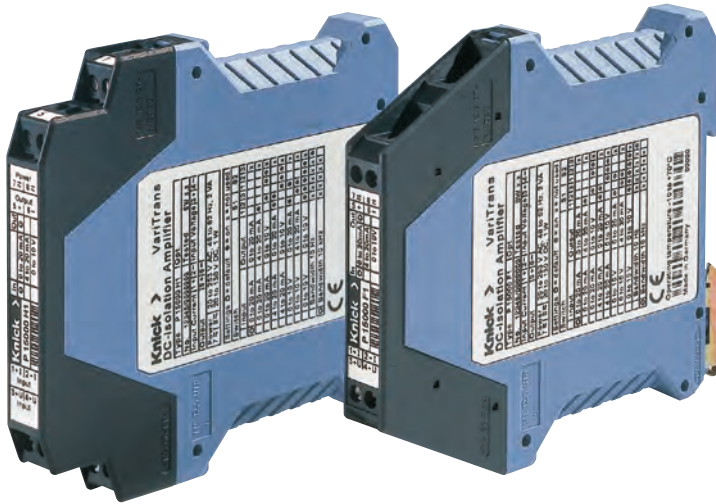


VariTrans P 15000

The professional signal conditioners.

With calibrated range selection and broad-range power supply.



The Task

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

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 signal conditioners feature excellent transmission quality combined with calibrated standard signal switching using DIP switches and a 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

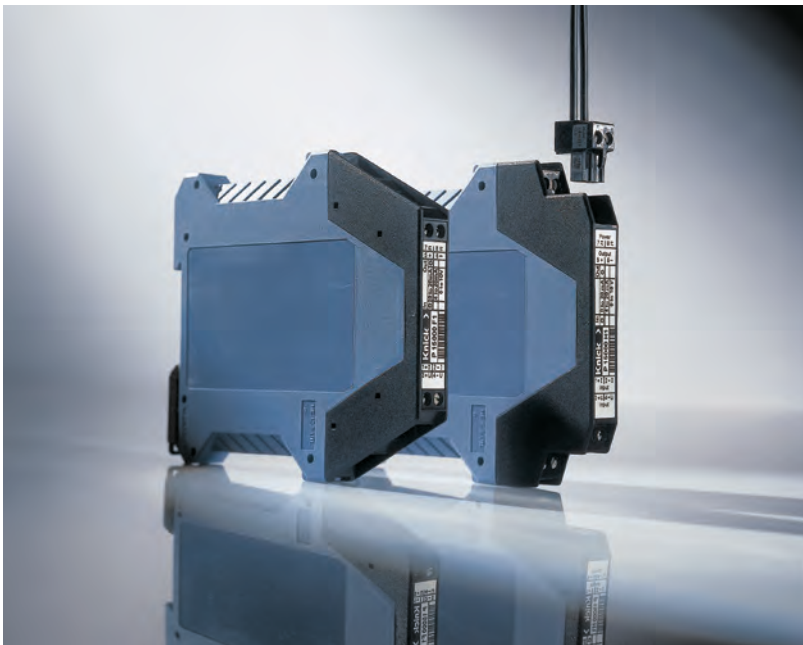
A microcontroller monitors the control element settings and controls the calibrated range selection. Interference with the signal transmission – due to contact resistance in the range switch, for example – is ruled out in this manner.

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.

VariTrans P 15000

Facts and Features

- **Flexible and extremely precise**
Calibrated range selection without complicated readjustments
- **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
- **Quick and easy configuration**
Housing can be easily opened
- **Pluggable screw terminals**
Simple, time-saving assembly and prewiring of enclosures
- **3-port separation**
Protection against incorrect measurements or damage
- **Maximum accuracy**
- **Specific test report**
following EN 10204 2.2
- **Protective separation**
according to EN 61140 protects against unpermitted high voltages
- **Maximum reliability**
No repair and failure costs
- **5-year warranty**



Product Line

Device	Input	Output	Order no.	Order no.
			with pluggable screw terminal	with fixed screw terminal
VariTrans P 15000 with calibrated switching of input and output	0 ... 20 mA	0 ... 20 mA	P 15000 H1	P 15000 F1
	4 ... 20 mA	4 ... 20 mA		
	0 ... 10 V	0 ... 10 V		
VariTrans P 15000 with fixed settings	0 ... 20 mA	0 ... 20 mA	P 15016 H1	P 15016 F1
	0 ... 20 mA	4 ... 20 mA	P 15017 H1	P 15017 F1
	0 ... 20 mA	0 ... 10 V	P 15018 H1	P 15018 F1
	4 ... 20 mA	0 ... 20 mA	P 15026 H1	P 15026 F1
	4 ... 20 mA	4 ... 20 mA	P 15016 H1	P 15016 F1
	4 ... 20 mA	0 ... 10 V	P 15028 H1	P 15028 F1
	0 ... 10 V	0 ... 20 mA	P 15036 H1	P 15036 F1
	0 ... 10 V	4 ... 20 mA	P 15037 H1	P 15037 F1
	0 ... 10 V	0 ... 10 V	P 15038 H1	P 15038 F1

Power supply

20 ... 253 V AC/DC

VariTrans P 15000

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 (transmission of negative signals up to approx. -5 % full scale)	switchable (default setting 0 ... 20 mA) or fixed setting (see product line)
Load	with output current with output voltage	≤ 12 V (600 ohms at 20 mA) ≤ 10 mA (1 kohm at 10 V) ¹⁾
Offset	20 μA or 10 mV	
Residual ripple	< 10 mV _{rms}	

Transmission behavior

Gain error ¹⁾	< 0.08 % meas.val. (DC)	
Cutoff frequency	> 10 kHz - 3 dB, P 15000 F1/H1 switchable to < 10 Hz -3 dB	
Response time T ₉₀	Approx. 70 μs with cutoff frequency 10 kHz	
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, take measures to prevent accidental contact and make sure that there is sufficient distance or insulation between adjacent devices.	
Protection against electric shock	Protective separation 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, take measures to prevent accidental contact and make sure that there is sufficient distance or insulation between adjacent devices.	

Specifications (continued)

Standards and approvals

Surge withstand	5 kV, 1.2/50 μ s, according to IEC 255-4
EMC ³⁾	EN 61326-1
Approvals	CUL: File-No. E216767, Standards UL 61010-1, CSA-C22.2-95, No. 10101-1 GL: No. 14593-99 HH KTA: 3503 / 3507
RoHS conformity	According to directive 2011/65/EU

Further data

MTBF ⁴⁾	Approx. 91 years
Ambient temperature	Operation: -10 ... +70 °C Transport and storage: -40 ... +85 °C
Ambient conditions	Indoor use ⁵⁾ ; relative humidity 5 ... 95 %, no condensation; max. altitude 2000 m (air pressure: 790 ... 1060 hPa) ⁶⁾
Design	Modular housing, 12.5 mm wide, see dimension drawings for further measurements, pluggable screw terminals: Type H1 fixed screw terminals: Type F1 Connection: pluggable ...H1; fixed ...F1 Conductor cross section max. 2.5 mm ² Multi-wire connection max. 1 mm ² (two wires with equal diameters)
Tightening torque	0.7 Nm
Ingress protection	IP 20
Mounting	Metal interlock to attach to 35 mm DIN rail according to EN 60715
Weight	Approx. 150 g

¹⁾ Input 4 ... 20 mA: Offset switching not calibrated

²⁾ Higher output load upon request

³⁾ Average TC in the specified operating temperature range -10 °C ... +70 °C

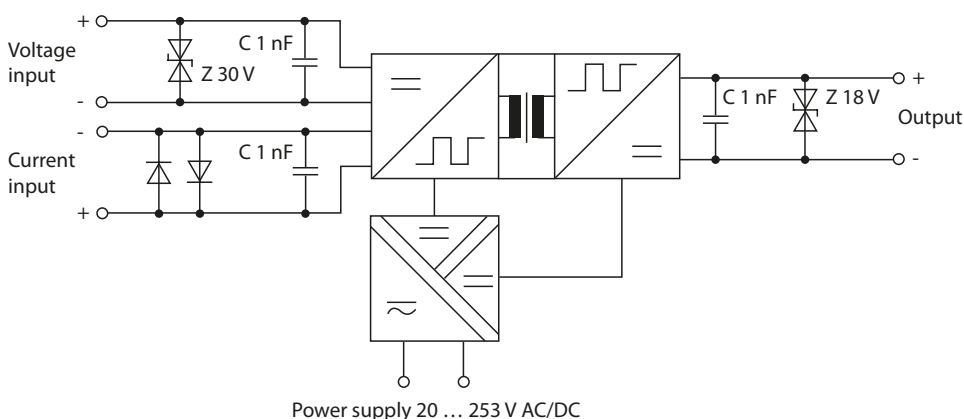
⁴⁾ Slight deviations are possible while there is interference

⁵⁾ 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

⁶⁾ Closed, weather-protected operating areas (stationary operation), water or wind-driven precipitation (rain, snow, hail, etc.) excluded

⁷⁾ Lower air pressure reduces the allowable working voltages.

Block Diagram

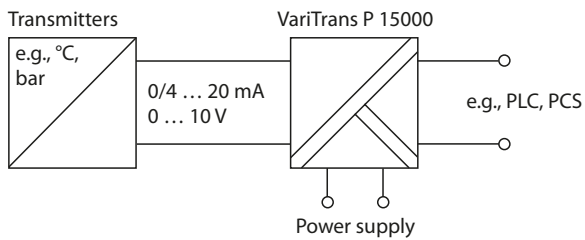


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Typical Applications

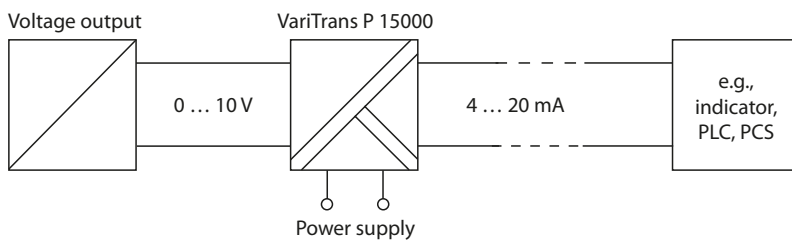
Potential isolation

for safe connection of the measurement signals to the processing electronics



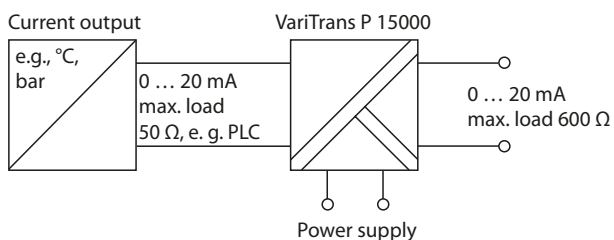
Signal conversion

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



Load increase

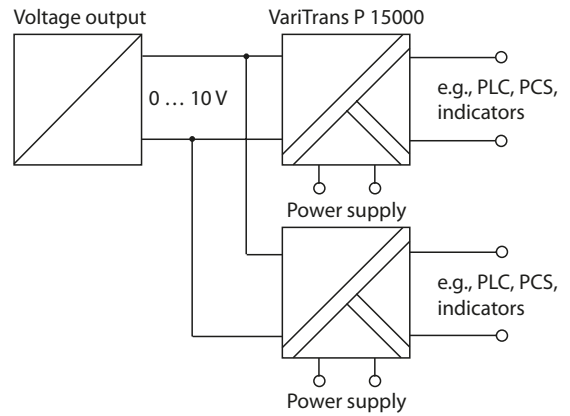
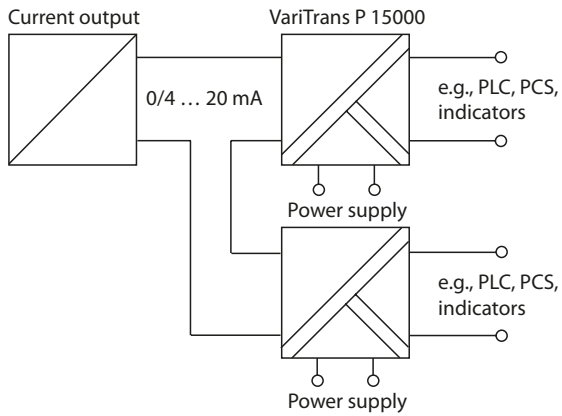
e.g., for measurement signals with low load capability



Typical Applications *(continued)*

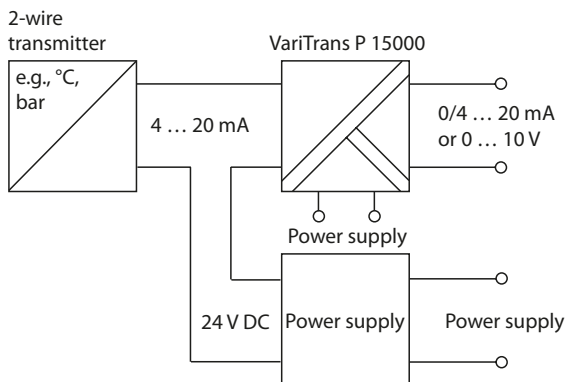
Signal multiplication

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



2-wire operation

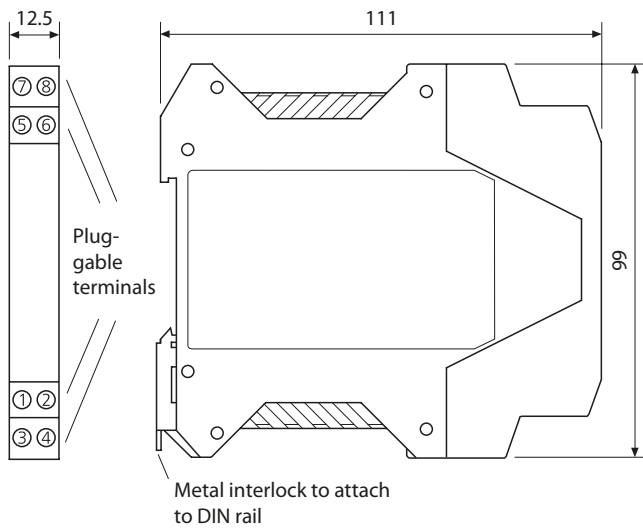
for easy configuration of 2-wire measurement circuits



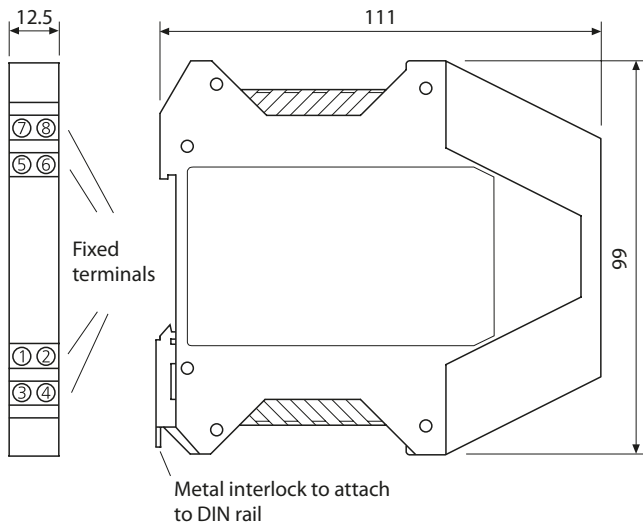
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Dimension Drawings and Terminal Assignments

Housing with pluggable screw terminals



Housing with fixed 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)

All dimensions in mm