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

ISO9001 Certified
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.

DIMENSIONS

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>
<td></td>
<td></td>
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<tr>
<td>Voltage V</td>
<td>V</td>
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<td>✓</td>
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<td>Current I A</td>
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<td>✓</td>
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<tr>
<td>Power P kW</td>
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<td>✓</td>
<td>✓</td>
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<tr>
<td>Reactive Power Q kvar</td>
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<td>✓</td>
<td>✓</td>
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<tr>
<td>Apparent Power S kVA</td>
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<td>✓</td>
<td>✓</td>
<td>✓</td>
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<tr>
<td>Power Factor PF Hz</td>
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<td>✓</td>
<td>✓</td>
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<tr>
<td>Frequency F Hz</td>
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<tr>
<td>ENERGY</td>
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<tr>
<td>Energy Ep_total,Ep+,Ep kWh</td>
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<tr>
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<td>✓</td>
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<td>DI OPTION</td>
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<td>Digital Input 2DI</td>
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<td>4DI</td>
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<td>✓</td>
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<td>RO/DO OPTION (either-or)</td>
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<td>Relay Output 2RO</td>
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<tr>
<td>Digital Output 2DO</td>
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<td>✓</td>
<td>✓</td>
<td>✓</td>
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<tr>
<td>AO/PO OPTION (either-or)</td>
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<td>Analog Output 4-20mA</td>
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<td>✓</td>
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<td>Auxiliary Power 24Vdc</td>
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<tr>
<td>COMMUNICATION</td>
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<td>RS485, Modbus-RTU protocol</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
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<td>DISPLAY</td>
<td>LCD Display</td>
<td>✓</td>
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<td>✓</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

<table>
<thead>
<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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</thead>
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<tr>
<td>E0</td>
<td>2</td>
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<td></td>
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</tr>
<tr>
<td>E1</td>
<td>6</td>
<td>2</td>
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<td>1</td>
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<tr>
<td>E2</td>
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<td>2</td>
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<td>2</td>
<td>1</td>
</tr>
<tr>
<td>E3</td>
<td>6</td>
<td>2</td>
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<td>2</td>
<td></td>
</tr>
<tr>
<td>E4</td>
<td>6</td>
<td>2</td>
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<td>2</td>
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<tr>
<td>D1</td>
<td>2</td>
<td>2</td>
<td></td>
<td>2</td>
<td></td>
</tr>
</tbody>
</table>
TYPICAL WIRING

3 Phase 4 Wire (3LN)

3 Phase 3 Wire (3LL)

3 Phase 4 with PT (3LN)

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

Single Phase 3 Wire (LLL)

Single Phase 2 Wire (1LN)

Relay Output (RO) Wiring

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</td>
<td>&lt;100 ppm/°C (0~50°C)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### INPUT

#### AC CURRENT
- Nominal Current: 5A ac/1A ac
- Metering Range: 0~6A/0~2A
- Pickup Current: 5mA/1mA
- Withstand: 20Arms Continuous, 100Arms for 1 second, Non-Recurring
- 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, 2500Vac, 50/60Hz for 1 Minute
- 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 0.5 (According to ANSI C12.20)

### COMMUNICATION

#### Type
- RS485 2 wire, half duplex, isolated

#### Baud Rate
- 1200 to 57600 bps

#### Protocol
- Modbus RTU

### ORDERING INFORMATION

**EV**
- Type: EV387, EV390
- Ordering Example: EV390 - E2

**DV**
- Type: DV327, DV330
- IO Option: D0: NO I/O, D1: 2DO+2AO
- Ordering Example: DV327 - D1

### 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)
- 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)
  - Output Voltage: 24Vac
  - Output Current: 42mA

### POWER SUPPLY
- Operating Range: 100~240Vac, 50/60Hz; 100~300Vdc
- Burden: 2W

### OPERATING ENVIRONMENT
- Operation Temperature: -25°C to 70°C
- Storage Temperature: -40°C to 85°C
- Relative Humidity: 5% to 95% non-condensing

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

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