



## Technical Data Sheet

# *Delta 1000/300*



**Delta 1000/300** measures important electrical parameters like AC Current (TRMS), DC Current, AC Voltage (TRMS), and DC Voltage. It also features Capacitance, Ohm & Continuity, frequency, and Duty cycle and temperature measurement.

## Special Features

### Unique Design

- Delta 1000A/300A is a highly innovative design for features those increases safety and comfort of user.
- Rotating clamp jaws facilitate the measurement at physically awkward positions, vertical bus bars, conductors placed at positions difficult to access.
- Location and design of trigger eliminates fatigues caused by single finger operation. It allows spreading the force required to open the jaws over more than one finger to ensure comfortable operation.
- Clamp jaws can be opened or closed with the trigger placed at bottom side away from the jaws. This allows the user to place his/her hand at safer distance from live conductor. This greatly reduces exposure of human beings to electrical shocks

## Application

**Delta 1000/300** measures important electrical parameters like AC Current (TRMS), DC Current, AC Voltage(TRMS), and DC Voltage. It also features Capacitance, Ohm & Continuity, frequency, and Duty cycle and temperature measurement.

## Product Features

<b>Large Jaw Opening</b>	For Delta 1000A AC-DC Jaw opening of 51mm for standard wire diameter of 50mm and for Delta 300A AC-DC Jaw opening of 41mm for standard wire diameter of 40mm for 300A	<b>CONTINUOUS ON MODE</b>	In this mode, AUTO POWER OFF is disabled.
<b>Narrow Body</b>	Narrow housing for firm grip and easy to carry.	<b>DATA Hold Function</b>	By pressing DATA HOLD button, reading on the display can be latched for Hands free operation.
<b>High Accuracy for low current measurement</b>	The clamp meter can measure accurately at not only the High currents but also Low current ranges.	<b>MIN,MAX Function</b>	By pressing MIN/MAX button, the clamp meter will start recording latest Minimum and Maximum readings
<b>True Root Mean Square (TRMS) measurement</b>	Clamp meter measures AC signal's root-mean-square value accurately irrespective of the shape of input waveform.	<b>NULL ZERO Correction for Resistance</b>	For Low ohm measurement, the lead resistance can be compensated by pressing the shift key (Yellow Key)
<b>Measurement on Variable Frequency Drives</b>	The clamp meter can measure accurately on variable frequency drives (VFD) and UPS.	<b>NULL ZERO Correction for Capacitance</b>	Null zero connection for capacitance. For nF range, stray capacitance can be compensated by shift key (Yellow Key)
<b>User selectable Backlit (Optional)</b>	It is possible to conduct measurement using the clamp meter during night time in darkness with the help of Backlit. The back lit can be switched ON or OFF by pressing a single key.	<b>AUTO and MANUAL ranging modes</b>	In AUTO ranging mode the instrument automatically selects the range with best resolution depending on the applied input. In MANUAL ranging mode range is user selectable using MAN key.
<b>Temperature measurement</b>	Temperatures from -200 to 800 °C using Pt 100 and Pt 1000 sensors.	<b>Diode Measurement</b>	For testing diode and transistors, diode measurement function is available.
<b>AUTO POWER OFF</b>	In order to save the power of the Batteries, the clamp meter will automatically shut OFF if it detects no activity for 10 minutes.	<b>Protection from dust and water</b>	IP20 for terminals as per IEC60529
<b>Analog Scale</b>	Analog scale that updates at the rate 20 times/sec to observe fluctuations in input.	<b>Applicable International Safety standards</b>	600 V CAT IV/1000V CAT III as per International Safety standard IEC 61010-1- 2010
		<b>Double molded Cover for soft touch and firm grip of the Instrument</b>	

## Technical Specifications

### 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

### Weight

Weight	0.6 Kg
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### Warranty

Warranty	1 year
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### Display

Number of digits	3 ¾ digits.
Maximum count	3100 counts.
Over range indication	"OL" is displayed.
Polarity indication	"—" sign is displayed for DC functions, if positive pole is at "⊥".

### Environmental

Operating temperature	-10 to +55°C
Storage temperature	-20 to +70°C
Relative humidity	0... 90% non condensing
Terminal Protection	IP50 for Housing and IP20 for terminals

# Technical Specifications

Battery	
Battery Voltage	9 V DC
Battery type	Manganese Dioxide Cell as per IEC6F22 , alkaline manganese cell as per IEC 6LR 61
Battery Life	Minimum 220 hours on Vdc, Adc, 80 hours on Vac, Aac.

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 IEC 61010-1-2010

Safety	
IP for water & dust	IEC60529
Pollution degree	2
Installation category	IV
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.


Measuring function	Measuring range	Resolution	Input impedance	Intrinsic error of digital display $\pm$ (...% of rdg + ...digit) at reference condition	Over load capacity <sup>1)</sup>			
					Over load value	Overload duration		
V dc	30.00 mV	10 $\mu$ V	>10 G $\Omega$ // <40pF	0.5 + 3 <sup>2)</sup>	1000 V DC AC eff /ms Sine wave	Continuously		
	300.0 mV	100 $\mu$ V	>10 G $\Omega$ // <40pF	0.5 + 3				
	3.000 V	1 mV	11 M $\Omega$ // 40pF	0.25 + 1				
	30.00 V	10 mV	10 M $\Omega$ // 40pF	0.25 + 1				
	300.0 V	100 mV	10 M $\Omega$ // 40pF	0.25 + 1				
1000 V	1 V	10 M $\Omega$ // <40pF	0.35 + 1					
V ~	3.000 V	1 mV	11 M $\Omega$ // <40pF	0.75 + 2 (10...300 Digit) 0.75 + 1 ( > 300 Digit)			1000 V DC AC eff /ms Sine wave	10 min
	30.00 V	10 mV	10 M $\Omega$ // <40pF					
	300.0 V	100 mV	10 M $\Omega$ // 40pF					
	1000 V	1V	10 M $\Omega$ // 40pF					
$\Omega$	No load voltage				1000 V DC AC eff /ms Sine wave	10 min		
	30.00 $\Omega$	10 m $\Omega$	Max. 3.2 V	0.5 + 3 <sup>2)</sup>				
	300.0 $\Omega$	100 m $\Omega$	Max. 3.2 V	0.5 + 3				
	3.000 K $\Omega$	1 $\Omega$	Max. 1.25 V	0.4 + 1				
	30.00 K $\Omega$	10 $\Omega$	Max. 1.25 V	0.4 + 1				
	300.0 K $\Omega$	100 $\Omega$	Max. 1.25 V	0.4 + 1				
	3.000 M $\Omega$	1 K $\Omega$	Max. 1.25 V	0.6 + 1				
30.00 M $\Omega$	10 K $\Omega$	Max. 1.25 V	2.0 + 1					
$\rightarrow$	2.000 V	1 mV	Max. 3.2 V	0.25 + 1	1100 A	Continuously		
Delta 1000A~/ A dc	2 to 300.0 A	0.1 A	-----	1.5 % of range + 5 Digits				
	1000 A	1 A	-----					
Delta 300A~/ A dc	0.2 to 30.0A	0.1 A	-----					
	300.0 A	1 A	-----					

Measuring Function	Measuring range	Resolution	Discharge resistance	U <sub>0</sub> max.	Intrinsic error of digital display $\pm$ (...% 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 K $\Omega$	2.5 V	1.0 + 3 <sup>2)</sup>	1000 V DC AC eff /ms Sine	10 min
	300.0 nF	100 pF	250 K $\Omega$	2.5 V	1.0 + 3		
	3.000 $\mu$ F	1 nF	25 K $\Omega$	2.5 V	1.0 + 3		
	30.00 $\mu$ F	10 nF	25 K $\Omega$	2.5 V	3.0 + 3		
Hz	f min V dc			f min V ~	0.5 + 1 <sup>3)</sup>	3 kHz 1000 v 30 kHz; 300 V 100 kHz 30 V	Continuously
	300.0 Hz	0.1 Hz	1 Hz	45 Hz			
	3.000 KHz	1 Hz	1 Hz	45 Hz			
	30.00 KHz	10 Hz	10 Hz	45 Hz			
%	2.0...98.0%	0.1 %	2 Hz	-	2 Hz... 1kHz $\pm$ 5 Digit <sup>4)</sup> 1 kHz ... 10 kHz; $\pm$ 5 Digit / kHz <sup>4)</sup>	1000 V DC AC eff /ms Sine	10 min
	°C	Pt 100	-200.0... +200.0 °C	0.1 °C	-		
			+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>		

## Technical Specifications

- 1) At 0° .... + 40 °C
- 2) With zero adjustment, without zero adjustment + 35 digits
- 3) Range :
  - 3 V ac/dc: Ue = 1.5 V eff/rms ... 100 V eff/rms
  - 30 V ac/dc: Ue = 15 V eff/rms ... 300 V eff/rms
  - 300 V ac/dc: Ue = 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

## 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	
		30 Ω <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	
Delta 1000A AC-DC		30 A ~ / A DC	0.2 X Specified accuracy	
		300 A ~ / A DC	0.1 X Specified accuracy	
		Delta 300A AC-DC	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			
Wave form of the measured quantity <sup>3)</sup>	Crest factor CF	V ~ <sup>4)</sup> A ~ <sup>4)</sup>	1...3	± 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 Digit	
		V~	4 Digit	
		AAC/ADC	8 Digit	
		30Ω / 300 Ω/°C	4 Digit	
		3 kΩ - 30MΩ	3 Digit	
		nF, μF	10 Digit	
		Hz	10 Digit	
%	10 Digit			

## Influence Quantities and Variations

Influence Quantity	Range of Influence	Measured Quantity/ Measuring Range	Variation <sup>1)</sup> ± (...% of rdg. + ....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

## Ordering Information

Product Code	DT 20-	X	X	X	0000000000
Type	Clamp 1000A AC/DC	1			
	Clamp 300A AC/DC	3			
Probe Set	Normal		N		
	Fine Tip		F		
Backlit	With Backlit			B	
	Without Backlit			Z	



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