EV/DV300 Series
Three Phase Multifunction Power and Energy Meters

- Power System Monitoring with True RMS Measuring
- Switch Status Monitoring and Controlling
- Bi-Direction Energy
- Utility Revenue Grade Accuracy
- RS485 Port Built-in with Modbus-RTU
- Standard Panel Mount 96mm DIN- Direct Retrofit
- Energy Pulse Output
- 4-20mA Analog Transducer Outputs
- Alarm Tripping Relay Output
**DESCRIPTION**

EV/DV300 series multifunction three phase power and energy meter provide a low cost metering solution with reliable power metering for voltage, current, power and bi-direction energy parameters.

Advanced measuring technologies ensure robust and accurate measuring in all types of environments.

**Any-Rating Meter**
Voltage: Measuring from 10V to 400Vac in one unit that works in any voltage rating system with or without potential transformer.

Current: 5A and 1A input field configurable that suits any industrial current transformer.

Frequency: Automatically adapt to 50Hz and 60Hz system without compromising the accuracy, that simplify design and eliminate international OEM frequency issues.

**Digital Input**
Monitor switch status and directly show on display and remotely accessed by communication.

**Built-in Power Supply**
24Vdc provides direct power supply to digital input. Reduce the cost and complication and space of additional low voltage power supply in panel.

**EV/DV300 Series Three Phase Multifunction Power and Energy Meters**

<table>
<thead>
<tr>
<th>Function</th>
<th>EV387</th>
<th>EV390</th>
<th>DV327</th>
<th>DV330</th>
</tr>
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<tbody>
<tr>
<td>METERING</td>
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<tr>
<td>Voltage</td>
<td>V</td>
<td>V</td>
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<td>Current</td>
<td>I</td>
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<tr>
<td>Power</td>
<td>P</td>
<td>kW</td>
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<tr>
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<td>Q</td>
<td>kvar</td>
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<td>S</td>
<td>kVA</td>
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<td>ENERGY</td>
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<tr>
<td>Energy</td>
<td>Ep_total, Ep+, Ep- kWh</td>
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<tr>
<td>Reactive Energy</td>
<td>Eq_Total, Eq+, Eq- kvarh</td>
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<td>DI OPTION</td>
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<td>Digital Input</td>
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<td>RO/DO OPTION (either-or)</td>
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<tr>
<td>Digital Output</td>
<td>2DO</td>
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<tr>
<td>AO/PO OPTION (either-or)</td>
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<td>Analog Output</td>
<td>4-20mA</td>
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<tr>
<td>Auxiliary Power</td>
<td>24Vdc</td>
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<tr>
<td>COMMUNICATION</td>
<td>RS485, Modbus-RTU protocol</td>
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<tr>
<td>DISPLAY</td>
<td>LCD Display</td>
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<tr>
<td>DIMENSION</td>
<td>96×96×73mm (Cut Out: 92×92mm)</td>
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</table>

**I/O Selection Table**

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<tr>
<th>Model</th>
<th>Digital Input</th>
<th>Digital Output (Pulse)</th>
<th>Analog Output (4-20mA)</th>
<th>Relay Output</th>
<th>Power Supply for DI</th>
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<tbody>
<tr>
<td>E0</td>
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<tr>
<td>E1</td>
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<td></td>
<td></td>
<td>2</td>
<td>1</td>
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<tr>
<td>E2</td>
<td>6</td>
<td>2</td>
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</tr>
<tr>
<td>E3</td>
<td>6</td>
<td>2</td>
<td></td>
<td>2</td>
<td></td>
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<tr>
<td>E4</td>
<td>6</td>
<td>2</td>
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<td>2</td>
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<td>D1</td>
<td>2</td>
<td>2</td>
<td></td>
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</tbody>
</table>
TYPICAL WIRING

3 Phase 4 Wire (3LN)

3 Phase 3 Wire (3LL)

3 Phase 4 Wire with PT (3LN)

3 Phase 3 Wire with PT and 2CT (2LL)*

LOAD

1A FUSE

LINE

A   B   C   N

Terminal Block

EV/DV300

7 6 5 4

Vn V3 V2 V1

I11

I12

I21

I22

I31

I32

11

12

13

14

15

16

3 Phase 3 Wire (3LL)

Single Phase 3 Wire (LLL)

Single Phase 2 Wire (1LN)

3 Phase 3 Wire with PT and 2CT (2LL)*

LOAD

1A FUSE

LINE

A   B   C   N

Terminal Block

EV/DV300

Relay Output (RO) Wiring

Power Supply

Relay Control

ROC

Digital Input Wiring with Built-in Power Supply

Digital Input Wiring with Vaux Power Supply

Digital Input

PO

PO2

17 18 19 20 21 22 23 24 25 26

PO

PO2

33 34

Vaux+

-+

114Vac

DO Type

Pulse Output

Alarm Output

Buzzer

10kΩ

Vaux

COM

Out

Energy Output (DO) Wiring

*Note: 2CT configuration is optional only in 3 Phase 3 Wire system.
## TECHNICAL SPECIFICATIONS

### METERING

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Accuracy (% of Full Scale)</th>
<th>Resolution</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voltage</td>
<td>0.5%</td>
<td>0.1V</td>
<td>10V~500kV</td>
</tr>
<tr>
<td>Current</td>
<td>0.5%</td>
<td>0.001A</td>
<td>0~9999A</td>
</tr>
<tr>
<td>Power</td>
<td>0.5%</td>
<td>1W</td>
<td>-9999~9999MW</td>
</tr>
<tr>
<td>Reactive Power</td>
<td>0.5%</td>
<td>1var</td>
<td>-9999~9999MVar</td>
</tr>
<tr>
<td>Apparent Power</td>
<td>0.5%</td>
<td>1VA</td>
<td>0~9999MVA</td>
</tr>
<tr>
<td>Power Factor</td>
<td>0.5%</td>
<td>0.001</td>
<td>-1.000~1.000</td>
</tr>
<tr>
<td>Frequency</td>
<td>0.2%</td>
<td>0.01Hz</td>
<td>45.00~65.00Hz</td>
</tr>
<tr>
<td>Energy</td>
<td>0.5%</td>
<td>0.1kWh</td>
<td>0~99999999.9kWh</td>
</tr>
<tr>
<td>Reactive Energy</td>
<td>0.5%</td>
<td>0.1kvarh</td>
<td>0~99999999.9kvarh</td>
</tr>
<tr>
<td>Temperature Coefficient</td>
<td>&lt;100 ppm/°C (0~50°C)</td>
<td></td>
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</tr>
</tbody>
</table>

### AC CURRENT
- Nominal Current: 5A ac/1A ac
- Metering Range: 0~6A/0~2A
- Pickup Current: 5mA/1mA
- Withstand: 20Arms Continuous
- Burden: 0.05VA (Typical) @ 5Arms
- Accuracy: 0.5% Full Scale

### AC VOLTAGE
- Nominal Full Scale: 230Vac L-N, 400Vac L-L (+20%)
- Withstand: 1500Vac Continuous
- Input Impedance: 2MΩ per Phase
- Metering Frequency: 45Hz~65Hz
- Pickup Voltage: 10Vac
- Accuracy: 0.5% Full Scale

### ENERGY ACCURACY
- Active: Class 0.5s (According to IEC 62053-22)
- Reactive: Class 2 (According to IEC 62053-23)

### COMMUNICATION
- Type: RS485 2 wire, half duplex, isolated
- Baud Rate: 1200 to 57600 bps
- Protocol: Modbus® RTU

### I/O OPTION

#### RELAY OUTPUT (RO)
- Type: Mechanical Contact
- Contact Resistance: 30mΩ @ 1A
- Max Break Voltage: 250Vac, 30Vdc
- Max Break Current: 5A
- Configuration: Form A
- Output Mode: Latch or Momentary (fixed 800ms)

#### ALARM OUTPUT
- Alarm Parameters: V1, V2, V3, V12, V23, V31, I1, I2, I3, Vavg, Vlavg, Iavg, In, P, Q, S, F and PF
- Output Type: RO/DO

#### DIGITAL OUTPUT (DO)
- Output Mode: Photo-MOS, Normally open node
- Isolation Voltage: 2500Vac RMS
- Max Working Voltage: 100Vdc
- Max Working Current: 50mA
- Minimum Pulse Width: 50ms

#### ANALOG OUTPUT (AO)
- Output Range: 4~20mA/0~20mA
- Resolution: 12bit
- Output Capability: 4~20mA Max Load: 750Ω

#### SWITCH STATUS (DI)
- Optical Isolated Voltage: 2500Vac RMS
- Input Type: Wet Contact
- Resistance: 4kΩ (Typical)
- Input Voltage: 16~30Vdc
- Max Input Current: 7.5mA
- Power Supply for DI (24Vdc)
- Operating Range: 100~240Vac, 50/60Hz; 100~300Vdc
- Burden: 2W

### ORDERING INFORMATION

#### EV
- E0: 2DI
- E1: 6DI+2RO+PS
- E2: 6DI+2DO+PS
- E3: 6DI+2DO+2AO
- E4: 6DI+2RO+2AO

#### DV
- D0: NO I/O
- D1: 2DO+2AO

Ordering Example: EV390 - E2  
Ordering Example: DV327 - D1

### ACCESSORIES:
- USB-RS485: RS485 to USB converter for connecting meter with computer, maximum distance 1200 meters.