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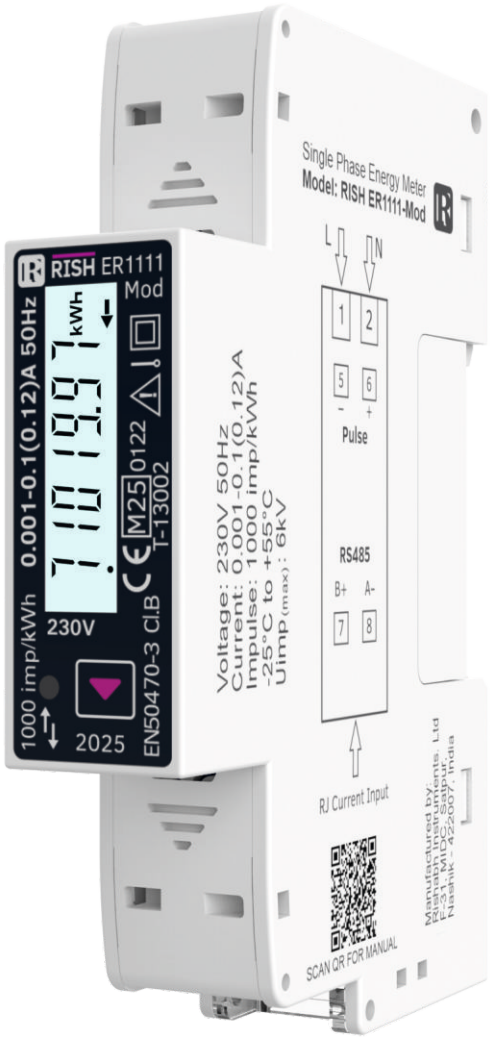
Data Sheet

Single-Phase RJ12 Current Input AC Energy Meter

RISH ER11XX-X



Measure Control Record Analyze

Overview :

RISH ER11XX is a modern Single Phase RJ12 AC Energy Meter designed for intended use in residential, commercial and light industrial Electrical Energy Metering. The meter is engineered using advanced microcontroller technology and is suitable for electrical parameter measurement and monitoring in 1 Phase 2 Wire Networks. It supports 100mA current measurement on RJ12 external CT connection. It supports Tariff Counters selectable via MODBUS or MBUS Communication or Tariff input. It displays parameters on bright LCD and also has Pulse Output and Impulse LED for energy monitoring. It has inbuilt industry standard MODBUS RTU or MBUS for remote monitoring. Meter housing is standard Din Rail Mount that allows ease of installation.

Product Features :

Plug and Play Current Transformer :
RJ-12 connector is available for external CT connection, which enables easy, fast and error free installation.

Measured Electrical Parameters :
The meter is primarily for bidirectional Active, Reactive and Apparent Energy measurement but it also accurately measures important electrical parameters like Voltage, Current, Frequency, Active, Reactive and Apparent Power, and Power Factor in Single Phase Networks. The measured parameters can be viewed on display and MODBUS or MBUS meter for remote viewing.

Demand :
The Demand parameter for Active Power (Import/Export), Reactive Power (Import/Export), Apparent Power and Current are calculated as per configurable Demand Integration time.

Pulse Output :
The meter has one opto-isolated potential free pulse output that can be configured for any one of the Active (Import/Export), Reactive (Import/Export) and Apparent Energy parameter. The pulse width and rate of pulse out is onsite programmable.

Impulse LED :
The meter has Impulse LED which flash at rate of 1000 impulse per 1 kWh indicating the Active Energy consumption.

LCD :
The LCD has bold seven segment digits with bright white backlit for display of measurement parameters.
Measurement screen can be set as automatic scrolling or manual scrolling.

Front Key :
One key is provided for easy navigation and accessibility of different parameters.

Remote Communication(Optional) :
The meter provides optional communication based on MODBUS or MBUS protocol for remote data acquisition of measurement data and configuration. MODBUS or MBUS parameters Baud rate, device address and parity- stop bits are programmable.

Tariff Inputs(Optional) :
The meter has one Tariff Input dedicated for selection of active tariff T1 and T2. The opto-isolated Tariff Input is rated for a wide range of AC/DC voltage for operation.

Dual tariff :
The meter has Tariff Counters for energy accumulation which are selectable via Tariff Input or via MODBUS or MBUS Communication. Energy for tariff are Active Energy (Import/Export/Total), Reactive Energy (Import/Export/Total) and Apparent Energy.

On-Site Programable CT Ratios :
It is possible to program Primary value of current transformer (CT) via front panel keys. The settable range for CT primary is 5A-1000A. This parameters are configured and programmed at the site only in first 15 minutes after entering into CT Primary or CT secondary edit mode and get locked as per MID standards.

Compliance to Standards :
National / International Standards are complied

Accuracy Standard :	EN50470-3 : 2022 IEC62053-21
IP for water & dust:	IEC 60529
Plastic Flammability Standard:	UL 94
Safety Standard	62052-31:2015

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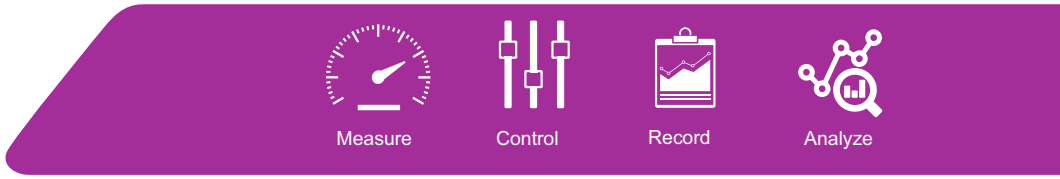
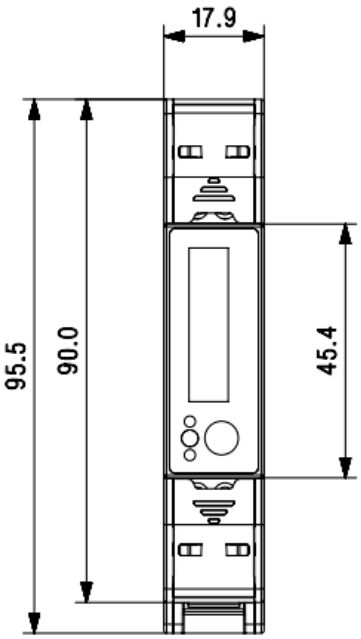
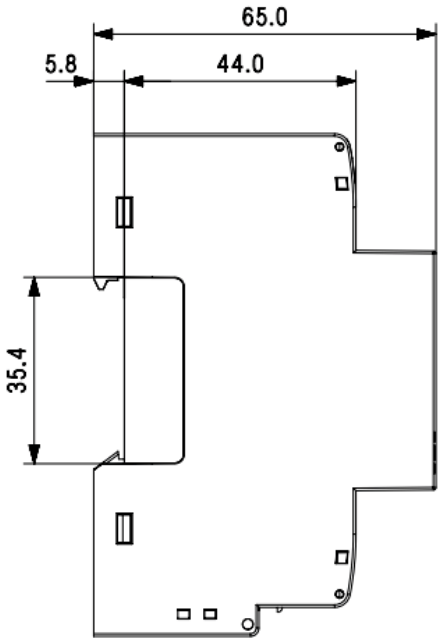


Dimensions Details:





Technical Specifications:

Input :

Nominal Voltage (U_n)	230 VLN
Operating Voltage Range	193 - 253 VLN
Power consumption in Voltage Circuit	< 2 W (10 VA)

Current Measurement Parameter	RJ12 Model
Starting Current (Ist = 0.04*Itr)	0.2 mA
Minimum Current (Imin = 0.2*Itr)	1 mA
Transitional Current (Itr)	5 mA
Nominal Current (I_n = 20*Itr)	100 mA
Maximum Current (Imax =24*Itr)	120 mA
Operating Current Range	1mA-100mA (120mA)
Short time Over-Current	20*Imax for 0.5 Second
Power Consumption in Current Circuit	<0.03 VA
Nominal Frequency	50 Hz

Auxiliary Supply :

Type	Self Powered

Reference Conditions for Accuracy :

Reference Temperature	23°C ± 2°C
Input Voltage	Un ± 1%
Input Waveform	Sinusoidal (distortion factor <2%)
Input Frequency	50 Hz ± 0.3%

Accuracy :

Active Energy (Import/Export)	Class B as per EN50470-3:2022 Class 1 as per IEC 62053-21
Reactive Energy (Import/Export)	±2%
Apparent Energy	± 1.0 %
Voltage	± 0.5% of of range max
Current	± 0.5% of Nominal value
Frequency	± 0.2% of Mid frequency
Active Power	± 1% of range max
Reactive Power	± 1% of range max
Apparent Power	± 1% of range max
Power Factor	±1.0 %

Pulse Outputs :

So	Passive Opto-isolated
Contact Range	5-27V DC, 27 mA DC (max)
Pulse Duration	60,100,200 millisecond
Pulse Rate	1,10,100,1000 pulse per kWh/kVARh/kVAh

Impulse LED :

Impulse Rate	1000 pulse per kWh

Communication Interface(MODBUS) :

Protocol	RS485 MODBUS
Baudrate	2.4 /4.8 / 9.6 /19.2/38.4 kbps
Data Width	8
Parity- Stop Bits	None -1 / None -2/ Even -1 / Odd -1
Device Address	1- 247
Response Time	250 millisecond at 9.6 Kbps Baudrate

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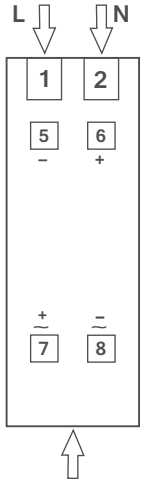
Connector Details:



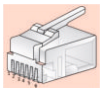
RJ Current Input

1 :L-In
2 :Neutral-In
5,6 :Pulse Output Terminal
7,8 :Tariff input Terminal (in Tariff input Model)
RS485 Terminal (in Modbus Model)
Mbus Terminal (in MBUS Model)

Wiring Guidelines

Solid / Stranded with insulated Pin types lugs		1 to 2.5
Torque value (Nm) 1. Aux and Voltage terminals 3.RS485,MBUS,Tariff and SO terminals		 0.4 Nm 0.4 Nm
Length available for lug entry in terminal (mm)		6.5
Use Standard RJ12 Connector		
PIN NUMBER	1, 3, 5	2, 4, 6
CT SIDE	S1	S2

*Note:
1. Pin number 1, 3, 5 are shorted.
2. Pin number 2, 4, 6 are shorted.



It is recommended that the wires used for connections to the instrument should have insulated pin type lugs soldered at the end.

Communication Interface(MBUS) :	
Protocol	EN13757-3 MBUS
Baudrate	0.3/ 0.6/ 1.2/ 2.4/ 4.8/ 9.6 kbps
Data Width	8
Parity - Stop Bits	Even -1
Address	1 250

Display Ranges :	
Active Energy	0.01-99999.99 kWh & Autoranging further
Reactive Energy	0.01-99999.99 kVARh & Autoranging further
Apparent Energy	0.01-99999.99 kVAh & Autoranging further
Active Power	0-300 KW
Reactive Power	0-300 KVAR
Apparent Power	0-300 KVA

Installation :	
Installation	Indoor
Enclosure	IP51(front side) & IP20(terminal side) (IEC 60529: 2001)
Housing	1 Module DIN 43880
Dimensions	17.9 mm X 95.5 mm X 65 mm
Weight	150 gm
Mounting	35 mm DIN Rail

Safety :	
Safety Standard	According to 62052-31:2015
Installation Category	III
Protective Class	II
High Voltage Test	4 kV AC, 50Hz for 1 minute between all electrical circuits
Impulse Voltage Withstand	6.0 kV (1.2 microsecond waveform)
Pollution Degree	2
Housing Flame Resistance	Flammability Class V-0 acc. to UL 94, Self Extinguishing, Non Dripping, free of Halogen

Environmental Conditions :	
Mechanical Environment	M1
Electromagnetic Environment	E2
Operating Temperature	-25°C to +55°C
Storage/Transport Temperature	-40°C to +70°C
Relative Humidity	0... 95% (Non Condensing)
Shock	Half sine wave, peak acceleration $30g_n$ (300 m/s^2), pulse duration 18msec
Vibration	10...150Hz, f<60 Hz 0.075mm constant amplitude, f>60Hz $1g_n$ constant acceleration, 10 sweep cycles per axis
Altitude	< 2000 m max

Tariff Input :	
0 V	Low
230 V	High

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Measured Parameter :

✓ : Available × : Not Available

Sr No	Parameters	1 Phase 2 Wire
1.	Import Active Energy	✓
2.	Export Active Energy	✓
3.	Total Active Energy	✓
4.	Import Reactive Energy	✓
5.	Export Reactive Energy	✓
6.	Total Reactive Energy	✓
7.	Total Apparent Energy	✓
8.	Tariff 1 Import Active Energy	✓
9.	Tariff 1 Export Active Energy	✓
10.	Tariff 1 Total Active Energy	✓
11.	Tariff 1 Import Reactive Energy	✓
12.	Tariff 1 Export Reactive Energy	✓
13.	Tariff 1 Total Reactive Energy	✓
14.	Tariff 1 Total Apparent Energy	✓
15.	Tariff 2 Import Active Energy	✓
16.	Tariff 2 Export Active Energy	✓
17.	Tariff 2 Total Active Energy	✓
18.	Tariff 2 Import Reactive Energy	✓
19.	Tariff 2 Export Reactive Energy	✓
20.	Tariff 2 Total Reactive Energy	✓
21.	Tariff 2 Total Apparent Energy	✓
22.	Partial Import Active Energy	✓
23.	Partial Export Active Energy	✓
24.	Partial Total Active Energy	✓
25.	Partial Import Reactive Energy	✓
26.	Partial Export Reactive Energy	✓
27.	Partial Total Reactive Energy	✓
28.	Partial Total Apparent Energy	✓
29.	Max Import kVA Demand	✓
30.	Max Current Demand	✓
31.	Max Export kVA Demand	✓
32.	Max Import kW Demand	✓
33.	Max Export kW Demand	✓
34.	Max Import kVAR Demand	✓
35.	Max Export kVAR Demand	✓
36.	Voltage	✓
37.	Current	✓
38.	Frequency	✓
39.	Active Power	✓
40.	Reactive Power	✓
41.	Apparent Power	✓
42.	Power Factor	✓
43.	Number of Interruptions	✓

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Order Code:

Ordering Information:

Product Code : ER11 - M - 0 - 01 - 01 - X - 0 - B - 0000

1Ph RJ-12 AC Energy Meter

Current Range:
01 - RJ12 100mA

Meter Interface :
A = 1 Tariff Inputs + 1 SO Output (ER1101 2TS)
B = RS485 - 1 SO Output (ER1111 Mod)
C = MBUS -1 SO Output (ER1111 MB)

Certification :
00 = CE Certified
UK = UKCA Certified

Order Code Example:

ER11-M00101B0B0000
ER1111-Mod 1 Phase RJ12 AC Energy Meter with Input voltage 193-253VLN, 100mA, RS485, 1 SO Output with CE Certification.

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Rishabh Instruments Limited, F31, MIDC, Satpur, Nashik-422007, Maharashtra, India
Tel: +91 253 2202028 | Fax: +91 253 2351064 | E-mail: marketing@rishabh.co.in | www.rishabh.co.in