

Power Transducer Series 50

PTA50, PTV50, without power supply;
 PTM50, with power supply;
 PTK50-1, PTK50-3, configurable;
 PTD50 display for power current variables

■ **Power transducers with excellent cost-performance ratio**

■ **Advanced technology**

- all inputs complying with overvoltage category III and degree of pollution 2
- outputs separated from inputs through double insulation, meeting the requirements for extra-low voltage (PELV)
- accuracy class 0.3

■ **Dual measuring ranges**

- for all current ranges and
- for nearly all voltage ranges

■ **Configurable measuring variables (PTK 50-1/-3)**

- for U, I, P, Q, S, $\cos\varphi$, $\sin\varphi$, φ , f with 2 or 3 analog outputs
- up to 4 limit values, 2 counters, several characteristic curves

■ **Interface**

- RS 232 or RS 485 (optional)

■ **Display**

- up to 16 measuring values, 4 limit values (configurable via the transducer)
- power supply and connection to the transducer through jack plug



**Safe, reliable, compact
and economical**

ABB

PTM50-AN 3KDE48514	PTM50-VN 3KDE48515	PTM50-FN 3KDE48516	PTK50-1 3KDE48517	PTK50-3 3KDE48518
1 A/5 A			1...2.5 A/2...5 A	1...2.5 A/2...5 A
0.1/0.5...2.4/12 A			2.4...6 A/4.8...12 A	2.4...6 A/4.8...12 A
≤ 0.15 VA			≤ 0.15 VA	≤ 0.15 VA
2 x I _{nom}			2 x I _{nom}	2 x I _{nom}
30 x I _{nom} ; max. 200 A ²⁾			40 x I _{nom} ; max. 200 A	40 x I _{nom} ; max. 200 A
1			1	3
	100/120 V	100/120 V	75...150...300 V	75...150...300 V
	10/12...250/300...600 V	10/12...250/300...600 V	150...250...600 V	150...250...600 V
	≤ 1 mA x U _{nom}	≤ 1 mA x U _{nom}	≤ 1 mA x U _{nom}	≤ 1 mA x U _{nom}
	1.5 x U _{nom}	1.5 x U _{nom}	1.5 x U _{nom}	1.5 x U _{nom}
	4 x U _{nom} ²⁾	4 x U _{nom} ²⁾	4 x U _{nom}	4 x U _{nom}
	Terminal: 300/600 V	Terminal: 300/600 V	Terminal: 300/600 V	Terminal: 300/600 V
	Against ground: 570 V	Against ground: 570 V	Against ground: 270/570 V	Against ground: 270/570 V
	1	1	1	3
50/60 Hz ± 10 %	50/60 Hz ± 10 %	50/60 Hz ± 10 %	50/60 Hz ± 10 %	50/60 Hz ± 10 %
		30...80 Hz	30...80 Hz	30...80 Hz
		2 Hz	2 Hz	2 Hz
any	any	any	any	any
yes < 2.0 VA	yes < 2.0 VA	yes < 2.0 VA	yes 3.7 W/5.3 VA	yes 4.5 W/6.3 VA
yes < 2.0 VA	yes < 2.0 VA	yes < 2.0 VA	yes 3.8 W/6 VA	yes 4.8 W/8.3 VA
0.3 %	0.3 %	0.3 %	0.3 %	0.3 %
		≥ 0.8 x U _{rated} : 0.3 %	≥ 0.8 x U _{rated} : 0.3 %	≥ 0.8 x U _{rated} : 0.3 %
		≥ 0.6 x U _{rated} : 0.5 %	≥ 0.6 x U _{rated} : 0.5 %	≥ 0.6 x U _{rated} : 0.5 %
0.4 s	0.4 s	0.4 s	0.4 s...5 s	0.4 s...5 s
≤ 0.7 % (peak-peak)	≤ 0.7 % (peak-peak)	≤ 0.7 % (peak-peak)	≤ 0.7 % (peak-peak)	≤ 0.7 % (peak-peak)
23 °C ± 1 %	23 °C ± 1 %	23 °C ± 1 %	23 °C ± 1 %	23 °C ± 1 %
f _{nom} ± 2 %	f _{nom} ± 2 %	f _{nom} ± 2 %	f _{nom} ± 2 %	f _{nom} ± 2 %
sinusoidal	sinusoidal	sinusoidal	sinusoidal	sinusoidal
375 Ω ± 1 %	375 Ω ± 1 %	375 Ω ± 1 %	375 Ω ± 1 %	375 Ω ± 1 %
200 kΩ	200 kΩ	200 kΩ		
≤ 0.5 %/10 K	≤ 0.5 %/10 K	≤ 0.5 %/10 K	≤ 0.5 %/10 K	≤ 0.5 %/10 K
1.2-fold: ≤ 0.4 %	1.2-fold: ≤ 0.4 %	1.2-fold: ≤ 0.4 %	1.2-fold: ≤ 0.4 %	1.2-fold: ≤ 0.4 %
up to crest factor 3.6	up to crest factor 3.6	up to crest factor 3.6	up to crest factor 3.6	up to crest factor 3.6
≤ 0.05 %	≤ 0.05 %	≤ 0.05 %	≤ 0.05 %	≤ 0.05 %
≤ 1 % up to 400 A/m	≤ 1 % up to 400 A/m	≤ 1 % up to 400 A/m	≤ 1 % up to 400 A/m	≤ 1 % up to 400 A/m
≤ 0.05 %	≤ 0.05 %	≤ 0.05 %	≤ 0.05 %	≤ 0.05 %
I (current)	U (voltage)	f (frequency)	I, U, f, φ, cos φ, sin φ, P, Q, S	I, U, f, φ, cos φ, sin φ, P, Q, S
1	1	1	2 (bipolar)	3 (bipolar)
4...20 mA	4...20 mA	4...20 mA	configurable	configurable
0...max. 20 mA	0...max. 20 mA	0...max. 20 mA	-20...0...20 mA	-20...0...20 mA
max. 1.25 x I _{nom}	max. 1.25 x I _{nom}	max. 1.25 x I _{nom}	max. 1.25 x I _{nom}	max. 1.25 x I _{nom}
≤ 15 V/I _{nom}	≤ 15 V/I _{nom}	≤ 15 V/I _{nom}	≤ 15 V/I _{nom}	≤ 15 V/I _{nom}
(≤ 750 Ω with 20 mA)	(≤ 750 Ω with 20 mA)	(≤ 750 Ω with 20 mA)	(≤ 750 Ω with 20 mA)	(≤ 750 Ω with 20 mA)
0...max. 10 V	0...max. 10 V	0...max. 10 V		
30 V with R = ∞	30 V with R = ∞	30 V with R = ∞		
R ≥ 100 kΩ	R ≥ 100 kΩ	R ≥ 100 kΩ		
linear	linear	linear	configurable	configurable
no	no	no	no	2
no	no	no	yes	yes
no	no	no	yes	yes
no	no	no	optionally	optionally

²⁾ under reference conditions

PTM50-AN 3KDE48514	PTM50-VN 3KDE48515	PTM50-FN 3KDE48516	PTK50-1 3KDE48517	PTK50-3 3KDE48518
yes, to VL94-V2	yes, to VL94-V2	yes, to VL94-V2	yes, to VL94-V2	yes, to VL94-V2
6.0/4.0 mm ² 2.5/2.5 mm ²	2.5/2.5 mm ²	2.5/2.5 mm ²	6.0/4.0 mm ² 2.5/2.5 mm ²	6.0/4.0 mm ² 2.5/2.5 mm ²
IP 40 IP 20 approx. 135 g	IP 40 IP 20 approx. 145 g	IP 40 IP 20 approx. 145 g	IP 40 IP 20 max. 225 g	IP 40 IP 20 max. 430 g
DIN EN 60688/IEC 60688	DIN EN 60688/IEC 60688	DIN EN 60688/IEC 60688	DIN EN 60688/IEC 60688	DIN EN 60688/IEC 60688
5.55 kV, 50/60 Hz ≤ 300/600 V ≤ 570 V, double insulation	5.55 kV, 50/60 Hz ≤ 300/600 V ≤ 570 V, double insulation	5.55 kV, 50/60 Hz ≤ 300/600 V ≤ 570 V, double insulation	5.55 kV, 50/60 Hz ≤ 300/600 V ≤ 270 V/570 V double insulation	5.55 kV, 50/60 Hz ≤ 300/600 V ≤ 270 V/570 V double insulation
III II 2	III II 2	III II 2	III II 2	III II 2
≤ 570 V	≤ 570 V	≤ 570 V	≤ 270 V/570 V double insulation	≤ 270 V/570 V double insulation
yes	yes	yes	yes	yes
3K5 -20...+60 °C 2K4 -40...+80 °C	3K5 -20...+60 °C 2K4 -40...+80 °C	3K5 -20...+60 °C 2K4 -40...+80 °C	3K5 -20...+60 °C 2K4 -40...+80 °C	3K5 -20...+60 °C 2K4 -40...+80 °C
30 g, 11 ms 2 g, 5...150 Hz	30 g, 11 ms 2 g, 5...150 Hz	30 g, 11 ms 2 g, 5...150 Hz	30 g, 11 ms 2 g, 5...150 Hz	30 g, 11 ms 2 g, 5...150 Hz

Ordering information

		Catalog No.	Code		
Preferred types, all mains variables, RMS value					
Power transducer PTK50-1	1-phase	1)	3KDE485170L	5	7 2 0 1 0
Power transducer PTK50-3	3-phase	1)	3KDE485180L	5	7 2 0 1 0
Variants, all mains variables, RMS value					
Power transducer PTK50-1	1-phase		3KDE485170V		0
for U, I, f, φ, cos φ, sin φ, P, Q, S in 45 mm standard housing					
Power transducer PTK50-3	3-phase		3KDE485180V		0
for U, I, f, φ, cos φ, sin φ, P, Q, S in 67.5 mm standard housing					
Rated current					
I_{rated} = 1...2.5 A / 2...5 A		2)	5		
I_{rated} = 2.4...6 A / 4.8...12 A		2)	6		
Rated voltage					
U_{rated} = 75...150 V / 150...300 V		3)	7		
U_{rated} = 150...300 V / 300...570 V		2)	8		
Power supply					
UH = 19...72 V AC / 19...100 V DC			1	0	
UH = 80...265 V AC / 80...300 V DC			2	0	
Communication					
with RS 232 configuration interface				1	
with RS 232 configuration interface and RS 485 MODBUS RTU				2	
Options					
without customized configuration				0	
with customized configuration				1	

Additional ordering information		Code	
Zertifikate			
Quality test certificate DIN 55350-18-4.1.1 (certification of compliance with the order)		CH6	
Quality test certificate DIN 55350-18-4.2.2 with test point protocol		4) 5)	499

Accessories		Catalog No.	Code	
Display PTD50				
96 mm x 96 mm for panel mounting, including connection cable between transducer and display (length 5 m)		3KDE485200L003010		
230 V AC wall power supply for PTD50 display		3KDE485010L0001		
Configuration cable for transducer series 50		3KDE485010L0006		
Device Configuraton Tool DRC200		V49830A-0100		6)

- 1) for preferred types, the bold-printed Catalog-Nr. including 'L' is sufficient
- 2) max. permissible voltage: 300/600 V across terminals 570 V to ground
- 3) max. permissible voltages: 300/600 V across terminals 270 V to ground
- 4) can only be ordered in advance, i.e. prior to device production
- 5) this code No. is not printed on the device type plate / packing
- 6) for process data visualisation, OPC Modbus server and archiving see data sheet 49-8.30 EN

Configuration form for PTK50-1

Please provide the following information which is mandatory for ordering a customized device.

3KDE485170V

x	x	x	x	x	1
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Tag No. Code No. -411
(clear text, max. 31 characters)

Measuring circuit and input circuits -412

Measuring circuit
Single-phase alternating current (~)
4-wire 3-phase current of equal load (3N ~ 1E)

1
5

Input circuits
I: connection to x.1 (higher current value)
I: connection to x.2 (lower current value)
Current transformer primary side
Current transformer secondary side or rated current directly (without current transformer)

1					A
2					A

U: connection to x.1 (higher voltage value)
U: connection to x.2 (lower voltage value)
Voltage transformer primary side
Voltage transformer secondary side or rated voltage directly (without voltage transformer)

1					V
2					V

Units

Current	kA	A	mA
Voltage	kV	V	
Frequency		Hz	
Angle φ	\pm	Deg	
$\cos \varphi$	ind., cap.		
$\sin \varphi$	\pm		

Power \pm GW MW kW **W**
Reactive power \pm GVA_r MVA_r kVA_r **var**
Apparent power GVA MVA kVA **VA**

Work \pm GWh MWh kWh **Wh**
Reactive work \pm GVA_rh MVA_rh kVA_rh **varh**
Apparent work GVA_rh MVA_rh kVA_rh **Vah**

Code for measuring variables (code No.)											
Meas. var.	Code	Meas. var.	Code	Meas. var.	Code	Meas. var.	Code	Meas. var.	Code	Meas. var.	Code
Voltage (V)		Current (A)		Active power (W)		Active power factor (cos φ) (sinusoidal)		Active power factor (cos φ) (non-sinusoidal)		Frequency (Hz)	
U _{L1-N}	UN1	I _{L1}	IL1	P _{L1}	PL1	cos φ _{L1}	CL1	PF _{L1}	DL1	f _{L1} current	FC1
										f _{L1} voltage	FV1
React. power (Var) (sinusoidal)		React. power factor (sinusoidal)		React. power (Var) (non-sinusoidal)		React. power factor (cos φ) (non-sinusoidal)		Apparent power (VA)		Phase angle (Deg) (sinusoidal)	
Q _{L1}	QL1	sin φ _{L1}	BL1	QN _{L1}	NL1	QF _{L1}	GL1	S _{L1}	SL1	φ _{L1}	AL1