



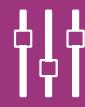
Data Sheet

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.

CONTINOUS 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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Technical Specifications

| Measuring function | Measuring range | Resolution | Input impedance | Intrinsic error of digital display ± (...% of rdg + ...digit) at reference condition | Over load capacity ¹⁾ | | | |
|--------------------|-----------------|------------|-----------------|---|-------------------------------------|-------------------|--|--|
| | | | | | Over load value | Overload duration | | |
| V dc | 30.00 mV | 10 µV | >10 GΩ // <40pF | 0.5 + 3 ²⁾ | 1500 V DC 1000 V AC eff / rms | Continuously | | |
| | 300.0 mV | 100 µV | >10 GΩ // <40pF | 0.5 + 3 | | | | |
| | 3.000 V | 1 mV | 11 MΩ // <40pF | 0.25 + 3 | | | | |
| | 30.00 V | 10 mV | 10 MΩ // <40pF | 0.25 + 3 | | | | |
| | 300.0 V | 100 mV | 10 MΩ // <40pF | 0.25 + 3 | | | | |
| | 1000 V | 1 V | 10 MΩ // <40pF | 0.35 + 3 | | | | |
| V ~ | 1500 V | 1 V | 10 MΩ // <40pF | 0.5 + 3 | Sine wave | | | |
| | 3.000 V | 1 mV | 11 MΩ // <40pF | 0.75 + 2 (10....300 Digit) | | | | |
| | 30.00 V | 10 mV | 10 MΩ // <40pF | | | | | |
| | 300.0 V | 100 mV | 10 MΩ // <40pF | 0.75 + 1 (> 300 Digit) | | | | |
| Ω | No load voltage | | | | 1500 V DC 1000 V AC eff / rms | 10 Sec | | |
| | 30.00 Ω | 10 mΩ | Max. 3.2 V | 0.5 + 3 ²⁾ | | | | |
| | 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 | Sine wave | | | |
| | 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 ± (...% of rdg + ...digit) at reference condition | Over load capacity ¹⁾ | | | |
|--------------------|--------------------|--------------------|-----------------------|---------------------|---|-------------------------------------|--------------------|--|--|
| | | | | | | Overload value | Over load duration | | |
| F | 30.00 nF | 10 pF | 250 kΩ | 2.5 V | 1.0 + 3 ²⁾ | 1500 V DC 1000 V AC eff / rms | 10 Sec | | |
| | 300.0 nF | 100 pF | 250 kΩ | 2.5 V | 1.0 + 3 | | | | |
| | 3.000 µF | 1nF | 25 kΩ | 2.5 V | 1.0 + 3 | | | | |
| | 30.00 µF | 10 nF | 25 kΩ | 2.5 V | 3.0 + 3 | | | | |
| | 300.0 µF | 10 nF | 15 kΩ | 2.5 V | 5.0 + 6 | | | | |
| Hz | | | f min V dc | f min V ~ | | | | | |
| | 300.0 Hz | 0.1 Hz | 1 Hz | 45 Hz | 0.5 + 3 ³⁾ | | | | |
| | 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 kHz 30 V | | | | |
| | 2.0....98.0% | | 0.1 % | 2 Hz | | | | | |
| °C | Pt 100 | -200.0...+200.0 °C | 0.1 °C | - | 2 Kelvin + 5 Digit ⁵⁾ | 1500 V DC 1000 V AC eff / rms | 10 Sec | | |
| | +200.0...+850.0 °C | 0.1 °C | 1.0 + 5 ⁵⁾ | | | | | | |
| | Pt 1000 | -100.0...+200.0 °C | 0.1 °C | - | 2 Kelvin + 2 Digit ⁵⁾ | | | | |
| | +200.0...+850.0 °C | 0.1 °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: 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

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



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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 "⊥".

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 |
| | | RISH Clamp SOLAR | 300 A ~/ A DC 0.2 X Specified accuracy |
| | | | 1500 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 ¹⁾ ± (....% of rdg. +digits) | |
|---|--------------------|-----------|---------------------------------------|---|--|
| Wave form of the measured quantity ³⁾ | Crest factor CF | 1....3 | V ~ ⁴⁾ | ± 1 % of rdg | |
| | | 1....5 | | ± 3 % of rdg | |
| Battery Voltage ■ ⁵⁾ ... < 7.9 V > 8.1 V ... 10.0 V 75% | | | 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 | 1 x intrinsic error | |
| | | Meter off | Ω | | |
| | | | F | | |
| | | | Hz | | |
| | | | % | | |
| HOLD | | - | C | | |
| MIN/MAX | | - | -- | ± 1 digits | |
| | | | 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 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

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

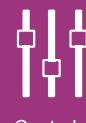
0.6 Kg

Warranty

1 years



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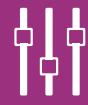
Analyze



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