

Ziegler

Redefine Innovative Metering

Technical Datasheet

ZCM 4PAD | ZCM 10PAD

AC/DC POWER CLAMP METER

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AC/DC POWER CLAMP METER

ZCM 4/10 PAD measures, calculate and displays important electrical parameters of single phase or three phase power system. It also features Resistance, continuity, diode and non-contact voltage detection. It offers distinctive features which helps user to take easy and reliable measurement, in remote areas of applications.

Product Features

- AC/DC Current measurement upto 400A for ZCM 4PAD & 1000 A for ZCM 10PAD
- Trms Measurement
- Large jaw opening of 41mm for ZCM 4PAD & 51 mm for ZCM 10PAD
- Power Quality Parameters measurement like KW/KVAr/KVA, Phase angle, Power factor for 1ph/2w, 3ph/3w & 3ph/4w balanced and unbalanced systems
- Harmonics Measurement upto 49th & THD
- It features Horse Power, Inrush/Peak Current, Energy measurement for single phase and balanced three phase, Ampere hour measurement, Crest Factor, Distortion Factor
- Low Pass Filter function for accurate measurement at VFD drives
- AC & DC Voltage up to 1000V
- Inrush > 5A, Inrush /Peak Value measurement
- Horse Power Measurement
- Energy measurement at single phase and balanced three phase
- Phase Angle, THD, DF, Power factor, Crest factor
- Non-Contact Voltage detection from 100V to 1000V for 50/60Hz
- Automatic calculation of three phase power
- Dual display & Backlit facility
- Min/Max function
- Auto power off & continuous ON mode



Fact Sheet

Display	
Display	7 segment
Character height	Main Display Character: 11.5mm , Sub Display Character : 7.2mm
Number of digits	4
Maximum count	9999 counts for V, I ,Power and Resistance
Over range indication	"OL" is displayed
Polarity indication	"-" sign is displayed for negative values
Applicable Standards	
EMC	Electromagnetic Compatibility
Emission	IEC 61326 : 2012 CLASS B
Immunity	IEC 61236 :2012 IEC 61000-4-2: 8 KV air discharge, 4 KV contact discharge IEC 61000-4-3 : 3V/m
Safety	IEC 61010-1-2010
IP for water & dust	IP 50 for housing, IP 20 for terminal
Pollution degree	2
Installation category:	CATIII 1000 V / CATIV 600 V
High Voltage Test	7.4 kV AC, 50Hz for 1 min between housing and input 4.26 kV AC, 50Hz for 1 min between housing jaws and input

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Technical Specifications

Measuring function	Measuring range	Resolution	Intrinsic error of digital display at reference condition		Over load capacity	
					Over load value	Overload duration
V DC	999.9 V	0.1 V	±(0.5% of rdg + 5 dgt)		1000 V DC/AC eff/rms Sine wave	Continuously
V ~	999.9 V	0.1 V	±(0.75% of rdg+5 dgt)			
V ACDC	999.9 V	0.1 V	±(1.25% of rdg+10dgt)			
LPF V~	999.9 V	0.1 V	50.....60 Hz	±(0.75% of rdg + 5dgt)		
			61...400Hz	±(5.0% of rdg + 5dgt)		
POWER CLAMP 10PAD, 1000A ADC-AAC	999.9A	0.1 A	±(1.5% of rdg+5 dgt) ¹⁾		1100 A AC/DC for power clamp 10PAD	Continuously
POWER CLAMP 4PAD, 400A ADC - AAC	99.99 A	0.01 A	display value <1000 add 10 dgt	±(1.5% of rdg+0.2A) ¹⁾		
	400 A	0.1 A		±(1.5% of rdg+5 dgt) ¹⁾		
POWER CLAMP 10PAD 1000A A ACDC	999.9A	0.1 A	±(3% of rdg+10 dgt) ¹⁾		440 A AC/DC for power clamp 10PAD	Continuously
POWER CLAMP 4PAD 400A A ACDC	99.99 A	0.01 A	display value <1000 add 10 dgt	±(3% of rdg+0.4A) ¹⁾		
		400 A	0.1 A		±(3% of rdg+10 dgt) ¹⁾	440 A AC/DC for power clamp 4PAD
POWER CLAMP LPF 10PAD 1000A A AC	999.9A	0.1 A	50.....60 Hz	±(1.5% of rdg + 5dgt)		
			61...400Hz	±(5.0% of rdg + 5dgt)		
POWER CLAMP LPF 4PAD 400A A AC	99.99 A	0.01 A	50.....60 Hz	±(1.5% of rdg + 0.3A)	1000 V DC/AC 1100 A AC/DC for Power Clamp 10PAD 440 A AC/DC for Power Clamp 4PAD	Continuously
			61...400Hz	±(5.0% of rdg + 5dgt)		
POWER CLAMP LPF 4PAD 400A A AC	99.99 A	0.01 A	50.....60 Hz	±(1.5% of rdg + 5dgt)		
			61...400Hz	±(5.0% of rdg + 5dgt)		
Active Power ²⁾	9.999 kW	1 W	±(2% of rdg+5 dgt) ¹⁾			
	99.99 kW	10 W				
	999.9 kW	100 W				
	9999 kW	1 kW				
Reactive Power ²⁾	9.999 kVAr	1 VAr				
	99.99 kVAr	10 VAr				
	999.9 kVAr	100 VAr				
	9999 kVAr	1 kVAr				
Apparent Power ²⁾	9.999 kVA	1 VA				
	99.99 kVA	10 VA				
	999.9 kVA	100 VA				
	9999 kVA	1 kVA				
Horse Power ²⁾	9.999 hp	0.001 hp				
	99.99 hp	0.01 hp				
	999.9 hp	0.1 hp				
	9999 hp	1 hp				
kWh ²⁾	9.999 kWh	0.001 kWh	± (3% of rdg+5 dgt)			
	99.99 kWh	0.01kWh				
	999.9 kWh	0.1 kWh				
	9999 kWh	1 kWh				

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Measuring function	Measuring range	Resolution	Intrinsic error of digital display at reference condition	Over load capacity	
				Over load value	Overload duration
Ahr	999.9 Ahr	0.1 Ahr	$\pm(3\% \text{ of rdg}+5 \text{ dgt})$	1000 V DC/AC 1100 A AC/DC for Power Clamp 10PAD 440 A AC/DC for Power Clamp 4PAD	Continuously
Phase angle ²⁾	0.0° ...360.0°	0.1°	$\pm 3^\circ$		
Power Factor ²⁾	-1...0...1	0.001			
Harmonics (RMS & %) ³⁾	1...13	0.1V	$\pm(3\% \text{ of rdg}+10 \text{ dgt})$		
	14...49	0.1A 0.1%	$\pm(5\% \text{ of rdg}+20 \text{ dgt})$		
THD ³⁾	0...99.9%	0.1%	$\pm(3\% \text{ of rdg}+20 \text{ dgt})$		
DF ³⁾	0...99.9%	0.1%	$\pm(3\% \text{ of rdg}+20 \text{ dgt})$		
Crest Factor ³⁾	1.0...2.9	0.1	$\pm(2\% \text{ of rdg}+3 \text{ dgt})$		
	3.0...5.0	0.1	$\pm(3\% \text{ of rdg}+5 \text{ dgt})$		
POWER CLAMP 10PAD 1000A Peak	1400 A / 1400V	1 A	$\pm(3\% \text{ of rdg}+3 \text{ dgt})$		
POWER CLAMP 4PAD 400A Peak	100 A	0.1 A	$\pm(3\% \text{ of rdg}+10 \text{ dgt})$		
	560 A / 1000 V	1 A / 1 V	$\pm(3\% \text{ of rdg}+3 \text{ dgt})$		
POWER CLAMP 10PAD 1000A INRUSH ⁴⁾	999.9A	0.1 A	$\pm(3\% \text{ of rdg}+5 \text{ dgt})$		
POWER CLAMP 4PAD 400A INRUSH ⁴⁾	99.99 A	0.01 A	$\pm(3\% \text{ of rdg}+0.3A)$		
	400 A	0.1 A	$\pm(3\% \text{ of rdg}+5 \text{ dgt})$		
Resistance	9999 Ohm	1 Ohm	$\pm(0.5\% \text{ of rdg}+5 \text{ dgt})$	1000 V DC/AC eff/rms Sine wave	10 Secs
Continuity	Below 40 Ohm	1 Ohm	$\pm(0.5\% \text{ of rdg}+5 \text{ dgt})$		
Diode	0...2.2V	0.001 V	$\pm(0.5\% \text{ of rdg}+5 \text{ dgt})$		

Note:- Accuracy claimed for Power and Current when conductor is positioned at the center of the jaw.

1) For DCA make auto zero correction by long pressing the **HOLD** key

For Power Clamp 1000A 10PAD

- 2) Accuracy Defined for $V \geq 10V$ and $I \geq 5A$
Add 10 digit to accuracy when power is $< 5,000 \text{ kW/kVAr/kVA}$ or $< 6,700 \text{ hp}$
- 3) Accuracy Defined for $V \geq 10V$ and $I \geq 10A$
- 4) Accuracy Defined for $I \geq 10A$

For Power Clamp 400A 4PAD

- 2) Accuracy Defined for $V \geq 10V$ and $I \geq 4A$
Add 10 digit to accuracy when power is $< 5,000 \text{ kW/kVAr/kVA}$ or $< 6,700 \text{ hp}$
- 3) Accuracy Defined for $V \geq 10V$ and $I \geq 10A$
- 4) Accuracy Defined for $I \geq 5A$

For Power Clamp 1000A 10PAD

In 1P2W mode maximum power meter can measure is, 1000 kVA / 1000 kVAr / 1000 kW / 1341 hp
In 3P4W mode maximum power meter can measure is, 3000 kVA / 3000 kVAr / 3000 kW / 4023 hp
In 3P3W mode maximum power meter can measure is, 1732 kVA / 1732 kVAr / 1732 kW / 2322 hp

For Power Clamp 400A 4PAD

In 1P2W mode maximum power meter can measure is, 400 kVA / 400 kVAr / 400 kW / 536 hp
In 3P4W mode maximum power meter can measure is, 1200 kVA / 1200 kVAr / 1200 kW / 1608 hp
In 3P3W mode maximum power meter can measure is, 693 kVA / 693 kVAr / 693 kW / 928 hp

AC current measurement in both 1000A and 400A model starts from 0.5A in AC Amp mode and from 1A in LPF mode

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Mechanical design	
Dimensions	W x H x D 90 mm x 270 mm x 70 mm
Weight	Approx. 500 gram with battery
Reference conditions for accuracy	
Reference Temperature	23°C ± 2° C
Relative Humidity	45%...55% RH
Input frequency	50 or 60 Hz
Power Factor	0.5L.....1.....0.5C
Battery Voltage	8 V ± 0.1 V
Environmental conditions	
Operating temperature	0 to +55°C
Storage temperature	-20 to +70°C
Temp coefficient	0.15X(Intrinsic error)/°C
Relative humidity	0.....75% non-condensing
Terminal Protection	IP 50 for housing and IP20 for terminals
Battery	
Battery Voltage	9 V DC
Battery type	Manganese Dioxide cells as per IEC6F22. Alkaline Manganese cell as per IEC 6LR 61
Consumption	20mA avg. (without backlight)
Battery Life	48 HRs APPROX
Safety	
IP for water and dust	IP 50 for housing, IP20 for terminal
Pollution Degree	2
High Voltage test	
Between housing and input	7.4 kV AC, 50Hz for 1 min
Between housing with jaws and input	4.26 kV AC, 50Hz for 1 min

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Influence Quantities

Influence quantity	Range of Influence	Measured quantity / Measuring Range	Variation
Temperature	0 °C... 21 °C and 25 °C...50 °C	V AC	0.15 X Intrinsic Error / °C
		V DC	
		V ACDC	
		A AC	
		A DC	
		A ACDC	
		AC Power	
		DC Power	
		Resistance/ Diode/ Continuity	
Frequency of the measured quantity	40 Hz... 50 Hz and 60 Hz...400 Hz	V AC	1 X Intrinsic Error
		V ACDC	
		A AC	
		A ACDC	
	45 Hz...65 Hz ²⁾	AC Power	
Crest Factor ¹⁾	1.4...2	V AC A AC	1% + Intrinsic Error
	2...2.5		2.5% + Intrinsic Error
	2.5...5		4% + Intrinsic Error
Supply Voltage	When Low Battery symbol is ON	All Ranges	1 X Intrinsic Error
Relative humidity	75%	All Ranges	1 X Intrinsic Error

1) Except Sine Wave

CF2@690V, 690A for 10PAD
 CF3@690V, 186A for 4PAD
 CF4@345V, 345A for 10PAD
 CF4@345V, 140A for 4PAD
 CF2@690V, 280A for 4PAD
 CF5@280V, 280A for 10PAD
 CF3@460V, 460A for 10PAD
 CF5@280V, 112A for 4PAD

2) Except for 50/60Hz

Scope of Delivery

- 1 Clamp meter
- 1 Probe set
- 1 Instruction Manual / Warranty card
- 1 Clamp Carrying case
- 1 9V Battery
- 2 Crocodile clips

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