

Attention – High Voltage!

VariTrans® P 40000 High-Voltage Isolators

The new reference for galvanic isolation and standardization of voltages and currents at a high potential.

Isolation Amplifiers
Transmitters

Indicators

Process Analyzers

Portable Meters

Laboratory Meters

Sensors

Fittings



Knick 

High-voltage isolation with the new TransShield® technology

Knick >



VariTrans® P 40000

Working voltages up to 3600 V AC/DC and test voltage up to 15 kV AC, calibrated range selection and VariPower® broad-range power supply, extreme efficiency compressed in compact modular housing – with a unique combination of product features Knick's new VariTrans® P 40000 series shows what is possible today in isolators with high isolation capability.

The universal devices transmit voltages and currents, ensure galvanic isolation with high insulation and convert the input signal with high accuracy into a standardized output signal.

■ TransShield® technology

In this series, Knick relies on the newly developed TransShield® technology which compared to conventional designs enables very compact high-voltage transformers with low leakage.

Thanks to the resulting space advantage, the P 41000 shunt isolators could be implemented in an only 22.5 mm wide modular housing.

Another substantial advantage of this technology: high transient overvoltages (common-mode interference) are reliably isolated and cause hardly any measurement errors at the output. The term T-CMR (Transient Common

Mode Rejection) is defined for the corresponding data specification. It describes the quotient between differential DC gain and common-mode gain of a transient interference signal with a rise speed of 1000 V/μs.

The VariTrans® P 40000 series devices achieve a T-CMR of 115 dB here; the common-mode rejection for 50 Hz disturbances is 150 dB.

■ Calibrated range selection

A highly functional and unique feature of high voltage isolators is the calibrated range selection: 16 input/output signal combinations can be easily selected with a rotary coding switch on the front of the device. Tedious on-site adjustment using a screwdriver, calibrator or multimeter is no longer required. There are no drift problems due to instable trim components – e.g. potentiometers.

Easy scalability of the range selection supports customized solutions; optimally adapted to the respective application, up to 16 tailor-made signal combinations can be implemented in one device.





■ **Integrated broad-range power supply**

Maximum flexibility and direct added value for the user is also provided by the integrated 20 to 253 V AC/DC broad-range power supply. This ensures trouble-free operation with alternating or direct voltages everywhere in the world and provides for maximum safety even in unstable power supply networks. Installation is also easy and safe: Incorrect assignment of the mains voltage is practically excluded; expensive downtimes and repairs during commissioning are avoided.

■ **Maximum safety**

Vacuum encapsulation protects the circuitry against environmental influences and reliably ensures the high insulation strength required for working voltages up to 3600 V AC/DC. At the same time, not only the safety regulations stipulated in EN 61010-1 but also the regulations of the EN 50124-1 standard (insulation coordination for railway applications) are observed. Thus the

isolators are excellently equipped for galvanically isolated measurements in railway transportation technologies up to a voltage of 3000 V DC.

To prove insulation according to specification, a 100 % routine test is carried out with a voltage of 15 kV AC (fixed range models) and 10 kV AC (switchable models) respectively. The vacuum encapsulation technology employed by Knick provides maximum long-term protection against aggressive environmental influences, shock, and vibrations.

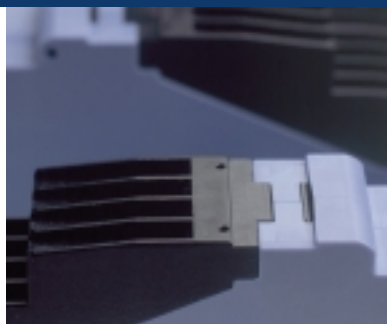
■ **Impressive functionality**

Also in the new VariTrans® P 40000 series, the switching technology and device construction ensure excellent transmission quality that is reflected, among other things, in the zero stability, linearity, long-term stability, frequency response and immunity to interference. Thanks to the high cut-off frequency of the

devices, the signal form on the input is reproduced on the output without distortion. Fast changes in the input signal are converted almost without delay into a corresponding change in the output signal.

In the input signals, the new Knick high-voltage isolators provide a wide measurement range: from a millivolt range – for example for the measurement of large currents via shunt resistances – to high voltages in the kilovolt range; currents up to 5 A can be measured directly. Analog unipolar and bipolar (standard) signals are available at the output of the high voltage isolators. The planner or user can select any combination from the input and output signal and thus take into account the individual conditions of use flexibly.

VariTrans® P 40000 High-Voltage Isolators



■ Versatile applications

The VariTrans® P 40000 series is interesting for applications in the monitoring and control of electric drive systems that can be operated with medium or high voltages. Further applications can be found in railway power supply; main tasks include voltage monitoring or measurement of operating and fault currents in direct current switchgear.

This device class offers previously unknown efficiency and flexibility which support the user optimally in the development of his product or system solution.

■ Optimized series

For different measuring ranges and standard requirements, three series in 22.5 to 67.5 mm wide housings are offered – either as variants with fixed settings or as switchable version with calibrated range selection.

The working voltage for fixed range models is 3600 V AC/DC (test voltage 15 kV AC), and 2200 V AC/DC (test voltage 10 kV AC) for switchable models. The impressed 0 to ±20 mA, 0 to ±10 V or 4 to 20 mA signals are available at the output. Customer-specific devices can be equipped with up to 16 freely selectable signal combinations.

The facts:

Universal usability: input 60 mV up to 3600 V or 100 mA up to 5 A

New TransShield® technology enables extremely compact modular housing

Working voltages up to 3600 V AC/DC

Protection against electrical shock through Safe Isolation up to 1800 V AC/DC

Increased test voltage 15 kV AC

Excellent transmission properties:

- gain error only to 0.1 %
- cut-off frequency >5 kHz
- rise time T90 <0.1 ms

Practically no influence from common-mode voltages: CMRR > 150 dB

High immunity to transient interferences: T-CMR > 115 dB

Tremendous flexibility provided by

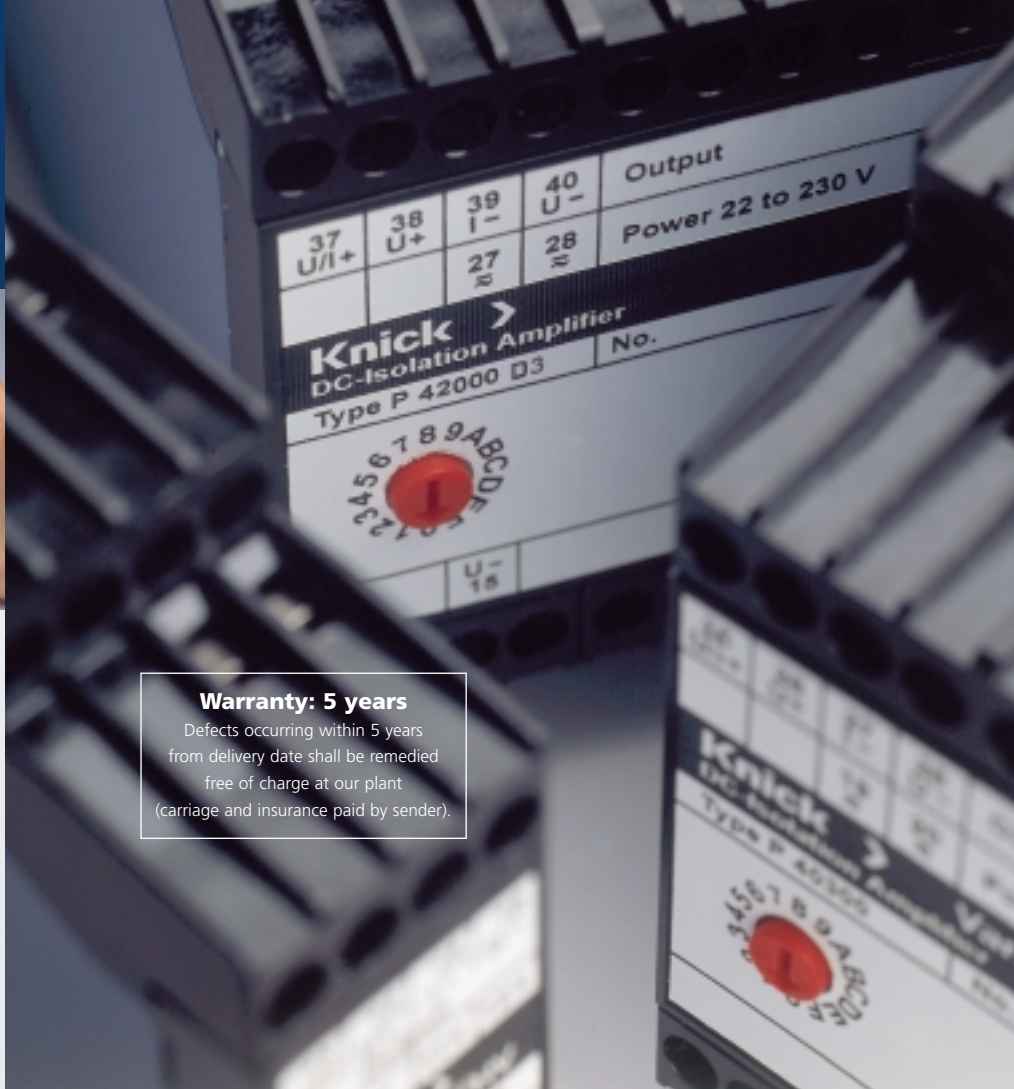
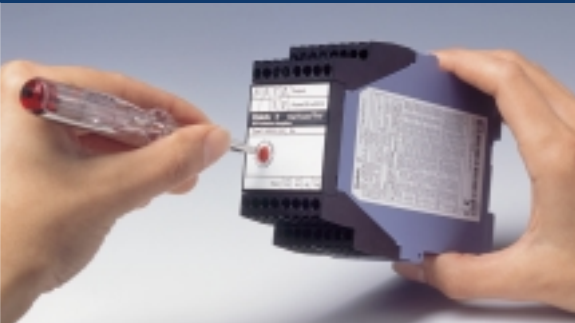
- calibrated switching of up to 16 input/output ranges
- up to 16 customer-specific measuring ranges
- VariPower® 20 V to 253 V AC/DC broad-range power supply unit

Reliable function even with unstable supply

No destruction in the event of erroneously incorrect mains voltage. Switchable types reduce variety of versions, thus saving storage costs

Robust thanks to vacuum encapsulation





Warranty: 5 years
 Defects occurring within 5 years from delivery date shall be remedied free of charge at our plant (carriage and insurance paid by sender).

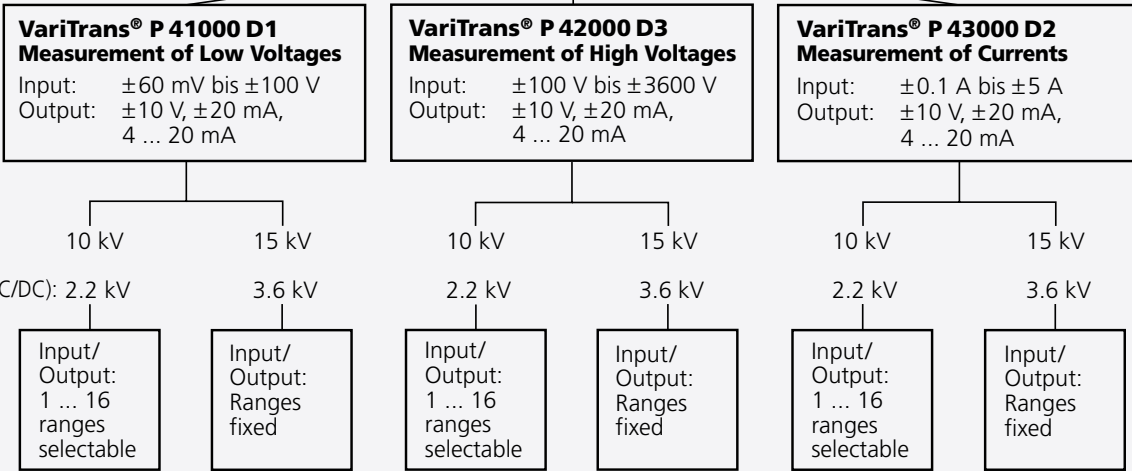
Suitable for direct current railway systems up to 3000 V DC

Mechanically stable for operation on ships, rail vehicles and land crafts

Warranty: 5 years

VariTrans® P 40000 High Voltage Isolator

Power supply 20 ... 253 V AC/DC





Product line

Devices

Input

Output

Order no.

Working voltage:
≤2.2 kV AC/DC

Test voltage: 10 kV AC

Order no.

Working voltage:
≤3.6 kV AC/DC

Test voltage: 15 kV AC

VariTrans® P 41000
Input and output
adjustable

±60/90/150/300/
500 mV/10 V¹⁾,
switchable

±10 V, ±20 mA and
4 ... 20 mA,
switchable

P 41000 D1

–

VariTrans® P 41000
Fixed settings

±60 mV
±60 mV
0 ... 60 mV
±60 mV
±90 mV
±90 mV
0 ... 90 mV
±90 mV
±150 mV
±150 mV
0 ... 150 mV
±150 mV
±300 mV
±300 mV
0 ... 300 mV
±300 mV
±500 mV
±500 mV
0 ... 500 mV
±500 mV
±1 V
±1 V
0 ... 1 V
±1 V
±10 V
±10 V

±20 mA
4 ... 20 mA
4 ... 20 mA
±10 V
±20 mA
4 ... 20 mA
4 ... 20 mA
±10 V
±20 mA
4 ... 20 mA
4 ... 20 mA
±10 V
±20 mA
4 ... 20 mA
4 ... 20 mA
±10 V
±20 mA
4 ... 20 mA
4 ... 20 mA
±10 V
±20 mA
4 ... 20 mA
4 ... 20 mA
±10 V
±20 mA
4 ... 20 mA
4 ... 20 mA
±10 V
±20 mA
4 ... 20 mA
4 ... 20 mA
±10 V
±20 mA

P 41056 D1
P 41059 D1
P 41057 D1
P 41058 D1
P 41046 D1
P 41049 D1
P 41047 D1
P 41048 D1
P 41066 D1
P 41069 D1
P 41067 D1
P 41068 D1
P 41076 D1
P 41079 D1
P 41077 D1
P 41078 D1
P 41086 D1
P 41089 D1
P 41087 D1
P 41088 D1
P 41096 D1
P 41099 D1
P 41097 D1
P 41098 D1
P 41036 D1
P 41038 D1

P 41156 D1
P 41159 D1
P 41157 D1
P 41158 D1
P 41146 D1
P 41149 D1
P 41147 D1
P 41148 D1
P 41166 D1
P 41169 D1
P 41167 D1
P 41168 D1
P 41176 D1
P 41179 D1
P 41177 D1
P 41178 D1
P 41186 D1
P 41189 D1
P 41187 D1
P 41188 D1
P 41196 D1
P 41199 D1
P 41197 D1
P 41198 D1
P 41136 D1
P 41138 D1

VariTrans® P 41000
To customer
requirements

±60 mV ... 100 V one
or more ranges to cus-
tomer requirements²⁾

±10 V, ±20 mA,
4 ... 20 mA, one or
more ranges to cus-
tomer requirements²⁾

P 41000 D1-nnnn

–

±60 mV ... 100 V
fixed, to customer
requirements²⁾

±10 V, ±20 mA,
4 ... 20 mA, fixed, to
customer requirements²⁾

P 41000 D1-nnnn

P 41100 D1-nnnn

Power supply

20 ... 253 V AC/DC

1) Input ± 10 V, switchable only with output ± 10 V

2) Please specify settings when ordering

■ Specifications

Input

Inputs	P 41000 D1	60 mV, 90 mV, 150 mV, 300 mV, 500 mV, 10 V, unipolar/bipolar calibrated range selection, factory setting: ± 10 V
	P 41000 D1-nnnn	60 mV ... 100 V, unipolar/bipolar 1 to 16 ranges to customer requirements, calibrated selection
	P 41100 D1-nnnn	60 mV ... 100 V, unipolar/bipolar fixed setting to customer requirements
Input resistance	Range ≤ 0.5 V	Approx. 100 kohms
	Range > 0.5 V	> 2 Mohms
Input capacitance	Range ≤ 0.5 V	Approx. 10 nF
	Range > 0.5 V	Approx. 1 nF
Overload	Range ≤ 10 V	Limited to 36 V by suppressor diode, permissible permanent current = 20 mA
	Range > 10 V	Limited to 150 V by suppressor diode, permissible permanent current = 3 mA

Output

Output	P 41000 D1	20 mA, 10 V unipolar/bipolar and 4 ... 20 mA calibrated range, factory setting: ± 10 V
	P 41000 D1-nnnn	20 mA, 10 V unipolar/bipolar and/or 4 ... 20 mA calibrated range, factory setting
	P 41100 D1-nnnn	20 mA, 10 V unipolar/bipolar or 4 ... 20 mA calibrated range, factory setting
Offset	Factory setting up to ± 150 %	
Load	With output current	≤ 12 V (600 ohms at 20 mA)
	With output voltage	≤ 10 mA (1000 ohms at 10 V)
Offset	< 20 μ A or 10 mV	
Residual ripple	< 10 mV _{rms}	

VariTrans® P 41000 D1

■ Specifications, continued

Transmission behavior

Gain error	<0.1 % meas. val.		
Cut-off frequency (–3 dB)	>5 kHz; optional factory setting: 10 Hz		
Common mode rejection	Input ranges ≤1 V	CMRR ¹⁾	approx. 150 dB (DC/AC: 50 Hz)
		T-CMR ²⁾	approx. 115 dB (1000 V, tr = 1 μs)
	Input ranges >1 V	CMRR ¹⁾	DC: approx. 150 dB
			AC 50 Hz: approx. 120 dB
Temperature influence ³⁾	<50 ppm/K full scale		

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, power supply		
Test voltage	Calibrated selection	10 kV AC input against output and power supply	
	Fixed settings	15 kV AC input against output and power supply	
	All models	4 kV AC output against power supply	
Working voltage (basic insulation) to EN 61010-1	Calibrated selection	Up to 2200 V AC/DC across input, output and power supply with overvoltage category III and pollution degree 2 (transient overvoltage 13.5 kV).	
	Fixed settings	Up to 3600 V AC/DC across input, output and power supply with overvoltage category III and pollution degree 2 (transient overvoltage max. 20 kV).	
Working voltage (basic insulation) to EN 50124-1	Calibrated selection	Up to 1800 V AC/DC across input, output and power supply with overvoltage category III and pollution degree 2.	
	Fixed settings	Up to 3000 V AC/DC across input, output and power supply with overvoltage category III and pollution degree 2.	

■ Specifications, continued

Isolation

Protection against electrical shock	Calibrated range selection	Safe Isolation according to EN 61140 by reinforced insulation in accordance with EN 61010-1 Working voltages with overvoltage category III and pollution degree 2: – up to 1100 V AC/DC across input and output/ power supply
	Fixed settings	– up to 300 V AC/DC across output and power supply Safe Isolation according to EN 61140 by reinforced insulation in accordance with EN 61010-1 Working voltages with overvoltage category III and pollution degree 2: – up to 1800 V AC/DC across input and output/ power supply – up to 300 V AC/DC across output and power supply
For applications with high working voltages, you should ensure there is sufficient spacing or isolation from neighboring devices and protection against electrical shocks.		

Standards and approvals

EMC ⁴⁾	Product standard EN 61326 Emitted interference: Class B Immunity to interference: Industry
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Further data

Ambient temperature ⁵⁾	Operation: –10 ... +70 °C Transport and storage: –40 ... +85 °C
Design	Modular housing with screw connectors, width D1: 22.5 mm, See dimension drawing for other measurements
Protection class	Housing IP40, terminals IP20
Mounting	Snap-on mounting on 35 mm top hat rail according to EN 60715
Weight	Approx. 180 g

1) Common-Mode Rejection Ratio = $\frac{\text{Differential-mode voltage gain}}{\text{Common-mode voltage gain}}$

2) Transient Common-Mode Rejection = $\frac{\text{Differential-mode DC voltage gain}}{\text{Common-mode transient crest value gain}}$

3) Reference temperature for TC specifications = 23 °C, the average TC is specified

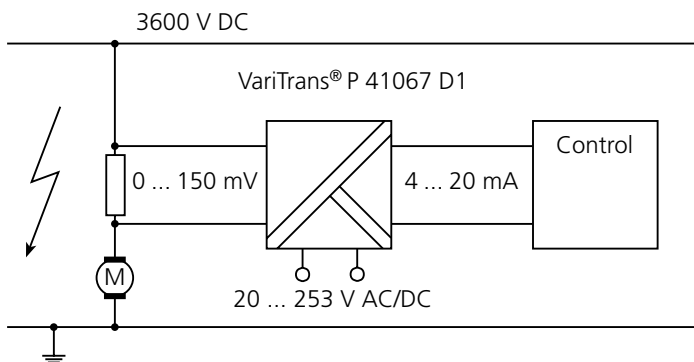
4) Slight deviations are possible during interference

5) Increased operation temperature range –40 ... +85 °C on request

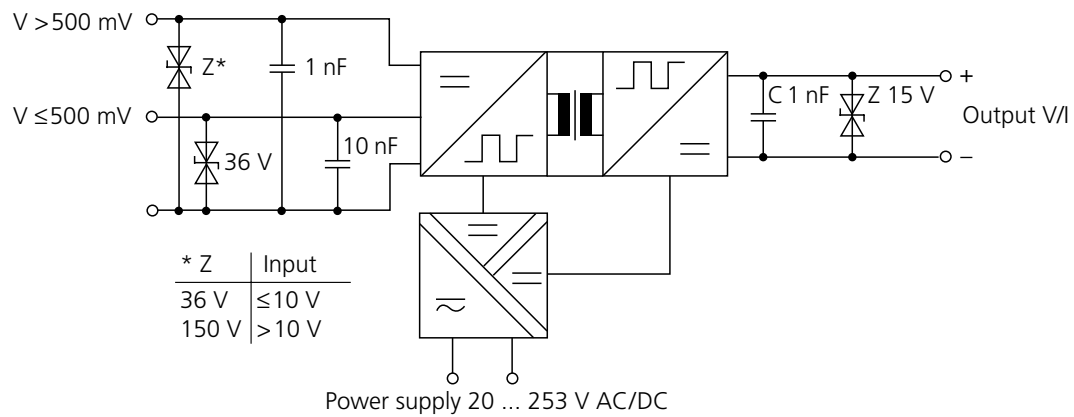
VariTrans® P 41000 D1

■ Typical application

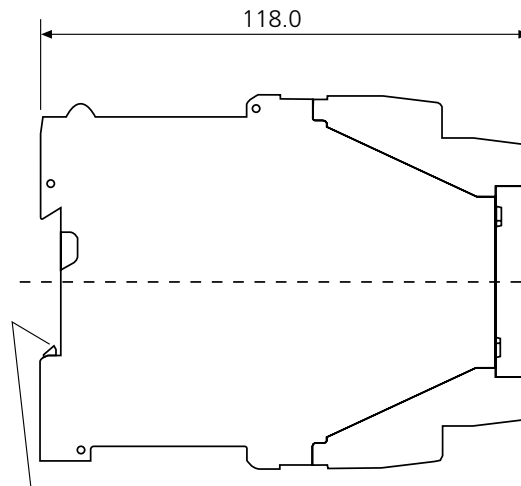
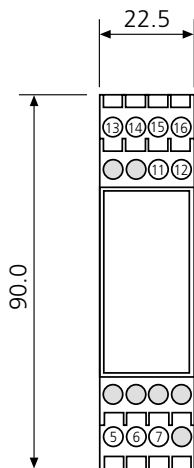
Current measurement with shunt resistor



■ Schematic diagram



■ Dimension drawing and terminal assignments



Snap-on mounting for 35 mm top hat rail to EN 50 022

Terminal assignment:

- 5 Input voltage + (0.5 ... 100 V)
- 6 Input voltage + (60 ... 500 mV)
- 7 Input –

- 11 Power supply AC/DC
- 12 Power supply AC/DC

- 13 Output current + \downarrow
- 14 Output voltage + \downarrow
- 15 Output current –
- 16 Output voltage –

M 3.5 connecting screws with self-releasing terminal case, max. conductor cross section 1 x 4 mm² solid or 1 x 2.5 mm² stranded wire with ferrule, min. 1 x 0.5 mm² solid or stranded wire with ferrule.

For switchable devices and voltage output, place jumper across terminals 13 and 14

Knick >

■ Product line

Devices	Input	Output	Working voltage	Test voltage	Order no.
VariTrans® P 42000 Input and output adjustable	±400 / 600 / 800 / 1000 / 1200 V, switchable	±10 V, ±20 mA, 4 ... 20 mA, switchable	up to 2.2 kV AC/DC	10 kV AC	P 42000 D3
	±1400 / 1600 / 1800 / 2000 / 2200 V, switchable	±10 V, ±20 mA, 4 ... 20 mA, switchable	up to 2.2 kV AC/DC	10 kV AC	P 42001 D3
VariTrans® P 42000 Adjusted to customer requirements	±100 V ... 2200 V, one or more ranges to customer requirements ¹⁾	±10 V, ±20 mA, 4 ... 20 mA, one or more ranges to customer requirements ¹⁾	up to 2.2 kV AC/DC	10 kV AC	P 42000 D3-nnnn
	±100 V ... 3600 V, fixed, to customer requirements ¹⁾	±10 V, ±20 mA, 4 ... 20 mA, fixed, to customer requirements ¹⁾	up to 3.6 kV AC/DC	15 kV AC	P 42100 D3-nnnn

Power supply

20 ... 253 V AC/DC

1) Please specify desired settings when ordering



■ Specifications

Input

Inputs	P 42000 D3	400 V, 600 V, 800 V, 1000 V, 1200 V, unipolar/bipolar calibrated selection, factory setting: ± 1200 V
	P 42001 D3	1400 V, 1600 V, 1800 V, 2000 V, 2200 V, unipolar/bipolar calibrated selection, factory setting: ± 2200 V
	P 42000 D3-nnnn	100 V ... 2200 V, unipolar/bipolar 1 to 16 ranges to customer requirements, calibrated selection
	P 42100 D3-nnnn	100 V ... 3600 V, unipolar/bipolar fixed setting to customer requirements
Input resistance	P 42000 D3	7.2 Mohms
	P 42001 D3	14 Mohms
	P 42000 D3-nnnn	>5 Mohms
	P 42100 D3-nnnn	>5 Mohms
Input capacitance	<10 pF	
Overload	20 % full scale, max. ± 3900 V	
	20 % full scale, max. ± 3900 V	

Output

Output	P 42000 D3	20 mA, 10 V unipolar/bipolar and 4 ... 20 mA calibrated selection, factory setting: ± 10 V
	P 42001 D3	20 mA, 10 V unipolar/bipolar and 4 ... 20 mA calibrated selection, factory setting: ± 10 V
	P 42000 D3-nnnn	20 mA, 10 V unipolar/bipolar and/or 4 ... 20 mA calibrated selection, to customer requirements
	P 42100 D3-nnnn	20 mA oder 10 V unipolar/bipolar or 4 ... 20 mA fixed setting to customer requirements
Offset	Factory setting up to ± 150 %	
Load	With output current	≤ 12 V (600 ohms at 20 mA)
	With output voltage	≤ 10 mA (1000 ohms at 10 V)
Offset	<20 μ A or 10 mV	
Residual ripple	<10 mV _{rms}	

VariTrans® P 42000 D3

■ Specifications, continued

Transmission behavior

Gain error	<0.3 % meas. val.
Cut-off frequency (-3 dB)	Approx. 5 kHz; optional factory setting: 10 Hz
Temperature influence ¹⁾	100 ppm/K full scale

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	Calibrated range selection	10 kV AC across input and output/power supply
	Fixed settings	15 kV AC across input and output/power supply
	All models	4 kV AC output to power supply
Working voltage (basic insulation) to EN 61010-1	Calibrated range selection	Up to 2200 V AC/DC across input, output and power supply with overvoltage category III and pollution degree 2 (transient overvoltage: 13.5 kV).
	Fixed settings	Up to 3600 V AC/DC across input, output and power supply with overvoltage category III and pollution degree 2 (transient overvoltage 20 kV).
Working voltage (basic insulation) to EN 50124-1	Calibrated range selection	Up to 1800 V AC/DC between input, output and power supply with overvoltage category III and pollution degree 2.
	Fixed settings	Up to 3000 V AC/DC between input, output and power supply with overvoltage category III and pollution degree 2.

■ Specifications, continued

Isolation

Protection against electrical shock	Calibrated range selection	Safe Isolation according to EN 61140 by reinforced insulation in accordance with EN 61010-1 Working voltages with overvoltage category III and pollution degree 2: – up to 1100 V AC/DC across input and output/ power supply
	Fixed settings	– up to 300 V AC/DC across output and power supply Safe Isolation according to EN 61140 by reinforced insulation in accordance with EN 61010-1 Working voltages with overvoltage category III and pollution degree 2: – up to 1800 V AC/DC across input and output/ power supply – up to 300 V AC/DC across output and power supply
For applications with high working voltages, you should ensure there is sufficient spacing or isolation from neighboring devices and protection against electrical shocks.		

Standards and approvals

EMC ²⁾	Product standard EN 61326 Emitted interference: Class B Immunity to interference: Industry
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Further data

Ambient temperature ³⁾	Operation: –10 ... +70 °C Transport and storage: –40 ... +85 °C
Design	Modular housing with screw connectors, width D3: 67.5 mm, See dimension drawing for other measurements
Protection class	Housing IP40, terminals IP20
Mounting	Snap-on mounting on 35 mm top hat rail according to EN 60715
Weight	Approx. 500 g

1) Reference temperature for TC specifications = 23 °C, the average TC is specified

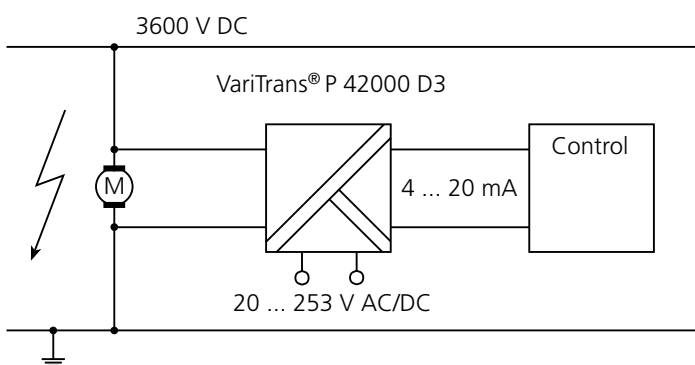
2) Slight deviations are possible during interference

3) Increased operation temperature range –40 ... +85 °C on request

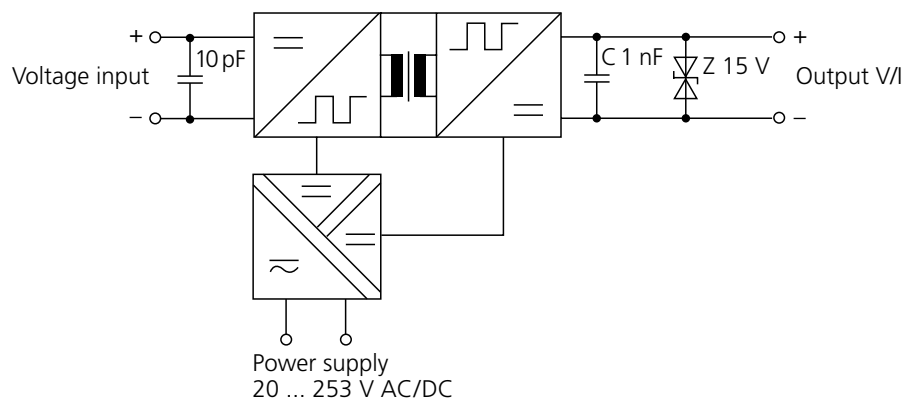
VariTrans® P 42000 D3

■ Typical application

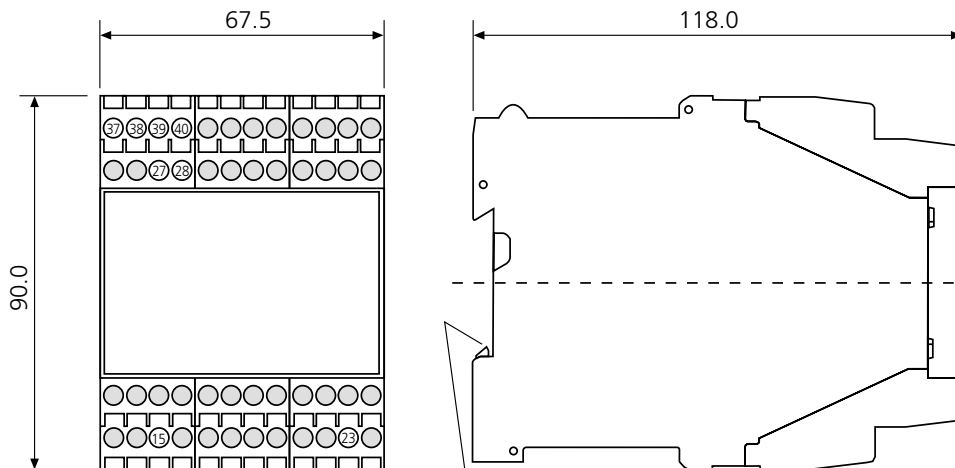
Direct measurement of supply voltage



■ Schematic diagram



■ Dimension drawing and terminal assignments



Terminal assignment:

- 15 Input voltage –
- 23 Input voltage + (≤ 3600 V)
- 27 Power supply AC/DC
- 28 Power supply AC/DC
- 37 Output current + $\left[\begin{array}{l} \text{---} \\ \text{---} \end{array} \right]$
- 38 Output voltage + $\left[\begin{array}{l} \text{---} \\ \text{---} \end{array} \right]$
- 39 Output current –
- 40 Output voltage –

M 3.5 connecting screws with self-releasing terminal case, max. conductor cross section $1 \times 4 \text{ mm}^2$ solid or $1 \times 2.5 \text{ mm}^2$ stranded wire with ferrule, min. $1 \times 0.5 \text{ mm}^2$ solid or stranded wire with ferrule.

For switchable devices and voltage output, place jumper across terminals 13 and 14

Snap-on mounting for 35 mm top hat rail to EN 50 022



■ Product line

Devices	Input	Output	Working voltage	Test voltage	Order no.
VariTrans® P 43000 input and output adjustable	$\pm 1 / 1.5 / 2 / 3 / 5$ A, switchable	± 10 V, ± 20 mA, 4 ... 20 mA, switchable	Up to 2.2 kV	10 kV	P 43000 D2
VariTrans® P 43000 adjusted to cus- tomer requirements	± 0.1 A ... 5 A one or more ranges to cus- tomer requirements ¹⁾	± 10 V, ± 20 mA, 4 ... 20 mA, one or more ranges to cus- tomer requirements ¹⁾	Up to 2.2 kV	10 kV	P 43000 D2-nnnn
	± 0.1 A ... 5 A, fixed, to customer requirements ¹⁾	± 10 V, ± 20 mA, 4 ... 20 mA, fixed, to customer requirements ¹⁾	Up to 3.6 kV	15 kV	P 43100 D2-nnnn

Power supply

20 ... 253 V AC/DC

1) Please specify desired setting when ordering



■ Specifications

Input

Inputs	P 43000 D2	1 A, 1.5 A, 2 A, 3 A, 5 A, unipolar/bipolar calibrated selection, factory setting: ± 5 A
	P 43000 D2-nnnn	0.1 A ... 5 A, unipolar/bipolar 1 to 16 ranges to customer requirements, calibrated selection
	P 43100 D2-nnnn	0.1 A ... 5 A, unipolar/bipolar fixed setting to customer requirements
Input resistance	<0,6 ohms	
Input capacitance	approx. 1 nF	
Overload	20 % full scale	

Output

Output	P 43000 D2	20 mA, 10 V unipolar/bipolar and 4 ... 20 mA calibrated selection, factory setting: ± 10 V
	P 43000 D2-nnnn	20 mA, 10 V unipolar/bipolar and/or 4 ... 20 mA calibrated selection, to customer requirements
	P 43100 D2-nnnn	20 mA, 10 V unipolar/bipolar or 4 ... 20 mA fixed setting to customer requirements
Offset	Factory setting up to ± 150 %	
Load	With output current	≤ 12 V (600 ohms at 20 mA)
	With output voltage	≤ 10 mA (1000 ohms at 10 V)
Offset	<20 μ A or 10 mV	
Residual ripple	<10 mV _{rms}	

Transmission behavior

Gain error	<0.3 % meas. val.	
Cut-off frequency (-3 dB)	approx. 5 kHz; optional factory setting: 10 Hz	
Common mode rejection	CMRR ¹⁾	DC: approx. 150 dB AC 50 Hz: approx. 120 dB
Temperature influence ²⁾	<50 ppm/K full scale	

VariTrans® P 43000 D2

■ Specifications, continued

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
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Test voltage	Calibrated range selection	10 kV AC between input and output/power supply
	Fixed settings	15 kV AC between input and output/power supply
	All models	4 kV AC output to power supply

Working voltage (basic insulation) to EN 61010-1	Calibrated selection	Up to 2200 V AC/DC across input, output and power supply with overvoltage category III and pollution degree 2 (transient overvoltage 13.5 kV).
	Fixed settings	Up to 3600 V AC/DC across input, output and power supply with overvoltage category III and pollution degree 2 (transient overvoltage max. 20 kV).

Working voltage (basic insulation) to EN 50124-1	Calibrated selection	Up to 1800 V AC/DC across input, output and power supply with overvoltage category III and pollution degree 2.
	Fixed settings	Up to 3000 V AC/DC across input, output and power supply with overvoltage category III and pollution degree 2.

Protection against electrical shock	Calibrated range selection	Safe Isolation according to EN 61140 by reinforced insulation in accordance with EN 61010-1 Working voltages with overvoltage category III and pollution degree 2: – up to 1100 V AC/DC across input and output/ power supply – up to 300 V AC/DC across output and power supply
	Fixed settings	Safe Isolation according to EN 61140 by reinforced insulation in accordance with EN 61010-1 Working voltages with overvoltage category III and pollution degree 2: – up to 1800 V AC/DC across input and output/ power supply – up to 300 V AC/DC across output and power supply

For applications with high working voltages, you should ensure there is sufficient spacing or isolation from neighboring devices and protection against electrical shocks.

■ Specifications, continued

Standards and approvals

EMC ³⁾	Product standard EN 61326 Emitted interference: Class B Immunity to interference: Industry
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Further data

Ambient temperature ⁴⁾	Operation: -10 ... +70 °C Transport and storage: -40 ... +85 °C
Design	Modular housing with screw connectors, width D2: 45.0 mm, See dimension drawing for other measurements
Protection class	Housing IP40, terminals IP20
Mounting	Snap-on mounting on 35 mm top hat rail according to EN 60715
Weight	Approx. 350 g

1) Common-Mode Rejection Ratio = $\frac{\text{Differential-mode voltage gain}}{\text{Common-mode voltage gain}}$

2) Reference temperature for TC specifications = 23 °C, the average TC is specified

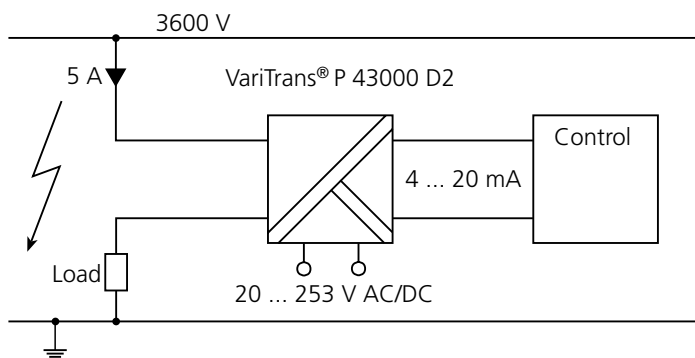
3) Slight deviations are possible during interference

4) Increased operation temperature range -40 ... +85 °C on request

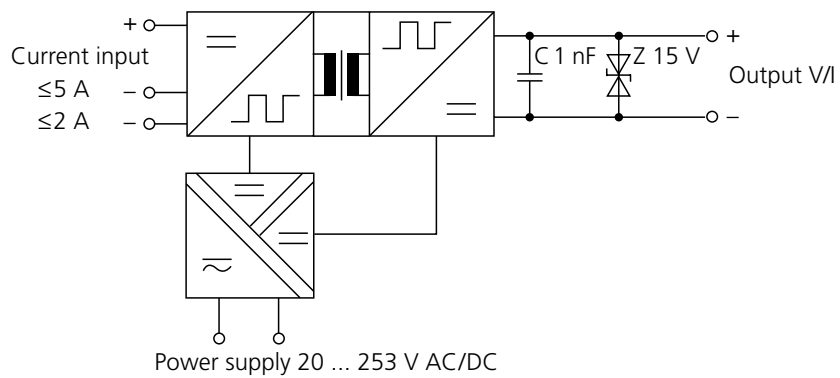
VariTrans® P 43000 D2

■ Typical application

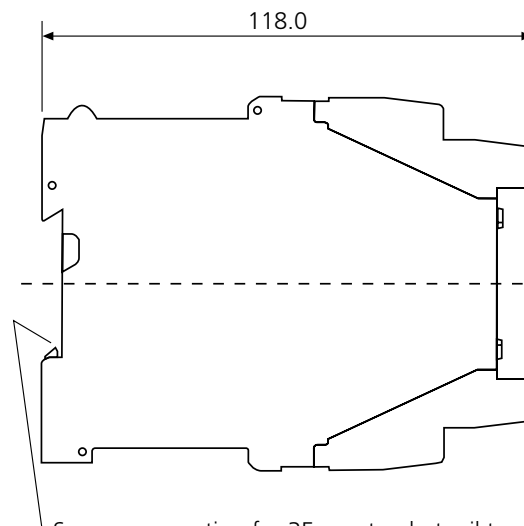
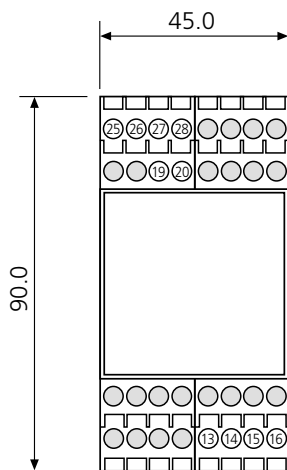
Direct current measurement at high input potential



■ Schematic diagram





■ Dimension drawing and terminal assignments



Terminal assignment:

- 13 n.c.
- 14 Input current +
- 15 Input current - (≤ 5 A)
- 16 Input current - (≤ 2 A)

- 19 Power supply AC/DC
- 20 Power supply AC/DC

- 25 Output current + 
- 26 Output voltage + 
- 27 Output current -
- 28 Output voltage -

M 3.5 connecting screws with self-releasing terminal case, max. conductor cross section 1 x 4 mm² solid or 1 x 2.5 mm² stranded wire with ferrule, min. 1 x 0.5 mm² solid or stranded wire with ferrule.

For switchable devices and voltage output, place jumper across terminals 25 and 26

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