



Data Sheet

RISH Clamp SOLAR True RMS Digital Clamp Meter



Measure



Control



Record



Analyze

Application

RISH Clamp SOLAR 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

Unique Design

Rish Clamp SOLAR 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.
- 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
- 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.
- Comfortable operation of push buttons and function selector switch, in adverse field conditions.

Large Jaw Opening

For Rish Clamp SOLAR Jaw opening of 51mm for standard wire diameter of 50mm .

Narrow Body

Narrow housing for firm grip and easy to carry.

High Accuracy for low current measurement

The clamp meter can measure accurately at not only the High currents but also Low current ranges.

True Root Mean Square (TRMS) measurement

Clamp meter measures AC signal's root-mean-square value accurately irrespective of the shape of input waveform.

Measurement on Variable Frequency Drives

The clamp meter can measure accurately on variable frequency drives (VFD) and UPS.

User selectable Backlit : (Optional)

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.

Temperature measurement

Temperatures from -200 to 800 °C using Pt 100 and Pt 1000 sensors.

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AUTO POWER OFF

In order to save the power of the Batteries, the clamp meter will automatically shut OFF if it detects no activity for 10 minutes.

Analog Scale

Analog scale that updates at the rate 20 times/sec to observe fluctuations in input.

CONTINUOUS ON MODE

In this mode, AUTO POWER OFF is disabled

DATA Hold Function

By pressing DATA HOLD button, reading on the display can be latched for Hands free operation.

MIN,MAX Function

By pressing MIN/MAX button, the clamp meter will start recording latest Minimum and Maximum readings

NULL ZERO Correction for Resistance

For Low ohm measurement, the lead resistance can be compensated by pressing the shift key (Yellow Key)

NULL ZERO Correction for Capacitance

Null zero connection for capacitance. For nF range, stray capacitance can be compensated by shift key (Yellow Key)

AUTO and MANUAL ranging modes

range with best resolution depending on the applied input. In MANUAL ranging mode range is user selectable using MAN Key

Diode Measurement

For testing diode and transistors, diode measurement function is available.

Protection from dust and water

IP20 for terminals as per IEC60529

Applicable International Safety standards

600 V CAT IV/1000V CAT III as per International Safety standard IEC 61010-1-2010

Double molded Cover for soft touch and firm grip of the Instrument



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Measuring function	Measuring range	Resolution	Input impedance	Intrinsic error of digital display $\pm$ (...% of rdg + ...digit) at reference condition	Over load capacity ¹⁾	
					Over load value	Overload duration
V dc	30.00 mV	10 μ V	>10 G Ω // <40pF	0.5 + 3 ²⁾	1500 V DC 1000 V AC eff / rms Sine wave	Continuously
	300.0 mV	100 μ V	>10 G Ω // <40pF	0.5 + 3		
	3.000 V	1 mV	11 M Ω // <40pF	0.25 + 3		
	30.00 V	10 mV	10 M Ω // <40pF	0.25 + 3		
	300.0 V	100 mV	10 M Ω // <40pF	0.25 + 3		
	1000 V	1 V	10 M Ω // <40pF	0.35 + 3		
	1500 V	1 V	10 M Ω // <40pF	0.5 + 3		
V ~	3.000 V	1 mV	11 M Ω // <40pF	0.75 + 2 (10....300 Digit) 0.75 + 1 (> 300 Digit)		
	30.00 V	10 mV	10 M Ω // <40pF			
	300.0 V	100 mV	10 M Ω // <40pF			
	1000 V	1V	10 M Ω // <40pF			
Ω	No load voltage					
	30.00 Ω	10 m Ω	Max. 3.2 V	0.5 + 3 ²⁾	1500 V DC 1000 V AC eff / rms Sine wave	10 Sec
	300.0 Ω	100 m Ω	Max. 3.2 V	0.5 + 3		
	3.000 K Ω	1 Ω	Max. 1.25 V	0.4 + 1		
	30.00 K Ω	10 Ω	Max. 1.25 V	0.4 + 1		
	300.0 K Ω	100 Ω	Max. 1.25 V	0.4 + 1		
	3.000 M Ω	1 K Ω	Max. 1.25 V	0.6 + 1		
	30.00 M Ω	10 K Ω	Max. 1.25 V	2.0 + 1		
	2.000 V	1 mV	Max. 3.2 V	0.2 + 3		
A AC/DC	2 to 300.0 A	0.1 A	-----	2 % + 0.5 A	1600 A	Continuously
	300 to 1200 A	1 A	-----	2 % + 5 A		
	1200 to 1500 A	1 A	-----	2.2 % + 5 A		

Measuring Function	Measuring range		Resolution	Discharge resistance	U ₀ max.	Intrinsic error of digital display $\pm$ (...% of rdg + ...digit) at reference condition	Over load capacity ¹⁾	
							Overload value	Over load duration
F	30.00 nF	10 pF	250 K Ω	2.5 V	2.5 V	1.0 + 3 ²⁾	1500 V DC 1000 V AC eff / rms Sine wave	10 Sec
	300.0 nF	100 pF	250 K Ω	2.5 V	2.5 V	1.0 + 3		
	3.000 μ F	1 nF	25 K Ω	2.5 V	2.5 V	1.0 + 3		
	30.00 μ F	10 nF	25 K Ω	2.5 V	2.5 V	3.0 + 3		
	300.0 μ F	10 nF	15 K Ω	2.5 V	2.5 V	5.0 + 6		
			f min V dc	f min V ~				
Hz	300.0 Hz	0.1 Hz	1 Hz	45 Hz		0.5 + 3 ³⁾	3 kHz 1000 V 30 kHz; 300 V 100 kHz 30 V	Continuously
	3.000 KHz	1 Hz	1 Hz	45 Hz		0.5 + 1 ³⁾		
	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 $\pm$ 5 Digit ⁴⁾ 1 kHz ... 10 kHz; $\pm$ 5 Digit / kHz ⁴⁾		
$^{\circ}$ C	Pt 100	-200.0... +200.0 $^{\circ}$ C	0.1 $^{\circ}$ C	-	-	2 Kelvin + 5 Digit ⁵⁾	1500 V DC 1000 V AC eff / rms Sine wave	10 Sec
		+200.0... +850.0 $^{\circ}$ C	0.1 $^{\circ}$ C			1.0 + 5 ⁵⁾		
	Pt 1000	-100.0... +200.0 $^{\circ}$ C	0.1 $^{\circ}$ C	-	-	2 Kelvin + 2 Digit ⁵⁾		
		+200.0... +850.0 $^{\circ}$ C	0.1 $^{\circ}$ C			1.0 + 2 ⁵⁾		

- 1) At 0° + 40 °C
- 2) With zero adjustment, without zero adjustment + 35 digits
- 3) Range :
3 V ac/dc: U_e = 1.5 V eff/rms ... 100 V eff/rms
30 V ac/dc: U_e = 15 V eff/rms ... 300 V eff/rms
300 V ac/dc: U_e = 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 $\pm$ 2K
 Relative Humidity 45%...55% RH
 Waveform of measured quantity Sinusoidal
 Input frequency 50 or 60 Hz $\pm$ 2%
 Battery Voltage 8 V $\pm$ 0.1 V



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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

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.

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 "⊥".

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Influence Quantities and Variations

Influence Quantity	Range of Influence	Measured Quantity/ Measuring Range	Variation ¹⁾ ± (....% 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 ²⁾	0.15 + 2
		300 Ω	0.25 + 2
		3 KΩ – 3 MΩ	0.15 + 1
		30 MΩ	1.0 + 1
		30 nF ²⁾ – 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
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 ¹⁾ ± (....% of rdg. +digits)
Wave form of the measured quantity ³⁾	Crest factor CF	V ~ ⁴⁾	± 1 % of rdg
			± 3 % of rdg
Battery Voltage	$\square\square\square$ ⁵⁾ ... < 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
		V~, VDC	
Relative Humidity	3 Days	A~, ADC Ω F Hz % C	1 x intrinsic error
	Meter off		
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 “ $\square\square\square$ ” symbol is displayed

Applicable Standards

EMC IEC/EN 61326-1: 2012 Class B
 Immunity IEC/EN 61326-1: 2012
 IEC 61000-4-2
 8 KV atmosphere discharge,
 4 KV contact discharge.
 IEC 61000-4-3 : 3 V/m
 IEC 61000-4-8 : 3 A/m

Safety

IEC 61010-1-2010

IP for water & dust

IEC60529

Pollution degree

2

Installation category

III 1000V, IV 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

Warranty

1 years

Standard Scope of supply

- 1 Cable Set
- 1 Battery Set
- 1 Operating Instructions Manual
- 1 Leather carrying case

Ordering code

- **CL40-1NZ0000000000** - Rish clamp solar 1500V AC/DC, 1500AAC/DC with normal tips probe
- **CL40-1FZ0000000000** - Rish clamp solar 1500V AC/DC, 1500AAC/DC with fine tips probe



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