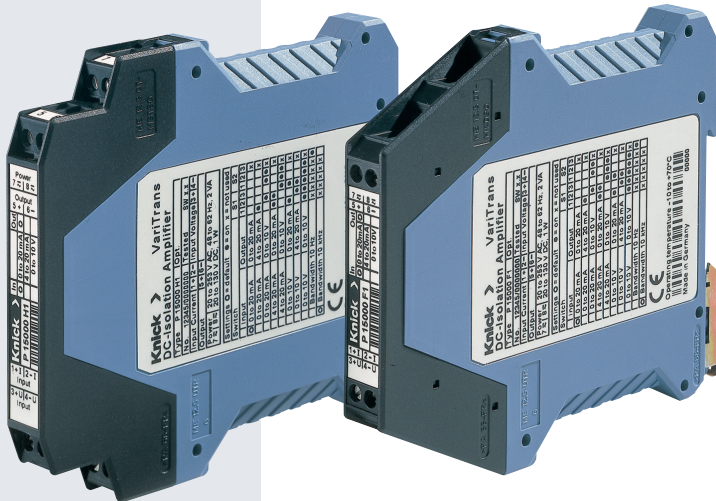


Standard-Signal Isolation Amplifiers

VariTrans P 15000

The professional standard-signal isolator.
With calibrated range selection and broad-range power supply.



The Housing

At a width of just 12.5 mm, the modular housing with pluggable screw terminals allows for simple and fast assembly and pre-wiring of enclosures. Housings with fixed screw terminals are also available for extremely high mechanical loads. The easy-to-open housing allows for simple configuration of the input and output ranges and provides good protection against contact and unintentional adjustment.

The Advantages

The analog transmission of the measurement signal with transformer isolation and the new digitally controlled range selection guarantee almost perfect signal transmission:

- Gain error only 0.08 %
- Excellent pulse formation
- Extremely low residual ripple
- Maximum long-term stability and reliability

The Technology

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

Thanks to the VariPower power supply for all common supply voltages from 20 to 253 V AC/DC, the devices can be used internationally with virtually all supply voltages. The extremely low power consumption and the related minimal self-heating significantly increase reliability. The result: a 5-year warranty.

The Task

Industrial applications require the transmission and conversion of different standard signals (0 ... 20 mA, 4 ... 20 mA and 0 ... 10 V) with maximum accuracy.

The Problems

Long transmission paths can cause potential differences that lead to errors in the measuring result. Different products were also required for different signals and supply voltages.

The Solution

The VariTrans P 15000 isolation amplifier from Knick features excellent transmission quality combined with calibrated standard signal switching using DIP switches and a broad-range power supply.

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

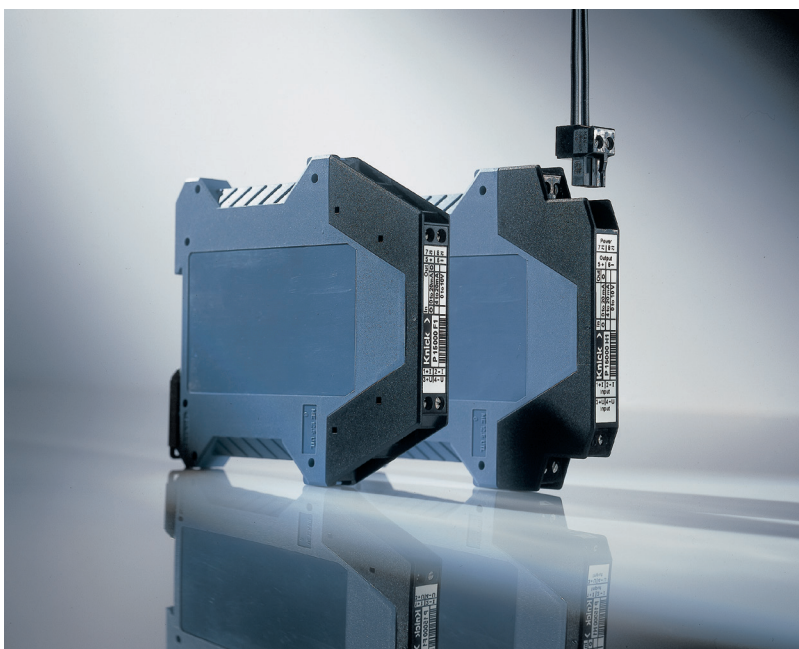
Knick >

The Facts

- **Flexible and highly accurate**
Calibrated range selection without time-consuming readjustment
- **Broad-range power supply**
VariPower 20 ... 253 V AC/DC
- **Extremely compact design**
12.5 mm modular housing;
up to 80 active isolators per meter of mounting rail
- **Fast and easy configuration**
Easy-to-open housing
- **Pluggable screw terminals**
Simple, time-saving assembly and pre-wiring of enclosures
- **3-port isolation**
Protection against incorrect measurements or damage
- **Extremely high precision**
- **Specific test report**
following EN 10204 2.3
- **Protective separation**
according to EN 61140 protects against excessively high voltages
- **Maximum reliability**
No repair or failure costs
- **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).



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VariTrans P 15000

Product Line

Device	Input	Output	Order No. with pluggable screw terminal	Order No. with fixed screw terminal
VariTrans P 15000 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	P 15000 H1	P 15000 F1
VariTrans P 15000 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	P 15016 H1 P 15017 H1 P 15018 H1 P 15026 H1 P 15016 H1 P 15028 H1 P 15036 H1 P 15037 H1 P 15038 H1	P 15016 F1 P 15017 F1 P 15018 F1 P 15026 F1 P 15016 F1 P 15028 F1 P 15036 F1 P 15037 F1 P 15038 F1

Power supply

20 ... 253 V AC/DC

Specifications

Input data		
Inputs	0 ... 20 mA 4 ... 20 mA 0 ... 10 V	terminal selectable / switchable (default setting 0 ... 20 mA) or fixed setting (see product line)
Input resistance	Current input Voltage input	voltage drop approx. 250 mV at 20 mA approx. 1 Mohm
Overload capacity	Current input Voltage input	≤300 mA Voltage limiting to 30 V by suppressor diode, max. allowable continuous current: 30 mA
Output data		
Outputs	0 ... 20 mA 4 ... 20 mA 0 ... 10 V	witchable (default setting 0 ... 20 mA) or fixed setting (see product line)
	(transmission of negative signals up to approx. -5 % full scale)	

Specifications (continued)

Output data (continued)

Load	With output current $\leq 12\text{ V}$ (600 ohms at 20 mA) With output voltage $\leq 10\text{ mA}$ (1 kohm at 10 V) ¹⁾
Offset	20 μA or 10 mV
Residual ripple	$< 10\text{ mV}_{\text{rms}}$

Transmission behavior

Gain error	$< 0.08\%$ meas.val. (DC)
Cutoff frequency	$> 10\text{ kHz} - 3\text{ dB}$, P 15000 F1/H1 switchable to $< 10\text{ Hz} - 3\text{ dB}$
Temperature coefficient ²⁾	0.005 %/K full scale (reference temp. 23 °C)

Power supply

Power supply	20 ... 253 V AC/DC AC 48 ... 62 Hz, approx. 2 VA DC approx. 0.9 W
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Isolation

Galvanic isolation	3-port isolation between input, output and power supply
Test voltage	4 kV AC input against output against power supply
Working voltage (basic insulation)	1000 V AC/DC with overvoltage category II and pollution degree 2 according to EN 61010-1. For applications with high working voltages, ensure there is sufficient spacing or isolation from neighboring devices and protection against electric shocks.
Protection against electric shock	Protective separation according to EN 61140 by reinforced insulation according to EN 61010-1. Working voltages up to 300 V AC/DC across input and output and power supply with overvoltage category II and pollution degree 2. For applications with high working voltages, 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 μs , according to IEC 255-4
EMC ³⁾	EN 61326
Approvals	CUL: File No. E 216767, Standards UL 3101-1, CSA-C22.2-95, No. 10101-1 GL: No. 14593-99 HH KTA: 3507

Standard-Signal Isolation Amplifiers

VariTrans P 15000

Specifications (continued)

Further data

MTBF ⁴⁾	Approx. 91 years
Ambient temperature	Operation: -10 ... +70 °C Transport and storage: -40 ... +85 °C
Design	Modular housing, 12.5 mm wide, see dimension drawings for further measurements, pluggable screw terminals: Type H1 fixed screw terminals: Type F1
Ingress protection	IP 20
Mounting	Metal interlock to attach to 35-mm mounting rail according to EN 50022. See dimension drawings for conductor cross-section
Weight	Approx. 150 g

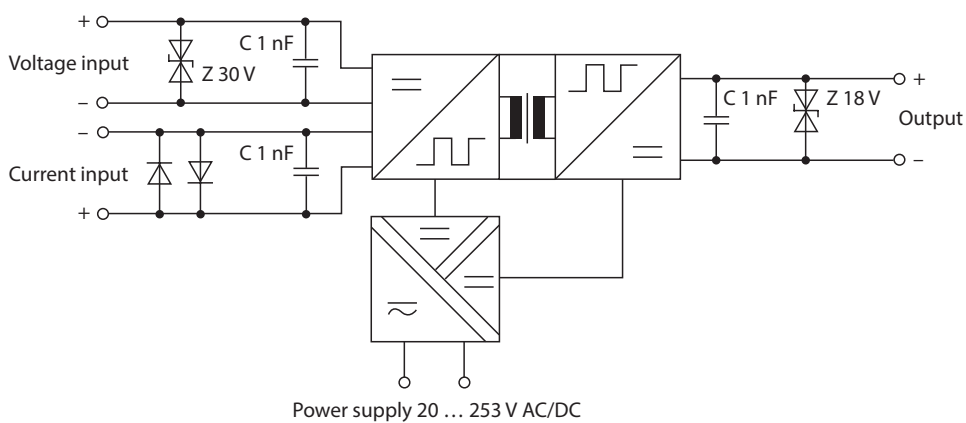
¹⁾ Higher voltage output loads upon request

²⁾ Average TC in the specified operating temperature range -10 °C ... +70 °C

³⁾ Slight deviations are possible while there is interference

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



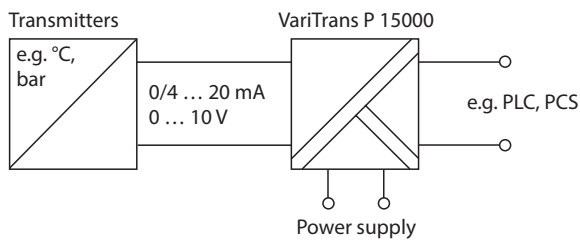
For up-to-date information, please visit www.knick.de



Typical Applications

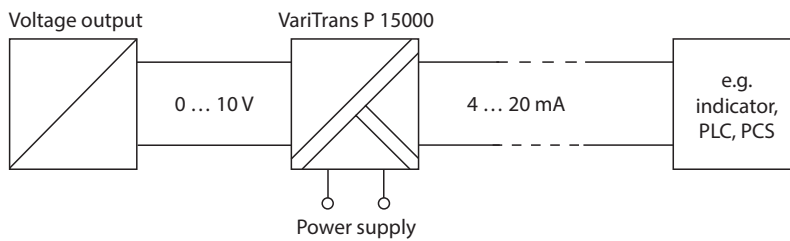
Potential isolation

for safe connection of the measurement signals to the processing electronics



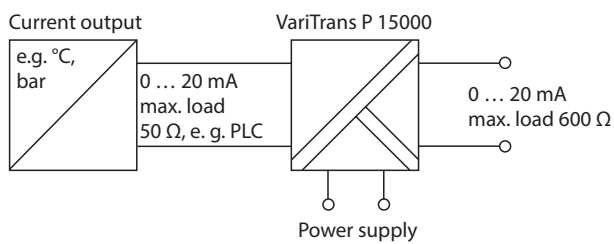
Signal conversion

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



Load increase

e.g. for measurement signals with low load capability



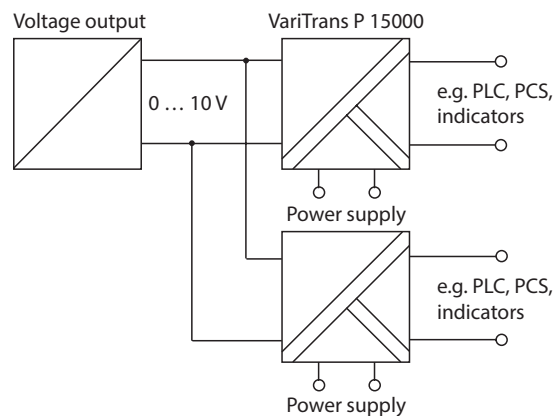
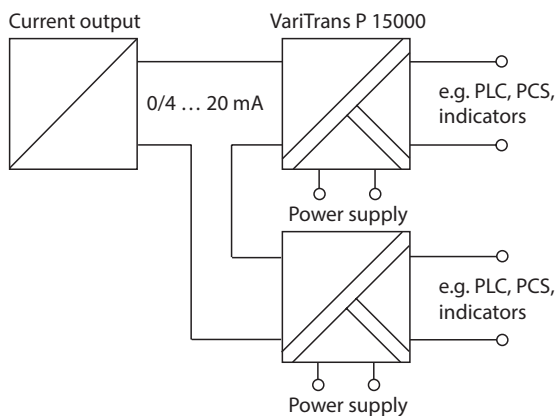
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Typical Applications (continued)

Signal multiplication

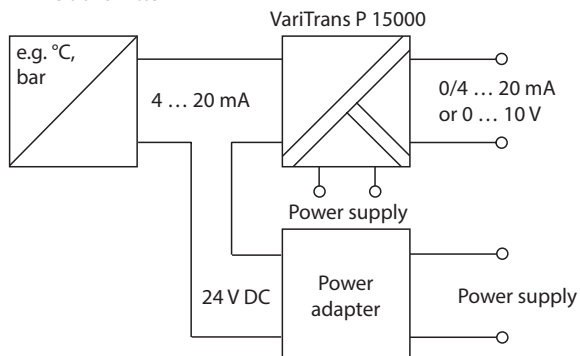
e.g. for safe processing of the measurement signals by different devices



2-wire operation

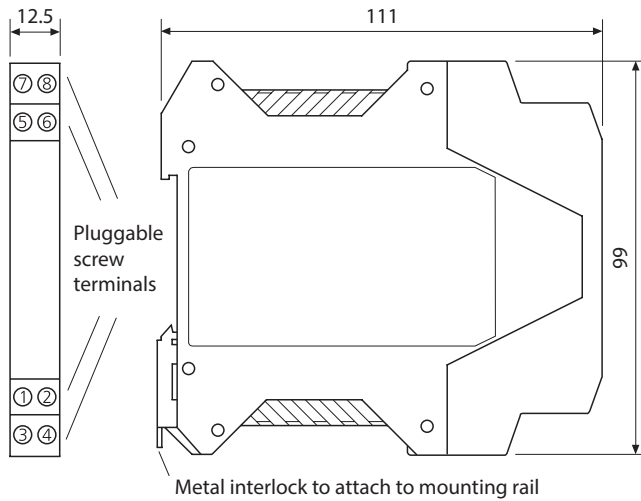
for easy configuration of 2-wire measurement circuits

2-wire transmitter



Dimension Drawings and Terminal Assignments

Housing with pluggable screw terminals



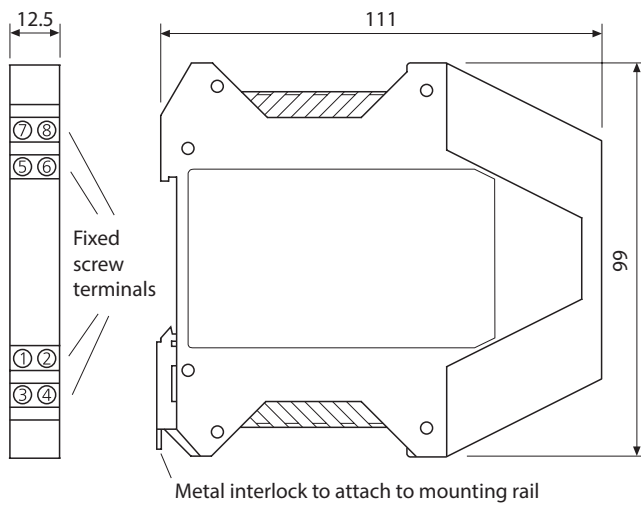
Terminal assignments

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

Conductor cross-section max. 2.5 mm²

Multi-wire connection max. 1 mm²
(two wires with equal diameters)

Housing with fixed screw terminals



All dimensions in mm