexible temperature detection with conventional sensors: Pt 100, Pt 1000, thermocouples type J and K
- Intuitive, "readable" configuration using 4 rotary and 8 dip switches
- Calibrated switching without potentiometer adjustment
- Automatic recognition of the sensor connection (2-, 3-, or 4-wire)
- High accuracy due to innovative circuit design
- Minimum space consumption in the enclosure: 6-mm housing
- CE compliant and UL approved
- 3-year warranty
- Perfect price-performance ratio

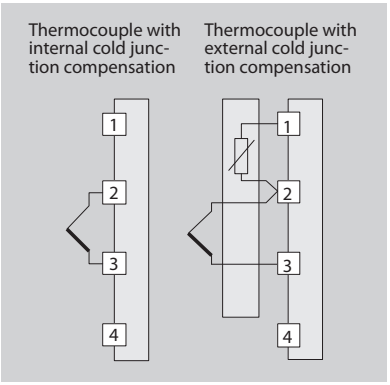
Block Diagram



Connection of Resistance Thermometers



Connection of Thermocouples



No.	Error	4 ... 20 mA	0 ... 20 mA	0 ... 5 V	0 ... 10 V
0	None	–	–	–	–
1	Value below range	3.6	0	0	0
2	Value above range	21	21	5.25	10.5
3	Sensor short circuit	21	21	5.25	10.5
4	Sensor open	21	21	5.25	10.5
5	–	–	–	–	–
6	–	–	–	–	–
7	Identification of connection	21	21	5.25	10.5
8	Switch misadjusted	21	21	5.25	10.5
9	Adjustment error	21	21	5.25	10.5
10	Device error[1)]	3.6	0	0	0

[1)] Self-locking error. Disconnect power supply to reset.

Input	Output	Power supply
Pt 100, Pt 1000, Thermocouples Type J and K	0 … 20 mA 4 … 20 mA 0 … 10 V	24 V DC

Product Line

Device		Order No.
BasicLine BL 520	Adjustable	**BL 520**

Specifications

Input data

Resistance thermometers	Sensor type Pt 100 Pt 1000	Standard DIN 60751 DIN 60751	Measuring range -200 ... +850 °C -200 ... +850 °C
Connection	2-, 3- or 4-wire, (automatic recognition, LED signaling)		
Max. line resistance	100 ohms		
Error limits	< 5 kohms	± (50 mohms +0.05 % meas. val.) for spans > 15 ohms	
Temperature coefficient[1)]	< 0.005 %/K of adjusted end value		
Thermocouples	Sensor type Type J Type K	Standard DIN 60584-1 DIN 60584-1	Measuring range -210 … +1200 °C -200 … +1372 °C
Input resistance	>10 Mohms		
Max. line resistance	1 kohm		
Input error limits	± (10 µV + 0.05 % meas. val.) for spans > 2 mV		
Temperature coefficient[1)]	< 0.005 %/K of adjusted end value		
Error	Internal reference junction External reference junction	< 1.5 K < 80 mohms + 0.1 % meas. val.	 Via Pt 100 for T_{comp} = 0 ... 80 °C

Output data

Outputs	0 ... 20 mA, 4 ... 20 mA, 0 ... 5 V, 0 ... 10 V (16 bit)	
Control range	0 ... approx. 102.5 % of meas. span, at 4 ... 20 mA: –1.25 % ... approx. 102.5 % of meas. span	
Load	Current output Voltage output	≤ 10 V (≤ 500 ohms at 20 mA) ≤1 mA (≥ 10 kohms at 10 V)
Error limits	Current output Voltage output	± (10 µA + 0.05 % meas. val.) ±(5 mV + 0.05 % meas. val.)
Residual ripple	< 10 mV_{rms}	
Temperature coefficient[1)]	< 0.005 %/K full scale	
Error signaling	See table	
Measuring rate[3)]	Approx. 3/sec	

Power supply

Power supply	24 V DC (± 15%), 0.85 W

Isolation

Galvanic isolation	3-port isolation between input, output and power supply
Test voltage	1,5 kV AC, 50 Hz
Working voltage	300 V AC/DC (basic insulation) with overvoltage category II / pollution degree 2 according to EN 61010-1.

Standards and approvals

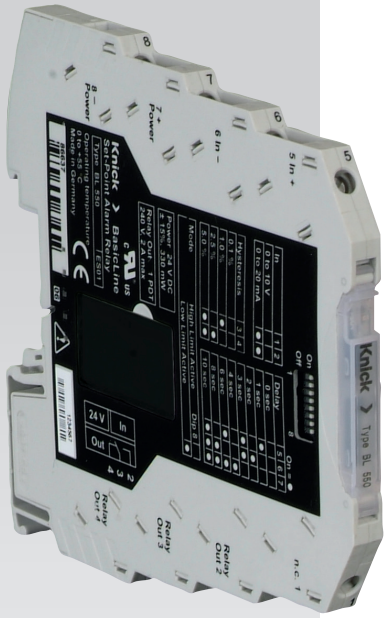
Conformity	CE compliant
EMC [2)]	Product family standard: EN 61326
Approval	UL Recognized Components File-No. E220033, Standard: UL 508, CAN/CSA 22.2 No. 14-95

Further data

Ambient conditions	Stationary operation, weatherproof, relative humidity 5 ... 95 %, no condensation, max. altitude 2000 m, water or wind-driven precipitation (rain, hail, snow) excluded	
Ambient temperature	Operation: 0 ... +55 °C	Transport, storage: –25 ... +85 °C
Housing	Modular housing, screw terminals, IP 20 protection	
Mounting	35-mm mounting rail, EN 60715	
Dimensions	6.1 mm x 101 mm x 93 mm	
Wire cross-section	Max. 2.5 mm^2, 24-14 AWG	
Weight	Approx. 50 g	

1) Average TC in specified operating temperature range, reference temperature 23 °C
2) Slight deviations are possible while there is interference
3) For thermocouples with external reference junction compensation: approx. 2 / s

Set-Point Alarm Relays



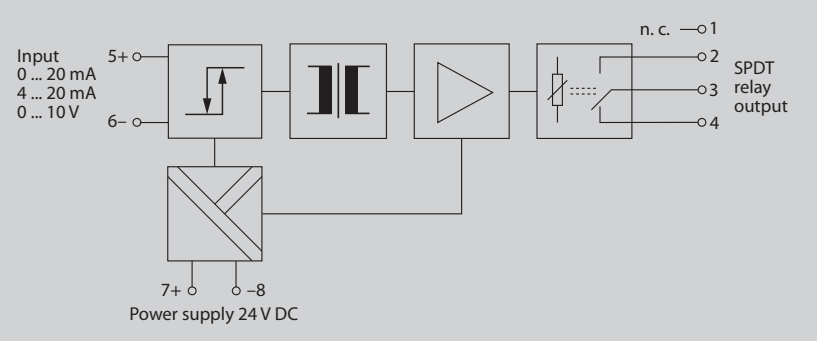
BasicLine BL 550

Highly compact set-point alarm relay with changeover output contacts

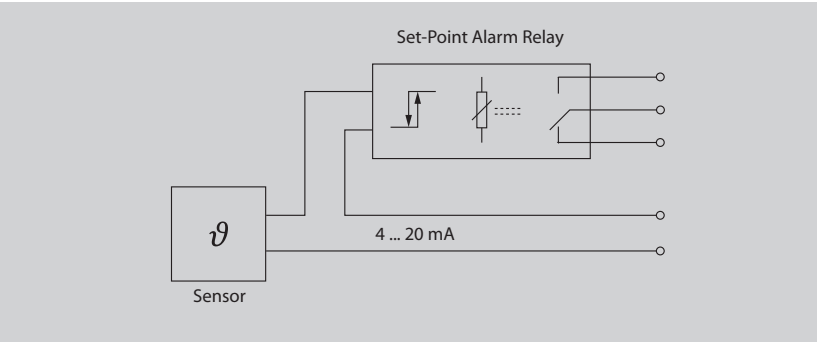
Facts

- Simple monitoring and control of standard signals
- NC/NO changeover
- Limit values / switching thresholds freely adjustable using potentiometer on the front
- Input signal, switching hysteresis and delay adjustable using DIP switches
- 3-way isolation
- Minimum space consumption in the enclosure: 6-mm housing
- CE compliant and UL approved
- 3-year warranty
- Perfect price-performance ratio

Block Diagram



Limit Monitoring of a Sensor (Temperature, ...)



Input	Output	Power supply
0 … 20 mA 4 … 20 mA 0 … 10 V	SPDT changeover relay, single pole	24 V DC

Product Line

Device	Order No.
BasicLine BL 550	**BL 550**

Specifications

Input		
Voltage	0 ... 20 mA, 4 ... 20 mA, 0 ... 10 V	
Resistance	Current input	50 ohms
	Voltage input	100 kohms
Overload capacity	Current input	100 mA
	Voltage input	30 V
Relay output		
Output type	SPDT relay output	
Contact type	1 changeover contact	
Contact material	$AgSnO_2$, hard gold plated	
Max. switching voltage	240 V AC	
Limiting continuous current	2 A	
Switching threshold	Adjustable using potentiometer on the device front	
Response delay	0 s ... 10 s (0 s; 1 s; 2 s; 3 s; 4 s; 6 s; 8 s; 10 s)	
Internal hysteresis	0.1 %; 1 %; 2.5 %; 5 %	
General data		
Temperature coefficient[1)]	< 0.02 %/K	
Setpoint repeatability	< 0.2 % full scale	
Step response	< 35 ms	
Power supply		
Power supply	24 V DC (± 15 %), approx. 330 mW	
Isolation		
Galvanic isolation	3-port isolation between input, output and power supply	
Test voltage	1,5 kV AC, 50 Hz	
Working voltage	50 V AC/DC (basic insulation) with overvoltage category II / pollution degree 2 according to EN 61010-1.	
Standards and approvals		
Conformity	CE compliant	
EMC [2)]	Directive 2004/108/EC	
Radiated emission	EN 61000-6-4	
Immunity to interference [2)]	EN 61000-6-2	
Approval	UL Recognized Component, File No. E306206, Standards: UL 508 and CAN/CSA C22.2 No. 14-95	
Further data		
Ambient temperature	Operation: 0 ... +55 °C	Transport, storage: –20 ... +85 °C
Housing	Modular housing, screw terminals, IP 20 protection	
Mounting	35-mm mounting rail, EN 60715	
Dimensions	6.1 mm x 101 mm x 93 mm	
Wire cross-section	Max. 2.5 mm^2, 24-14 AWG	
Weight	Approx. 50 g	

1) Average TC in specified operating temperature range, reference temperature 23 °C

2) Slight deviations are possible while there is interference (typically 5%)

Knick

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