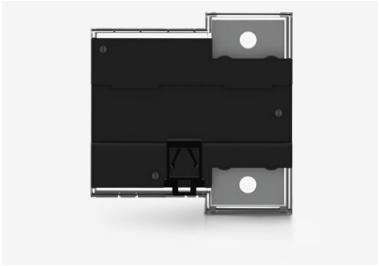
AcuDC 300 Series

EV Charging Meter Datasheet



DESCRIPTION

The AcuDC 300 DC meter is specially designed for electric vehicle (EV) charging stations. Compliant with IEC 62053-41:2021 Class 0.5 & EN50470-4 Class C standards and cable loss compensation capability, AcuDC 300 ensures revenue-grade accuracy for billing purposes. With 0.2% accuracy on current measurements and 0.1% accuracy on voltage measurements, it is the ideal solution for precise energy metering in EV fast charging infrastructures. Featuring configurable data loggers with non-volatile memory and electronic metrology seal function, AcuDC 300 ensures data integrity and prevents unauthorized tampering.

FEATURES

+ Bidirectional energy measurement, compliant to IEC 62053-41:2021 Class 0.5, EN50470-4 Class C.
+ Direct voltage measurement at 0.1% accuracy from 60V to 1000V.
+ Bidirectional current measurement via shunt from -650A to 650A at 0.2% accuracy.
+ Measures DC electrical parameters such as voltage, current, energy, power, electrical charge, and demand.
+ Signed data readouts in OCMF format.
+ Three data loggers and 1 trend logger to record key parameters to built-in non-volatile memory.
+ Modbus-RTU over RS485 and Modbus-TCP/IP over Ethernet for data query and configuration.
+ Real-time data query and configuration via HMI display.
+ MID certified & UL Recognized for international markets.

KEY FEATURES

High Accuracy Measurement for EV Charging

+ AcuDC 300 complies with the IEC 62053-41:2021 Class 0.5 & EN50470-4 Class C standards, delivering precise measurements for revenue-grade applications. It offers current measurements via DC shunt, at the accuracy level of 0.2% from -650A to 650A, as well as directly connected voltage measurements at 0.1% accuracy from 60V to 1000V, covering the entire range of operation for most DC fast charging stations.

Cable Loss Compensation

+ Resistance in the cable may lead to energy loss, making the energy received by the EV less than the energy delivered from the grid. The AcuDC 300 comes with a cable loss compensation feature, which ensures accurate billing data, so that the users will only be charged for the energy delivered to the vehicle, and not the energy lost in the cables.

OCMF Data Format

+ AcuDC 300 supports OCMF (Open Charge Metering Format) data format, which is the industry standard used in EV charging applications. This format ensures accurate billing, monitoring and reporting of energy usage.

Metrology Seal

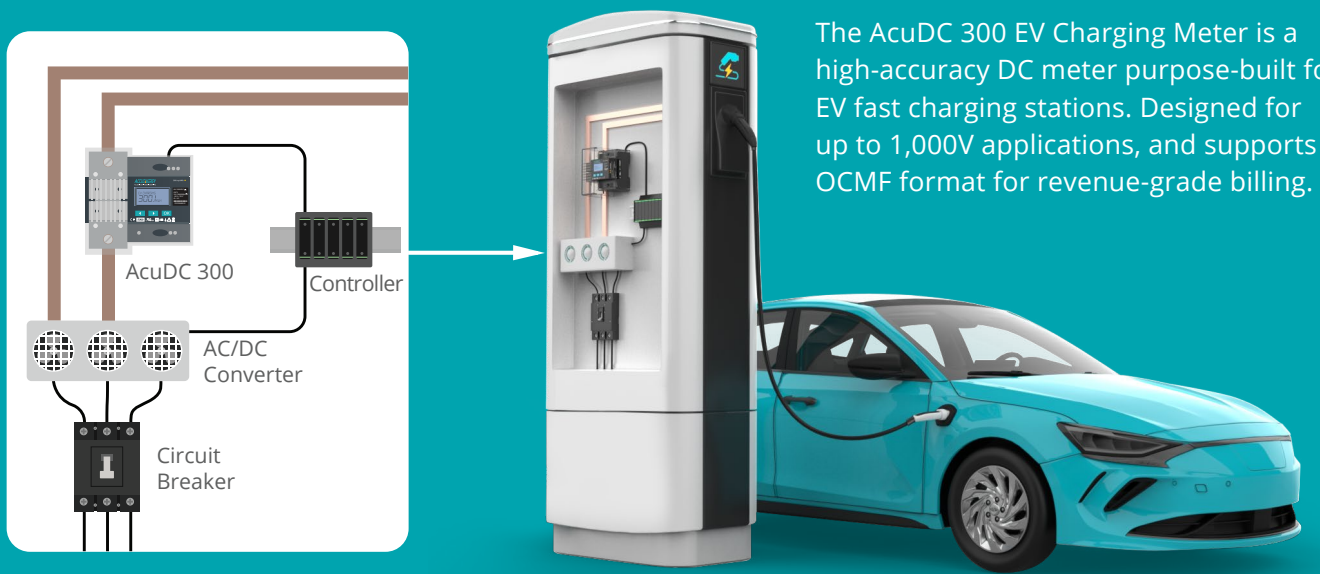
+ The AcuDC 300 features an electronic seal function which can be activated and deactivated by toggling the meter seal switch, which will be kept hidden under a protective cover. When the electronic seal is activated, certain settings cannot be modified. A physical seal can also be installed to secure the cover, preventing unauthorized tampering and enhancing the DC meter's integrity.

Data Logging

+ AcuDC 300 logs real-time metering data and energy data onto a non-volatile memory so information will be preserved even when the meter is powered off. The DC meter includes four configurable data loggers, and each can be programmed independently to record different parameters. Each data record is timestamped, allowing the user to track the exact moment when each record was logged.

Compact & Flexible

+ The AcuDC 300 meter is 125mm in length, 69mm in width, and 125mm in height, making it a compact device that can easily fit inside an EV charging station. The meter is designed to be installed on a 35mm DIN rail mount for a simplified installation process.



EV FAST CHARGING APPLICATION

The AcuDC 300 EV Charging Meter is a high-accuracy DC meter purpose-built for EV fast charging stations. Designed for up to 1,000V applications, and supports OCMF format for revenue-grade billing.

SPECIFICATIONS

Metering

PARAMETERS	ACCURACY	RESOLUTION	RANGE
Voltage	0.1%	0.001V	60.00~1000.00V
Current	0.2%*	0.001A	-650.000 ~650.000A
Power	0.5%	0.001kW	-650.000~650.000 kW
Energy	0.5%	0.0001kWh	-999999999999.9999 ~999999999999.9999 kWh
Charge	0.5%	0.0001Ah	-999999999999.9999 ~999999999999.9999 Ah
Current Demand	0.2%	0.001A	-650.000 ~650.000A
Power Demand	0.5%	0.001kW	-650.000~650.000 kW
Ripple Factor	N/A	0.001%	0.000~100.000%

Input

CURRENT INPUTS	
Nominal Current	130A
Metering Range	±650A
Withstand	30 x Imax for 0.01 second
Pickup Current	0.52A
Accuracy	0.2% (±650A)

VOLTAGE INPUTS	
Metering Range	0-1000V
Withstand	5kVRMS 1Min
Pickup Voltage	10V
Accuracy	0.1% (60V~1000V)

ENERGY ACCURACY	
Energy	Class 0.5 (According to IEC 62053-41), Class C (According to EN50470-4)
Charge	0.5%

Communications

Modbus-RTU	Modbus-RTU 2-Wire Shielded Twisted Pair Cable Connection 2400~115200 bps
Ethernet	Ethernet 10M/100M BaseT Modbus-TCP/IP

Control Power

Universal	DC

DC CONTROL POWER	
Operating Range	9V~36V
Burden	6W

Operating Environment

Operating Temperature	–35°C to 70°C (–31°F to 158°F)
Storage Temperature	–35°C to 70°C (–31°F to 158°F)
Relative Humidity Range for Operation	0 % to 95 %
Relative Humidity Range for Storage and Shipping	0 % to 95 %
Altitude	0~2000m

Standard Compliance & Certifications

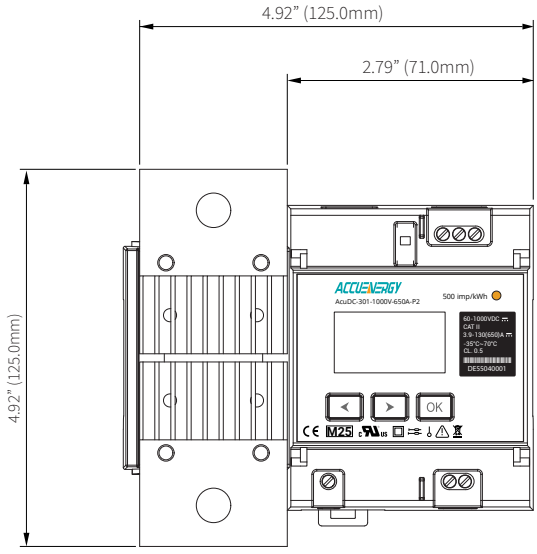
Measurement Standard	IEC 62053-41:2021, IEC 61557-12, EN50470-4
EMC Emission	EN55032 Class B FFC-15 Class B
Safety Standard	UL 61010-1, UL61010-2-30 Measurement Category II Overvoltage Category II
EMC Standard	IEC 61000-4-2/3/4/5/6/8/11/18/19/29, IEC 61000-6-1/2

* Acceptable percentage error limits:
For I_{min} = 6.5A < I < 0.1 I_n = 13A, current accuracy is 1%. For 0.1 I_n = 13A < I < I_{max} = 650A, current accuracy is 0.2%.

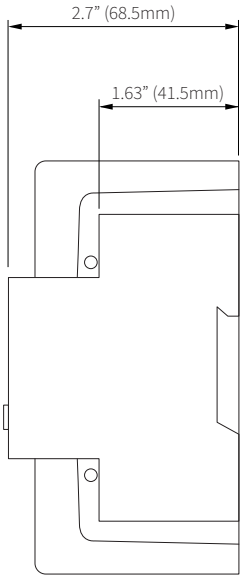
FUNCTION LIST

	Function	Parameters
Real-Time Measuring	Basic	Voltage Measured Voltage Compensated Voltage Current Power Ripple Factor U Ripple Factor I
	Demand	Demand I Demand P
Real-Time Energy	Energy	Import Energy Export Energy Net Energy Total Energy
	Charge	Import Charge Export Charge Net Charge Total Charge
Max/Min with Timestamps		Max Demand I Max Demand P Max Voltage, Min Voltage Max Current, Min Current Max Power, Min Power Max Ripple Factor U, Min Ripple Factor U Max Ripple Factor I, Min Ripple Factor I
Data Logging	Data Logging 1 Data Logging 2 Data Logging 3	Measured Voltage (float) Compensated Voltage (float) Current (int), (float) Power (int), (float) Ripple Factor U (int), (float) Ripple Factor I (int), (float) Demand Current Import (int), (float) Demand Current Export (int), (float) Demand Power Import (int), (float Demand Power Export (int), (float) Import Energy (double) Export Energy (double) Net Energy (double) Total Energy (double) Import Charge (double) Export Charge (double) Net Charge (double) Total Charge (double)
Trend Logging for Max/Min/Average	Data Log 4	Measured Voltage (float) Compensated Voltage (float) Current (float) Power (float) Ripple Factor U (float) Ripple Factor I (float) Demand Current Import (float) Demand Current Export (float) Demand Power Import (float) Demand Power Export (float)
Time	Device Run-Time	Hours
	Device Load-Time	Hours
	Device Clock	Year-Month-Date Hours:Minutes:Seconds, Weekdays

DIMENSIONS

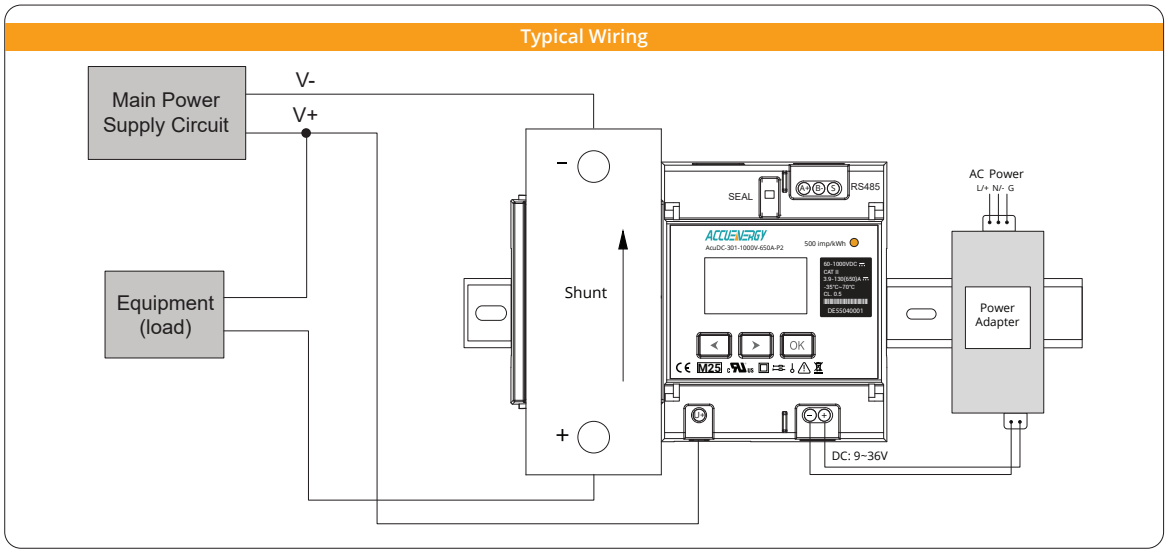


Front View



Side View

WIRING DIAGRAM



ORDERING INFORMATION

Meter Model	- Voltage Input	- Current Input	- Power Supply
AcuDC 301	**1000:** 1000V Direct Connect	**650:** 650A Direct Connect (Built-In Shunt)	**P2:** 9-36 VDC Input
Ordering Example:	**AcuDC301-1000V-650A-P2**		

NOTE: P2 power supply sold separately. Accuenergy recommends the AcuLink-RIK-PSU

Accessories *(Optional)*	
AcuLink-RIK-PSU	9-36VDC input with DIN-rail mount.

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Revision Date: September 2025 Version: 1.0.1
Specs Subject To Change Without Notice.

ISO 9001, 14001 & 45001 Certified