DESCRIPTION
The AcuDC 240 is a DC energy meter designed to monitor and control DC power systems with a wide range of measurement parameters such as voltage, current, power and energy. Ideal for renewable energy applications, it supports bi-directional current measurement used in net metering, solar PV, and wind turbine power generation as well as other applications such as transportation systems, telecommunications, and power distribution systems.

FEATURES
+ 0.2% accuracy on voltage and current; 0.5% on power and energy
+ Optional data logging with adjustable log size
+ Optional RS485 Modbus-RTU communications
+ Compatible with DC current sensors, DC voltage sensors, Hall effect sensors, & shunts
+ 0.1Wh resolution for energy measurement
+ Equip with a variety of I/O options including Analogue Output, Analogue Input, Relay Output or Digital Output
+ Standard 72mm x 72mm DIN size for drawer-type panel installation
KEY FEATURES

High Accuracy Measurements
+ With 0.5% accuracy on power & energy* and 0.2% accuracy on voltage & current, the AcuDC 240 meter captures precision metrics across DC systems up to 1000Vdc. Meter critical, real-time voltage, current, power, energy, and amp-hour parameters while viewing real-time data instantly on the multi-function display.

Modbus-RTU Communications
+ Communicate all DC metered data to SCADA, PLC, or other external systems using industry-standard Modbus-RTU protocol via an on-board RS485 communication port. Daisy-chain multiple meters together for efficient data collection.

I/O Modules
+ A variety of optional analogue, digital, relay, and alarm output combinations are available with optional I/O modules. Each module features a unique combination of DI, AO, AI, RO, or DO options to extend the capabilities of the AcuDC 240 meter. Certain modules also feature a Hall effect sensor power supply for additional flexibility.

Built-In Data Logging
+ The AcuDC offers three, configurable log files where meter parameters such as power, energy, voltage, current, amp hour, and DI count data are recorded. Log at a 1 minute interval for up to four months for later analysis.

*0.2% accuracy on power & energy available upon request.

APPLICATIONS
+ DC Energy Management Systems
+ Power Distribution Systems
+ Renewable Energy
+ Industrial DC Control Systems
+ Metallurgy & Electroplating Industries
+ Light Rail Transit Systems
+ Electric Vehicle Charging
+ Data Centers
+ Cellular Tower Monitoring
**SPECIFICATIONS**

### Metering

<table>
<thead>
<tr>
<th>PARAMETERS</th>
<th>ACCURACY</th>
<th>RESOLUTION</th>
<th>RANGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voltage</td>
<td>0.2%</td>
<td>0.001V</td>
<td>0~9999V</td>
</tr>
<tr>
<td>Current</td>
<td>0.2%</td>
<td>0.001A</td>
<td>0~±50000A</td>
</tr>
<tr>
<td>Power*</td>
<td>0.5%</td>
<td>0.001kW</td>
<td>0~±60000kW</td>
</tr>
<tr>
<td>Energy*</td>
<td>0.5%</td>
<td>0.0001kWh</td>
<td>0~9999999.99kWh</td>
</tr>
<tr>
<td>Drift with Temperature</td>
<td>&lt;100ppm/°C</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stability</td>
<td>0.5‰/year</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* 0.2% accuracy on Power and Energy available upon request

### Input

**CURRENT INPUTS (Each Channel)**

- **Nominal Current Options**
  - 0~±10A (Direct Input, pick up current 0.01A)
  - 0~±50000A (via Shunt or Hall Effect Sensor, programmable range)
- **Shunt**
  - 50~100mV (programmable)
- **Hall Effect Sensor**
  - 0~±5V/0~±4V, 4~20mA/12mA±8mA
- **Power Consumption**
  - 2W (Max)
- **Accuracy**
  - 0.20%

**VOLTAGE INPUTS (Each Channel)**

- **Nominal Full Scale**
  - Direct Input: 0~1000V
  - Via Hall Effect Sensor: 0~9999V
- **Input Impedance**
  - 2MΩ
- **Load**
  - <0.6W
- **Accuracy**
  - 0.20%

### I/O Options

**DIGITAL INPUT**

- **Optical Isolated Voltage**
  - 2500Vac
- **Input Type**
  - Dry
- **Input Resistance**
  - 100kΩ
- **Input Voltage Range**
  - 20~160 Vac/dc
- **Input Current (Max)**
  - 2mA
- **Start Voltage**
  - 15V
- **Stop Voltage**
  - 5V
- **Pulse Frequency (Max)**
  - 100Hz, 50% Duty Ratio (5ms ON and 5ms OFF)
- **SOE Resolution**
  - 2ms

**DIGITAL OUTPUT (Photo-Mos)**

- **Voltage Range**
  - 0~250Vac/dc
- **Load Current**
  - 100mA (Max)
- **Output Frequency**
  - 25Hz, 50% Duty Ratio (20ms ON, 20ms OFF)
- **Isolation Voltage**
  - 2500Vac

**RELAY OUTPUT (RO)**

- **Type**
  - Mechanical contact, Form A
- **Switching Voltage (Max)**
  - 250Vac, 30Vdc
- **Load Current**
  - 5A(R), 2A(L)
- **Set Time**
  - 10ms (Max)
- **Contact Resistance**
  - 30Ωμ (Max)
- **Isolation Voltage**
  - 2500Vac
- **Mechanical Life**
  - $1.5 \times 10^7$

**ANALOGUE OUTPUT (AO)**

- **Output Range**
  - 0~5V/1~5V, 0~20mA/4~20mA (Optional)
- **Accuracy**
  - 0.50%
- **Temperature Drift**
  - 50ppm/°C Typical
- **Isolation Voltage**
  - 500Vdc
- **Open Circuit Voltage**
  - 15V
- **Load Capacity**
  - Current type, max load resistance: 750 Ohm Voltage type, max load current: 20 mA

### Standard Compliance & Certifications

- **Safety Standard**
  - IEC 61010-1
- **EMC Standard**
  - IEC 55011, IEC 61000-6-2, IEC 61000-3-2, IEC 61000-3-3

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**FUNCTION LIST**

<table>
<thead>
<tr>
<th>Function</th>
<th>Parameters</th>
<th>AcuDC 243</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Metering</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Voltage</td>
<td>V</td>
<td>●</td>
</tr>
<tr>
<td>Current</td>
<td>I</td>
<td>●</td>
</tr>
<tr>
<td>Power</td>
<td>P</td>
<td>●</td>
</tr>
<tr>
<td>Energy</td>
<td>E</td>
<td>●</td>
</tr>
<tr>
<td>Ampere-hour</td>
<td>Ah</td>
<td>●</td>
</tr>
<tr>
<td><strong>I/O</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>X1: 2DI+2AO</td>
<td>(4<del>20mA/0</del>20mA)</td>
<td>●</td>
</tr>
<tr>
<td>X2: 2DI+2AO</td>
<td>(0-5V/1-5V)</td>
<td>●</td>
</tr>
<tr>
<td>X3: 2DI+2RO</td>
<td></td>
<td>●</td>
</tr>
<tr>
<td>X4: 2DI+2DO</td>
<td></td>
<td>●</td>
</tr>
<tr>
<td>X5: 2DI±15Vdc</td>
<td></td>
<td>●</td>
</tr>
<tr>
<td>X6: 2AI±15Vdc</td>
<td>(4<del>20mA/0</del>20mA)</td>
<td>●</td>
</tr>
<tr>
<td>X7: 2AI±15Vdc</td>
<td>(0<del>5V/1</del>5V)</td>
<td>●</td>
</tr>
<tr>
<td><strong>Datalogging</strong></td>
<td>All metering parameters can be recorded (Voltage, Current, Power, Energy, Ampere-hour, DI Count); Interval 1 minute; Can record 4 months</td>
<td>●</td>
</tr>
<tr>
<td><strong>Communication</strong></td>
<td>RS485, Modbus RTU</td>
<td>●</td>
</tr>
<tr>
<td><strong>Display</strong></td>
<td>LCD</td>
<td>●</td>
</tr>
<tr>
<td><strong>Dimension</strong></td>
<td>72.0 × 72.0 × 64.5 mm (Cutout: 68.0 × 68.0 mm) / 2.84 × 2.84 × 2.54 inch (Cutout: 2.68 × 2.68 inch)</td>
<td>●</td>
</tr>
</tbody>
</table>

**DIMENSIONS**

- **Front View**
  - 2.84” (72.0mm)

- **Side View**
  - 2.04” (51.7mm)

- **Cut Out**
  - 2.68” (68.0mm)

**I/O Module Dimensions**

- **Front View**
  - 2.58” (65.5mm)

- **Side View**
  - 0.50” (12.8mm)

**DIN Rail Dimensions**

- **Front View**
  - 3.07” (78.0mm)

- **Side View**
  - 2.95” (75.0mm)
WIRING DIAGRAMS

Current Direct Wiring

Voltage Direct Wiring

Voltage Wiring using Voltage Hall Effect Sensor

Voltage & Current Direct Wiring

Voltage & Current Wiring using Shunt

Voltage & Current Wiring using Hall Effect Sensors

Digital Input

Analogue Output 4~20mA, R<500Ω

External Power Supply < 250Vac or 30Vdc I < 3A

Power Supply Wiring

* A physical jumper from terminal 3 to 6 must be connected.
** Hall effect sensors can also be powered using the ±15V power supply from the X5, X6, or X7 modules.
ACCESSORIES

DIN Rail Mounting Adapter
The AcuDC DIN Rail Mounting Adapter is the easy way to mount the AcuDC energy meter on horizontal DIN rail. The adapter quickly secures to the DC meter plus any additional I/O options for a quick, secure installation.

USB RS485 Converter
This professional-grade, plug-and-play USB to Serial RS485 Converter is compliant with both USB 1.1 and 2.0 standards and is designed to provide a convenient, reliable USB connection to the AcuDC energy meter and other serial devices.

ORDERING INFORMATION

<table>
<thead>
<tr>
<th>Meter Model</th>
<th>Voltage Option</th>
<th>Current Option</th>
<th>Power Supply Option</th>
<th>I/O Option</th>
<th>Communication</th>
<th>Datalogging</th>
</tr>
</thead>
<tbody>
<tr>
<td>AcuDC 243: Multifunction</td>
<td>1000V: Nominal Input Voltage 1000Vdc</td>
<td>A0: 0~±10A</td>
<td>P1: 100-240Vac 50/60Hz, 100-300Vdc</td>
<td>X0: No I/O</td>
<td>C: RS485, Modbus RTU</td>
<td>D: Datalogging</td>
</tr>
<tr>
<td>600V: Nominal Input Voltage 600Vdc</td>
<td>A1: Shunt (50~100mV)</td>
<td>P2: 20-60Vdc</td>
<td>X1: 2DI+2AO (4<del>20mA/0</del>20mA)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>300V: Nominal Input Voltage 300Vdc</td>
<td>A2: Current Hall Effect Sensor (4~20mA/12mA±8mA)</td>
<td>X2: 2DH+2AO (0<del>5V/1</del>5V)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>60V: Nominal Input Voltage 60Vdc</td>
<td>A3: Voltage Hall Effect Sensor (0~±5/0~±4V)</td>
<td>X3: 2DI+2RO</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5V: Via Hall Effect Sensor (0<del>5V/0</del>4V), ratio settable</td>
<td></td>
<td>X4: 2DH-2DO</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Accessories (Optional)

| USB-RS485: | USB-to-RS485 Converter |
| DC-DIN: | DIN Rail Mounting Accessory |

Ordering Example: AcuDC 243 - 300V - A1 - P1 - X1 - C - D
AcuDC 243 - 1000V - A1 - P2 - C - D

Note: When the input voltage is above 1000V, or the system design requires an isolation sensor, the voltage input can be selected as Via Hall Effect Sensor (0~5V). The Voltage Hall Effect Sensor output range requires 0~5V.

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Specs Subject To Change Without Notice.