

# RISH Clamp ES1000 AC/ES400 AC 3 3/4 Digits digital Clamp meter

## Data Sheet

3 3/4 Digits digital  
Clamp meter



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Measure, Control & Record with a Difference

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## Application

RISH Clamp ES1000 AC/ES400 AC measures important electrical parameters like AC Current, AC Voltage, and DC Voltage. It also features Capacitance, Ohm & Continuity, frequency, and Duty cycle and temperature measurement.

## Product Features

### Unique Design

RISH Clamp ES1000 AC/ES400 AC 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 ES1000 AC Jaw opening of 51mm for standard wire diameter of 50mm and for RISH Clamp ES400 AC Jaw opening of 41mm for standard wire diameter of 40mm for 400A

### 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.

### User selectable Backlit

It is possible to conduct measurement using the clamp meter during night time in darkness with the help of Backlit.

### Temperature measurement

Temperature from 0 to 1300 °C using K type thermocouple sensors.

### 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 15 minutes.

### Relative Measurement

By pressing REL key, the zero correction is made and relative value is measured. All functions can measure Relative value except Hz/Duty.

## Hold Function

By pressing HOLD key reading on the display can latched. Simultaneously HOLD is displayed on display.

## Hz / Duty

The instrument can measure frequency (Hz) and Duty cycle (%) of AC voltage by pressing yellow key in VAC function.

## NULL ZERO Correction for Resistance

For Low ohm measurement, the lead resistance can be compensated by pressing REL key.

## Non contact voltage (NCV) detection

Presence of AC voltage >75 V AC 50/60 Hz can be detected by keeping jaws near voltage carrying conductor. It is indicated by beep sound.

## AUTO and MANUAL ranging modes

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.

## Diode and continuity testing

For testing diode and transistors, diode measurement function is available. Continuity test generates beep sound if resistance is less than 75 ohm

## Protection from dust and water

IP20 for terminals as per IEC60529

## Applicable International Safety standards

600 V CAT III/1000V CAT II 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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## Specifications



Meas. Function	Measuring Range	Resolution	Input Impedance V(AC) / V(DC)	Intrinsic error of digital display at reference conditions ± (...% of rdg + ...digits)	Overload capacity <sup>1)</sup>		
					Overload value	Overload duration	
V $\overline{\text{---}}$	400.0mV	100 $\mu$ V	>20G $\Omega$	0.75+2	1050V(DC)	Continuous	
	4.000V	1mV	11M $\Omega$	0.5+2			
	40.00V	10mV	10M $\Omega$				
	400.0V	100mV	10M $\Omega$				
	1000V	1V	10M $\Omega$				
V $\sim$	400.0mV	100mV	11M $\Omega$	1.5+5	1050V(AC) rms	Continuous	
	4.000V	1mV	11M $\Omega$	1+5			
	40.00V	10mV	10M $\Omega$				
	400.0V	100mV	10M $\Omega$				
	1000V	1V	10M $\Omega$				1+10
A $\sim$ Clamp meter 400A	40.00A	10mA		1.5 % of range +5 digits	480 A	Continuous	
	400.0A	100mA		1.5 % of range +5 digits	1100A	Continuous	
A $\sim$ Clamp meter 1000A	400.0A	100mA					
	1000A	1A					
			Open-circuit voltage				
$\Omega$	400.0 $\Omega$	100m $\Omega$	approx 0.45V	0.8+5	500V DC/AC rms	10 min	
	4.000k $\Omega$	1 $\Omega$		0.8+2			
	40.00k $\Omega$	10 $\Omega$					
	400.0k $\Omega$	100 $\Omega$					
	4.000M $\Omega$	1k $\Omega$					
	40.00M $\Omega$	10k $\Omega$					
$\Omega$ )	400.0 $\Omega$	100m $\Omega$		Acoustic signal for 0...<75 $\Omega$ (approx)			
F	1.000V	1mV	approx 1V	2+10	500V DC/AC rms	10 min	
	5.000nF	1pF		3+40 <sup>2)</sup>			
	50.00nF	10pF		2+10 <sup>2)</sup>			
	500.0nF	100pF		0.5+3			
	5.000 $\mu$ F	1nF		1+2			
	50.00 $\mu$ F	10nF		1.5+2			
	200.0 $\mu$ F	100nF		5+10 <sup>4)</sup>			
Hz <sup>3)</sup>	10.000Hz	0.001Hz	10Hz	0.2+2	≤1kHz : 1000V ≤10kHz : 400V ≤500kHz : 40V except 400mV	Continuous	
	100.00Hz	0.01Hz	10Hz				
	1.0000kHz	0.1Hz	10Hz				
	10.000kHz	1Hz	10Hz				
	100.00kHz	10Hz	10Hz				
	500.0kHz	100Hz	10Hz				
%	2.0...98.0%	0.1%	---	10Hz...1kHz : ±5D 1kHz...10kHz : ±5D/kHz			
				<b>Sensor</b>			
°C	0...+1300 °C	1 °C	K-type NiCr-Ni	2+3 <sup>5)</sup>	500V DC/AC rms	10 min	

- 1) At 0° .... + 40 °C
- 2) With zero adjustment, using REL key.
- 3) Indication of frequency measurement expanded to 9999 Digits.
- 4) Time required for measurement approximately 60 secs
- 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	3 V ± 0.1 V



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## Influence Quantities and Variations

Influence Variable	Influence Range	Meas. Magnitude/ Measuring Range	Influence Effect
Temperature	0 °C ... +21 °C and +25 °C ... +50 °C	V $\overline{=}$	0.1 x intrinsic error/K
		V $\sim$	
		A $\sim$	
		$\Omega$	
		F	
		Hz	
		Duty(%)	
°C			

Influence of frequency on	Influence Range (max. resolution)	Frequency	Intrinsic Error at Ref. $\pm(\dots \% \text{ of rdg. } + \dots D)$
V <sub>AC</sub>	4V, 40V, 400V	20 Hz ... < 50 Hz > 60Hz... 1kHz	2 + 3
	400 mV, 1000V	20 Hz ... < 50 Hz > 60 Hz ... 500 Hz	2 + 3

Influence Variable	Influence Range	Meas. Magnitude/ Measuring Range	Influence Effect
Relative Humidity	55 ... 75%	V $\simeq$ A $\sim$ $\Omega$ F Hz (%) °C	1x intrinsic error

Influence Variable	Interference Magnitude	Measuring Range	Attenuation
Common mode Interference Voltage	1000 V DC/AC 50 Hz sine	all V DC	> 100 dB
	1000 V DC	all V AC	> 100 dB
	1000 V AC 50 Hz sine	400 mV / 4 V AC	> 55 dB
		40 V AC	> 55 dB
		400 V AC	> 43 dB
1000 V AC	> 23 dB		
Series-Mode Interference Voltage	max.1000 V AC 50/60 Hz sine	V DC	> 43 dB
	max.1000 V DC	V AC	> 55 dB

Battery voltage influence:

(Without  $\rightarrow$  display) - all ranges except capacitance:  $\pm 8$  Digits

- For capacitance  $\pm 60$  D at battery voltage 2.6V



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## Environmental

Operating temperature	-10 to +50°C
Storage temperature	-25 to +70°C
Relative humidity	45...75% non condensing
Terminal Protection	IP 52 for Housing and IP20 for terminals

## Battery

Battery Voltage	1.5 x 2 V AAA size batteries
Battery type	zinc-carbon cell <b>OR</b> alkaline manganese cell per IEC 6LR 03
Battery Life	with zinc-carbon cell: approx. 200 hrs with alkaline manganese cell: approx. 400 hrs

## Display

Display/Char. Height	7 segment digits / 13 mm
Number of Places	3 3/4 place $\cong$ 3999 steps
Overflow Display	"OL"
Polarity Display	"—" sign is displayed when plus pole is at "⊥"
Measuring Rate	3 measurements/s

## 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	IEC60529
Pollution degree	2
Installation category	600V CATIII / 1000V CATII
High Voltage Test	4.4 kV AC, 50Hz for 1 minute between housing and input.

## Mechanical configuration

Dimensions	90mm (W) x 270mm (L) x 70mm (H)
Weight	0.6 Kg

