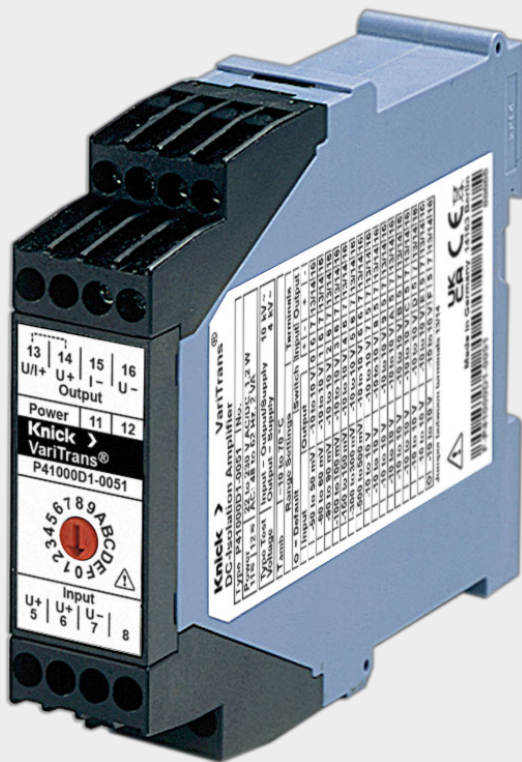


P41000

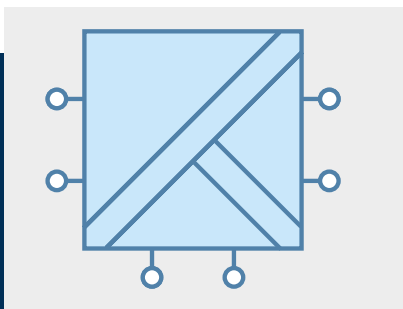
Universal high voltage transducer for electrically isolated measurement of currents at a high potential



P41000 is the proven solution for current measurement via a shunt resistor and for measuring small voltages at a high potential.

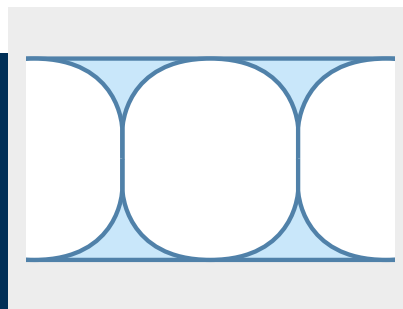
The high voltage transducer is designed for continuous voltages up to 3600 V AC/DC and transient overvoltages up to 30 kV. The P41000 safely separates the high potential of the input circuit during the measurement of low, bipolar voltages.

Protective separation in accordance with EN 61140 from the input to the output and to the auxiliary power reliably protects against electric shock up to 1800 V AC/DC.



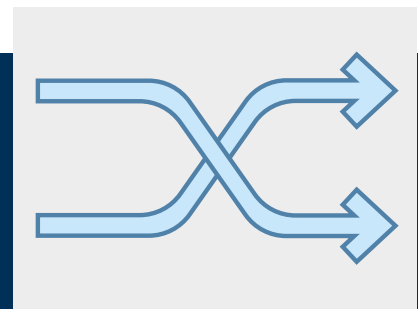
High Insulation

- Continuously voltage-proof in accordance with EN 61010-1, EN 50124-1, UL 347
- Basic insulation up to 3600 V
- Reinforced insulation up to 1800 V



High Signal Integrity

- Precise mapping of the waveform at the input on the output
- Cutoff frequency of 5 kHz
- T_{90} response time of 110 μ s



High Flexibility

- Up to 16 transmission ranges calibrated and switchable
- Freely selectable range limits
- Universal supply 22...230 V AC or DC

Product Identification

Input	Output	Model Designation Working voltage ≤ 2.2 kV AC/DC Test voltage 10 kV AC 1 to 16 ranges in accordance with customer requirements, calibrated and switchable	Model Designation Working voltage ≤ 3.6 kV AC/DC Test voltage 15 kV AC 1 calibrated transmission range in accordance with customer requirements
±60 mV, ±90 mV, ±150 mV, ±300 mV, ±500 mV, ±10 V, bipolar	±20 mA, ±10 V, bipolar and 4...20 mA	P41000D1	-
±60 mV	±20 mA	P41056D1	P41156D1
±60 mV	4...20 mA	P41059D1	P41159D1
0...60 mV	4...20 mA	P41057D1	P41157D1
±60 mV	±10 V	P41058D1	P41158D1
±90 mV	±20 mA	P41046D1	P41146D1
±90 mV	4...20 mA	P41049D1	P41149D1
0...90 mV	4...20 mA	P41047D1	P41147D1
±90 mV	±10 V	P41048D1	P41148D1
±150 mV	±20 mA	P41066D1	P41166D1
±150 mV	4...20 mA	P41069D1	P41169D1
0...150 mV	4...20 mA	P41067D1	P41167D1
±150 mV	±10 V	P41068D1	P41168D1
±300 mV	±20 mA	P41076D1	P41176D1
±300 mV	4...20 mA	P41079D1	P41179D1
0...300 mV	4...20 mA	P41077D1	P41177D1
±300 mV	±10 V	P41078D1	P41178D1
±500 mV	±20 mA	P41086D1	P41186D1
±500 mV	4...20 mA	P41089D1	P41189D1
0...500 mV	4...20 mA	P41087D1	P41187D1
±500 mV	±10 V	P41088D1	P41188D1
±1 V	±20 mA	P41096D1	P41196D1
±1 V	4...20 mA	P41099D1	P41199D1
0...1 V	4...20 mA	P41097D1	P41197D1
±1 V	±10 V	P41098D1	P41198D1
±10 V	±20 mA	P41036D1	P41136D1
±10 V	±10 V	P41038D1	P41138D1
0...(±)50 mV ¹⁾ up to 0...(±)100 V, uni-/bipolar	(±)20 mA, (±)10 V, uni-/bipolar and/or 4...20 mA	P41000D1-nnnn	P41100D1-nnnn

Delivery including individual test certificate 2.2 in accordance with EN 10204.

1) Minimum (±)30 mV input voltage on request

Accessories

High-voltage signal cables	ZU1475
Insulation 5400 V DC, 3600 V AC, 2 m, 2 pieces	

Specifications (Excerpt)

Excerpt from the user manual. Detailed information → knick-international.com

Input

Input ²⁾	P41000D1	±60 mV, ±90 mV, ±150 mV, ±300 mV, ±500 mV, ±10 V, bipolar, calibrated and switchable Factory setting: ±10 V
	P41000D1-nnnn	0...(±)50 mV ³⁾ up to 0...(±)100 V, uni-/bipolar 1 to 16 ranges in accordance with customer requirements, calibrated and switchable
	P41100D1-nnnn	0...(±)50 mV ³⁾ up to 0...(±)100 V, uni-/bipolar 1 range in accordance with customer requirements, fixed settings

Output

Output	P41000D1	±20 mA, ±10 V, bipolar and 4...20 mA Calibrated and switchable Factory setting: ±10 V
	P41000D1-nnnn	(±)20 mA, (±)10 V, uni-/bipolar and/or 4...20 mA In accordance with customer requirements, calibrated and switchable, transmission of bipolar input to unipolar output possible
	P41100D1-nnnn	(±)20 mA, (±)10 V, uni-/bipolar or 4...20 mA 1 range in accordance with customer requirements, fixed settings, transmission of bipolar input to unipolar output possible
Offset	Factory-side up to ±150 %	

²⁾ Up to 500 mV input voltage with shunt monitoring on request

³⁾ Minimum (±)30 mV input voltage on request

Transfer Characteristics

Gain error	< 0.1 % of measured value
Cutoff frequency (–3 dB)	Approx. 5 kHz Configurable to 10 Hz factory-side
Response time T_{90}	Approx. 110 μ s

Auxiliary Power

Auxiliary power	22...230 V AC, ± 10 %, 48...62 Hz, approx. 2 VA 22...230 V DC, ± 10 %, approx. 1.2 W
-----------------	---

Insulation

Galvanic isolation	3-port isolation between input, output and auxiliary power	
Test voltage	Calibrated and switchable	10 kV AC input to output/auxiliary power
	Fixed settings (P410**D1)	10 kV AC input to output/auxiliary power
	Fixed settings (P411**D1)	15 kV AC input to output/auxiliary power
	All types	4 kV AC output to auxiliary power
Working voltage (basic insulation) in accordance with EN 61010-1	Calibrated and switchable or fixed settings (P410**D1)	Up to 2200 V AC/DC for overvoltage category OV3 and pollution degree PD2 for input to output/auxiliary power (transient overvoltages: max. 13.5 kV)
	Fixed settings (P411**D1)	Up to 3600 V AC/DC for overvoltage category OV3 and pollution degree PD2 for input to output/auxiliary power (transient overvoltages: max. 20 kV)
Rated insulation voltage in accordance with EN 50124-1	Calibrated and switchable or fixed settings (P410**D1)	Up to 2200 V AC/DC for overvoltage category OV3 and pollution degree PD2 for input to output/auxiliary power
	Fixed settings (P411**D1)	Up to 3600 V AC/DC for overvoltage category OV3 and pollution degree PD2 for input to output/auxiliary power
Rated voltage in accordance with UL 347	P410**D1	2200 V AC (45...65 Hz) / DC
	P411**D1	3600 V AC (45...65 Hz) / DC
	Input current	< 50 μ A
	BIL/Rated impulse voltage	30 kV (1.2/50 μ s)
	Overvoltage category	OV3
	Pollution degree	PD2
	P41000 contains no components that require maintenance. Use copper cables only.	

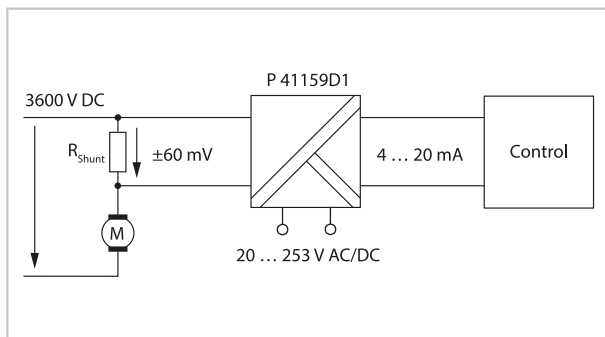
Further Data

MTBF ⁴⁾	Approx. 2700 years		
Ambient temperature ⁵⁾	Operation: -10... 70 °C		
Design	Modular enclosure with screw terminals (max. tightening torque 0.8 Nm)		
	Enclosure width	P41***D1	22.5 mm
	Other dimensions		

Application Example

Note: The figure shows an example of current measurement via a shunt resistor. The specified values refer to the P41159D1 version.

Note: In the figure, *Control* is used as an umbrella term for any form of further processing of the output signal.



4) Mean Time Between Failures (MTBF) determined based on data from field experience.

5) Extended operating temperature range -40...75 °C (-40...167 °F), short-time 85 °C (185 °F) on request

**Knick
Elektronische Messgeräte
GmbH & Co. KG**

Beuckestraße 22, 14163 Berlin
Germany

Phone: +49 30 80191-0

Fax: +49 30 80191-200

info@knick.de • www.knick-international.com

Subject to change.