



Data Sheet

RISH EM 2340

Multi-Function Dual Source Energy Meter



Measure



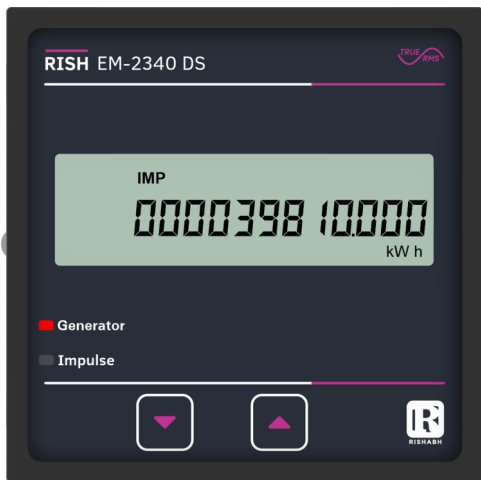
Control



Record



Analyze



RISH EM 2340 measures important electrical parameters of Utility and Generator in 3 phase and single phase Network & replaces the multiple analog panel meters. It measures electrical parameters like Active / Reactive / Apparent energy , power. The instrument has 2 configurable optional outputs as pulse output for energy measurement or limit output.

Applications:

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

Product Features:

True RMS measurement:

- ▶ Measures distorted waveform up to 15th Harmonic.

Dual Source Energy Measurement as per IEC 62053:

- ▶ Independent Energy counter for Generator and Utility.
- ▶ Generator sense signal (10 to 60VDC/20 to 300VAC)
- ▶ Active energy (kWh), Reactive energy (kVAh), Apparent energy (kVAh) measurement.
- ▶ Accuracy as per IEC 62053-21, IEC62053-23.

THD Measurement:

- ▶ The instrument measures THD per phase voltage & current up to 15th Harmonic.

Onsite programmable:

- ▶ Onsite Programmable System Configuration 3PH4W / 3PH3W / 1PH2W.
- ▶ Onsite Programmable CT ratios and PT ratios

Direct remote access(Optional):

- ▶ Remote configuration of the Instrument via MODBUS.
- ▶ Remote access of measured parameters. Programmable baud rates up to 38.4kbps.

Limit (Alarm) or Pulse Relay Output(Optional):

- ▶ Potential free, very fast acting relay contact.
- ▶ Configurable as pulse output which can be used to drive an external counter for energy measurement.
- ▶ Configurable as limit (alarm) switch.

Low back depth:

- ▶ The instrument has very low back depth (behind the panel) of less than 35 mm.

User Configurable Features:

- ▶ User can select any five or ten measurement screens which will be shown on display. Also backlit can be programmed to switched on or off.

LCD Display with Backlit:

- ▶ LCD shows 3 Parameters at a glance.

Parameter Screen recall:

- ▶ In case of power failure, the instrument memorizes the last displayed screen.

Run Hour, ON Hour, Number of Interruptions:

- ▶ Run Hour records the number of hours load is connected. ON Hour is the period for which the auxiliary supply is ON. Number of Interruptions indicates the number of times the Auxiliary Supply was interrupted.

Onsite selection of Auto scroll / Fixed Screen

- ▶ User can set the display in auto scrolling mode or fixed screen mode locally via front panel keys by entering into Programming mode or remotely via MODBUS (Rs485).

Enclosure Protection for dust and water:

- ▶ Conforms to IP 50 (front face) as per IEC60529

Compliance to International Safety standards

- ▶ Compliance to International Safety standard IEC 61010-1- 2010

EMC Compatibility

- ▶ Compliance to International standard IEC 61326



Measure



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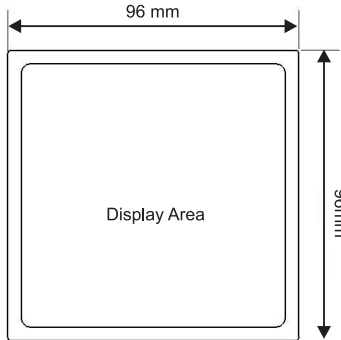


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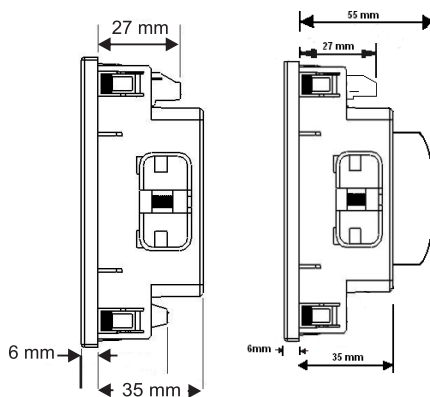


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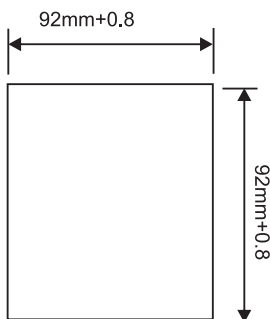
Dimensions Details:



Front View



Side View



Panel Cutout

Technical Specifications:

| Input Voltage: | | |
|---|---|----------------------|
| Nominal input voltage (AC RMS) | Phase –Neutral | Line-Line |
| | 63.5 V _{L-N} | 110 V _{L-L} |
| | 133 V _{L-N} | 230 V _{L-L} |
| | 239.6 V _{L-N} | 415 V _{L-L} |
| System PT primary values | 100 VLL to 1200 kVLL programmable on site. | |
| Max continuous input voltage | 120% of nominal value | |
| Input Current: | | |
| Nominal input current | 1A/5A AC RMS | |
| System CT primary values | From 1A to 9999A | |
| Max continuous input current | 120% of nominal value | |
| Overload Indication | “-OL” >121% of nominal value (for voltage and current) | |
| Auxiliary Supply: | | |
| External Higher Aux | 60 V – 300V AC-DC (± 5% approx) | |
| Higher Aux Nominal Value | 230 V AC/DC | 50/60 Hz for AC Aux |
| | OR | |
| External Lower Aux | 20 V – 60V DC / 20 V – 40V AC | |
| Lower Aux Nominal Value | 48 V DC / 24 V AC 50/60 Hz for AC Aux | |
| Aux Supply frequency | 45 to 65 Hz range | |
| VA Burden: | | |
| Nominal input voltage burden | < 0.3 VA approx. per phase | |
| Nominal input current burden | < 0.3 VA approx. per phase | |
| Auxiliary Supply burden | | |
| With add on card | < 6 VA approx. | |
| Without add on card | < 4 VA approx. | |
| Generator Sense: | | |
| AC voltage | 20... 300 VAC | |
| DC voltage | 10... 60 VDC | |
| Operating Measuring Ranges: | | |
| Current (Energy Measurement) (As per IEC 62053 - 21) | Starting current : 2mA for 1A & 10mA for 5A Range: 20mA to 1.2A for 1A 100mA to 6A for 5A | |
| Voltage | 50... 120% of nominal value | |
| Power Factor | 0.5 Lag ... 1... 0.8 Lead | |
| Frequency | 50Hz / 60Hz | |
| Total Harmonic distortion | 0...50% | |
| Accuracy: | | |
| Reference Conditions (As per IEC 62053 - 21) | 23°C +/- 2°C | |
| Active Energy | Class 1 as per IEC 62053 - 21 | |
| Reactive Energy | Class 2 as per IEC 62053 - 23 | |
| Apparent Energy | Class 1 | |
| Active Power | ±0.5% of nominal value at cos ϕ = 1 | |
| Re-Active Power | ±1.0% of nominal value at sin ϕ = 1 | |
| Apparent Power | ±0.5% of nominal value | |
| Power Factor/Phase Angle | ±3° | |
| Voltage | ±0.5% of nominal value | |
| Current | ±0.5% of nominal value | |
| Frequency | ± 0.2% of mid frequency | |
| THD (Voltage / Current) | ± 2.0% | |



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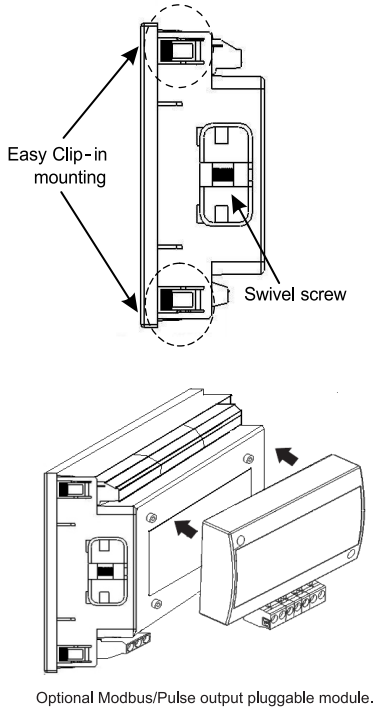


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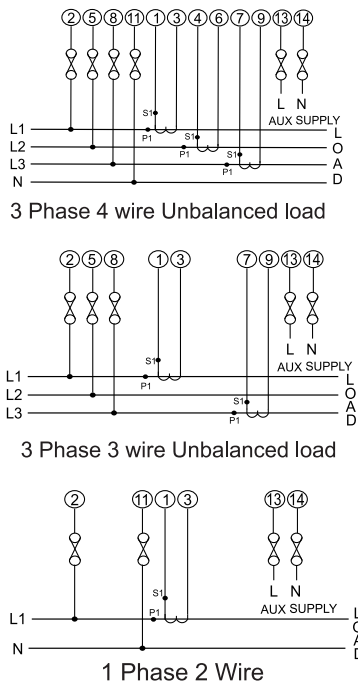


Analyze

Installation:



Electrical Connection:



Technical Specifications:

| | |
|------------------------------|--|
| Overload Withstand: | |
| Voltage | 2 x Nominal value for 1 second, repeated 10 times at 10 second intervals |
| Current | 20 x I _{max} for 0.5sec |
| Display update rate: | |
| Response time to step input | 1 sec approx. |
| Applicable Standards: | |
| EMC | IEC 61326 -1 :2005 |
| Immunity | IEC 61000-4-3. 10V/m min – Level 3 industrial Low level |
| Safety | IEC 61010-1-2010, Permanently connected use |
| IP for water & dust | IEC 60529 |
| Pollution degree: | 2 |
| Installation category: | III |
| Isolation : | |
| Protective Class | 2 |
| High Voltage Test | |
| Input + Aux Vs Surface | 4kV RMS,50Hz,1min |
| Input Vs Remaining Circuit | 2kV RMS,50Hz,1min |
| Environmental | |
| Operating temperature | -10 to +55°C |
| Storage temperature | -20 to +65°C |
| Relative humidity | 0... 90% RH (non condensing) |
| Warm up time | Minimum 3 minute |
| Shock (As per IEC60068-2-27) | Half sine wave, Peak acceleration 30gn(300m/s ²), duration 18ms. |
| Vibration | 10... 150...10 Hz, 0.15mm amplitude |
| Number of sweep cycles | 10 per axis. |
| Enclosure | IP 50 (front face only) |
| Interfaces | |
| Impulse Led | For Energy Calibration at front |
| Relay(Optional) | 240VAC,5A(Configured as Limit or Pulse output) |
| ModBus(Optional) | RS485,max. 1200m |
| | Baud rate : 4.8k,9.6k,19.2k,38.4k bps. |

NOTE: Variation due to influence Quantity is 100% of class index for all other parameters except Energy.

PT Secondary Ranges for Various Input Voltage:

| Input Voltage | PT Secondary Settable Range |
|-----------------------|-----------------------------------|
| 110V L-L (63.5V L-N) | 100V – 125V L-L (57V – 72V L-N) |
| 230V L-L (133V L-N) | 126V – 250V L-L (73V – 144V L-N) |
| 415V L-L (239.6V L-N) | 251V – 480V L-L (145V – 277V L-N) |

Input connections are made directly to screw-type terminals with indirect wire pressure. Numbering is clearly marked on the connector . Choice of cable should meet local regulations. Terminal for both Current and Voltage inputs will accept up to 4mm² (12AWG) solid or 2.5 mm² standard cable.

Note: It is recommended to use wire with lug for connection with meter.



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Display Parameter:

✓ : Available

× : Not Available

| Sr No | Displayed Parameters | 3 Phase 4Wire | 3Phase 3Wire | 1Phase 2Wire |
|-------|---|---------------|--------------|--------------|
| 1. | Utility Active Energy (kWh) | ✓ | ✓ | ✓ |
| 2. | Generator Active Energy (kWh) | ✓ | ✓ | ✓ |
| 3. | Utility Reactive Energy (kVArh) | ✓ | ✓ | ✓ |
| 4. | Generator Reactive Energy (kVArh) | ✓ | ✓ | ✓ |
| 5. | Apparent Energy (kVAh) (Utility & Generator) | ✓ | ✓ | ✓ |
| 6. | System Active Power (kW) | ✓ | ✓ | ✓ |
| 7. | Active Power L1 (kW) | ✓ | × | × |
| 8. | Active Power L2 (kW) | ✓ | × | × |
| 9. | Active Power L3 (kW) | ✓ | × | × |
| 10. | System Re-active Power (kVAR) | ✓ | ✓ | ✓ |
| 11. | Re-active Power L1 (kVAR) | ✓ | × | × |
| 12. | Re-active Power L2 (kVAR) | ✓ | × | × |
| 13. | Re-active Power L3 (kVAR) | ✓ | × | × |
| 14. | System Apparent Power (kVA) | ✓ | ✓ | ✓ |
| 15. | Apparent Power L1 (kVA) | ✓ | × | × |
| 16. | Apparent Power L2 (kVA) | ✓ | × | × |
| 17. | Apparent Power L3 (kVA) | ✓ | × | × |
| 18. | System Power Factor | ✓ | ✓ | ✓ |
| 19. | Power Factor L1 | ✓ | × | × |
| 20. | Power Factor L2 | ✓ | × | × |
| 21. | Power Factor L3 | ✓ | × | × |
| 22. | System Phase Angle | ✓ | ✓ | ✓ |
| 23. | Phase Angle L1 | ✓ | × | × |
| 24. | Phase Angle L2 | ✓ | × | × |
| 25. | Phase Angle L3 | ✓ | × | × |
| 26. | Current Demand(Utility / Generator) | ✓ | ✓ | ✓ |
| 27. | kVA Demand(Utility / Generator) | ✓ | ✓ | ✓ |
| 28. | kW Demand (Utility / Generator) | ✓ | ✓ | ✓ |
| 29. | Max Current Demand(Utility & Generator) | ✓ | ✓ | ✓ |
| 30. | Max kVA Demand(Utility & Generator) | ✓ | ✓ | ✓ |
| 31. | Max kW Demand(Utility & Generator) | ✓ | ✓ | ✓ |
| 32. | Run Hour (Utility & Generator & Total) | ✓ | ✓ | ✓ |
| 33. | On Hour (Utility & Generator & Total) | ✓ | ✓ | ✓ |
| 34. | Number of Interruptions (Utility & Generator) | ✓ | ✓ | ✓ |
| 35. | System Voltage | ✓ | ✓ | ✓ |
| 36. | Voltage L1 | ✓ | × | × |
| 37. | Voltage L2 | ✓ | × | × |
| 38. | Voltage L3 | ✓ | × | × |
| 39. | Voltage L12 | ✓ | ✓ | × |
| 40. | Voltage L23 | ✓ | ✓ | × |
| 41. | Voltage L31 | ✓ | ✓ | × |
| 42. | System Voltage THD | ✓ | ✓ | ✓ |
| 43. | Voltage L1 THD | ✓ | ✓ | × |
| 44. | Voltage L2 THD | ✓ | ✓ | × |
| 45. | Voltage L3 THD | ✓ | ✓ | × |
| 46. | System Current | ✓ | ✓ | ✓ |
| 47. | Current L1 | ✓ | ✓ | × |
| 48. | Current L2 | ✓ | ✓ | × |
| 49. | Current L3 | ✓ | ✓ | × |



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Display Parameter:

✓ : Available

✗ : Not Available

| Sr No | Displayed Parameters | 3 Phase 4Wire | 3Phase 3Wire | 1Phase 2Wire |
|-------|---|---------------|--------------|--------------|
| 50. | System Current THD | ✓ | ✓ | ✓ |
| 51. | Current L1 THD | ✓ | ✓ | ✗ |
| 52. | Current L2 THD | ✓ | ✓ | ✗ |
| 53. | Current L3 THD | ✓ | ✓ | ✗ |
| 54. | Neutral Current | ✓ | ✗ | ✗ |
| 55. | Frequency | ✓ | ✓ | ✓ |
| 56. | RPM | ✓ | ✓ | ✓ |
| 57. | Phase Reversal Indication | ✓ | ✓ | ✗ |
| 58. | Current Reversal Indication | ✓ | ✓ | ✓ |
| 59. | Phase Absent Indication | ✓ | ✓ | ✗ |
| 60. | Old Utility Active Energy (kWh) | ✓ | ✓ | ✓ |
| 61. | Old Generator Active Energy (kWh) | ✓ | ✓ | ✓ |
| 62. | Old Utility Reactive Energy (kVArh) | ✓ | ✓ | ✓ |
| 63. | Old Generator Reactive Energy (kVArh) | ✓ | ✓ | ✓ |
| 64. | Old Apparent Energy (kVAh) (Utility & Generator) | ✓ | ✓ | ✓ |
| 65. | Old Run Hour (Utility & Generator & Total) | ✓ | ✓ | ✓ |
| 66. | Old On Hour (Utility & Generator & Total) | ✓ | ✓ | ✓ |
| 67. | Old Number of Interruptions (Utility & Generator) | ✓ | ✓ | ✓ |



Measure



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Ordering Information:

| Ordering information | Ordering Code RISH EM 2340 |
|--|-------------------------------|
| System Type (Connection network) | |
| 3 Phase (onsite programmable to 3PH4W,3PH3W and 1PH2W) | 3 |
| 1 Phase | 1 |
| Input Voltage For 3 Phase | |
| 110V L-L (100V – 125V L-L) | 110 |
| 230V L-L (126V – 250V L-L) | 230 |
| 415V L-L (251V – 480V L-L) | 415 |
| Input Voltage For 1 Phase | |
| 64 V L-N (57V – 72V L-N) | 64 |
| 110 V L-N (73V – 144V L-N) | 110 |
| 240 V L-N (145V – 277V L-N) | 240 |
| Input Current | |
| 5 Amps / 1 Amps | 5 |
| Auxiliary Supply Voltage | |
| 60 - 300 V AC DC | EA |
| 20 - 60 V DC / 20 - 40 V AC | LA |
| Optional: | |
| MODBUS (RS485) output | R |
| MODBUS Option not used | Z |
| Optional: Pulse/Limit Output | |
| With 1 output | P1 |
| With 2 output | P2 |
| Without Output | Np |

Order Code Examples:

1. RISH EM 2340 – 3 – 415 - 5 - EA - R - P2

RISH Dual Source Energy Meter, three Phase, 415 VLL input voltage, 5 Amps / 1 Amps , external aux (60V – 300V AC/DC), with MODBUS output, With 2 output (2 Pulse/Limit output).

2. RISH EM 2340 – 1 – 240 - 5 - LA - Z - P2

RISH Dual Source Energy Meter, Single Phase, 240 VLN input voltage, 5 Amps / 1 Amps , external aux (20V – 60V DC / 20 - 40 V AC), With 2 output (2 Pulse/Limit output).



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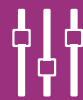
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