P45000

Signal Conditioner with a High Level of Isolation for Measuring Direct and Alternating Voltages of up to 3900 V DC and 4500 V AC_{peak}

Certified according to SIL 2/3, the P45000 is the world's first functionally safe high voltage transducer and it's ready to order with any input voltage range from 500 V DC.

One of the most space-saving high voltage transducers, it impresses thanks to its numerous installation options. This means not only can it be mounted on 35 mm DIN rails, but also screwed onto mounting surfaces—vertically, horizontally, or stacked as needed.

The P45000 can be flexibly customized to meet specific customer requirements, and many implemented versions are available for special uses.

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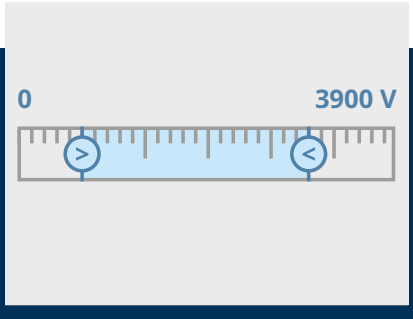
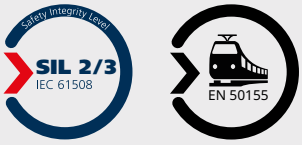


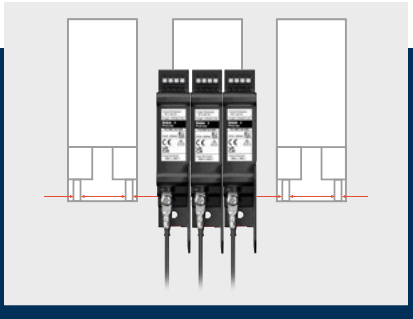
Can be Ordered with any Input Voltage Range

- Rapid availability for the input voltage ranges from 0 … 500 V DC to 0 … 3000 V DC.
- Additional input voltages are available on request.



Certified in Accordance with Standards

- World's first functionally safe high voltage transducer.
- Optimized for use on rolling stock.



Space Saving and Flexibly Mountable

- Mounting on a 35 mm DIN rail or horizontally or vertically on a mounting surface.
- Multiple devices can be installed in series or stacked.

Product Code

High Voltage Transducer	P45	_	_	_	K	2	_	_	_	/	_	_	_	_	_	_	_	_	_
Type test voltage 10 kV AC, nominal voltage $U_{in,n}$ [V]: 500…1500		0								/									
Type test voltage 20 kV AC, nominal voltage $U_{in,n}$ [V]: 500…3000		1								/									
I_{out} = ±50 mA; bipolar			0							/									
I_{out} = 10 … 50 mA; unipolar			1	1						/									
Out special type			9							/					-	S	x	x	x
Without SIL capability, gain error 0.2 %[1)]				0						/									
With SIL capability, gain error 0.2 %				1						/									
Without SIL capability, gain error 0.1 %				2						/									
Type of housing					K	2				/									
Wall mounting only							0			/									
Wall mounting/35 mm DIN rail							1			/									
High-voltage connection: screwed contact/ring cable lug								0		/									
High-voltage connection: fixed cable								1		/									
Output/auxiliary power: push-in terminals									1	/									
Output/auxiliary power: screw terminals									2	/									
Input nominal voltage: $U_{in,n}$ = xxxx V										/	x	x	x	x					
Special types															-	S	x	x	x

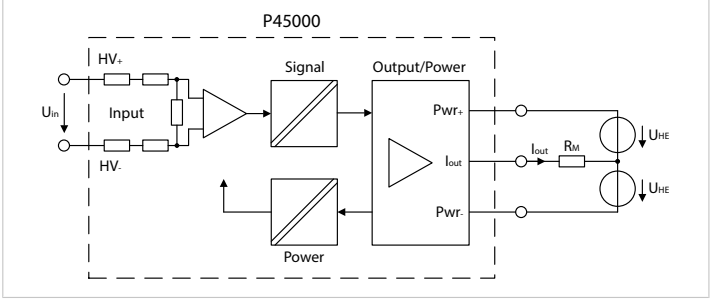
Accessories

Partition: For increasing the clearance. It is mounted in the area of the high-voltage contacts.	ZU1471
Jumper: For connecting (parallel connection) the input screw terminals of two devices. It is mounted on the screwed contacts.	ZU1474
High-voltage signal cable: Connects primary circuits (high potentials) to the input of a high voltage transducer.	ZU1475

Specifications (Excerpt)

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

1 Block Diagram



1) Only for nominal voltage $U_{in,n}$ [V]: 500, 750, 1000, 1500, 2000, 2800, 3000

2 Input

Measuring ranges/output ranges				
Product variant	Nominal voltage	Nominal measuring range	Nominal output range	Type test voltage
Products without SIL capability				
P4500*	500 V ... 1500 V	±500 V ... ±1500 V	±50 mA ±50 mA	10 kV
P4510*	500 V ... 3000 V	±500 V ... ±3000 V	±50 mA ±50 mA	20 kV
Products with SIL capability/EN 61508				
P45011	500 V ... 1500 V	0 ... 500 V ... 0 ... 1500 V	10 ... 50 mA 10 ... 50 mA	10 kV
P45111	500 V ... 3000 V	0 ... 500 V ... 0 ... 3000 V	10 ... 50 mA 10 ... 50 mA	20 kV

3 Isolation

Galvanic isolation	Input to output/auxiliary power 2-port isolation
Type test	
Test voltage P450**K2***:	10 kV AC for 1 min
Test voltage P451**K2***:	20 kV AC for 1 min
Surge voltage P450**K2***:	30 kV
Surge voltage P451**K2***:	50 kV
BIL P450**K2*** in accordance with UL 347A (E533966):	30 kV
BIL P451**K2*** in accordance with UL 347A (E533966):	45 kV
Routine test	
Test voltage P450**K2***:	10 kV AC for 10 s
Test voltage P451**K2***:	16 kV AC for 10 s
Partial discharge extinction voltage	≥ 10 kV AC (50 Hz)

4 Auxiliary Power

Power supply unit	
Nominal voltage range	±15 V DC, ± 10% ... ±24 V DC, ± 10%

5 Device Error Detection and Signaling

Output current (in the event of a fault)	
P45*0*K2***:	No error signal
P45*1*K2***:	$I_{out,failure}$: < 9 mA

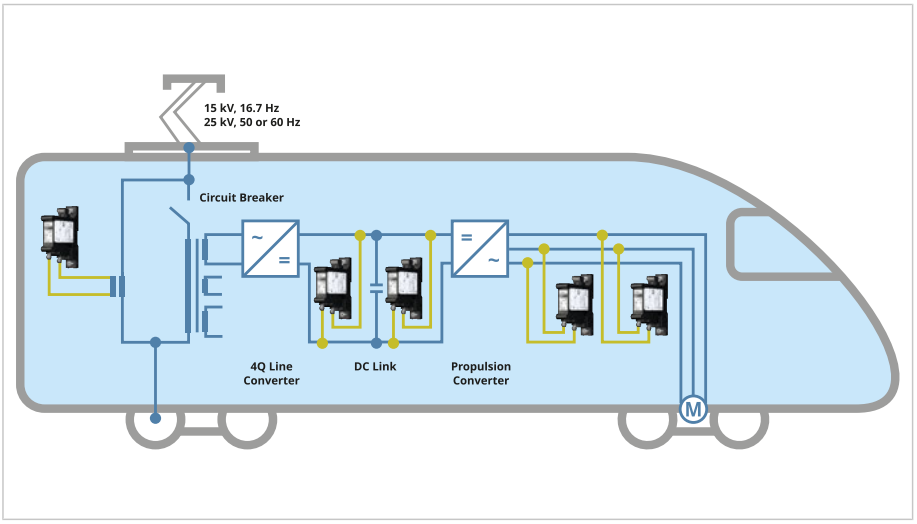
6 Transmission Behavior

Gain error	≤ 0.2 % of the measured value at 23 °C (73.4 °F)
Gain error (option)	≤ 0.1 % of the measured value at 23 °C (73.4 °F)
Offset error	< 100 µA at 23 °C (73.4 °F)
Temperature coefficient	< 100 ppm/K of full scale value
Total error in the entire temperature range	< 1 % of full scale value

7 Further Data

EMC	
Railway applications	EN 50121-1, EN 50121-3-2, EN 50121-5
Industrial applications	EN 61326-1, EN 61326-3-1
Emitted interference	Class B (up to 110 V DC/up to 230 V AC)
Immunity to interference	Industrial applications
Mechanical stress Vibration and shock in accordance with EN 61373, IEC 61373	Category 1, class B Tested by an independent test laboratory
Fire protection in accordance with EN 45545-1, EN 45545-2, EN 45545-5	For outdoor applications (combustible weight < 400 g) up to HL3
	For interior applications: Mount only in closed control cabinets with sufficient fire protection
	Certified by independent test laboratory

Application Example



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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