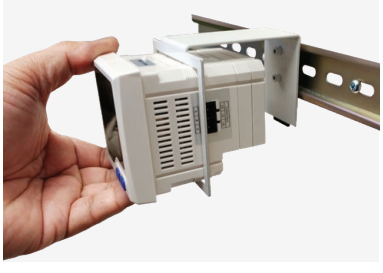
AcuDC 240

DC Power & Energy Meter Datasheet









DESCRIPTION

The AcuDC 240 series DC energy meter is 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 with support for bi-directional current measurement used in solar PV net metering. Other applications includes transportation systems, telecommunications, and power distribution systems.

New model specially designed for EV charging stations with multiple DC shunt options available for revenue grade measurement and billing.

FEATURES

- NEW High-accuracy shunt model specifically designed for EV charging stations
- NEW Cable loss compensation for current, voltage, energy and power measurement
- \+ 0.2% accuracy on voltage and current; 0.5% on power and energy
- \+ Optional data logging with adjustable log size
- \+ Optional RS485 ModbusRTU 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 analog output, analog input, relay output, or digital output
- \+ Standard 72mm x 72mm DIN size for drawer-type panel installation

Mod-Tronic | www.mod-tronic.com | sales@mod-tronic.com | 1-800-794-5883

KEY FEATURES

EV Charging Station Monitoring NEW

+ Monitor energy consumption in real-time for EV charging stations with revenue-grade accuracy. AcuDC 240 provides detailed insights through accumulated totals and historical data logs and is compatible with a range of optional Accuenergy DC shunts from 50A to 2000A input options, ensuring precise tracking of 0.1 - 0.5% accuracy level.

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 onboard RS485 communication port. Daisy-chain multiple meters together for efficient data collection.

Cable Loss Compensation NEW

+ Cable resistance causes inaccuracies in current and voltage readings, impacting power and energy measurements. It compensates for losses over long cable runs, ensuring accurate and reliable measurements. For infrastructures where the meter is far from the load in an industrial facility or EV charging station it can provide more accurate billing, energy efficiency, & reduced costs.

I/O Modules

+ A variety of optional analog, 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

PARAMETERS	ACCURACY	RESOLUTION	RANGE
Voltage	0.2%	0.001V	0~9999V
Current	0.2%	0.001A	0~±50000A
Power*	0.5%	0.001kW	0~±60000kW
Energy*	0.5%	0.0001kWh	0~9999999.99kWh
Drift with Temperature	<100ppm /°C		
Stability	0.5% year		

* 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
Pickup Voltage	10V
Input Impedance	2MΩ
Load	<0.6W
Accuracy	0.2%

ENERGY ACCURACY

Active	0.50%

Communications

RS-485

2-Wire Shielded Twisted Pair Cable Connection
Half duplex, Optically Isolated
1200 to 38400bps
Isolation Voltage: 2500Vac

PROTOCOLS

Modbus-RTU

Control Power

AC/DC CONTROL POWER

Operating Range	(P1) 100-240Vac, 50/60Hz, 100-300Vdc (P2) 20-60Vdc
Power Consumption	3W (typical)

Operating Environment

Operating Temperature	-25°C to 70°C -13°F to 158°F
Storage Temperature	-40°C to 85°C -40°F to 176°F
Relative Humidity	5% to 95% Non-Condensing

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	30mΩ (Max)
Isolation Voltage	2500Vac
Mechanical Life	$1.5x10^7$

ANALOGUE OUTPUT *(AO)*

Output Range	0~5V/1~5V, 0~20mA/4~20mA (Optional)
Accuracy	0.5%
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

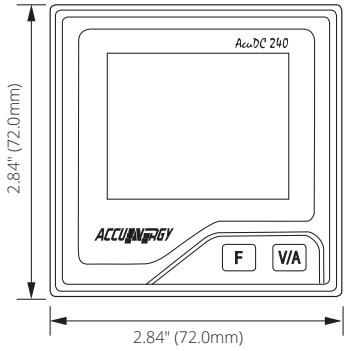
Safety Standard	IEC 61010-1
EMC Standard	IEC 55011, IEC 61000-6-2, IEC 61000-3-2, IEC 61000-3-3

FUNCTION LIST

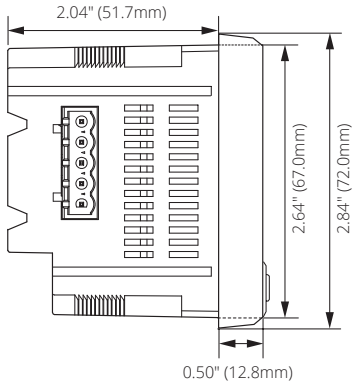
● Function; ⊙ Option; Blank NA

	Function	Parameters	AcuDC 243
Metering	Voltage	V	●
	Current	I	●
	Power	P	●
	Energy	E	●
	Ampere-hour	Ah	●
I/O	X1: 2DI+2AO (4~20mA/0~20mA)	Support DI count	⊙
	X2: 2DI+2AO (0-5V/1-5V)		⊙
	X3: 2DI+2RO		⊙
	X4: 2DI+2DO		⊙
	X5: 2DI+±15Vdc		⊙
Data Logging	All metering parameters can be recorded (Voltage, Current, Power, Energy, Ampere-hour, DI Count); Interval 1 minute; Can record 4 months		⊙
Communication	RS485, Modbus RTU		⊙
Display	LCD		●
Dimension	72.0 × 72.0 × 64.5mm (Cutout: 68.0×68.0 mm) / 2.84 × 2.84 × 2.54 inch (Cutout: 2.68 × 2.68 inch)		

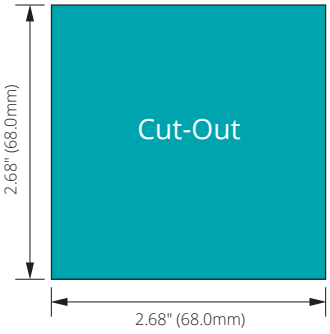
DIMENSIONS



Front View

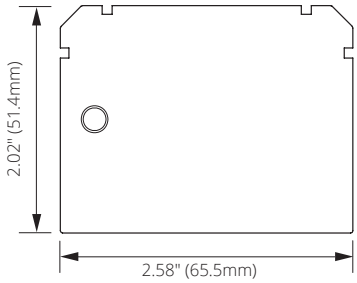


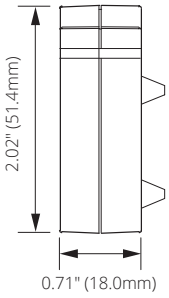
Side View



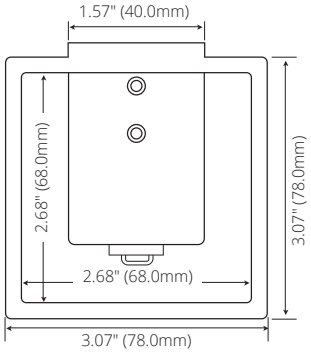
Cut Out

I/O Module Dimensions

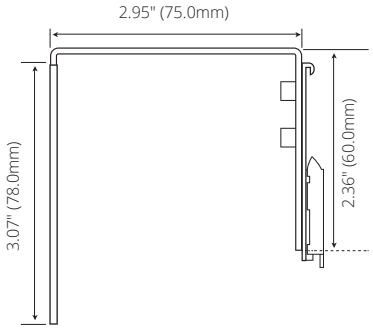




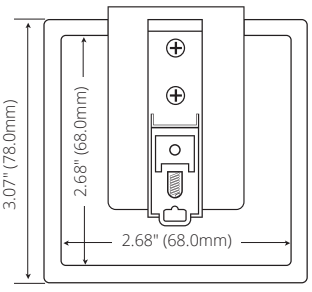
DIN Rail Dimensions



Front View



Side View

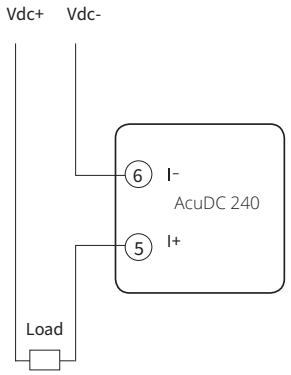


Back View

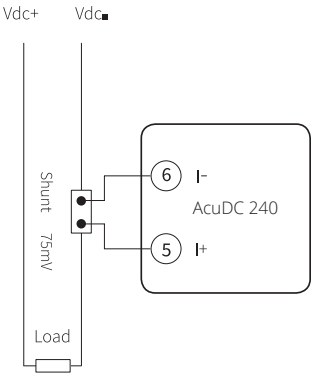
WIRING DIAGRAMS

Grounding Limitation: AcuDC 243 with current Hall effect input and direct voltage input supports only negative grounding systems. For positive, ungrounded, or center-tap systems, an external voltage Hall effect sensor must be used. Otherwise, damage or unsafe operation may occur.

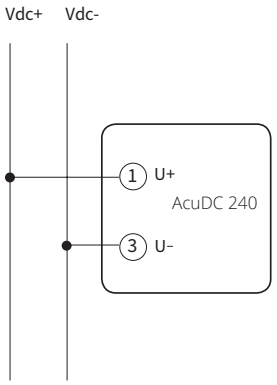
Current Direct Wiring



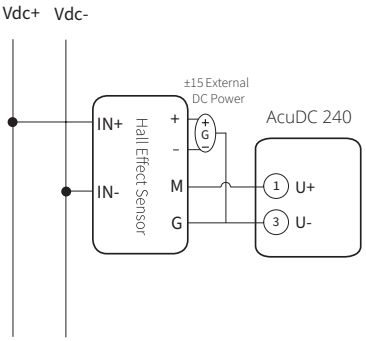
Current Wiring Using Shunt



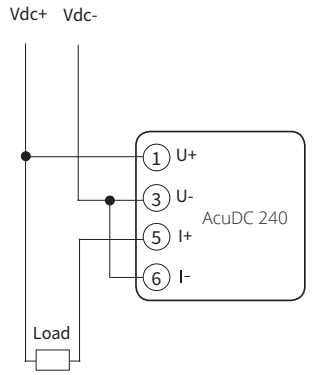
Voltage Direct Wiring



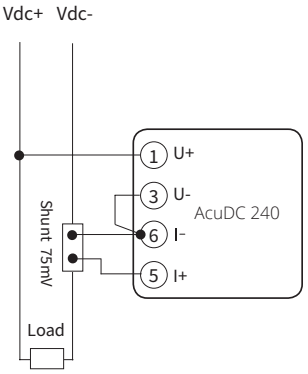
Voltage Wiring using Voltage Hall Effect Sensor*



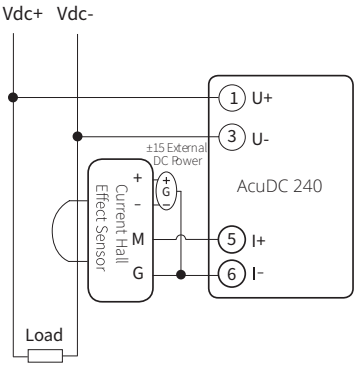
Voltage & Current Direct Wiring



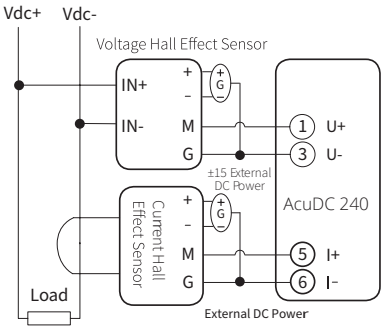
Voltage & Current Wiring using Shunt*



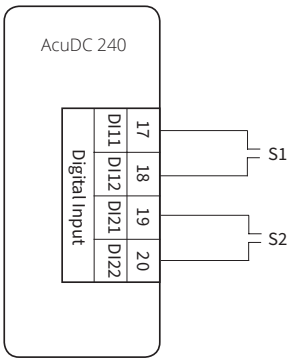
Voltage & Current Wiring using Current Hall Effect Sensor**



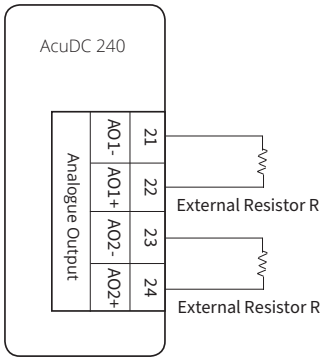
Voltage & Current Wiring using Hall Effect Sensors**



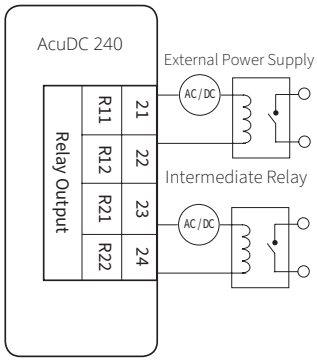
Digital Input



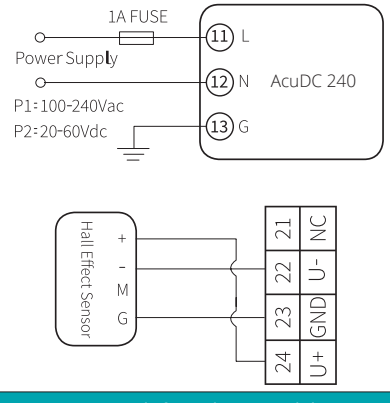
Analogue Output 4~20mA, R<500Ω



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



Power Supply Wiring



* *A physical jumper from terminals 3 to 6 must be connected.*

** *Hall effect sensors can also be powered using the ±15V power supply from the X5 module.*

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

Meter Model	Voltage Option	Current Option	Power Supply Option	I/O Option	Communication	Datalogging
AcuDC 243: Multifunction	**1000V:** Nominal Input Voltage 1000Vdc	**A0:** 0~±10A	**P1:** 100-240Vac 50/60Hz, 100-300Vdc	**X1:** 2DI+2AO (4~20mA/0~20mA)	**C:** RS485, Modbus RTU	**D:** Datalogging
	600V: Nominal Input Voltage 600Vdc	**A1:** Shunt (50~100mV)	**P2:** 20-60Vdc	**X2:** 2DI+2AO (0~5V/1~5V)		
	300V: Nominal Input Voltage 300Vdc	**A2:** Current Hall Effect Sensor (4~20mA/12mA±8mA)		**X3:** 2DI+2RO		
	60V: Nominal Input Voltage 60Vdc	**A3:** Current Hall Effect Sensor (0~±5/0~±4V)		**X4:** 2DI+2DO		
	5V: Via Hall Effect Sensor (0-5V/0-4V), ratio settable			**X5:** 2DI+ ±15Vdc		

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

Note: For installations with positive, ungrounded, or center-tap grounding, select and install an external voltage Hall-effect sensor for the voltage input.

NEW ACUDC 240 EV CHARGER APPLICATION ORDER INFORMATION

Meter Model	Shunt Options (Single Direction)
AcuDC 243-1000V-A1-P2-C-U	50A (0~75mV)
	100A (0~75mV)
	200A (0~75mV)
	300A (0~75mV)
	400A (0~75mV)
	500A (0~75mV)
	600A (0~75mV)
	1000A (0~75mV)

Ordering Example:	**AcuDC 243 - 1000V - A1 - P2 - C - U**
	AcuDC 243 - 1000V - A1 - P2 - C - U - 1000A

Accessories *(Optional)*	
USB-RS485:	USB-to-RS485 Converter
DC-DIN:	DIN Rail Mounting Accessory
Ordering Example:	**USB-RS485**

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

MOD-TRONIC INSTRUMENTS LIMITED

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Specs Subject To Change Without Notice.

ACCUENERGY

ISO 9001, 14001 & 45001 Certified

ISO 27001 & 50001 Certified

BBB ACCREDITED BUSINESS