



Data Sheet

RISH MD1340

Multifunction Meter - DIN Rail Mounted



Measure



Control



Record



Analyze



Optimize

RISH MD1340 measures important electrical parameters in 3 phase 4 wire, 3 phase 3 wire and 1 phase 2 wire Network. It displays many parameters at a glance. It measures electrical parameters like Active / Reactive / Apparent energy and all basic parameter. The instrument has optional digital output available as potential free relay or SO interface and configurable as pulse or alarm. This instrument also has optional digital inputs for monitoring the external contact status, pulse counting and/or energy accumulation according to tariff.

Applications

- Internal Energy billing/monitoring/auditing
- Sub-metering
- Electrical load monitoring
- Genset, Test Benches and Laboratories

Product Features

True RMS measurement

True RMS measurement with Sampling rate of 128 samples per cycle

Compliance to Performance Standards

Compliance to performance standard IEC 61557-12, IEC 62053-22 and 62053-23

Relay Output (optional)

Potential free, very fast acting relay contact configurable for following:

- **Pulse** output which can be used to drive an external counter for energy measurement.
- **Limit** (alarm) switch. Limit output also configurable for three logical combination of parameters.
- **Timer** output which can be used to operate relay in cyclic manner
- **Pre-Paid Cost** based energy tripping
- Switch for **unhealthy three phase load**
- **Remote Relay Control** using MODBUS

Pre-Paid Cost Based Energy Tripping

- This feature provides the luxury of tripping the load whose energy has crossed the required threshold of the configured tariff amount
- The user just needs to set the energy, top-up amount and the rate per unit (kilo) of energy

Health Monitoring of Three Phase Load

- This feature is applicable only for Three phase load (such as a Three phase motor) which can be monitored for phase failure, phase reversal, voltage & current unbalance, under frequency, under voltage, over voltage and over current
- Further, set a relay on this mode and use it for indication / guard against such faults

Pulse Output (SO Output)

- Opto-isolated pulse output
- Configurable for Active, Reactive and Apparent Energy Parameters
- The pulse rate and pulse duration is also onsite configurable

High Max System Power Limit

- Upto 3750 MVA Nominal System Power is measurable
- Upto 9000 MVA Max System Power is measurable

Energy as per IEC 62053

- Active Energy accuracy 0.5s as per 62053-22 and Reactive Energy Class 2 as per 62053-23
- Active Energy accuracy 0.2s (optional) as per 62053-22 and Reactive Energy Class 2 as per 62053-23
- Independent Import and Export Energy counter. Active energy (kWh), Reactive energy (kVAh), Apparent energy (kVAh) measurement of system as well as phase-wise

Digital Inputs

- 2 Digital Inputs (Optional) can be configured as:
- Status to indicate if the input is present or not.
- Pulse Counter for counting pulses from external sources.
- Tariff Input to store separate energy counters on the basis of digital inputs present

Dual Tariff

- 2 Tariff based on digital input available
- 6 Energy Parameters configurable for tariff based energy

THD and Individual Harmonics Measurement

The instrument measures per phase THD and individual harmonic up to 31st harmonics for voltage & current

Direct Remote Access (Optional)

Remote configuration of the Instrument and access of measured parameter via MODBUS Rs485

User Assignable Screens & Programmable Voltage and Power units

- User can define preferred unit for voltage and power over MODBUS
- User can select minimum 1 no. and maximum 10 nos. of screens out of all the screens as per application requirement.

Min-Max and Old Values

- Min-Max Voltage, Current, Active/Reactive/Apparent power, Power factor, Phase angle, Frequency
- Old value storage after Reset

EMC Compatibility

Compliance to International standard IEC 61326



Measure



Control



Record



Analyze



Optimize

Product Features

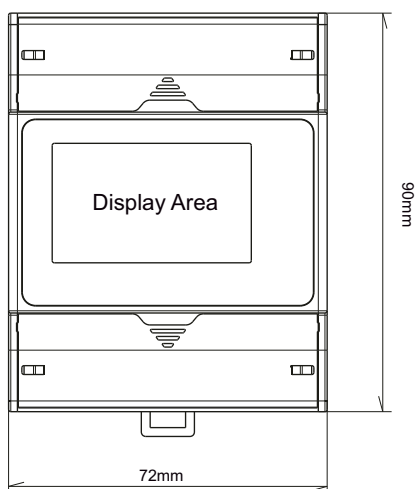
User Assignable Screens

- Instrument measures more than 85 parameters and these parameters are displayed through different screens
- User can select minimum 1no. and maximum 10 nos. of screens out of all the screens as per application requirement

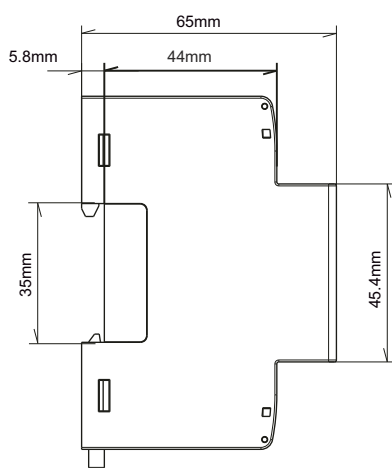
Compliance to International Safety Standards

Compliance to International Safety standard IEC 61010-1- 2010

Dimensions Details



Front View



Side View

Technical Specifications

Input Voltage

Nominal input voltage (Vn)

Programmable on site.

System PT primary values

Measuring Range

Overload Withstand

100VLL to 600 VLL AC RMS

57.5VLN to 346.42 VLN AC RMS

100VLL to 1200kVLL programmable on site.

20%....120% of nominal value

2 x rated value for 1 second, repeated 10 times at 10 second intervals

Overload Indication

"-OL-" >121% of Nominal value

Nominal input voltage burden

< 0.3VA approx. per phase(at nominal 240V)

Input Current

Nominal input current (In)

System CT primary values

Measuring Range

1A / 5A onsite programmable

From 1A to 9999A

1%....200% of nominal value

(1%....180% of nominal value for CF = 2)

Overload Indication

"-OL-" >205% of Nominal value

Nominal input current burden

< 0.3VA approx. per phase

Overload Withstand

20 x rated value for 1 second, repeated 5 times at 5 minute intervals

Auxiliary Supply

Higher Auxiliary supply range

As per IEC 61557-12

Lower Auxiliary supply range

Aux Supply frequency

Auxiliary Supply burden

100-550V AC/DC (230V AC/DC nominal)

100-320V AC/DC (230V AC/DC nominal)

20-60V AC/DC (24V AC / 48V DC nominal)

45 to 66 Hz range

< 6VA approx. (at nominal value)

Operating Measuring Ranges

Current (Energy Measurement)

Starting current

1....200% of nominal value

As per Standard IEC62053-22 (0.5s)

As per Standard IEC62053-22 (0.2s Optional)

Voltage

20... 120% of nominal value

Power Factor

0.5 Lag ... 1... 0.8 Lead

Frequency

40Hz to 70Hz



Measure



Control



Record



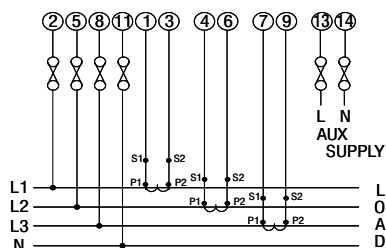
Analyze



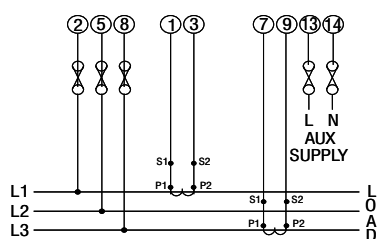
Optimize

Electrical Connections:

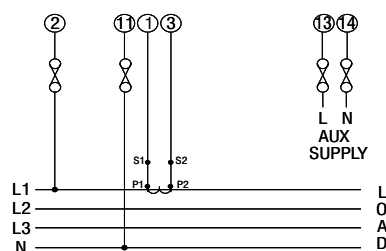
Network Types :



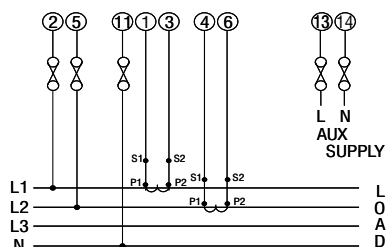
a) 3 Phase 4 Wire



b) 3 Phase 3 Wire



c) Single Phase Load



d) 1 Phase 3 Wire

Wiring Guidelines

Solid with Pin type lugs (sq. mm)	1 to 2.5
Stranded with pin types lugs (sq. mm)	1 to 2.5
Torque value (Nm)	
1. Aux and Voltage terminals	0.5 to 0.6
2. Current Terminals	0.4 to 0.5
3. RS485, DI and Relay terminals	0.3 to 0.4
Length available for lug entry in terminal (mm)	9.5

It is recommended that the wires used for connections to the instrument should have lugs soldered at the end. That is, the connections should be made with Lugged wires for secure connections.

Technical Specifications

Reference Conditions for Accuracy

Reference temperature

23°C +/- 2°C

Influence of temperature

0.01% / °C for Voltage

0.025% / °C for Current

Input Waveform

Sinusoidal (distortion factor 0.005)

Input frequency

50/60 Hz ± 2%

Auxiliary supply frequency

50/60 Hz ± 1%

Total Harmonic distortion

THDv ≤ 50% upto 31st at Vn

THDi ≤ 200% upto 31st at In

(THDi ≤ 180% upto 31st at In for CF = 2)

Voltage range

20%.....120% of nominal value

Current range

10%.....200% of nominal value

Display Specification

Display

3 Line 4 Digit LCD with Backlit

Response time to step input

1 sec approx.

LED Indications

Impulse (Integration of Energy)

Display scrolling

Automatic/Manual (Programmable)

Push buttons

4 Buttons

Accuracy

Active Energy (Bidirectional)

As per IEC 62053-22 Standard

Class 0.5S (Optional-Class 0.2S)

As per IEC 61557-12 Standard

Class 0.5 (Optional-Class 0.2 for 5A In (Class 0.5 for 1A In))

Apparent Energy

Class 1 as per IEC 61557-12

Reactive Energy

Class 2 as per IEC 62053 - 23 and IEC 61557

Parameters	Class 0.2s (on Request)	Class 0.5s (Standard)
Voltage	± 0.2% of Nominal value	± 0.5% of Nominal value
Current	± 0.2% of Nominal value	± 0.5% of Nominal value
Frequency	± 0.1% of Mid frequency	± 0.1% of Mid frequency
Active Power	± 0.2% of Nominal value	± 0.5% of Nominal value
Re-Active Power	± 1.0% of Nominal value	± 1.0% of Nominal value
Apparent Power	± 0.2% of Nominal value	± 0.5% of Nominal value
Power Factor/ angle	±3°	±3°
THD (V/I) w.r.t. fundamental	±5% (upto 31st Harmonics)	±5% (upto 31st Harmonics)
Individual Harmonics	±5% (upto 31st Harmonics)	±5% (upto 31st Harmonics)

Environmental

Operating temperature

-20 to +55°C (Storage: -40 to +85°C)

Relative humidity

0... 95% (non condensing)

Warm up time

Minimum 3 minute

Shock (As per IEC 60068-2-27)

Half sine wave, Peak acceleration

30gn (300 m/s²), duration 18ms

Vibration

10... 150...10 Hz, 0.15mm amplitude

Altitude

< 2000 m

Number of Sweep cycles

10 per axis

Enclosure

IP 20 (Terminal side) and IP 54 (Front side)



Measure



Control



Record



Analyze



Optimize

Technical Specifications:

Applicable Standards

Electromagnetic Compatibility	IEC 61326 - 1
Immunity	IEC 61000-4-2,-3,-4,-5,-6,-8,-11
Emission	CISPR 11
Safety	IEC 61010-1-2010
IP for water & dust	IEC 60529
Pollution degree	2
Installation category	III
Protective Class	2
High voltage test	
• Input + Aux Vs Surface	4kV RMS, 50Hz for 1min
• Input / Aux Vs Others	3.3kV RMS, 50Hz for 1min
• DI / Pulse out / RS485 Vs Others	3.3kV RMS, 50Hz for 1min
• DI Vs DI / Pulse out Vs Pulse out	2.2kV RMS, 50Hz for 1min

Installation

Mechanical Housing	Lexan 940(polycarbonate), Class V-0 acc. to UL 94, non dripping, free of halogen
Mounting Position	DIN Rail Mounted
Connection Element	Conventional screw type terminal with indirect wire terminals
Connection Terminal	4 mm ² solid or 2.5 mm ² stranded cable
Weight	300 grams approx

Interfaces

Impulse LED	For Energy testing
Digital Input (Optional)	20... 300 VAC / 10... 60 VDC, Optical couplers, Min width 10ms, Min length b/w 2 pulses 18ms
Relay (Optional)	250 VAC, 5 AAC / 30 VDC, 5A DC
SO Output (Optional)	Opto-coupler max. 30V, 20mA, at least 5V, Pulse width 30ms, Impedance 100 ohm
Modbus (Optional)	RS485, max 1.2Km : 4.8,9.6,19.2,38.4,57.6kbps



Measure



Control



Record



Analyze



Optimize

Measured Parameter System wise:

✓ : Available

✗ : Not Available

Sr No	Parameters	3 Phase 4Wire	3Phase 3Wire	1Phase 2Wire	1Phase 3Wire
1.	System Import Active Energy ¹	✓	✓	✓	✓
2.	L1,L2,L3 Import Active Energy ¹	✓	✗	✗	✓ ³
3.	System Export Active Energy ¹	✓	✓	✓	✓
4.	L1,L2,L3 Export Active Energy ¹	✓	✗	✗	✓ ³
5.	System Total Active Energy ¹	✓	✓	✓	✓
6.	L1,L2,L3 Total Active Energy ¹	✓	✗	✗	✓ ³
7.	System Inductive Reactive Energy ¹	✓	✓	✓	✓
8.	L1,L2,L3 Inductive Reactive Energy ¹	✓	✗	✗	✓ ³
9.	System Capacitive Reactive Energy ¹	✓	✓	✓	✓
10.	L1,L2,L3 Capacitive Reactive Energy ¹	✓	✗	✗	✓ ³
11.	System Total Reactive Energy ¹	✓	✓	✓	✓
12.	L1,L2,L3 Total Reactive Energy ¹	✓	✗	✗	✓ ³
13.	System Apparent Energy ¹	✓	✓	✓	✓
14.	L1,L2,L3 Apparent Energy ¹	✓	✗	✗	✓ ³
15.	System Active Power (kW)	✓	✓	✓	✓
16.	L1,L2,L3 Active Power (kW)	✓	✗	✗	✓ ³
17.	System Total Re-active Power (kVAr)	✓	✓	✓	✓
18.	L1,L2,L3 Total Re-active Power (kVAr)	✓	✗	✗	✓ ³
19.	System Fundamental Re-active Power (kVAr) ²	✓	✓	✓	✓
20.	L1,L2,L3 Fundamental Re-active Power (kVAr) ²	✓	✗	✗	✓ ³
21.	System Distorted Re-active Power (kVAr) ²	✓	✓	✓	✓
22.	L1,L2,L3 Distorted Re-active Power (kVAr) ²	✓	✗	✗	✓ ³
23.	System Apparent Power (kVA)	✓	✓	✓	✓
24.	L1,L2,L3 Apparent Power (kVA)	✓	✗	✗	✓ ³
25.	System Power Factor	✓	✓	✓	✓
26.	L1,L2,L3 Power Factor	✓	✗	✗	✓ ³
27.	System Displacement Power Factor ²	✓	✓	✓	✓
28.	L1,L2,L3 Displacement Power Factor ²	✓	✗	✗	✓
29.	System Reactive Power Factor ²	✓	✓	✓	✓
30.	L1,L2,L3 Reactive Power Factor ²	✓	✗	✗	✓ ³
31.	System LF Factor $\text{SgnQ}(1-(P/S))^2$	✓	✓	✓	✓
32.	L1,L2,L3 LF Factor $\text{SgnQ}(1-(P/S))^2$	✓	✗	✗	✓ ³
33.	System Phase Angle	✓	✓	✓	✓
34.	L1,L2,L3 Phase Angle	✓	✗	✗	✓ ³
35.	Current Demand	✓	✓	✓	✓
36.	kVA Demand	✓	✓	✓	✓
37.	Import kW Demand	✓	✓	✓	✓
38.	Export kW Demand	✓	✓	✓	✓
39.	Inductive Var Demand	✓	✓	✓	✓
40.	Capacitive Var Demand	✓	✓	✓	✓
41.	Max Current Demand	✓	✓	✓	✓
42.	Max kVA Demand	✓	✓	✓	✓
43.	Max Import kW Demand	✓	✓	✓	✓
44.	Max Export kW Demand	✓	✓	✓	✓
45.	Max Inductive Var Demand	✓	✓	✓	✓
46.	Max Capacitive Var Demand	✓	✓	✓	✓
47.	Run Hour	✓	✓	✓	✓
48.	On Hour	✓	✓	✓	✓
49.	Number of Interruptions	✓	✓	✓	✓
50.	System Voltage	✓	✓	✓	✓
51.	L1,L2,L3 Voltage	✓	✗	✗	✓ ³
52.	L12,L23,L31 Voltage	✓	✓	✗	✓ ³



Measure



Control



Record



Analyze



Optimize

Measured Parameter System wise:

✓ : Available

✗ : Not Available

Sr No	Parameters	3 Phase 4Wire	3Phase 3Wire	1Phase 2Wire	1Phase 3Wire
53.	System Voltage THD	✓	✓	✓	✓
54.	L1-L2-L3 Voltage THD	✓	✓	✗	✓ ³
55.	System Current	✓	✓	✓	✓
56.	L1-L2-L3 Current	✓	✓	✗	✓ ³
57.	System Current THD	✓	✓	✓	✓
58.	L1-L2-L3 Current THD	✓	✓	✗	✓ ³
59.	Individual Harmonics VL1(Up to 31st Harmonics)	✓	✓	✓	✓
60.	Individual Harmonics VL2 (Up to 31st Harmonics)	✓	✓	✗	✓
61.	Individual Harmonics VL3 (Up to 31st Harmonics)	✓	✓	✗	✗
62.	Individual Harmonics IL1(Up to 31st Harmonics)	✓	✓	✓	✓
63.	Individual Harmonics IL2(Up to 31st Harmonic)	✓	✗	✗	✓
64.	Individual Harmonics IL3(Up to 31st Harmonics)	✓	✓	✗	✗
65.	Neutral Current (Calculated)	✓	✗	✗	✓
66.	Frequency	✓	✓	✓	✓
67.	RPM	✓	✓	✓	✓
68.	Phase Sequence Indication	✓	✓	✗	✗
69.	Current Reversal Indication	✓	✗	✓	✗
70.	Phase (V-I) Absent Indication	✓	✗	✗	✗
71.	Tariff Source 1 Energy Count	✓	✓	✓	✓
72.	Tariff Source 2 Energy Count	✓	✓	✓	✓
73.	Tariff Source 3 Energy Count	✓	✓	✓	✓
74.	Tariff Source 4 Energy Count	✓	✓	✓	✓
75.	Tariff Source 5 Energy Count	✓	✓	✓	✓
76.	Tariff Source 6 Energy Count	✓	✓	✓	✓
77.	Old Max A Demand ²	✓	✓	✓	✓
78.	Old Max VA Demand ²	✓	✓	✓	✓
79.	Old Max kW Import Demand ²	✓	✓	✓	✓
80.	Old Max kW Export Demand ²	✓	✓	✓	✓
81.	Old Max Var Inductive Demand ²	✓	✓	✓	✓
82.	Old Max Var Capacitive Demand ²	✓	✓	✓	✓
83.	Old System Import Active Energy ²	✓	✓	✓	✓
84.	Old L1-L2-L3 Import Active Energy ²	✓	✗	✗	✓ ³
85.	Old System Export Active Energy ²	✓	✓	✓	✓
86.	Old L1-L2-L3 Export Active Energy ²	✓	✗	✗	✓ ³
87.	Old System Inductive Reactive Energy ²	✓	✓	✓	✓
88.	Old L1-L2-L3 Inductive Reactive Energy ²	✓	✗	✗	✓ ³
89.	Old System Capacitive Reactive Energy ²	✓	✓	✓	✓
90.	Old L1-L2-L3 Capacitive Reactive Energy ²	✓	✗	✗	✓ ³
91.	Old System Apparent Energy ²	✓	✓	✓	✓
92.	Old L1-L2-L3 Apparent Energy ²	✓	✗	✗	✓ ³
93.	Old Run Hour ²	✓	✓	✓	✓
94.	Old On Hour ²	✓	✓	✓	✓
95.	Old Number of Interruptions ²	✓	✓	✓	✓
96.	Voltage VLN Unbalance	✓	✗	✗	✗
97.	Voltage VLL Unbalance	✓	✓	✗	✗
98.	Current Unbalance	✓	✓	✗	✓

Note: 1. Energy on display is autoranging & unit for Energy parameters on modbus are dependent on CT PT ratio or unit selected by user.

2. Parameters are available only on modbus.



Measure



Control



Record



Analyze



Optimize

Ordering Information :

Ordering Information	MD00-	3	3	01	02	X	X	X	0000
Product Type	RISH MD 1340								
System Type	3 Phase (On site configurable as 1 / 3 Phase)								
Input voltage	100-500VLL 50/60Hz								
Input Current	CT-1/5A								
Output & Input Option	RS485					M			
	RS485+2 Digital Input+2 Relay Output					C			
	RS485+1 Digital Input+1 SO Output					S			
Auxiliary Supply	100 - 550V AC/DC						H		
	20-60V AC/DC						L		
Accuracy	Class 0.2S							2	
	Class 0.5S							5	

Order Code Example : MD00-330102CH20000

Rish MD1340 : Input 1A/5A, 100-500VLL 50/60Hz, Aux 100-550V AC/DC, with RS485+2 Digital Input+2 Relay output, Accuracy Class 0.2S



Measure



Control



Record



Analyze



Optimize



Specifications may change without prior notice



Measure



Control



Record



Analyze



Optimize

RISHABH INSTRUMENTS LIMITED

Domestic (India): +91 253 2202099 | marketing@rishabh.co.in
International: +91 253 2202004/06/08/99 | global@rishabh.co.in
www.rishabh.co.in