Energy Meter DC IMD, Hall Sensor Module Selection for EV Charger

1-phase&3-phase&DC Energy Meter, IMD, Hall Sensor Module Selection Plan for all types of EV Charger.

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Acrel Energy Meter&IMD Model Selection Solution for EV Charger

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0. Major Types of EV Charging Charger and their requests for Energy Meter and DC IMD

Type 1: Small 1-phase AC EV Charger

- Noted: Request below are request of EV charging station to the energy meter used by it.
- Rated Voltage: Request rated voltage in the range of 220~264Vac L-N (1-phase)
- Rated Current: Request Max current at least 60A AC
- Communication: Request RS485 communication for control function
- Metering: Request Multi-rate/tariff metering as a optional function

Type 2: Small 3-phase AC EV Charger

- Noted: Request below are request of EV charging station to the energy meter used by it.
- Rated Voltage: Request rated voltage in the range of 380~456Vac L-L & 220~264Vac L-N (3-phase)
- Rated Current: Request Max current input at least 80A AC (direct connect type) or Max 5A AC current input (via CTs)
- Communication: Request RS485 communication for control function
- Metering: Request Multi-rate/tariff metering as a optional function

Type 3: Medium&Large DC EV Charger

- Rated Voltage: Request rated voltage in the range of 200~1000Vdc
- Rated Current: Request Max current input normally not more that 500A DC
- Communication: Request RS485 communication for control function
- Metering: Request Multi-rate/tariff metering as a optional function
- Insulation: Request insulation monitoring for EV Charger between the DC+ and ground or DC- pole and ground.

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1. Energy Meter Model Selection (For Small 1-phase AC EV Charger Energy Monitoring)

Model 1: ADL200 1-phase DIN-rail Energy Meter

- Rated Voltage: 220~264Vac L-N (45~65Hz)

- Rated Current: 10(80)A AC

- Accuracy: Class 1.0 for active energy monitoring

- Communicaiton: RS485 Interface, MODBUS-RTU Protocol

- Extra Function: Multi-rate/tariff metering & Pulse Output

- Certificate&Standard: IEC; CE; CE-MID;EAC

1-phase 2-wire | **35mm DIN Rail**
Direct Load 80A | **MODBUS-RTU**

CE

Model 2: ADL100-ET 1-phase DIN-rail Energy Meter

- Rated Voltage: 220~264Vac L-N (45~65Hz)

- Rated Current: 10(60)A AC

- Accuracy: Class 1.0 for active energy monitoring

- Communicaiton: RS485 Interface, MODBUS-RTU Protocol

- Extra Function: Multi-rate/tariff metering&Pulse Output

- Certificate&Standard: CE; EAC

1-phase 2-wire | **35mm DIN Rail**
Direct Load 60A | **MODBUS-RTU**

Model 3: ADL10-E 1-phase DIN-rail Energy Meter

- Rated Voltage: 220~264Vac L-N (45~65Hz)

- Rated Current: 10(60)A AC

- Accuracy: Class 1.0 for active energy monitoring

- Communicaiton: RS485 Interface, MODBUS-RTU Protocol

- Certificate&Standard: CE; EAC

1-phase 2-wire | **35mm DIN Rail**
Direct Load 60A | **MODBUS-RTU**

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2. Energy Meter Model Selection (For Small 3-phase AC EV Charger Energy Monitoring)
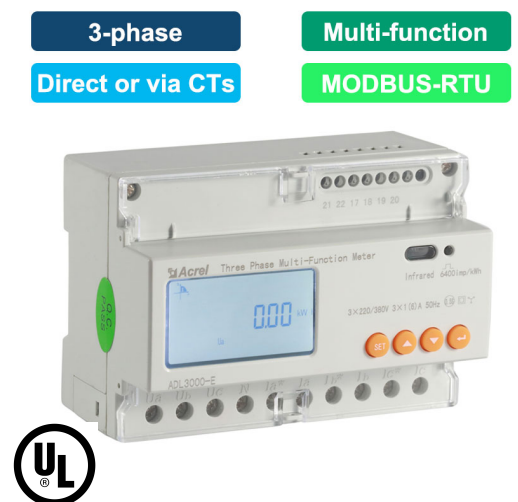
Model 1: ADL400 3-phase DIN-rail Energy Meter

- Rated Voltage: 3x380~456Vac L-L & 220~264Vac L-N (45~65Hz)
- Rated Current: 3x10(80)A AC (direct connect) or 3x1(6)A AC (via CTs)
- Accuracy: Class 0.5S for active energy monitoring
- Harmonic: Total and 2~31st harmonic monitoring
- Communicaiton: RS485 Interface, MODBUS-RTU Protocol
- Extra Function: Multi-rate/tariff metering & Pulse Output
- Certificate&Standard: IEC; CE; CE-MID;EAC

Model 2: ADL3000-E 3-phase DIN-rail Energy Meter

- Rated Voltage: 3x380~456Vac L-L & 220~264Vac L-N (45~65Hz)
- Rated Current: 3x10(80)A AC (direct connect) or 3x1(6)A AC (via CTs)
- Accuracy: Class 0.5S for active energy monitoring
- Communicaiton: RS485 Interface, MODBUS-RTU Protocol
- Certificate&Standard: UL; CE; IEC; EAC

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3. DC IMD Model Selection (For Medium&Large DC EV Charger Insulation Monitoring)

Model 1: AIM-D100-CA DC Insulation Monitoring Device

- Application: for DC EV charger Insulation Monitoring
- Insulation Resistance Monitoring Range: 1k ~10M
- Insulation Alarming Range: 10k ~10M
- Insulation Monitoring Mode: Triggered by RS485 Comms.
- Voltage Monitoring: 0~1000Vdc [0.5 Accuracy]
- Communicaiton: **RS485 Interface**, MODBUS-RTU Protocol
- Extra Current Monitoring: 1-channel DC current metering via shunt; 5% accuracy [module name AIM-D100-CAI]
- Auxiliary Power Supply: 9~36Vdc
- Certificate&Standard: CE

DC Insulation | **For EV Charger**
0~1000Vdc | **RS485 MODBUS**

Model 1: AIM-D100-T(H/L) DC Insulation Monitoring Device

- Application: for general DC system insulation monitoring.
- Insulation Resistance Monitoring Range: 1k ~10M
- Insulation Alarming Range: 10k ~10M
- Insulation Monitoring Mode: Real-time monitoring
- Voltage Monitoring: 10~100Vdc [Module: AIM-D100-TL];or 100~1000Vdc [Modue:AIM-D100-TH]; accuracy 0.5
- Communicaiton: **RS485 Interface**, MODBUS-RTU Protocol
- Auxiliary Power Supply: 9~36Vdc
- Certificate&Standard: CE

DC Insulation | **General Usage**
10~100~1000Vdc | **RS485 MODBUS**

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3. Energy Meter Model Selection (For Medium-Large DC EV Charger Energy Monitoring)

Model 1: DJSF1352-RN DC Din-rail Energy Meter

- Voltage Input Range: 0~1000Vdc

- Current Input Range: 0~5Vdc, 4~20mA DC (via Hall

Sensor) 0~75mV (via Shunt) and etc.

- Accuracy: Class 1.0 for active energy monitoring

- Communicaiton: RS485 Interface, MODBUS-RTU Protocol

- Extra Function: Multi-rate/tariff metering & Optional Dual

Circuits Monitoring

 - Certificate&Standard: CE, UL

| DC Metering | Solar PV |
| EV Charger | RS485 (MODBUS) |

Model 2: PZ72L-DE DC Panel mounted Energy Meter

- Voltage Input Range: 0~1000Vdc

- Current Input Range: 0~5Vdc, 4~20mA DC (via Hall

Sensor) 0~75mV (via Shunt) and etc.

- Accuracy: Class 1.0 for active energy monitoring

- Communicaiton: RS485 Interface, MODBUS-RTU Protocol

- Extra Function: Multi-rate/tariff metering

- Certificate&Standard: CE

| 1-circuit | Multi-function |
| DC Metering | MODBUS-RTU |

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3. Shunt&Hall Sensor Model Selection (For Medium-Large DC EV Charging Station)

DC Current In. | **DC Current Out.**
Max 0~500A DC | **0~75mV DC**

Model 1: AFL-T Series Shunt

- Current Input Range: 0~(50~500)A DC

- Current Output Range: 0~75mV

- Advantage: High accuracy, strong anti-interference

- Application: Paired with Acrel DC energy meter for current intput

Hall Effect | **AC&DC Transducer**
0~500A AC/DC In. | **0~±5/±4Vdc Out.**

Model 2: AHKC-EKA Split-core Hall Sensor

- Current Input Range: 0~(50~500)A DC

- Current Output Range: 0~±5Vdc

- Aperture: 20mm

- Auxiliary Power Supply: ±12~±15Vdc

- Advantage: Safety with electricity isolation

- Application: Paired with Acrel DC energy meter for current intput

Hall Effect | **AC&DC Transducer**
0~1000A AC/DC In. | **0~±5/±4Vdc Out.**

Model 2: AHKC-EKB Split-core Hall Sensor

- Current Input Range: 0~(200~1000)A DC

- Current Output Range: 0~±5Vdc

- Aperture: 40mm

- Auxiliary Power Supply: ±12~±15Vdc

- Advantage: Safety with electricity isolation

- Application: Paired with Acrel DC energy meter for current intput