

T201



AMC16(L)-DETT DC power meter module of base station

Installation and operation manual T1.0

Acrel Co., Ltd.

Declaration

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1 Overview

Base station dedicated DC energy meter AMC16-DETT is specially designed for base stations where have sharing requirements, and switch power supply is without the function of sub-user metering. The meter could measure 6 circuits DC energy, and supply working current to the matched hall sensors. Meanwhile, it can realize zero drift calibration by upper computer software. have the functions of telemetering,teleindication,teleadjusting, metering at real time, energy quality abnormal alarm, data storage and processing, data interaction. This meter can measure DC power consumption of three operators, providing detail datas for base station.

2 Product model

| Name | Model | Instruction | Note |
|------------------------------|---------------|---------------|-----------------------|
| Base station DC energy meter | AMC16(L)-DETT | 35mm din rail | L:with liquid crystal |

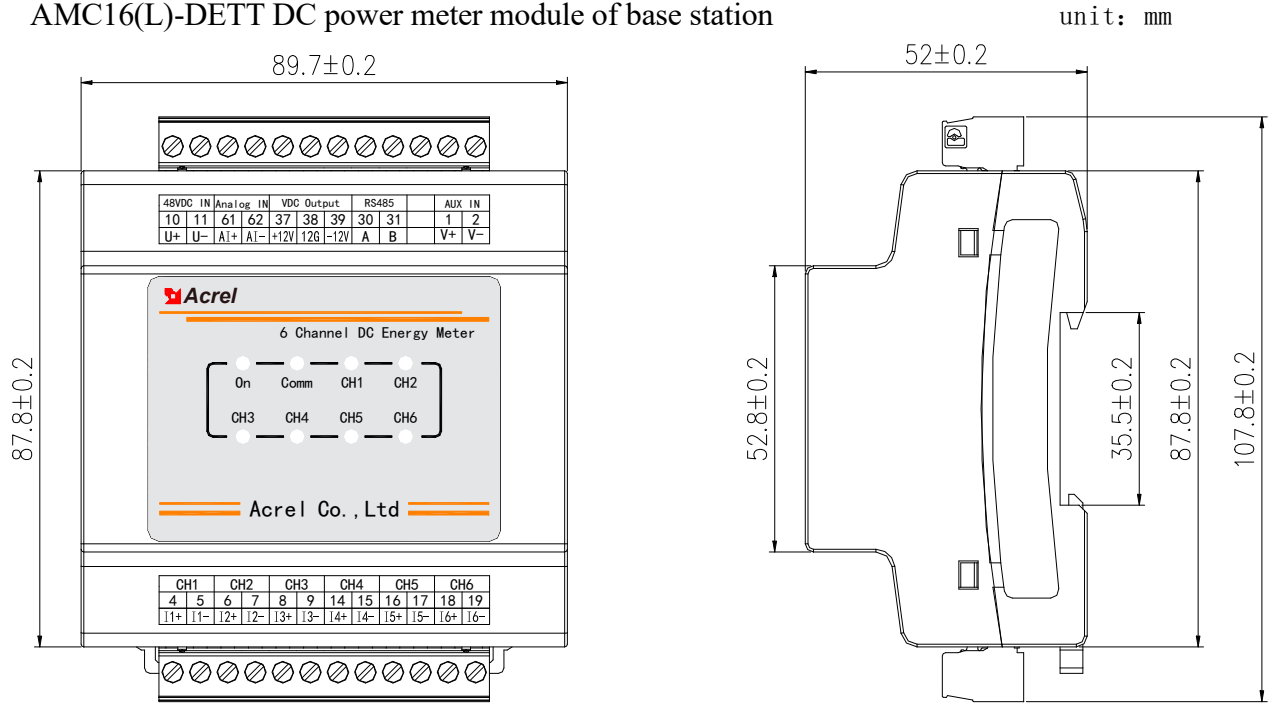
3 Technical parameters

| Technical parameter | | Index |
|--|-----------------------------|---|
| input | DC rated voltage | 1 channel: -48VDC |
| | DC current | 6 channels hall sensors: DC200A/0- 5V |
| | Commercial power monitoring | 1 channel: 0-5VDC |
| | Overload capacity | Voltage:1.2times continued,2 times continued 1s; Current: 1.2 times continued,10 times continued 1s. |
| Accuracy (no superposition hall sensors) | | error±0.5% |
| Measurement resolution | | Voltage output accuracy 0.01V; current output accuracy 0.01A; power output accuracy 0.01kw; energy output accuracy 0.01kwh. |
| functions | Basic function | Monitor device system time, total voltage, output total current, power, energy, each channel voltage, current, power, energy; LED indicator display;485 communication. |
| | Metering function | Start current: under rated voltage, when the load current value of the meter doesn't exceed 1% of the max. current, the meter starts. Shunt running current: when there is no current in the current circuit of the meter, and 85%-125%of the rated voltage is applied on the voltage circuit, the calculator shall not have more than one digital change. |
| | Alarm function | DC voltage output low alarm,DC voltage output high alarm,one power down alarm, module voltage loss alarm, metering branch error alarm, internal program error alarm, clock error alarm,memory failure alarm, AC input power failure alarm |
| | Timing function | support broadcast timing, could remote timing to the meter through RS485 communication. |
| | Communication | Single channel RS485, baudrate 9600bps, can be set to 1200BPS, 2400bps, 4800bps. Communication protocol: standard or custmized |

| | | |
|--------------------------|--|--|
| | Hall sensor power supply | Power supply output:+12V/100mA, -12V/50mA |
| | Clock accuracy | ≤0.5S/d(23°C), ≤1S/d(-20°C-60°C), |
| Auxiliary power supply | Voltage range | -40V~-60VDC |
| | Power consumption | Whole device≤2W(no hall power supply output) |
| Storage | | It has the storage function of historical power data and historical alarm information, and the memory is 2MB |
| Insulation resistance | | ≥40MΩ |
| environment | Temperature | Working : -20°C~+60°C; storage:-40°C~+70°C |
| | Humidity | ≤98% no condensation, no corrosive gas place |
| | Altitude | ≤4000m |
| Protection level | | IP20 |
| Material flame retardent | | Terminal glow wire temperature 960°C±10°C ,shell glow wire temperature 650°C±15°C |
| installation | | Standard 35mm din rail |
| Lightning protection | Voltage input (differential mode) | Peak value 5kA |
| | Auxiliary power supply (differential mode) | Peak value 5kA |

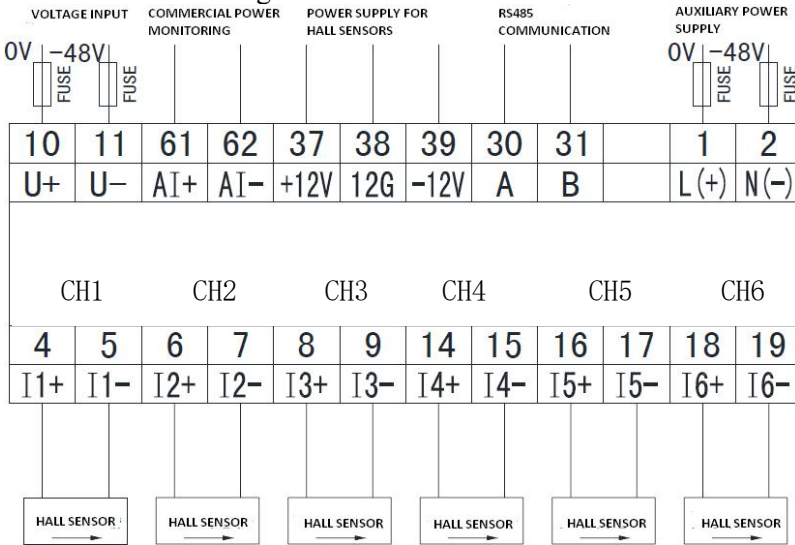
4 Outline structure

AMC16(L)-DETT DC power meter module of base station

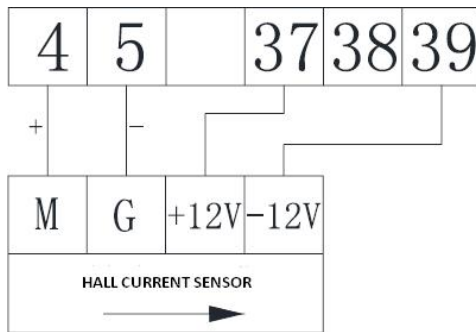


5 Installation wiring

5.1 terminals and wiring



Note: arrow direction should be the same with current direction marked on the sensor .



HALL SENSORS WITH ISOLATION FUNCTION WIRING

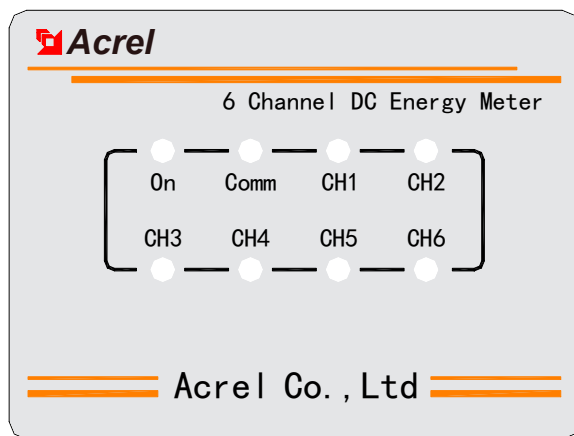
5.2 wiring precautions

- input voltage should not be higher than 120% of product's rated input voltage, must install 1A fuse at the voltage input terminal.
- Current input should use external diverter or hall sensor.
- To ensure the accuracy, the DC meter should be used together with Acrel hall sensors, the wiring length between sensors to meters should <3m.
- Advise use three core shielded wires as communication connection wires. Each core >0.5mm² connect A,B, Connect shielding layer to earth, and keep communication line away from strong electric cable or other strong electric field environment during wiring

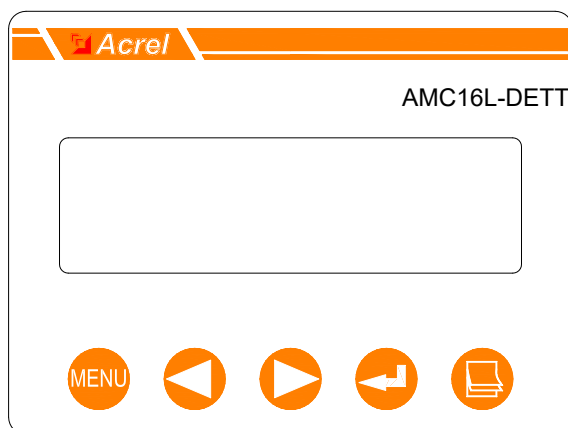
The hall sensor opening locking screw must be tightened to ensure the closed-loop tightness of the sensor.

6 Guide to use

6.1 Panel diagram



AMC16-DETT



AMC16L-DETT

6.2 LED instructions






A total of 8 LED indicators are used to indicate the working status of the metering modules;





“running” status (green) : when the metering module is in normal operation, the running indicator light flashes.

“communication” status (red) : when the 485 communication of metering module is normal, the communication indicator will flash.

6.3 AMC16L-DETT button operation

There are five buttons in the DC energy metering module of AMC16L-DETT base station, from left to right:

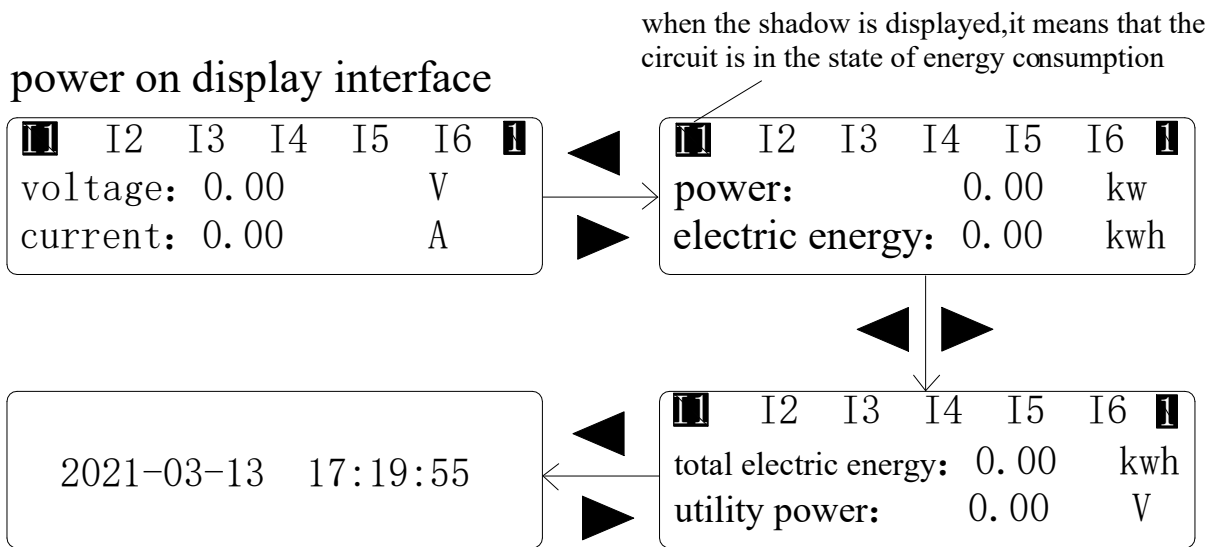
 menu button、 left button、 right button、 enter button and  page button

| | |
|--|--|
|  menu button | Non programming mode: press this button to enter the programming mode, and the device will prompt you to enter the password or return to the previous menu. Programming mode: used to return to the previous menu or exit the Programming mode. |
|  left button、  right button | Non programming mode: used to switch the display interface; Programming mode: used to switch the same level menu and shift the cursor. |
|  enter button | Programming mode: used to confirm the selection of menu items and enter the next level menu. |

6.4 AMC16L-DETT operation display instructions

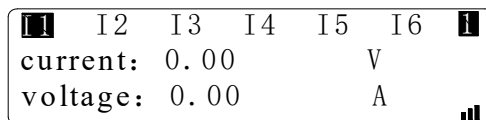
After the instrument is powered on, the screen displays the power on interface as follows:whether there is signal input in 6 current mrtering channels I1,I2,I3,I4,I5,I6 and the real time data of correspond voltage and current of each channel.The value under the black shadow in the upper right corner indicates the current channels.press the page turning button to increase the number of channels,up to 6.Then press the left and right button to switch back and forth the interface of voltage,current,power,electric energy,total electric energy,mains power and display time.On the power on interface,Press the menu button to enter the password input interface.After entering the password,you will enter the menu setting interface:1.communication,2.time,3.power,4.system.press the left and right button to move the cursor,and press enter to enter each sub interface for viewing.the specific flow chart is as follows.

Power on interface



When the first circuit current is connected,white words on black background will be displayed at I1,indicating that the circuit is in energy consumption state,and the rest circuits are the same.It can display single current connection or multiple current connection.

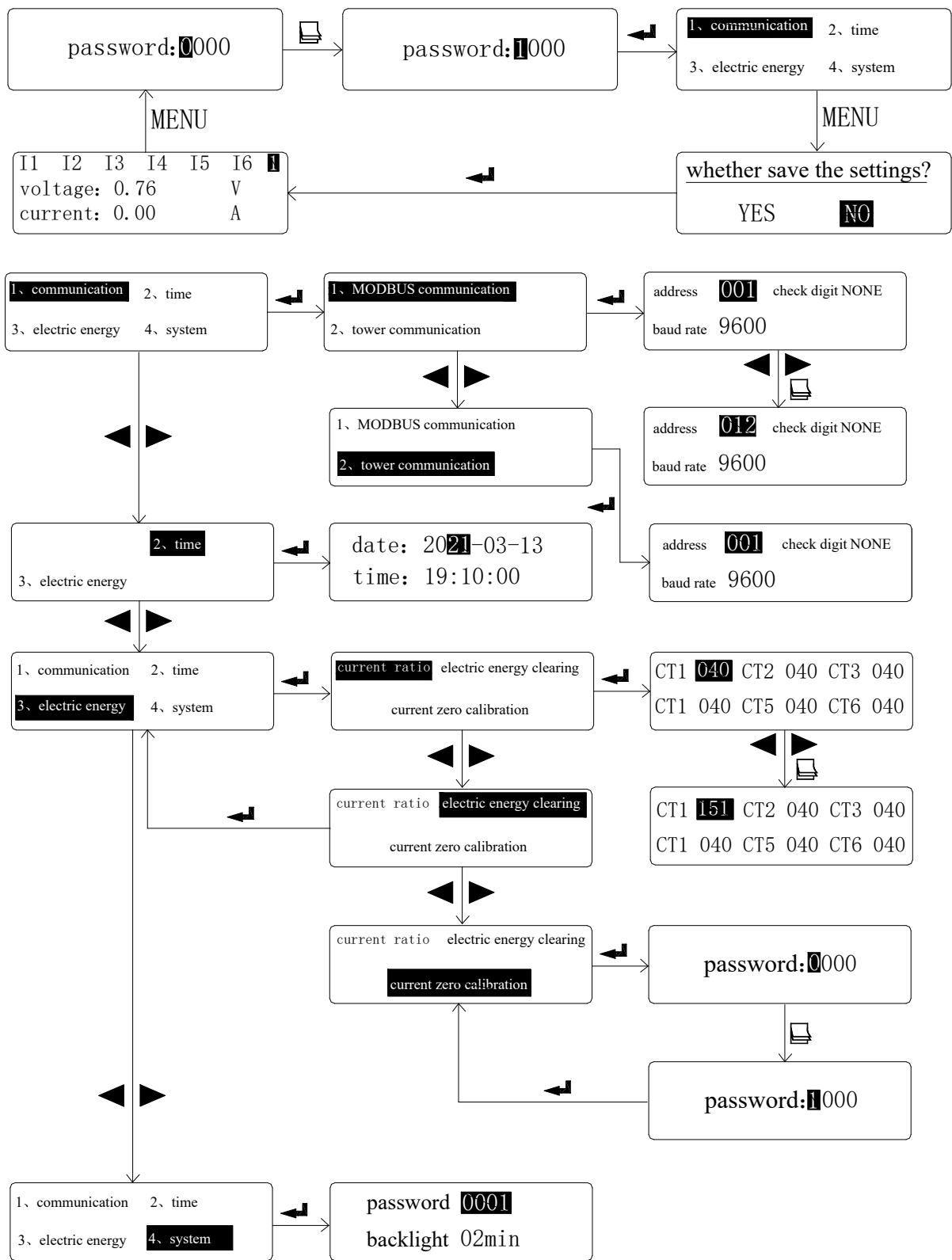
When connecting communication,the communication icon will appear in the lower right corner of the interface to distinguish.The specific display is shown in the figure below.



Menu function option interface

Press the menu button to enter the password interface.The default password is 1.Press left and right buttons to shift,press the page turning button to increase the value,and then press the enter button to return to the power on interface.

Menu function setting interface



CT1-CT6 in the current ratio interface indicates the corresponding transformation ratio of each circuit in the factory. The default value is 40, and the corresponding rating is $5 \times 40 = 200\text{A}$. The parameters can be adjusted through the page turning button, and the maximum value can be set to 999.

7 Communication guide

Modbus address table

Telemetry,telecontrol

Parameter area (0x00H~0x2FH)

| Serial number | variable | address | Read/write | length | unit | Data type | note |
|---------------|------------------------------|---------|------------|--------|------|-----------|---|
| 1 | address | 00H | R/W | 1 | NONE | Uint16 | 1~247 |
| 2 | Baud rate | 01H | R/W | 1 | NONE | Uint16 | 2400,4800,9600,19200 |
| 3 | reserve | 02H | R/W | 1 | NONE | Uint16 | |
| 4 | reserve | 03H | R/W | 1 | NONE | Uint16 | |
| 5 | voltage ratio | 04H | R/W | 1 | NONE | Uint16 | |
| 6 | voltage ratio 1 | 05H | R/W | 1 | NONE | Uint16 | |
| 7 | Current ratio 2 | 06H | R/W | 1 | NONE | Uint16 | |
| 8 | Current ratio 3 | 07H | R/W | 1 | NONE | Uint16 | |
| 9 | Current ratio 4 | 08H | R/W | 1 | NONE | Uint16 | |
| 10 | Current ratio 5 | 09H | R/W | 1 | NONE | Uint16 | |
| 11 | Current ratio 6 | 0AH | R/W | 1 | NONE | Uint16 | |
| 12 | Zero shielding value setting | 0BH | R/W | 1 | 0.1% | Uint16 | One decimal place |
| 13 | Current zero calibration | 0CH | W | 1 | NONE | Uint16 | 0x8801:the first way 0x8802:the second way 0x88FF:whole |
| 14 | Electric energy clearing | 0DH | W | 1 | NONE | Uint16 | 0x8801:the first way 0x8802:the first way 0x88FF:whole |
| 21 | backlight | 15H | R/W | 1 | min | Uint16 | 0~5 |
| 22 | password | 16H | R/W | 1 | NONE | Uint16 | 0~9999 |

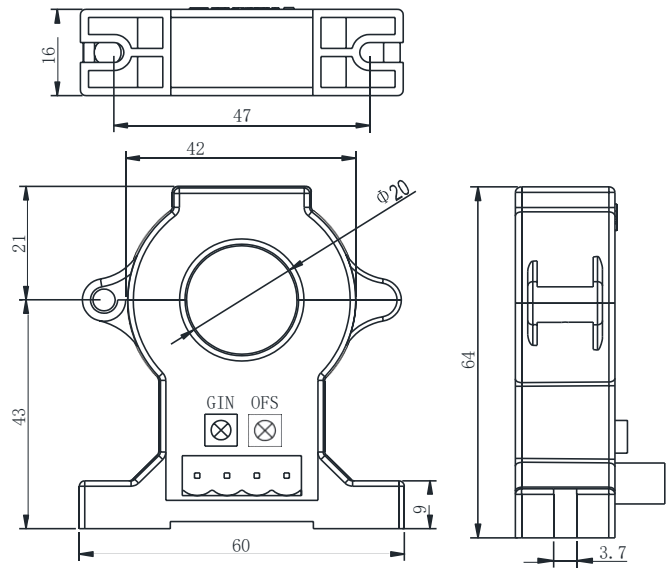
Electric parameter data area (0x30H~0xEFH)

| Serial number | variable | address | Read/write | length | unit | Data type | note |
|---------------|-------------------|---------|------------|--------|---------|-----------|------|
| 1 | voltage 1 | 30H-31H | R | 2 | V | float | |
| 2 | voltage 2 | 32H-33H | R | 2 | V | float | |
| 3 | voltage 3 | 34H-35H | R | 2 | V | float | |
| 4 | voltage 4 | 36H-37H | R | 2 | V | float | |
| 5 | voltage 5 | 38H-39H | R | 2 | V | float | |
| 6 | voltage 6 | 3AH-3BH | R | 2 | V | float | |
| 7 | current 1 | 3CH-3DH | R | 2 | A | float | |
| 8 | current 2 | 3EH-3FH | R | 2 | A | float | |
| 9 | current 3 | 40H-41H | R | 2 | A | float | |
| 10 | current 4 | 42H-43H | R | 2 | A | float | |
| 11 | current 5 | 44H-45H | R | 2 | A | float | |
| 12 | current 6 | 46H-47H | R | 2 | A | float | |
| 13 | power 1 | 48H-49H | R | 2 | w | float | |
| 14 | power 2 | 4AH-4BH | R | 2 | w | float | |
| 15 | power 3 | 4CH-4DH | R | 2 | w | float | |
| 16 | power 4 | 4EH-4FH | R | 2 | w | float | |
| 17 | power 5 | 50H-51H | R | 2 | w | float | |
| 18 | power 6 | 52H-53H | R | 2 | w | float | |
| 19 | electric energy 1 | 54H-55H | R | 2 | 0.01kWh | Uint32 | |
| 20 | electric energy 2 | 56H-57H | R | 2 | 0.01kWh | Uint32 | |
| 21 | electric energy 3 | 58H-59H | R | 2 | 0.01kWh | Uint32 | |
| 22 | electric energy 4 | 5AH-5BH | R | 2 | 0.01kWh | Uint32 | |
| 23 | electric energy 5 | 5CH-5DH | R | 2 | 0.01kWh | Uint32 | |
| 24 | electric energy 6 | 5EH-5FH | R | 2 | 0.01kWh | Uint32 | |
| 25 | DC input | 60H-61H | R | 2 | V | float | 0~5V |

8 Hall sensor recommended

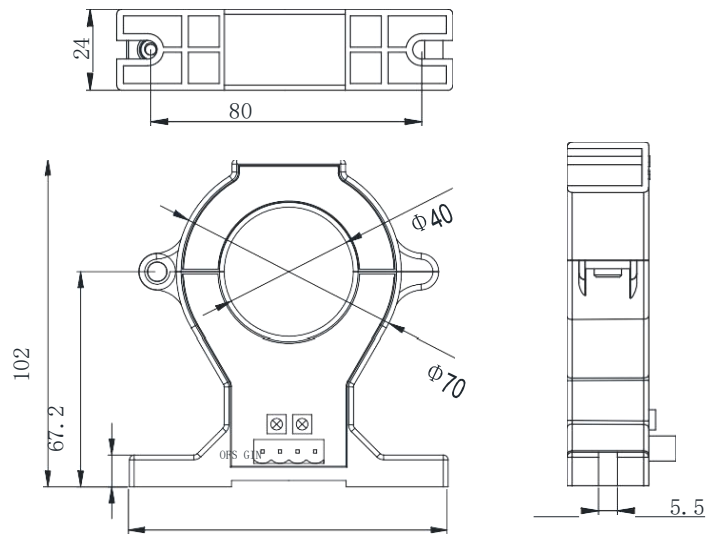
Recommend hall sensor

(unit: mm)



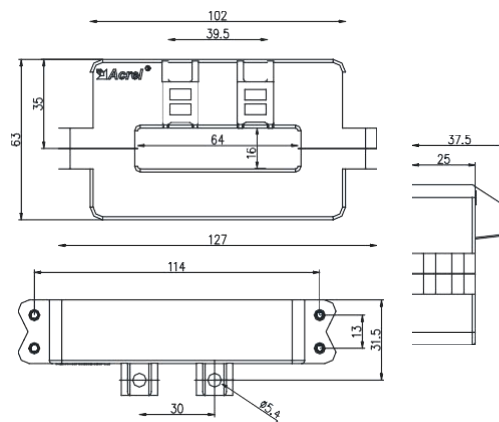
AHKC-EKA (50A/5V)

aperture $\Phi 20$ mm



AHKC-EKB (100A/5V)

aperture $\Phi 40$ mm



AHKC-K (200A/5V)

aperture $\Phi 64 \times 16$ mm

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