RISHABH

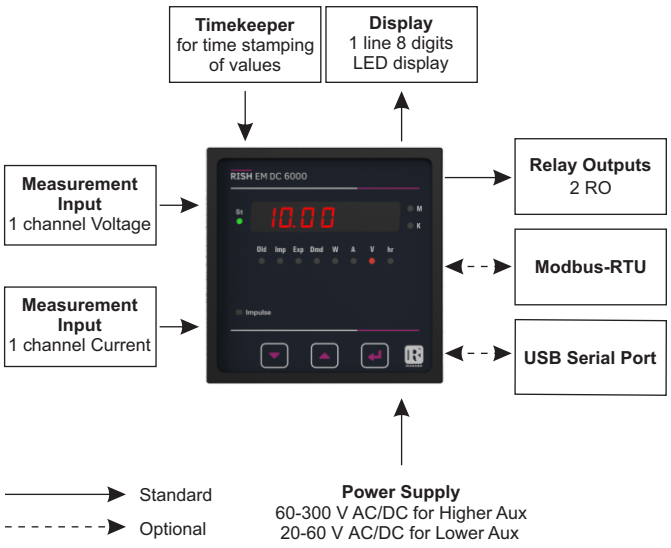
Data Sheet

RISH EM DC 6000

Multifunction DC Energy Meter

Measure Control Record Analyze

Block Diagram



Applications

- Solar Photovoltaic Systems
- Battery chargers and systems
- Wind Power Generation
- Electroplating Industries
- Power Distribution for Telecommunication
- Industrial DC control Systems

Possible Applications of Relay Outputs

- Alarming via lamp or horn
- Load shedding
- Remote controlling

Product Features

Bi-Directional Voltage & Current measurement

- The meter has a unique feature of measuring both charging and discharging current

Isolated Voltage Channel

- The Voltage channel is galvanically isolated from rest of the circuitry

Event Logging

- Previous 5 Events of factory-default parameters can be logged with Date and Time stamp

Data Logging

- User Selectable parameters (1 to 30) can be logged at regular intervals (1 to 60 min) with Date & Time stamp in internal memory and can be accessed via Modbus
- Max Records can vary from 8532 to 91010 depending upon number of selected parameters

Load Profile Analysis

- Logging of Energy consumed and Peak Demand (Power & Current) in a day and in a month for efficient tracking of load behaviour
- Daily Data is available for last 1 year and Monthly Data is available for last 14 years

Direct Remote Access (optional)

- Remote configuration of the Instrument and access of measured parameters via MODBUS
- Programmable baud rates up to 57.6kbps

1 - line 8 digit Ultra-bright LED Display

- 1 - line LED display provides easily readable data on meter front with a display range of 99999999

Reverse Locking

- Energy and Ampere Hour accumulation can be blocked for Reverse Power and Current resp
- Reverse condition can be set as Import or Export

Onsite Configuration

- Configuration can be done via Front Keys, USB Serial Interface or RS485 (MODBUS)

Relay Functions

- Limit Switch - For protection against over-shoot or under-shoot of any selected parameter
- Pulse Output - To drive an external counter for energy measurement
- Timer - Cyclic ON-OFF operation of relay for user-defined cycles with programmable ON-OFF Delays
- Remote Operation - Relays can be activated remotely via Modbus
- Reverse Locking Alarm
- RTC Relay - Relay can be activated & deactivated at predefined ON & OFF Time on any or all Days of Week

Enclosure Protection for dust and water

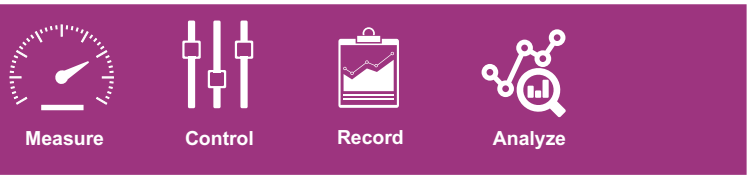
- Conforms to IP 54 (front face) as per IEC60529

Compliance to International Safety standards

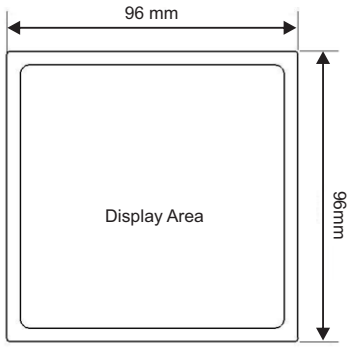
- Compliance to International Safety standard IEC 61010 - 1 - 2010

EMC Compatibility

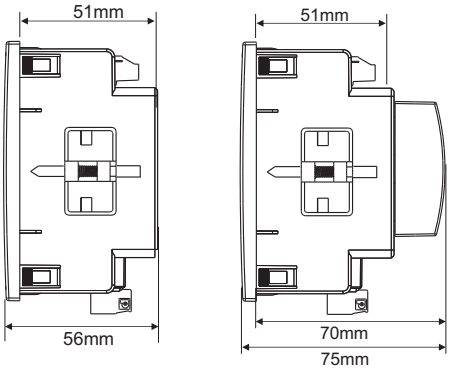
- Compliance to International standard IEC 61326 - 2012



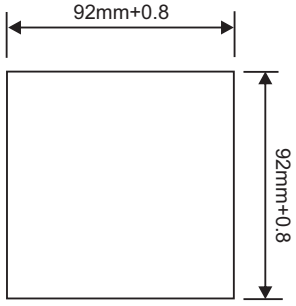
Dimensions Details



Front View



Side View



Panel Cutout

Technical Specifications

Input Voltage

Nominal Input Voltage Range	10 ~ 60 VDC 61 ~ 200 VDC 201 ~ 1000 VDC
Max continuous input voltage	125% of nominal value
Overload Withstand	2 x rated value for 1 second, repeated 10 times at 10 second intervals

Input Current

No of Channels	1
Current Sensor	External Shunt
Shunt Setting Range	50 ~ 150 mV
Full Scale Setting Range	1 A to 20 kA
Max continuous input current	125% of nominal value
Overload Withstand	20x rated value for 1 second, repeated 5 times at 5 min intervals

Operating Measuring Range

Voltage	±5 to ±125% of nominal value
Current	±0.2 to ±125% of nominal value

Auxiliary Supply

Higher Aux	60 V – 300 V AC-DC, 45 to 65 Hz range
Lower Aux	20 V – 60 V AC-DC
Nominal Value	230 V AC-DC, 50/60 Hz for Higher Aux 24 V AC-DC for Lower Aux

VA Burden

Nominal input voltage burden	< 0.4 W approx.
Nominal input current burden	< 0.1 W approx.
Auxiliary Supply burden	< 6 VA approx

Accuracy

Reference Conditions	23°C +/- 2°C
Voltage	±0.5% of Nominal value (±20 to ±120%)
Current	±0.5% of Nominal value (±5 to ±120%)
Power	±0.5% of Nominal value (±5 to ±120%)
Energy	Class 0.5
Temperature Drift	0.05%/°C

Display

Type	1 line 8-digit LED Display
Display Height	9 mm
Overload Indication	-oL- (Above 126% of nominal value)

Display Range

Voltage	0 to ±9999
Current	0 to ±9999
Power	0 to ±9999
Energy (Import & Export)	0 to 99999999

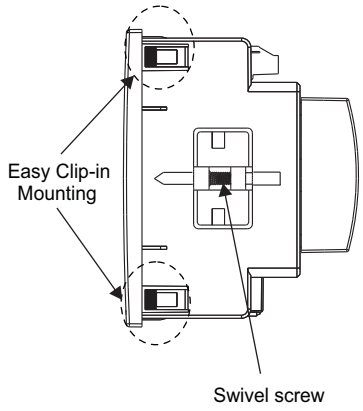
Real Time Clock (RTC)

Uncertainty	±2 minutes / month (23°C +/- 2°C)

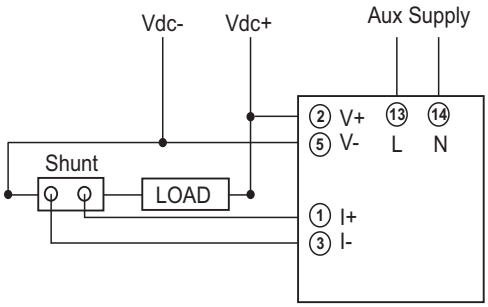
NOTE: Variation due to influence Quantity is 100% of class index

Measure Control Record Analyze

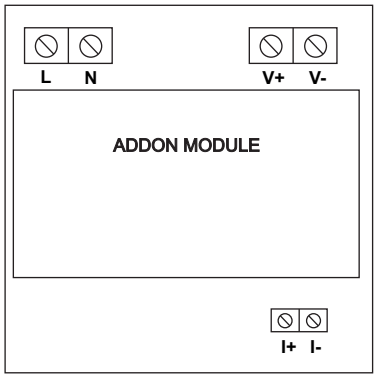
Installation



Electrical Connection



Meter Rear View



Technical Specifications

Interfaces

Impulse LED	For Energy Testing
Relay Output (Optional)	250 VAC / 30 VDC, 5 A
Modbus (Optional)	RS485, max. 1200 m Baud rate: 4800, 9600, 19200, 38400, 57600 bps
USB (Optional)	Baud rate: 57600 bps

Applicable Standards

EMC	IEC 61326-2012
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	1000V CATII, 600V CATIII (Measuring Inputs) 300V CATIII (Power Supply)
Protective Class	2
High Voltage Test (DC, 1 minute)	6.22 kV DC, Enclosure versus all electrical circuits 5.23 kV DC, Auxiliary Supply versus all other electrical circuits 6.22 kV DC, Measuring Terminals versus all other electrical circuits 3.11 kV DC, Relay versus Relay 5.23 kV DC, USB & RS485 versus all other electrical circuits

Environmental

Operating temperature	-10 to +55°C
Storage temperature	-20 to +70°C
Relative humidity	0... 90% non condensing
Warm up time	Minimum 3 minute
Shock	15g in 3 planes
Vibration	10... 55...10 Hz, 0.15mm amplitude
Number of Sweep Cycles	10 per axis
Enclosure	IP54 (Front Side) and IP20 (Terminal Side)

Dimensions & Weights

Bezel Size	96 mm x 96 mm DIN 43 718
Panel Cut-out	92 + 0.8 mm x 92 + 0.8 mm
Overall Depth	75 mm , with addon card 57 mm , without addon card
Weight	320 gm. approx.

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.

Measure Control Record Analyze

Measured Parameters

Sr No	Parameters	Sr No	Parameters
1	Voltage	12	Max Import and Export Power Demand
2	Current	13	Max Import and Export Current Demand
3	Power	14	Number of Interrruptions
4	Import and Export Energy	15	Old Import and Export Energy
5	Import and Export Ampere Hour	16	Old Import and Export Ampere Hour
6	Import and Export Power Demand	17	Old Max Import and Export Power Demand
7	Import and Export Current Demand	18	Old Max Import and Export Current Demand
8	On Hour	19	Old On Hour
9	Run Hour	20	Old Run Hour
10	Max and Min Voltage	21	Old Number of Interruptions
11	Max and Min Current		

Ordering Information

Product Code : EM94 - Z - X - X - X - 00000000

V1: 10 - 60 V
V2: 61 - 200 V
V3: 201 - 1000 V

H: 60 - 300 V AC / DC
M: 20 - 60 V AC / DC

R: RS485 - 2 Relay Outputs
D: RS485 - 2 Relay Outputs - USB - Datalogging
Z: NONE

Order Code Example

EM94-ZV1HD00000000

RISH EM DC 6000, Single Current Channel, Voltage Range 10 - 60 V, Higher External Aux 60V - 300V AC/DC, with MODBUS (RS485) communication, 2 Relay Outputs, USB and Datalogging.

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Measure Control Record Analyze

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