EM-DD Multi-circuit DC power meter (DIN rail)

Description
Provide high accuracy DC power measurement, display and remote communication of five loops (V, A, P, Kwh). Multi-circuit design and relay output modular expansion design decrease the overall cost and make the functionality more flexible. All monitored data is available via a RS485 serial, for the needs in energy management, alarming, and remote controlling. Embedded flash memory for
Data-Logging can avoid any data missing once the communication is interrupted. Moreover, its ultra compact size DIN-rail mounting makes itself mountable in virtually any panel, enclosure or indoor Cabinet.

Feature
- Metering parameters of Voltage, Current, Active Power, Energy (Watt-Hr) of DC power system
- 2-line display both with 6 digits, able to view the name and value of the parameter at the same time
- Modular Expansion Design, able to correspond to different parameters individually
- Relay output with Start Delay, Hysteresis, Energized, and de-energized delay functions
- With RS485 serial as standard for remote controlling relay output
- Standard DIN-Rail mounting
- CE Approved
- Embedded 1MB flash memory for Data-Logging
- With 20 words variables in Modbus address for acquiring the demand measurement at cost

ORDERING INFORMATION

EM-DD = Connection = CT Input = Voltage = Relay output = Communication output = AUX. POWER

CODE | Wiring | CODE | Half CT | CODE | Voltage Range | CODE | Relay output | CODE | Comm. | CODE | AUX. POWER
-----|--------|------|--------|------|---------------|------|-------------|------|--------|------|---------
SI   | 2-10 loops | 0-24VDC | SI   | 10-100VDC | SI   | NONE | UR | RS45 | ADH | AC 85-264V
                        DC 100-300V |
                        DC 20-56V |

TECHNICAL SPECIFICATION

Measurement and Wiring

Input Voltage Current
DC 10-100VDC Depend on external Half CT

Accuracy & Resolutions

<table>
<thead>
<tr>
<th>PARAMETERS</th>
<th>ACCURACY</th>
<th>RESOLUTION</th>
<th>DISPLAY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voltage</td>
<td>0.2%</td>
<td>0.1V</td>
<td>0-9999</td>
</tr>
<tr>
<td>Current</td>
<td>0.2%</td>
<td>0.001A</td>
<td>0-9999</td>
</tr>
<tr>
<td>Active Power</td>
<td>0.3% of FS + 0.3% of Rsd</td>
<td>0.1W</td>
<td>-32676~32767</td>
</tr>
<tr>
<td>Active Energy</td>
<td>0.5%</td>
<td>0.1kW</td>
<td>0-999999</td>
</tr>
</tbody>
</table>

Measurement: True RMS measuring Parameters
Display update period: 0.5 Sec
Wiring: 1P2W
Input range: Voltage: As metering and Wiring
Direct Input = 100V
CT Primary setting: 1-9999A
Max. input withstand:
Voltage: 1.2X Rated voltage continuous
Current: Clamp CT Specification1.2X Rate voltage continuous

Communication function
Port: RS-485
Protocol: Modbus RTU Mode
Address: 1-247
Baud rate: 1200, 2400, 4800, 9600, 19200, 38400 bps

Wire distance: 1200M max
Terminal resistance: 150Ω
Variable Communication address: Customizing from 0100h to 0113h, 20 address parameters

Recording
Memory: Internal 1MB
Capability: Depends, i.e. saving up to 100,000 records with recording kWh parameters only.
Recording interval: 1-32767
Time units: Second, minute, hour, day

Display
LCD backlight: 2-line, 6 digits for each. Top pane: 6.5mm high; bottom pane: 9.6mm high
Comm. status indication: With Communication status display icon
Parameter indication: show parameters and channels in words
Alarm status indication: R1-R5 with Relay contact status display icon
**Control function**

Remote Control: 5 relay outputs (Option) which can be control via communication directly

Alert Management:
5 set points can corresponding individually to each relay output

Relay output: R1&R2 FORM-A, R3-R5 FORM-A Common mode
1A/230Vac, 3A/115V

Relay parameter corresponding: Selected from various power parameters ≥

Relay mode: Hi / Lo / Hi.HLd / Lo.HLd / Ro / oFF

Energizing functions: Start delay / Energize time delay & de-energize time delay / Hysteresis / Energized Latch

Start band: 0~9999 counts
Start delay: 0:00.0~9(Minutes):59.9(Second)
Energize time delay:0:00.0~9(Minutes):59.9(Second)
De-energize time delay:0:00.0~9(Minutes):59.9(Second)
Hysteresis: 0~9999 counts

**Power**

Aux Power: ADH:AC85~264Vac, 50/60Hz, DC100~300Vdc
ADL:20~56Vdc

Power consumption: AC:10VA, DC:4W

Temperature Coefficient: 100 ppm/℃

**Security**

Password: Two groups password in 4 digits for parameter setting & reset to zero for WATT
Parameter setting: Password is able to set
Reset to zero for WATT: password is unable to set

Function Lock: There are 4 options
User Level: User Level lock. User can get into User Level only for checking but unable to change the setting

Programming Level: Programming Level lock. User can get into programming level only for checking but unable to change the setting

ALL: Allover. Lock both User Level & Programming Level. User can get into all level for checking but unable to change the setting

None: No Lock

Parameter storage methods:
F-RAM (Ferroelectric RAM), a random-access memory

**Operating environment**

Operation Temperature & Humidity:
0~60℃:Display 0~60℃/0~80%RH, No-condensing

Storage Temperature & Humidity:
-20~70℃/0~80%RH, Non-condensing

**Electrical Safety**

Insulating resistance: ≥100MΩ/500Vac

Dielectric strength: AC 2KV, 1min 50/60Hz,

Input/Output/Power/CASE

EMC:
EN1326-1:2006
EN61000-3-3:2008
IEC61000-4-3:2006
IEC61000-4-2:2009
IEC61000-4-4:2004
IEC61000-4-5:2006
IEC61000-4-6:2009
IEC61000-4-11:2004

LVD:
EN61010-1:2010

MTBF: 6x10^7 hours

**Mechanical**

Case material: PC fireproof

Mounting: DIN rail

Wire terminal:
Voltage input: AWG:28~12 / 0.2~2.5mm²
Screw Torque Value: M2.5 / 5.202kgf.cm (Max)

Current input:
AWG:28~14 / 0.2~1.5mm²
Screw Torque Value: M27 / 2.04kgf.cm (Max)

Weight:
EM-DD:185g, EM-OR5:75g

**Dimension**

[Dimensions diagram]

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**EM-DD**

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Wiring Diagram

### Power Supply

1A Fuse

- ADH: AC85~264V
- DC100~300V
- ADL: AC/DC 20~65V

### RS485 Communication Port

Max. wiring distance: 1200M
Terminal resistors (the farthest device):
- 120~300 ohm / 0.25W
  (typical: 150Ω)