

# Ziegler

Redefine Innovative Metering

# Technical Datasheet

ZCM 3AD | ZCM 10AD

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AC/DC CLAMP METER

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## AC/DC CLAMP METER

ZCM 3AD/10AD is 3¾ digit 1000A/300A Clamp meter, that measures AC/DC current, at awkward positions of bus-bars, conductors difficult to access. It allows uninterrupted measurement of current in circuits. 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 300A for ZCM 3AD & 1000 A for ZCM 10AD
- Large jaw opening 41mm for ZCM 3AD & 51 mm for ZCM 10AD
- Trms measurement
- For user safety, Trigger is located at back side, as it increases distance from load
- Unique rotatable jaw facility to take measurements in difficult to access places
- Double mould casing for firm grip
- Auto Power OFF, Data hold & Min-Max function
- Null zero correction for resistance & Low Batt indication
- Voltage measurement upto 1000V AC/DC
- CAT III 1000V & CAT IV 600V protection
- Comfortable operation of push buttons and function selector switch, in adverse field conditions
- Digital display with backlight & Analog bar graph
- Null zero correction for resistance, capacitance
- Low Battery indication
- Suitable for measurement at VFD drives & UPS
- Temperature measurement facility
- Auto/Manual ranging modes
- Diode measurement facility



### Fact Sheet

Display	
Number of digits	3 ¾ digits
Maximum counts	3100 counts
Over range display	"OL" is displayed
Polarity display	"-" sign is displayed for DC function when positive pole at "⊥"
Applicable Standards	
EMC	IEC 61326: Class B
Immunity	IEC 61000-4-2 : 8 KV atmosphere discharge, 4 KV contact discharge
	IEC 61000-4-3 : 3 V/m
Safety	IEC 61010-1-2010
IP for water & dust	IEC 60529
Pollution degree	2
Installation category:	CATIII 1000V/ CATIV 600V
High Voltage Test	6.7 kV AC, 50Hz for 1 minute between housing and input.
	3.7 kV AC, 50Hz for 1 minute between housing with jaws and input.
Weight	0.6 kg

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### Technical Specifications

Measuring function	Measuring range	Resolution	Input impedance	Intrinsic error of digital display ± (...% of rdg + ...digit) at reference condition	Over load capacity	
					Over load value	Overload duration
V dc	30.00 mV	10 µV	>10 GΩ // <40pF	0.5 + 3 <sup>2)</sup>	1000 V DC AC eff / rms Sine wave	Continuously
	300.0 mV	100 µV	>10 GΩ // <40pF	0.5 + 3		
	3.000 V	1 mV	11 MΩ // <40pF	0.25 + 1		
	30.00 V	10 mV	10 MΩ // <40pF	0.25 + 1		
	300.0 V	100 mV	10 MΩ // <40pF	0.25 + 1		
	1000 V	1 V	10 MΩ // <40pF	0.35 + 1		
V ~	3.000 V	1 mV	11 MΩ // <40pF	0.75 + 2 (10...300 Digit) 0.75 + 1 (> 300 Digit)		
	30.00 V	10 mV	10 MΩ // <40pF			
	300.0 V	100 mV	10 MΩ // <40pF			
	1000 V	1V	10 MΩ // <40pF			
Ω	No load voltage				1000 V DC AC eff / rms Sine wave	10 min
	30.00 Ω	10 mΩ	Max. 3.2 V	0.5 + 3 <sup>2)</sup>		
	300.0 Ω	100 mΩ	Max. 3.2 V	0.5 + 3		
	3.000 KΩ	1Ω	Max. 1.25 V	0.4 + 1		
	30.00 KΩ	10 Ω	Max. 1.25 V	0.4 + 1		
	300.0 KΩ	100 Ω	Max. 1.25 V	0.4 + 1		
	3.000 MΩ	1 KΩ	Max. 1.25 V	0.6 + 1		
	30.00 MΩ	10 KΩ	Max. 1.25 V	2.0 + 1		
	→	2.000 V	1 mV	Max. 3.2 V		
ZCM 10AD	2 to 300.0 A	0.1 A	-----	1.5 % of range + 5 Digits	1100 A	Continuously
	1000 A	1 A	-----			
ZCM 3AD	0.2 to 30.0A	0.1 A	-----			
	300.0 A	1 A	-----			

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Measuring Function	Measuring Range		Resolution	Discharge resistance	U <sub>0</sub> max.	Intrinsic error of digital display ± (...% of rdg + ...digit) at reference condition	Over load capacity <sup>1)</sup>	
							Over load value	Over load duration
F	30.00 nF		10 pF	250 KΩ	2.5 V	1.0 + 3 <sup>2)</sup>	1000 V DC AC eff / rms Sine wave	10 min
	300.0 nF		100 pF	250 KΩ	2.5 V	1.0 + 3		
	3.000 μF		1 nF	25 KΩ	2.5 V	1.0 + 3		
	30.00 μF		10 nF	25 KΩ	2.5 V	3.0 + 3		
			<b>Fmin V dc</b>	<b>Fmin V ~</b>				
Hz	300.0 Hz		0.1 Hz	1 Hz	45 Hz	0.5 + 1 <sup>3)</sup>	3 kHz 1000 v 30 kHz; 300 V 100 kHz 30 V	Continuously
	3.000 KHz		1 Hz	1 Hz	45 Hz			
	30.00 KHz		10 Hz	10 Hz	45 Hz			
	100.0 KHz		100 Hz	100 Hz	100 Hz			
%	2.0...98.0%		0.1 %	2 Hz	-	2 Hz... 1kHz ± 5 Digit <sup>4)</sup> 1 kHz ... 10 kHz; ± 5 Digit / kHz <sup>4)</sup>		
°C	Pt 100	-200.0... +200.0 °C	0.1 °C	-	-	2 Kelvin + 5 Digit <sup>5)</sup>	1000 V DC AC eff / rms Sine	10 min
		+200.0... +850.0 °C	0.1 °C			1.0 + 5 <sup>5)</sup>		
	Pt 1000	-100.0... +200.0 °C	0.1 °C	-	-	2 Kelvin + 2 Digit <sup>5)</sup>		
		+200.0... +850.0 °C	0.1 °C			1.0 + 2 <sup>5)</sup>		

1) At 0° .... + 40 °C

2) With zero adjustment, without zero adjustment + 35 digits

3) Range :

3 V ac/dc: U<sub>e</sub> = 1.5 V eff/rms ... 100 V eff/rms

30 V ac/dc: U<sub>e</sub> = 15 V eff/rms ... 300 V eff/rms

300 V ac/dc: U<sub>e</sub> = 150 V eff/rms ... 1000 V eff/rms

4) On the range 3 V dc, square – wave signal positive on one side 5 ... 15 V, f = const., not 163.84 Hz or integral multiple

5) Without sensor

### Reference conditions for accuracy

Reference Temperature	23°C ± 2K
Relative Humidity	45%...55% RH
Waveform of measured quantity	Sinusoidal
Input frequency	50 or 60 Hz ±2%
Battery Voltage	8 V ± 0.1 V

### Environmental conditions

Operating temperature	-10 to +55°C
Storage temperature	- 20 to +70°C
Relative humidity	0.....90% non-condensing
Terminal Protection	IP 50 for housing and IP20 for terminals.

### Battery

Battery Voltage	9V DC
Battery type	Manganese dioxide cell as per IEC 6F 22 Alkaline manganese cell as per IEC 6LR 61.
Battery Life	Minimum 220 hrs V dc, A dc 80 hrs on V ac , A ac

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## Influence Quantities and Variations

Influence Quantity	Range of Influence	Measured Quantity/ Measuring Range	Variation <sup>1)</sup> ± (... % of rdg. + ...digits)		
Temperature	0 °C +21 °C and +25 °C...+40°C	30/300 mV dc	1.0 + 3		
		3...300 V dc	0.15 + 1		
		1000 V dc	0.2 + 1		
		V ~	0.4 + 2		
		30Ω <sup>2)</sup>	0.15 + 2		
		300 Ω	0.25 + 2		
		3 KΩ – 3 MΩ	0.15 + 1		
		30 MΩ	1.0 + 1		
		30 nF <sup>2)</sup> – 3 μF	0.5 + 2		
		30 μF	2.0 + 2		
		Hz	0.5 + 1		
		%	± 5 digits		
		-200...+200 °C	0.5 K + 2		
		+200...+850°C	0.5 + 2		
		ZCM 3AD		30 A ~/ A DC	0.2 X Specified accuracy
				300 A ~/ A DC	0..1 X Specified accuracy
ZCM 10AD	300 A ~/ A DC			0.2 X Specified accuracy	
	1000 A ~/ A DC			0..1 X Specified accuracy	
Frequency of the measured quantity	> 65 Hz...400 Hz	3...300 V ~	2.0 + 3		
	>400 Hz...1 KHz				
	>65 Hz ... 1 KHz	1000 V ~	3.0 + 3		
	15Hz ...<45 Hz	A ~	1.0 % of range + 1		
	>66 Hz... 400 Hz				

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Influence Quantity	Range of Influence		Measured Quantity/ Measuring Range	Variation <sup>1)</sup> ± (... % of rdg. + .... digits)
Wave form of the measured quantity <sup>3)</sup>	Crest factor CF	1....3	V ~ <sup>4)</sup> A ~ <sup>4)</sup>	± 1 % of rdg
		1....5		± 3 % of rdg
Battery Voltage	 <sup>5)</sup> ... < 7.9 V > 8.1 V ... 10.0 V		V DC	2 Digits
			V~	4 Digits
			AAC/ADC	8 Digits
			30Ω / 300 Ω/°C	4 Digits
			3 kΩ – 30MΩ	3 Digits
			nF, μF	10 Digits
			Hz	10 Digits
			%	10 Digits
Relative humidity	75% 3 Days Meter off		V~, VDC A~, ADC Ω F Hz % °C	1 x intrinsic error
HOLD	-		--	± 1 Digits
MIN/MAX	-		V ac/dc , A ~ , ADC	± 2 Digits

1) With temperature: Error data apply per 10 K change in temperature

For Aac/Adc error data apply per K change in temperature

With frequency: Error data apply to a display from 300 digits onwards

2) With zero adjustment

3) With unknown waveform (crest factor CF > 2), measure with manual range selection

4) With the exception of sinusoidal waveform

5) After the  symbol is displayed

### Standard Scope of Supply

- 1 Clamp Meter
- 1 Cable set
- 1 Copy Operating Instructions
- 1 Carrying Bag
- 1 9V Battery

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**Ziegler Instrumentation UK Ltd.**

Central Buildings, Woodland close old woods Trading Estate, Torquay Devon, TQ2 7BB, United Kingdom  
+441803 616 800 | [info@ziegler-instrument.com](mailto:info@ziegler-instrument.com) | [ziegler-instrument.com](http://ziegler-instrument.com)