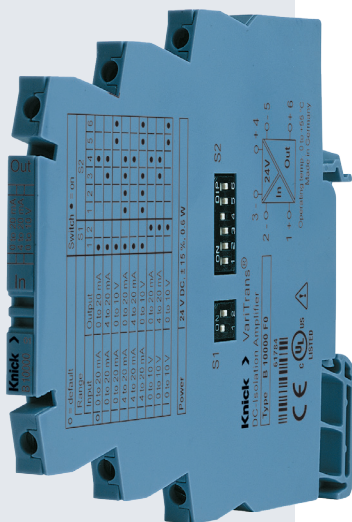


Standard-Signal Isolation Amplifiers

VariTrans B 10000

The world's first 3-port standard signal isolator in a 6-mm modular housing.



The Task

Isolation and, if required, conversion of 0 ... 20 mA, 4 ... 20 mA, and 0 ... 10 V standard signals. If space and budget are limited, there could still be difficulties when it comes to selecting a suitable isolator despite the standard transmission requirements.

The Problems

Up to now, the only way of reducing costs substantially was to opt for low quality products. As a large number of different signals also required a large number of isolators, this also led to considerable inventory costs.

The Solution

With its extremely compact design and low self-heating, the new standard-signal isolator from Knick sets new standards. The VariTrans B 10000 is available with nine selectable, calibrated ranges or as one of eight different fixed setting variants. The price is extremely attractive in all cases.

The Housing

Measuring only 6 mm, the closed modular housing of the VariTrans B 10000 allows up to 163 active isolation amplifiers per meter of mounting rail. A pluggable cross-connection to supply power enables quick and therefore inexpensive mounting.

The Advantages

In spite of the reduced space, the VariTrans B 10000 provides true 3-port isolation between the input, output and power supply to prevent parasitic voltages.

The Technology

Analog signal processing with transformer-based isolation ensures excellent signal transmission. Input and output ranges are easily selected using DIP switches.

For up-to-date information, please visit www.knick.de

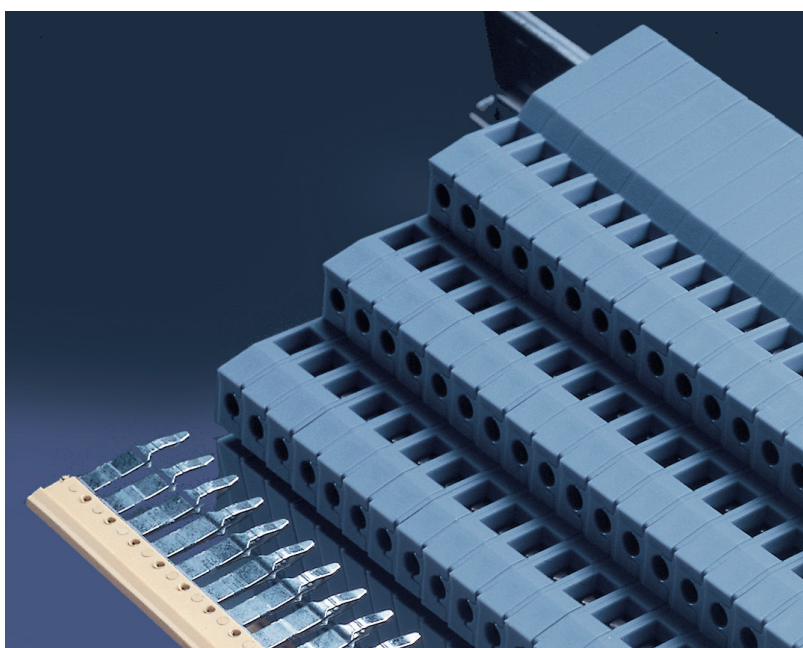
Knick >

The Facts

- **Safety in the smallest of spaces**
3-port isolation in a 6-mm housing
- **Space-saving installation**
No ventilation clearances required since there is no significant heat development
- **Attractive price**
One of the most cost-effective quality isolators on the market
- **Long service life**
Extremely low failure rate (MTBF of 440 years) due to reduced self-heating
- **Good accuracy**
Exemplary signal transmission for standard applications
- **Calibrated range selection**
No complicated calibration or adjusting
- **Low-cost installation**
Pluggable cross-connections allow for easy and extremely efficient connection of the power supply to several VariTrans B 10000 units
- **8 fixed-range models**
if range shifting is to be avoided
- **3-port isolation**
Prevention of incorrect measurements caused by potential differences
- **Simple configuration**
DIL switches accessible from outside
- **5-year warranty**

Warranty
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).



Standard-Signal Isolation Amplifiers

VariTrans B 10000

Product Line

Device	Input	Output	Order No.
VariTrans B 10000 with calibrated switching of input and output	0 ... 20 mA	0 ... 20 mA	B 10000 F0
	4 ... 20 mA	4 ... 20 mA	
	0 ... 10 V	0 ... 10 V	
VariTrans B 10000 with fixed settings	0 ... 20 mA	0 ... 20 mA	B 10016 F0
	0 ... 20 mA	4 ... 20 mA	B 10017 F0
	0 ... 20 mA	0 ... 10 V	B 10018 F0
	4 ... 20 mA	0 ... 20 mA	B 10026 F0
	4 ... 20 mA	4 ... 20 mA	B 10016 F0
	4 ... 20 mA	0 ... 10 V	B 10028 F0
	0 ... 10 V	0 ... 20 mA	B 10036 F0
	0 ... 10 V	4 ... 20 mA	B 10037 F0
	0 ... 10 V	0 ... 10 V	B 10038 F0
	Cross-connections	Pluggable cross-connection for looping through of power supply for up to 41 power supply connections of VariTrans B 10000, splittable	

Power supply

24 V DC

Specifications

Input data

Inputs

0 ... 20 mA
4 ... 20 mA
0 ... 10 V

calibrated switching or fixed setting
(see product line)

Input resistance

Current input: voltage drop < 0.1 V at 20 mA,
approx. 350 mV for open current output or power failure

Voltage input: approx. 100 kohms

Overload capacity

Current input: < 100 mA

Voltage input: voltage limited to 30 V by suppressor diode,
max. permitted continuous current: 3 mA

Output data

Outputs

0 ... 20 mA
4 ... 20 mA
0 ... 10 V

calibrated switching or fixed setting
(see product line)

Load

With output current: $\leq 10 \text{ V}$ ($\leq 500 \text{ ohms}$ at 20 mA)

With output voltage: $\leq 1 \text{ mA}$ ($\geq 10 \text{ kOhm}$ at 10 V)

Offset

< 20 μA or < 10 mV

Residual ripple

< 10 mV_{rms}

Specifications (continued)

Transmission behavior

Gain error	0.3 % full scale	Additional error for live-zero operation 20 µA or 10 mV
Cutoff frequency	>100 Hz, -3 dB	
Temperature coefficient	< 0.01 %/K full scale	Average TC in the specified operating temperature range 0 ... +55 °C, reference temperature 23 °C

Power supply

Power supply	24 V DC (± 15 %), approx. 0.6 W The power supply can be routed from one device to another via cross-connectors.
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Isolation

Galvanic isolation	3-port isolation between input, output and power supply
Test voltage	0.51 kV AC
Working voltage (basic insulation)	Up to 100 V AC/DC across all circuits with overvoltage category II and pollution degree 2 to EN 61010 Part 1. For applications with high working voltages, ensure there is sufficient spacing or isolation from neighboring devices and protection against electric shocks.

Standards and approvals

EMC	Product family standard: EN 61326 Emitted interference: Class B Immunity to interference: Industry Slight deviations are possible during interference.
Approval	cULus Listed, File No. E340287, E308146, E340288 Standard: UL 61010-1 and CAN/CSA C22.2 No. 61010-1
Explosion protection	Europe: II 3G Ex nA IIC T6 Gc X USA: Class I Div.2 GRP A,B,C,D T6 Class I Zone 2 AEx nA IIC T6 Canada: Class I Zone 2 Ex nA IIC T6 XClass I Div.2 GRP A,B,C,D T6

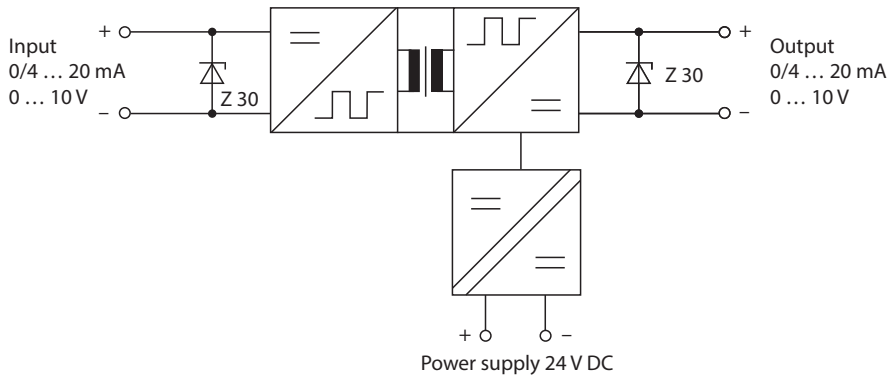
Further data

MTBF	Approx. 440 years Mean Time Between Failures – MTBF – according to EN 61709 (SN 29500) Requirements: stationary operation in well-kept rooms, average ambient temperature 40 °C, no ventilation, continuous operation
Ambient temperature	Operation: 0 ... +55 °C Transport and storage: -40 ... +85 °C
Design	Modular housing with screw terminals, 6.1 mm wide See dimension drawings for further measurements
Ingress protection	IP 20
Mounting	For 35-mm mounting rail according to EN 60715 See dimension drawing for conductor cross-section
Weight	Approx. 50 g

Standard-Signal Isolation Amplifiers

VariTrans B 10000

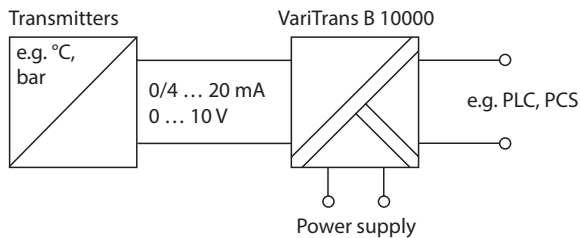
Block Diagram



Typical Applications

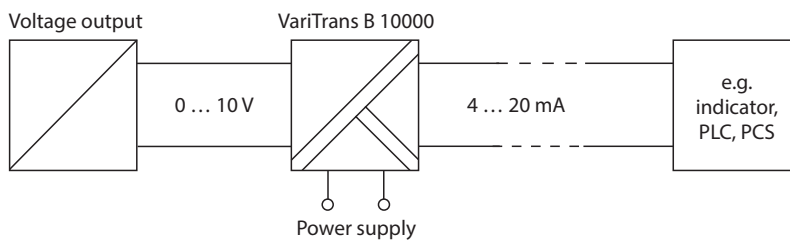
Potential isolation

for safe connection of the measurement signals to the processing electronics



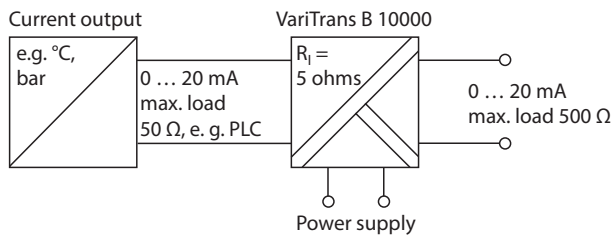
Signal conversion

e.g. to convert voltage signals into current signals for interference-free signal transmission over long distances

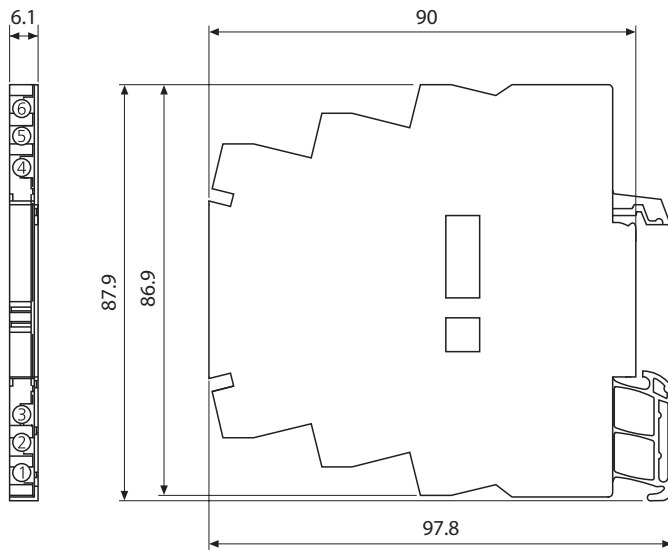


Application Examples (continued)

Load increase
e.g. for measuring signals with low load capability



Dimension Drawings and Terminal Assignments



Terminal assignments

- 1 Input +
- 2 Input -
- 3 Power supply -
- 4 Power supply +
- 5 Output -
- 6 Output +

Conductor cross-sections:

- single wire 0.5 ... 2.5 mm²
- stranded wire 0.5 ... 2.5 mm²
- with ferrule 0.5 ... 2.5 mm²

All dimensions in mm