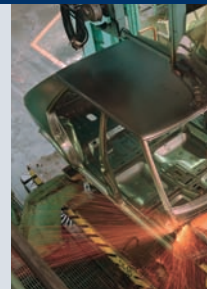


Modular Housings

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VariTrans® B 13000



The reasonably priced alternative for standard industrial applications. Standard-signal isolators with calibrated range selection.

The Task

Guaranteeing reliable and safe system operation requires galvanic isolation between sensors and controller (e.g. PCS, DCS etc.).

The Problems

In particular with large-scale systems, the difficulties often lie in the financial pressure in addition to the lack of space for mounting the isolators. Up to now, low-cost single-range isolators have, however, caused relatively high purchase, logistics, and storage costs, for example, also for stocking of spare parts.

The Solution

The calibrated switching of the input and output ranges allows the VariTrans® B 13000 basic low-cost standard-signal isolators to be used universally – without complicated readjustment. The settings are made simply using DIP switches.

The Housing

The modular housing, just 12.5 mm in width, can also withstand high mechanical loads. The housing is easy to open providing access to the setting elements.

The Advantages

The analog transmission of the measurement signal with transformer isolation and the new digitally controlled range selection guarantee troublefree use in all standard industrial applications.

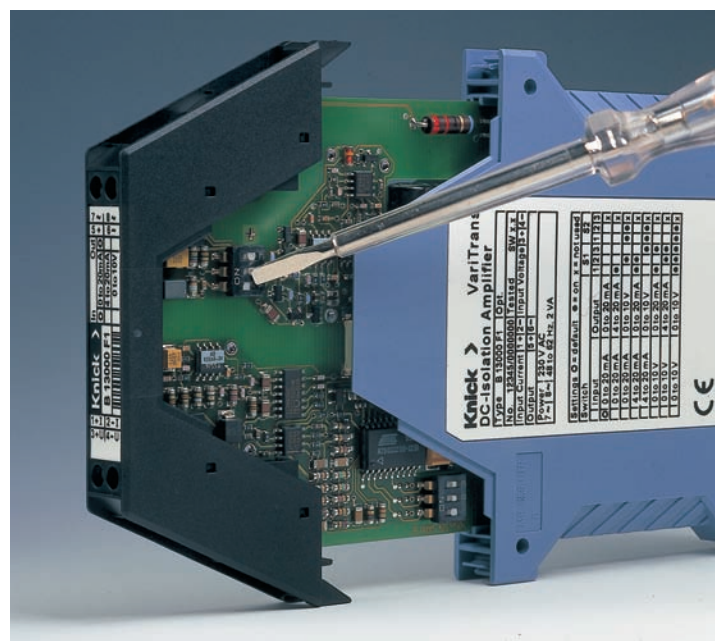
The Technology

A microcontroller monitors the control element settings and controls the calibrated range selection. Interference to the signal transmission – for example, due to contact resistance in the range switch – is thus ruled out.

The integrated power supply is configured for 230 V AC or 24 V AC/DC. The extremely low power consumption and the related minimal self-heating significantly increase reliability. The consequence: a 5-year warranty.

Warranty
5 years!

Defects occurring within 5 years from delivery are remedied free of charge at our works (carriage and insurance paid by sender).



Isolation Amplifiers for Standard Signals

Isolation Amplifiers
Transmitters

Indicators

Process Analytics

Portable Meters

Laboratory Meters

Sensors

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■ The Facts

Flexible and accurate

Calibrated range selection without complicated readjustment

Low-cost

The competitively priced solution for standard applications; considerable reduction in purchasing, logistics, and storage costs, for example for stocking of spare parts.

Extremely compact design

12.5 mm modular housing; up to 80 active isolators per meter of mounting rail

Fast and easy configuration

Housing simple to open

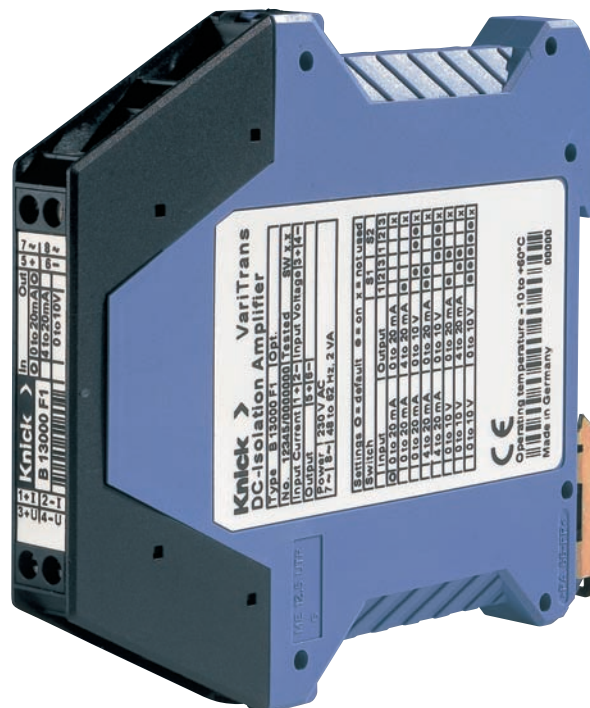
3-port isolation

Protection against incorrect measurements or damage

Maximum reliability

No repair and failure costs

5-year warranty



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■ Product Line

Devices	Input	Output	Order No.
VariTrans® B 13000 Input and output calibrated switchable	0 ... 20 mA, 4 ... 20 mA, 0 ... 10 V	0 ... 20 mA, 4 ... 20 mA, 0 ... 10 V	B 13000 F1
VariTrans® B 13000 with fixed settings	0 ... 20 mA 0 ... 20 mA 0 ... 20 mA 4 ... 20 mA 4 ... 20 mA 4 ... 20 mA 0 ... 10 V 0 ... 10 V 0 ... 10 V	0 ... 20 mA 4 ... 20 mA 0 ... 10 V 0 ... 20 mA 4 ... 20 mA 0 ... 10 V 0 ... 20 mA 4 ... 20 mA 0 ... 10 V	B 13016 F1 B 13017 F1 B 13018 F1 B 13026 F1 B 13016 F1 B 13028 F1 B 13036 F1 B 13037 F1 B 13038 F1
Power supply			
230 V AC			
24 V AC/DC			336

■ Specifications

Input data

Inputs	0 ... 20 mA 4 ... 20 mA 0 ... 10 V	Terminal selectable/switchable (factory setting 0 ... 20 mA) or fixed settings (see Product line)
Input resistance	Current input Voltage input	Voltage drop approx. 500 mV at 20 mA Approx. 1 Mohm
Overload	Current input Voltage input	≤ 300 mA Voltage limitation with suppressor diode 30 V, max. permitted continuous current 30 mA

Output data

Outputs	0 ... 20 mA 4 ... 20 mA 0 ... 10 V	Switchable (factory setting 0 ... 20 mA) or fixed settings (see Product line)
(Transmission of negative measurement signals up to approx. -5 % full scale)		

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Specifications (continued)

Output data (continued)

Load	With output current ≤ 10 V (500 ohms at 20 mA) With output voltage ≤ 10 mA (1 kohm at 10 V) ¹⁾
Offset	20 μ A or 10 mV
Residual ripple	< 20 mV _{rms}

Transmission behavior

Gain error	< 0.4 % meas.val. (DC)
Cut-off frequency	> 1 kHz, -3 dB
Temperature coefficient ²⁾	0.015 %/K full scale (reference temperature 23 °C)

Power supply

Power supply	230 V AC, -15 % $+10$ %, 48 ... 62 Hz, approx. 2 VA
Option 336:	24 V AC/DC AC: ± 15 %, 48 ... 62 Hz, approx. 2 VA DC: ± 15 %, approx. 0.9 W

Isolation

Galvanic isolation	3-port isolation between input, output and power supply
Test voltage	3.25 kV AC input against output against power supply
Working voltage (basic insulation)	600 V AC/DC with overvoltage category II and pollution degree 2 according to EN 61010-1. For applications with high working voltages, you should ensure there is sufficient spacing or isolation from neighboring devices and protection against electric shocks.

Standards and approvals

Surge withstand	5 kV, 1.2/50 μ s, according to IEC 255-4
EMC ³⁾	89/336/EEC directive; EN 61326
Approvals	CUL: File No. E 216767, Standards UL 3101-1, CSA-C22.2-95, No. 10101-1 GL: No. 14627-99 HH

1) Higher voltage output load on request

2) Average TC in specified operating temperature range -10 °C ... $+60$ °C

3) Slight deviations are possible while there is interference

Modular Housings

VariTrans® B 13000

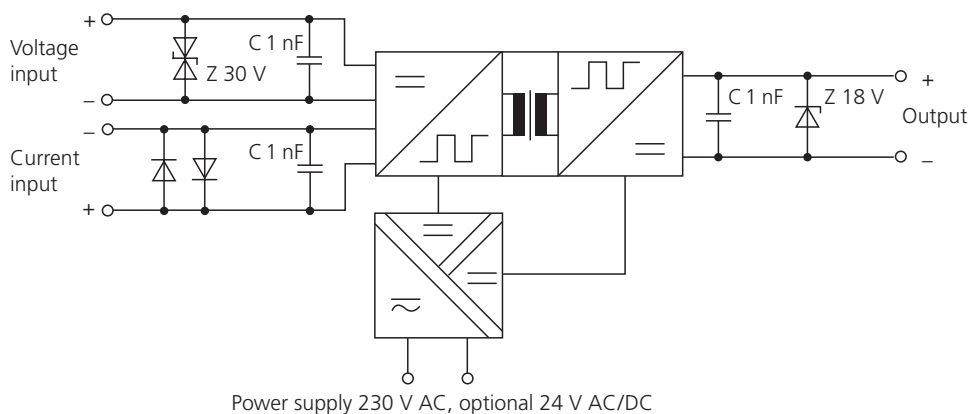
Specifications (continued)

Other data

MTBF ⁴⁾	Approx. 91 years
Ambient temperature	Operation: -10 ... +60 °C Transport and storage: -20 ... +85 °C
Design	Modular housing type F1, with screw terminals, width 12.5 mm, see dimension drawings for further measurements
Ingress protection	IP 20
Mounting	For 35 mm top hat rail to EN 50022 See dimension drawings for conductor cross section
Weight	Approx. 150 g

4) Mean Time Between Failures – MTBF – according to EN 61709 (SN 29500). Conditions: stationary operation in well-kept rooms, average ambient temperature 40 °C, no ventilation, continuous operation

■ Block Diagram



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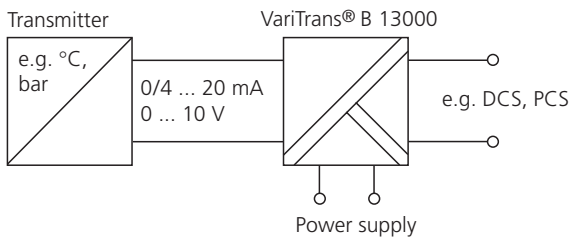
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■ Application Examples

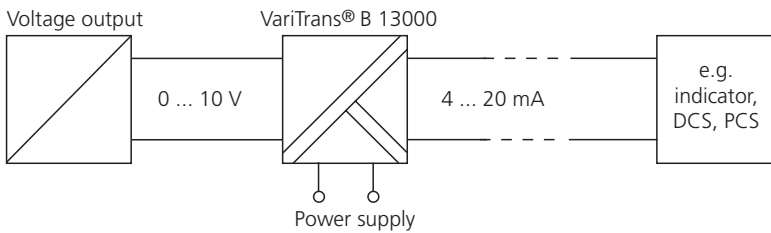
Electrical isolation

for safe coupling of the measurement signals to the evaluation electronics



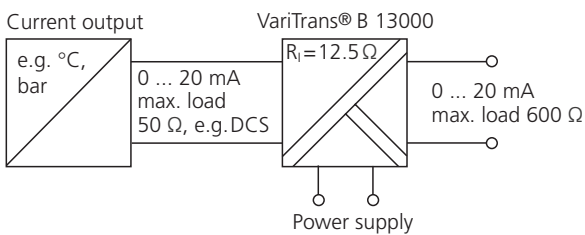
Signal conversion

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



Load increase

e. g. for low load capability signals



Modular Housings

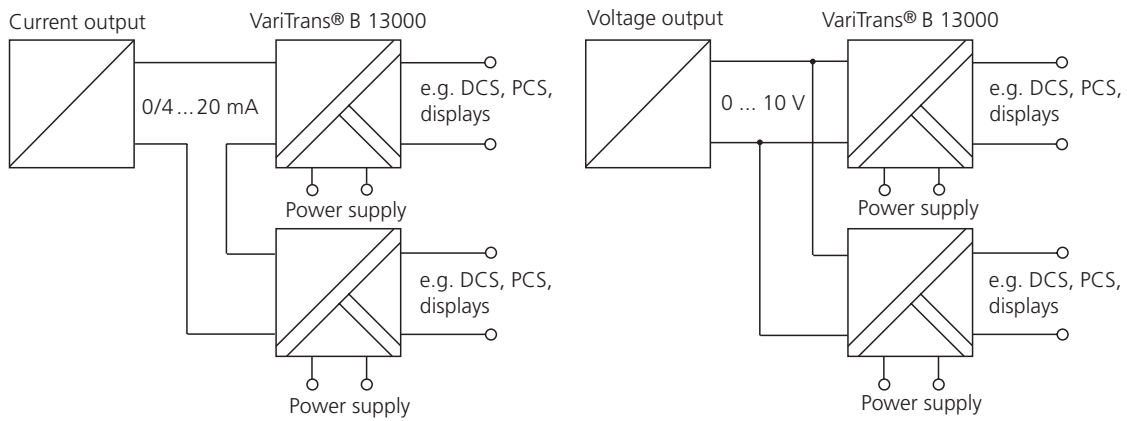
Modular Housings

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Application Examples (continued)

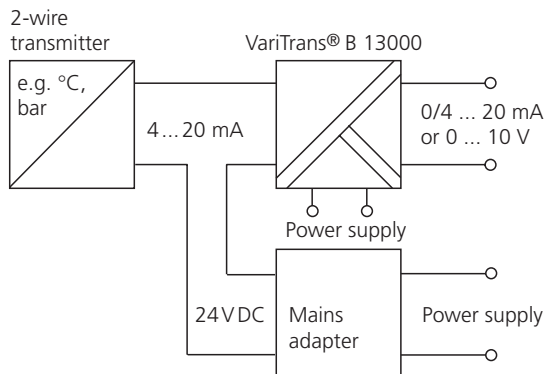
Signal Multiplication

e. g. for correct evaluation of measurement signals in different devices



2-wire application

for simple set-up of 2-wire measuring circuits



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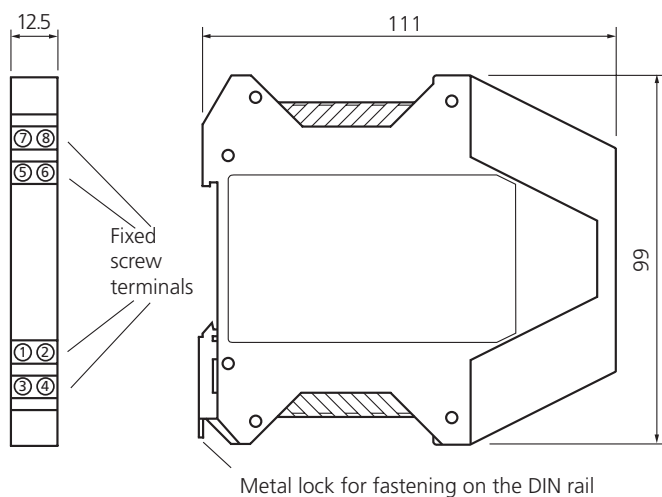
Laboratory Meters

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■ Dimension Drawings and Terminal Assignments



Terminal Assignments

1	Input	+	Current	5	Output	+
2	Input	-	Current	6	Output	-
3	Input	+	Voltage	7	Power supply	≈
4	Input	-	Voltage	8	Power supply	≈

Conductor cross-section max. 2.5 mm²

Multi-wire connection max. 1 mm² (two wires with same cross-section)

All dimensions in mm!