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# AMC100 DC precision power distribution monitoring device

Installation instruction V1.1

Acrel Co., Ltd.

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# Declaration

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## 1 General

With the rapid development of data centers, the energy consumption of data centers has become more and more prominent, and the energy management and power supply and distribution design of data centers have become a hot issue. Efficient and reliable power distribution system scheme of data centers is an effective way to improve the power efficiency of data centers and reduce the energy consumption of equipment. In order to realize energy saving in data center, first of all, it is necessary to monitor each power load. However, there are many load loops in data center, and traditional measuring instruments cannot meet the requirements of cost, volume, installation, construction and other aspects. Therefore, it is necessary to adopt multi-loop monitoring device suitable for centralized monitoring requirements in data center.

AMC100 series DC precision power distribution monitor is a measurement device designed specifically for power management of data center servers. The device design exquisite, can for A + B two into line and 192 road for electrical parameters, the input and output parameters of the switch state and the lightning protection device such as real-time monitoring, all alarm threshold measurement channels can be set in A separate, to qualify the limit event trigger system sound and light alarm, immediately on the volume in the traditional instrument, the height of the monitoring circuit integration.

## 2 Product Model

| Model | Functional Description |
|---|---|
| AMC100-ZD | Monitors the voltage, current, power, and electric energy of 2 independent incoming lines A+B,8 switching input, 4 switching output , 1 temperature and humidity detection, and 3 RS485 communications |
| AMC100-FDK30 | Monitor the full power parameters and switching status (active) of A+B dual DC outlet 30 branches ,and 1 RS485 communication |
| AMC100-FDK48 | Monitor the full power parameters and switching status (active) of A+B dual DC outlet 48 branches, and 1 RS485 communication |
| AMC100-FD30 | Monitor the full power parameters of A+B dual DC outgoing lines in A total of 30 branches, and 1 RS485 communication |
| AMC100-FD48 | Monitor the full power parameters of A+B dual DC outgoing lines in A total of 48 branches, and 1 RS485 communication |
| AMC100-KA30 | Wet contact, Monitor the switching status of 30 branches A+B, and 1 RS485 communication |
| AMC100-KA48 | Wet contact, Monitor the switching status of 48 branches A+B, and 1 RS485 communication |
| AMC100-KD30 | Dry contact: Monitor the switching status of 30 branches A+B, and 1 RS485 communication |
| AMC100-KD48 | Dry contact: Monitor the switching status of 48 branches A+B, and 1 RS485 communication |
| AMC100-FT30 | 1 channel RS485 communication and 30 channels temperature measurement |
| AMC100-FT48 | 1 channel RS485 communication and 48 channels temperature measurement |

## 3 Technical parameters

DC into line

| Instrument model | | AMC100-ZD |
|---|---|---|
| Measured parameters | | Voltage, Current, Power, Electric energy, Ambient temperature and Humidity |
| Bus voltage | Rated | 48VDC,240VDC,336VDC |
| | Measuring range | ±20% |
| | Overload | Instantaneous voltage 2 times per second |
| Current incoming circuit | Rated | 5V（Hall sensor, ±12V powered by AMC100-ZD） |
| | Overload | Duration is 1.2 times, instantaneous 10 times/second |
| Temperature and humidity | Temperature range | -40℃～+99℃ |
| | Humidity range | 20%～90% |
| Measuring accuracy | Coil in | Voltage/current level 0.5, power/electric energy level 1 |
| | Temperature | ±1℃ |
| | Humidity | ±5% |


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| | | |
|---|---|---|
| Auxiliary supply | | AMC100-ZD：Signal power（≤15W）<br>AMC100-ZD-P24：DC 12-24V independent power supply<br>AMC100-ZD-P220：<br>1、When the constant voltage is DC 240V、DC336V,powered by AC220V、DC240V 、DC336V independent supply<br>2、When the constant voltage is DC 48V,powered by DC48V independent supply |
| Environment | Temperature | Operation：-15℃～55℃ Storage：-25℃～70℃ |
| | Humidity | Relative humidity≤93% |
| | Altitude | ≤2500m |
| Switching output | | 4-way 3A 250VAC /3A 30VDC |
| Switch input | | 8 dry nodes |
| Communication | | 1 channel isolated RS485/Modbus-RTU to the background system<br>1 RS485/Modbus-RTU to touch screen<br>1 RS485/Modbus-RTU connection to the downstream module<br>1-channel Ethernet communication function is optional |
| Installation | | Method DIN35mm rail or bottom plate installation |
| Protection level | | IP20 |
| Pollution level | | 2 |
| Security | Insulation | The insulation resistance between all terminals and the conductive parts on the shell must be at least 100MΩ |
| | Withstand voltage | Voltage and current signal of line A // Voltage and current signal of line B // Switching output // Isolated communication port // Two of other ports should meet AC2kV for 1min, switching input and other ports should meet AC0.5kV for 1min, leakage current should be less than 2mA, no breakdown or flashover phenomenon. |
| Electromagnetic compatibility | Antistatic interference | Level 4 |
| | Reactance fast transient pulse | Level 3 |
| | Surge resistance | Level 4 |
| | Radio frequency electromagnetic radiation | Level 3 |

DC outlet

| Instrument model | | AMC100-FD30 | AMC100-FD48 |
|---|---|---|---|
| Measuring parameters | | Voltage, Current, Power, Electric energy | |
| Bus voltage | Rated | 48VDC,240VDC,336VDC | |
| | Measuring range | ±20% | |
| | Overload | Instantaneous voltage 2 times per second | |
| Current incoming circuit | Rated | 5V (Hall sensor, need external power supply ±12V or ±15V) | |
| | Range | | |
| | Overload | Duration is 1.2 times, instantaneous 10 times/second | |
| Measuring accuracy | coil out | Voltage/current level 0.5, power/electric energy level 1 | |
| Auxiliary supply | | Powered by AMC100-ZD; DC 12-24V power supply when used alone | |
| Environment | Temperature | Operation：-15℃～55℃ Storage：-25℃～70℃ | |
| | Humidity | Relative humidity≤93% | |
| | Altitude | ≤2500m | |
| Communication | | RS485/Modbus-RTU | |


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| | | |
|---|---|---|
| Installation | | Method DIN35mm rail or bottom plate installation |
| Protection level | | IP20 |
| Pollution level | | 2 |
| Security | Insulation | The insulation resistance between all terminals and the conductive parts on the shell must be at least 100MΩ |
| | Withstand voltage | Voltage and current signal of line A // Voltage and current signal of line B // The two of other ports meet AC2kV for 1min, the leakage current should be less than 2mA, and no breakdown or flashover phenomenon. |
| Electromagnetic compatibility | Antistatic interference | Level 4 |
| | Radio frequency electromagnetic radiation | Level 3 |

**Note: The input voltage of the secondary side of the DC inlet and outlet modules is 5V, and the default value of the primary side current is 100A. If the hall sensor is different, customers can set the ratio through the touch screen according to the actual use.**

| Instrument model | | AMC100-FDK30 | AMC100-FDK48 |
|---|---|---|---|
| Measuring parameters | | Voltage, Current, Power, Electric energy | |
| Bus voltage | Rated | 48VDC,240VDC,336VDC | |
| | Measuring range | ±20% | |
| | Overload | Instantaneous voltage 2 times per second | |
| Current incoming circuit | Rated | 5V (Hall sensor, need external power supply ±12V or ±15V) | |
| | Range | | |
| | Overload | Duration is 1.2 times, instantaneous 10 times/second | |
| Measuring accuracy | coil out | Voltage/current level 0.5, power/electric energy level 1 | |
| Auxiliary supply | | Powered by AMC100-ZD; DC 12-24V power supply when used alone | |
| Environment | Temperature | Operation：-15℃～55℃ Storage：-25℃～70℃ | |
| | Humidity | Relative humidity≤93% | |
| | Altitude | ≤2500m | |
| Communication | | RS485/Modbus-RTU | |
| Installation | | Method DIN35mm rail or bottom plate installation | |
| Protection level | | IP20 | |
| Pollution level | | 2 | |
| Security | Insulation | The insulation resistance between all terminals and the conductive parts on the shell must be at least 100MΩ | |
| | Withstand voltage | Voltage and current signal of line A // Voltage and current signal of line B // The two of other ports meet AC2kV for 1min, the leakage current should be less than 2mA, and no breakdown or flashover phenomenon. | |
| Electromagnetic compatibility | Antistatic interference | Level 4 | |
| | Radio frequency electromagnetic radiation | Level 3 | |

**Note: The input voltage of the secondary side of AMC100-FDK module is 5V, and the default value of the primary side current is 100A. If the hall sensor is different, customers can set the ratio through the touch screen according to the actual use.**


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Active switch module

| Instrument model | | AMC100-KA30 | AMC100-KA48 |
|---|---|---|---|
| Auxiliary supply | | Powered by AMC100-ZD; DC 12-24V power supply power supply when used alone | |
| Environment | Temperature | Operation：-15℃～55℃ Storage：-25℃～70℃ | |
| | Humidity | Relative humidity≤93% | |
| | Altitude | ≤2500m | |
| Switch input | | 30 wet nodes (48VDC,240VDC,336VDC) | 48 wet nodes (48VDC,240VDC,336VDC) |
| Communication | | RS485/Modbus-RTU | |
| Installation | | Method DIN35mm rail or bottom plate installation | |
| Protection level | | IP20 | |
| Pollution level | | 2 | |
| Security | Insulation | The insulation resistance between all terminals and the conductive parts on the shell must be at least 100MΩ | |
| | Withstand voltage | Voltage and current signal of line A // Voltage and current signal of line B // The two of other ports meet AC2kV for 1min, the leakage current should be less than 2mA, and no breakdown or flashover phenomenon. | |
| Electromagnetic compatibility | Antistatic interference | Level 4 | |
| | Radio frequency electromagnetic radiation | Level 3 | |

Passive switching module

| Instrument model | | AMC100-KD30 | AMC100-KD48 |
|---|---|---|---|
| Auxiliary supply | | Powered by AMC100-ZD; DC 12-24V power supply when used alone | |
| Environment | Temperature | Operation：-15℃～55℃ Storage：-25℃～70℃ | |
| | Humidity | Relative humidity≤93% | |
| | Altitude | ≤2500m | |
| Switch input | | 30 dry nodes | 48 dry nodes |
| Communication | | RS485/Modbus-RTU | |
| Installation | | Method DIN35mm rail or bottom plate installation | |
| Protection level | | IP20 | |
| Pollution level | | 2 | |
| Security | Insulation | The insulation resistance between all terminals and the conductive parts on the shell must be at least 100MΩ | |
| | Withstand voltage | Voltage and current signal of line A // Voltage and current signal of line B // The two of other ports meet AC2kV for 1min, the leakage current should be less than 2mA, and no breakdown or flashover phenomenon. | |
| Electromagnetic compatibility | Antistatic interference | Level 4 | |
| | Radio frequency electromagnetic radiation | Level 3 | |

Temperature measurement module

| Instrument model | AMC100-FT30 | AMC100-FT48 |
|---|---|---|
| Number of measuring channels | 30 channels | 48 channels |
| Auxiliary supply | Powered by AMC100-ZD; DC 12-24V power supply when used alone | |

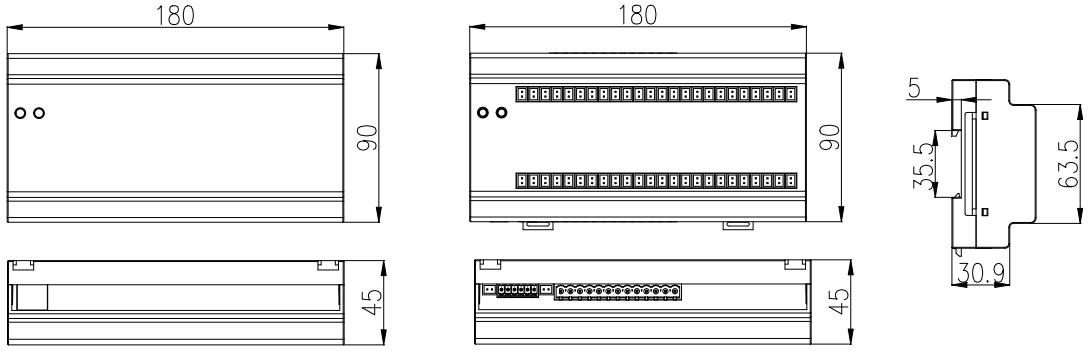

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| | | |
|---|---|---|
| Function | Temperature measurement range | -20℃～150℃ |
| | Communication | RS485/Modbus-RTU |
| Installation | | Method DIN35mm rail or bottom plate installation |
| Protection level | | IP20 |
| Pollution level | | 2 |
| Environment | Temperature | Operation：-20℃～60℃ Storage：-25℃～70℃ |
| | Humidity | Relative humidity≤93% |
| | Altitude | ≤2500m |
| Security | Insulation | The insulation resistance between all terminals and the conductive parts on the shell must be at least 100MΩ |
| | Withstand voltage | The auxiliary power supply and temperature measurement meet AC2kV for 1min, the leakage current should be less than 2mA, and no breakdown or flashover phenomenon. |
| Electromagnetic compatibility | Antistatic interference | Level 4 |
| | Radio frequency electromagnetic radiation | Level 3 |

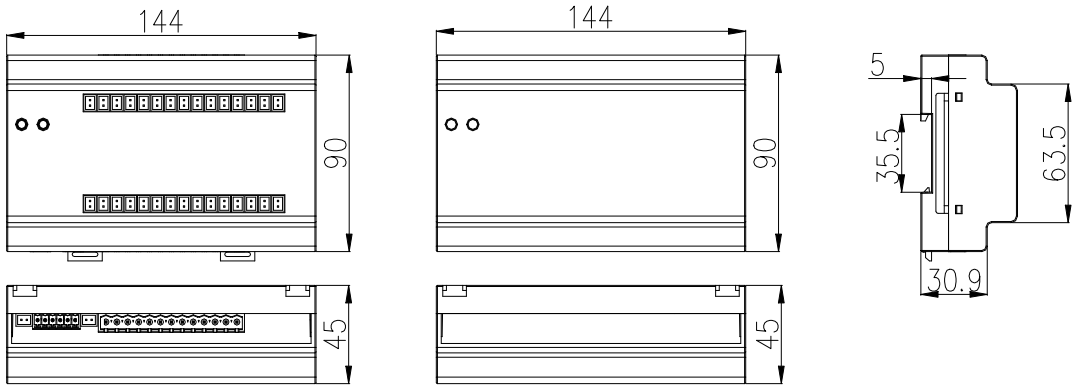
## 4 Appearance structure

AMC100 series DC precision power distribution monitoring device Unit:mm

AMC100-ZD、AMC100-FD□48、AMC100-K□48、AMC100-FT48




AMC100-FD□30、AMC100-K□30、AMC100-FT30



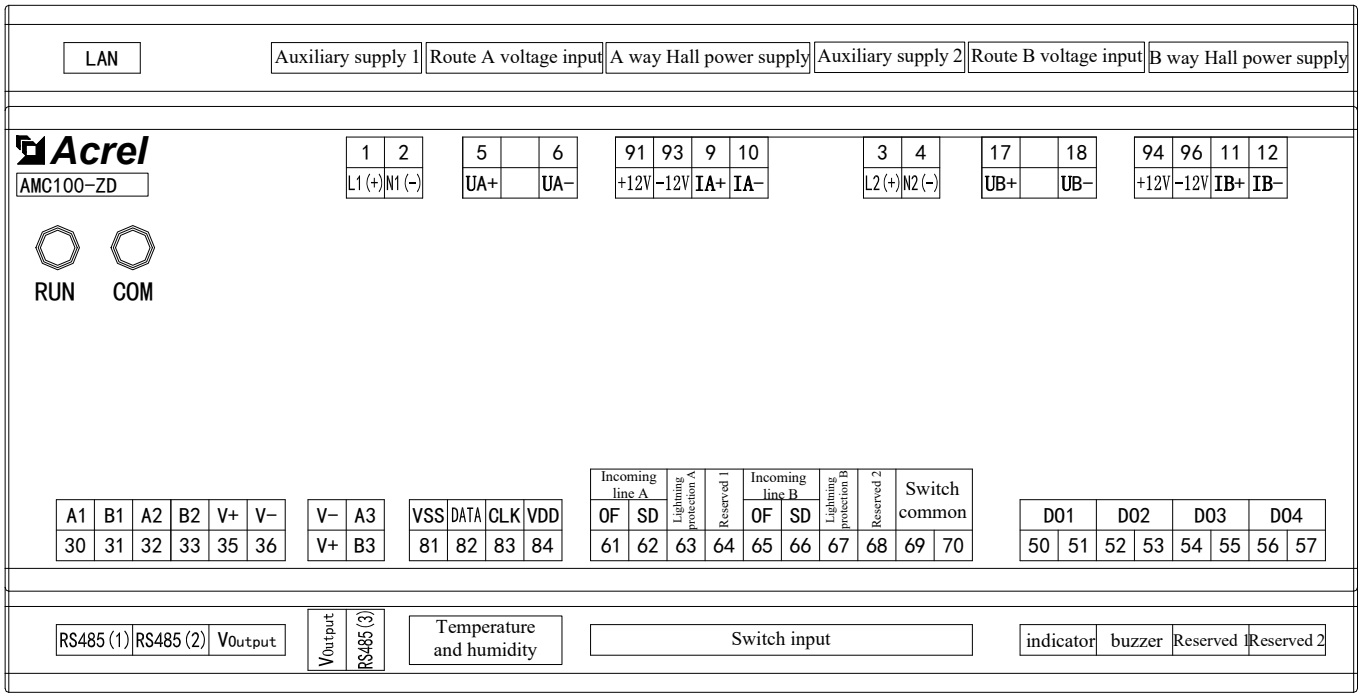


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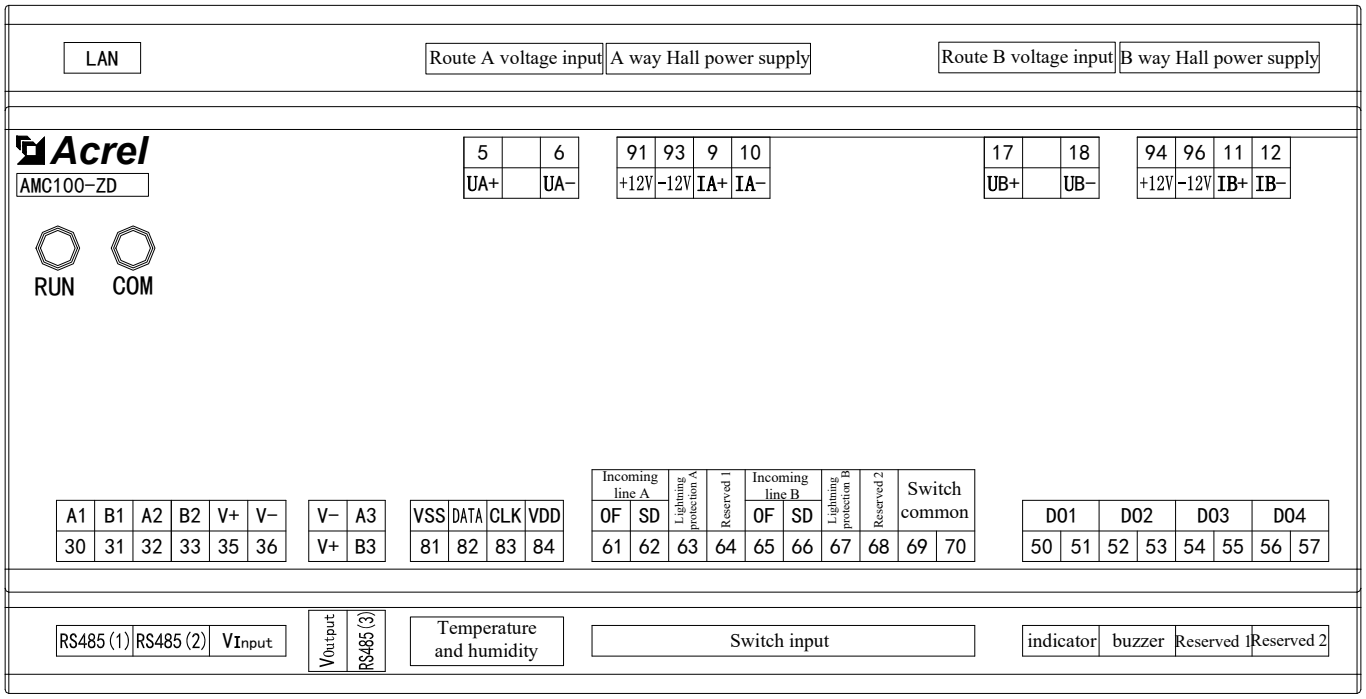
## 5 Wiring Terminals

5.1 AMC100 -ZD series

AMC100-ZD/CE-P220




AMC100-ZD/CE-P24




| Terminal number | Definition | Description | Remark |
|---|---|---|---|
| 1 | L1(+) | Auxiliary supply 1 | P220 used, not connected by default |
| 2 | N1(-) | | |
| 3 | L2(+) | Auxiliary supply 2 | P220 used, not connected by default |
| 4 | N2(-) | | |
| 5 | UA+ | Route A voltage input | Line A DC voltage input |
| 6 | UA- | | |
| 9 | IA+ | Route A current input | Line A incoming DC current |

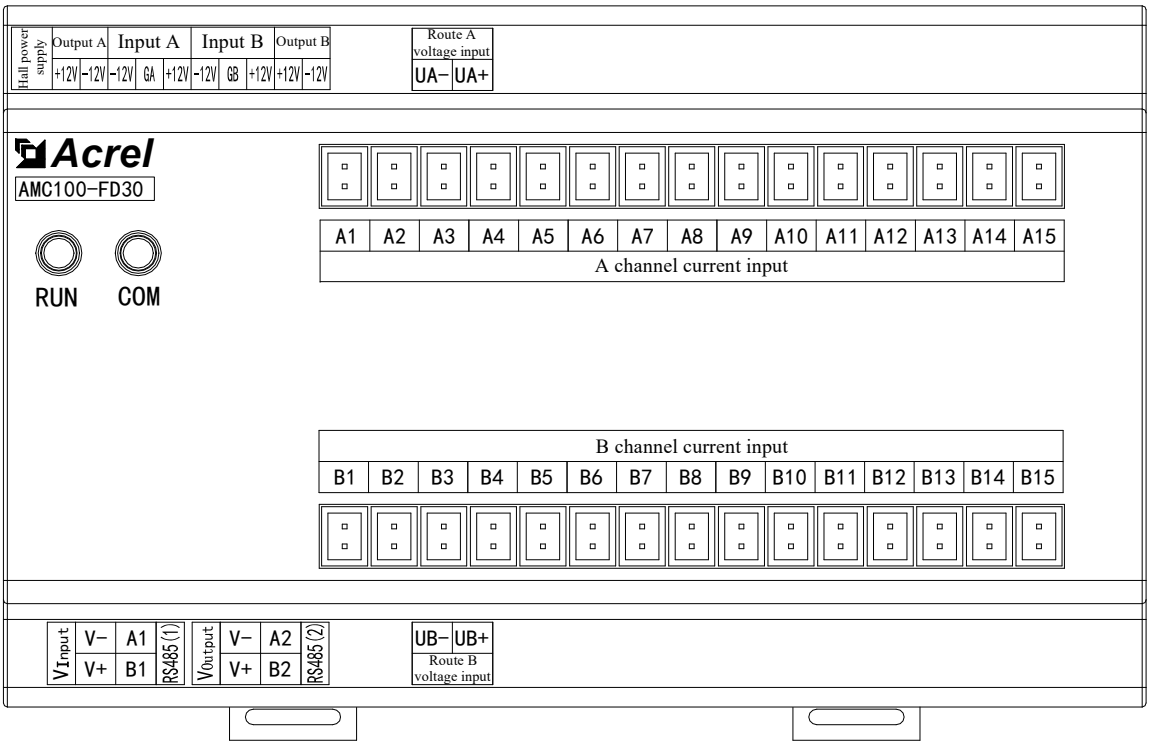

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| | | | |
|---|---|---|---|
| 10 | IA- | | (Hall sensor input) |
| 11 | IB+ | Route B current input | Line B incoming DC current (Hall sensor input) |
| 12 | IB- | | |
| 17 | UB+ | Route B voltage input | Line B incoming DC voltage input |
| 18 | UB- | | |
| 30 | A1 | RS485(1) | The first isolated communication interface, connected to the background system |
| 31 | B1 | | |
| 32 | A2 | RS485(2) | The second channel is connected to the touch screen or RS485 hub |
| 33 | B2 | | |
| | A3 | RS485(3) | The third way is connected to the downstream module |
| | B3 | | |
| | LAN | Ethernet | CE with Ethernet communication |
| 35 | V+ | Power Output (auxiliary power input when use p24) | Power supply to AMC100-FD30/48, AMC100-FDK30/48, AMC100-KA30/48, AMC100-KD30/48, AMC100-FT30/FT48 and touch screen, **this power supply prohibits external external equipment (such as indicator light, buzzer)** |
| 36 | V- | | |
| 50 | DO1 | Switch output | Connect the buzzer |
| 51 | | | |
| 52 | DO2 | | Connection indicator |
| 53 | | | |
| 54 | DO3 | | Reserved 1 |
| 55 | | | |
| 56 | DO4 | | Reserved 2 |
| 57 | | | |
| 61 | Incoming line A | Switch input | OF |
| 62 | | | SD |
| 63 | Lightning protection A | | Determine the SPD status of route A |
| 64 | Reserved | | Reserved1 |
| 65 | Incoming line B | | OF+SD |
| 66 | | | SD |
| 67 | Lightning protection B | | Determine the SPD status of route B |
| 68 | Reserved | | Reserved2 |
| 69 | Common port | | Switch common |
| 70 | | | |
| 81 | VSS | Temperature and humidity | Connect WH-3 temperature and humidity sensor |
| 82 | DATA | | |
| 83 | CLK | | |
| 84 | VDD | | |
| 91 | +12V | A way Hall power supply | Power Output |
| 93 | -12V | | |
| 94 | +12V | B way Hall power supply | |
| 96 | -12V | | |


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5.2 AMC100-FD30/FD48

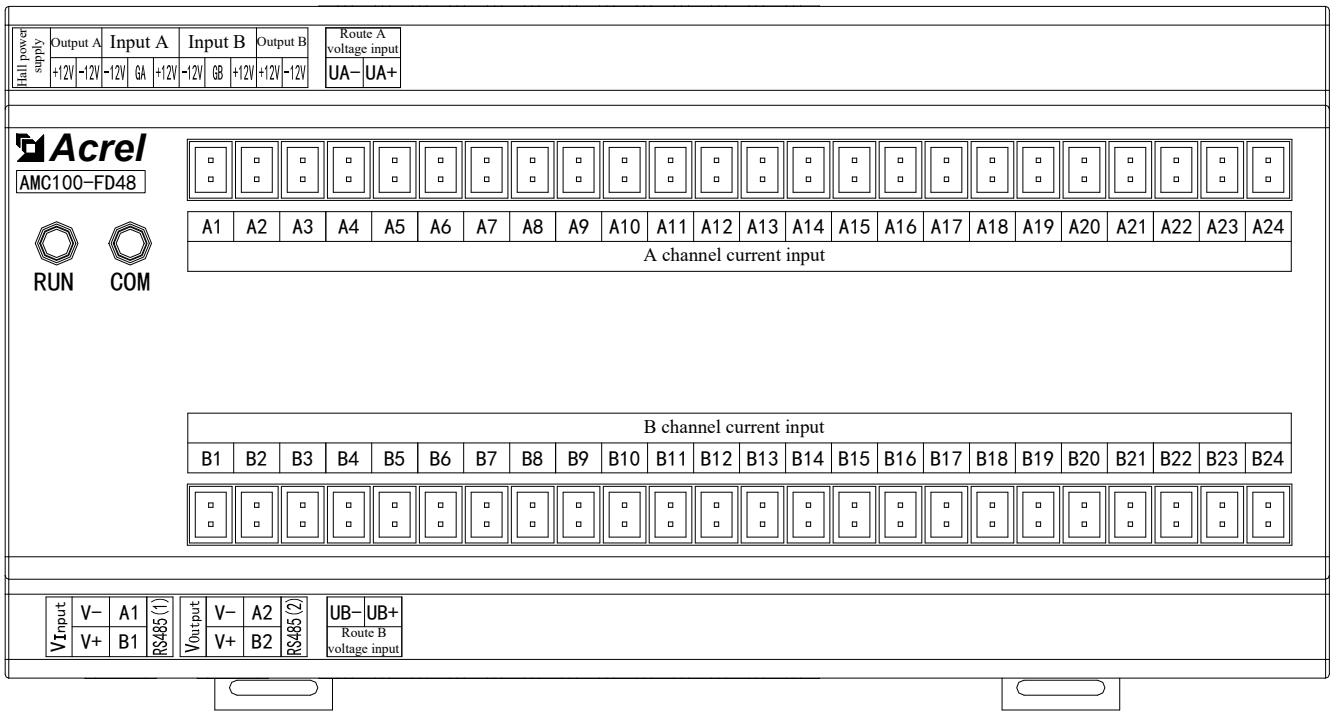
AMC100-FD30




| Definition | State | Remark |
|---|---|---|
| V+ | Auxiliary supply | Powered by AMC100-ZD<br>Or powered by DC12-24V power supply |
| V- | | |
| A1 | RS485 Communication（1） | Connect the pre-module |
| B1 | | |
| A2 | RS485 Communication（2） | Connect the subsequent sub-module |
| B2 | | |
| UA+ | Route A voltage input | Line A DC voltage input |
| UA- | | |
| UB+ | Route B voltage input | Line B DC voltage input |
| UB- | | |
| Input A | A way Hall power supply input | ±12V or ±15V switching power supply input |
| Output A | A way Hall power supply output | ±12V or ±15V power output connected to Hall sensor |
| Input B | B way Hall power supply input | ±12V or ±15V switching power supply input |
| Output B | B way Hall power supply output | ±12V or ±15V power output connected to Hall sensor |
| A1-A15 | A channel current input (15 channels) | A way outgoing DC current input<br>(15 channels Hall sensor) |
| B1-B15 | B channel current input (15 channels) | B way outgoing DC current input<br>(15 channels Hall sensor) |


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AMC100-FD48

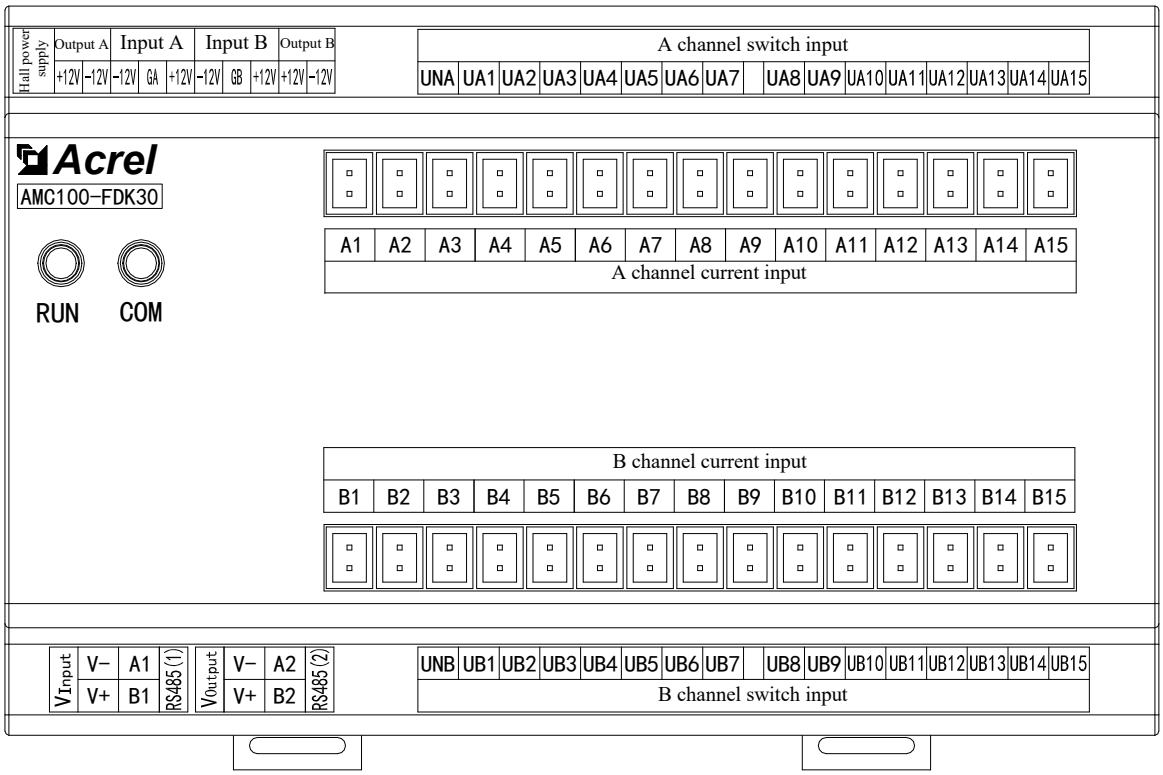



| Definition | State | Remark |
|---|---|---|
| V+ | Auxiliary supply | Powered by AMC100-ZD<br>Or powered by DC12-24V power supply |
| V- | | |
| A1 | RS485（1） | Connect the pre-module |
| B1 | | |
| A2 | RS485（2） | Connect the subsequent sub-module |
| B2 | | |
| UA+ | Route A voltage input | Line A DC voltage input |
| UA- | | |
| UB+ | Route B voltage input | Line B DC voltage input |
| UB- | | |
| Input A | A way Hall power supply input | ±12V or ±15V switching power supply input |
| Output A | A way Hall power supply output | ±12V or ±15V power output connected to Hall sensor |
| Input B | B way Hall power supply input | ±12V or ±15V switching power supply input |
| Output B | B way Hall power supply output | ±12V or ±15V power output connected to Hall sensor |
| A1-A24 | A channel current input (24 channels) | A way outgoing DC current input<br>(24 channels Hall sensor) |
| B1-B24 | B channel current input (24 channels) | B way outgoing DC current input<br>(24 channels Hall sensor) |


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5.3 AMC100-FDK30/FDK48

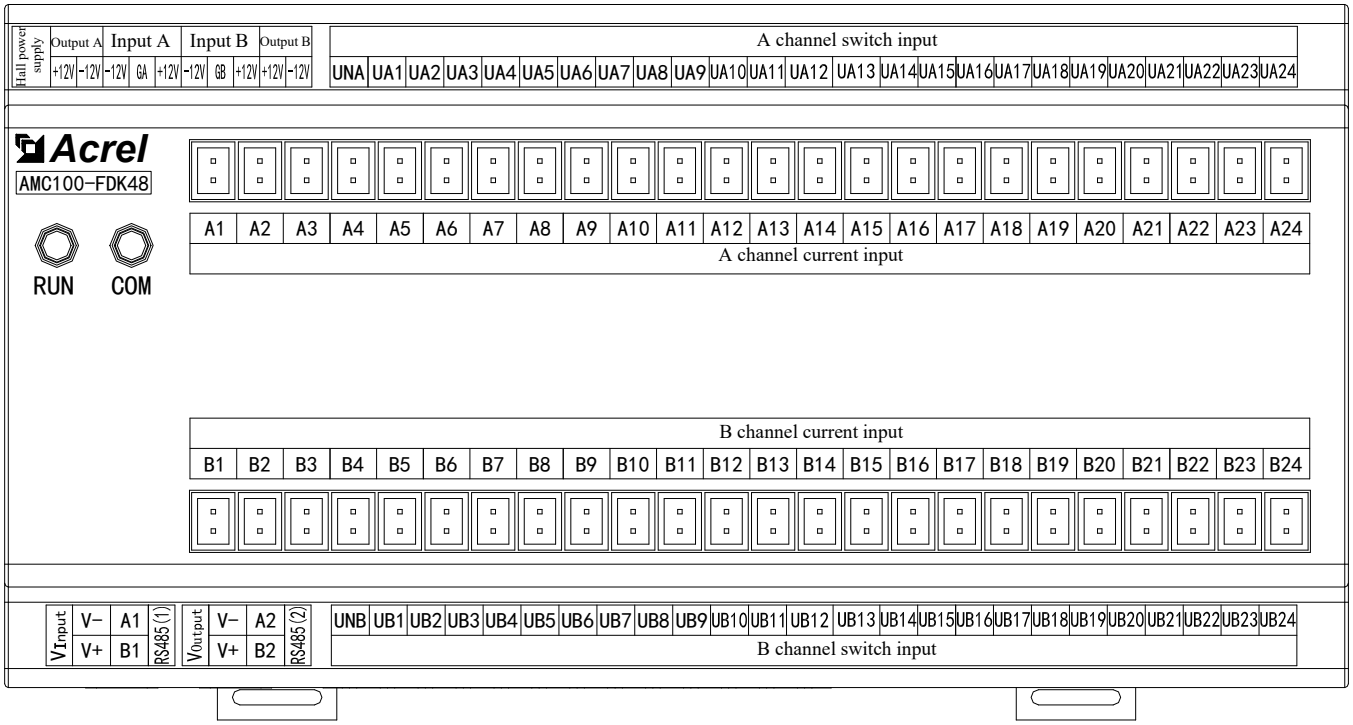
AMC100-FDK30




| Definition | State | Remark |
|---|---|---|
| V+ | Auxiliary supply | Powered by AMC100-ZD<br>Or powered by DC12-24V power supply |
| V- | | |
| A1 | RS485（1） | Connect the pre-module |
| B1 | | |
| A2 | RS485（2） | Connect the subsequent sub-module |
| B2 | | |
| UA+ | Route A voltage input | Line A DC voltage input |
| UA- | | |
| UB+ | Route B voltage input | Line B DC voltage input |
| UB- | | |
| Input A | A way Hall power supply input | ±12V or ±15V switching power supply input |
| Output A | A way Hall power supply output | ±12V or ±15V power output connected to Hall sensor |
| Input B | B way Hall power supply input | ±12V or ±15V switching power supply input |
| Output B | B way Hall power supply output | ±12V or ±15V power output connected to Hall sensor |
| A1-A15 | A channel current input (24 channels) | A way outgoing DC current input<br>(15 channels Hall sensor) |
| B1-B15 | B channel current input (24 channels) | B way outgoing DC current input<br>(15 channels Hall sensor) |
| UA1-UA15 | A channel voltage input | A channel switch input (15 channels) |
| UNA | | |
| UB1-UB15 | B channel voltage input | B channel switch input (15 channels) |
| UNB | | |


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AMC100-FDK48

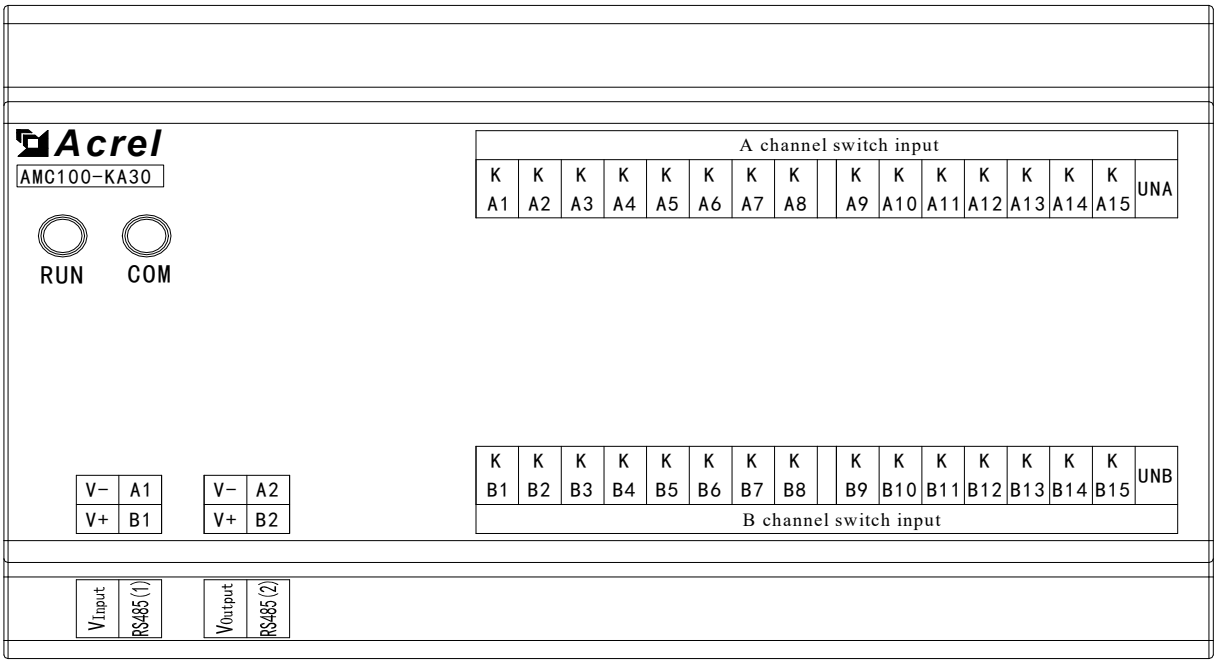



| Definition | State | Remark |
|---|---|---|
| V+ | Auxiliary supply | Powered by AMC100-ZD<br>Or powered by DC12-24V power supply |
| V- | | |
| A1 | RS485（1） | Connect the pre-module |
| B1 | | |
| A2 | RS485（2） | Connect the subsequent sub-module |
| B2 | | |
| UA+ | Route A voltage input | Line A DC voltage input |
| UA- | | |
| UB+ | Route B voltage input | Line B DC voltage input |
| UB- | | |
| Input A | A way Hall power supply input | ±12V or ±15V switching power supply input |
| Output A | A way Hall power supply output | ±12V or ±15V power output connected to Hall sensor |
| Input B | B way Hall power supply input | ±12V or ±15V switching power supply input |
| Output B | B way Hall power supply output | ±12V or ±15V power output connected to Hall sensor |
| A1-A24 | A channel current input | A way outgoing DC current input (24 channels) |
| B1-B24 | B channel current input | B way outgoing DC current input (24 channels) |
| UA1-UA24 | A channel voltage input | A channel switch input (24 channels) |
| UNA | | |
| UB1-UB24 | B channel voltage input | B channel switch input (24 channels) |
| UNB | | |


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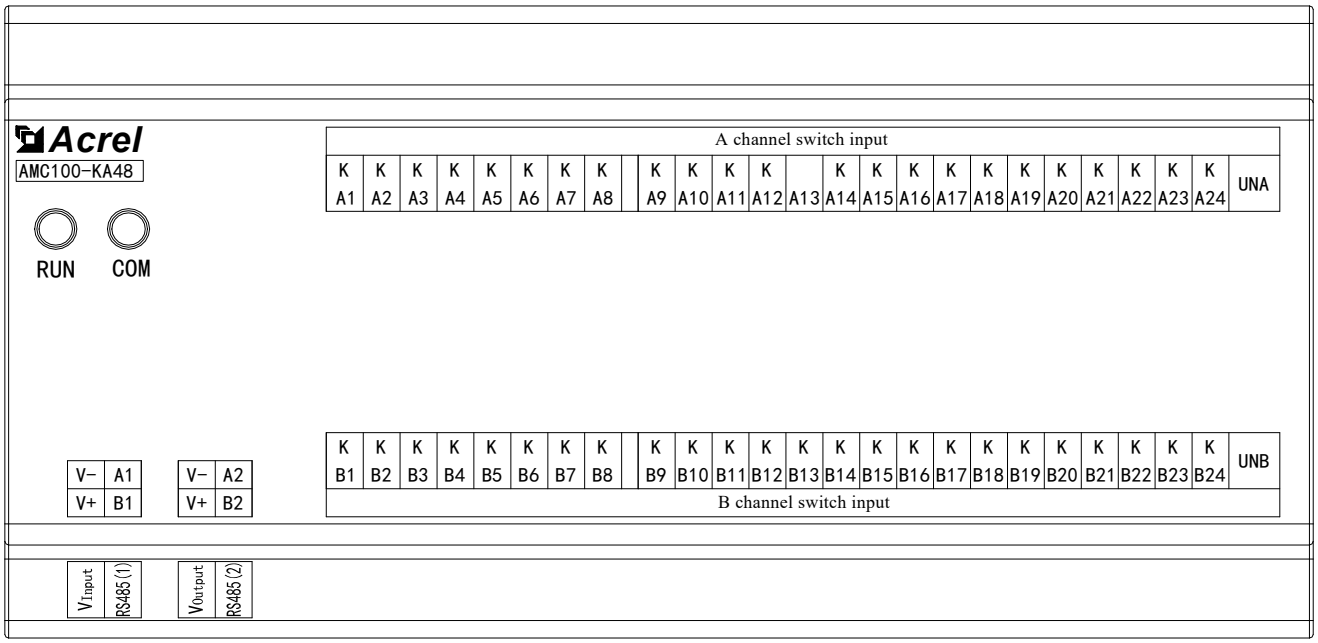
5.4 AMC100-KA30/KA48

AMC100-KA30




| Definition | State | Remark |
|---|---|---|
| V+ | Auxiliary supply | Powered by AMC100-ZD<br>Or powered by DC12-24V power supply |
| V- | | |
| A1 | RS485(1) | Connect the pre-module |
| B1 | | |
| A2 | RS485(2) | Connect the subsequent sub-module |
| B2 | | |
| KA1-KA15 | A channel switch input | A channel active switch input (15 channels) |
| UNA | | |
| KB1-KB15 | B channel switch input | B channel active switch input (15 channels) |
| UNB | | |

AMC100-KA48



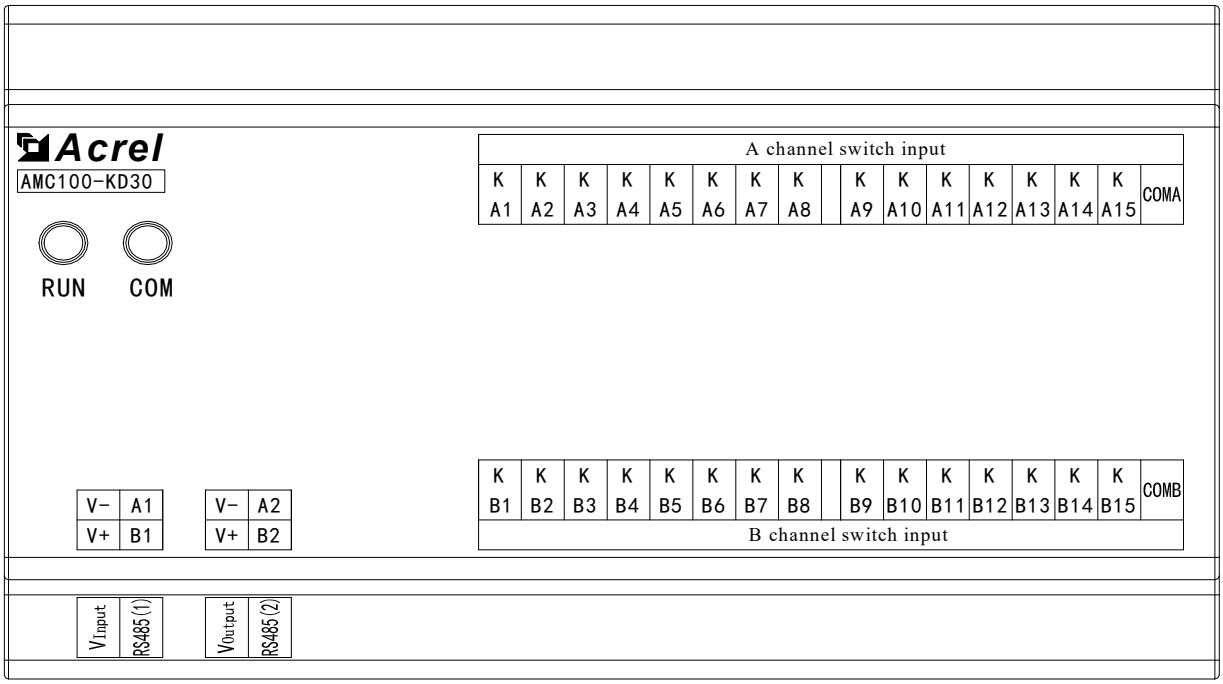


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| Definition | State | Remark |
|---|---|---|
| V+ | Auxiliary supply | Powered by AMC100-ZD<br>Or powered by DC12-24V power supply |
| V- | | |
| A1 | RS485(1) | Connect the pre-module |
| B1 | | |
| A2 | RS485(2) | Connect the subsequent sub-module |
| B2 | | |
| KA1-KA24 | A channel switch input | A channel active switch input (24 channels) |
| UNA | | |
| KB1-KB24 | B channel switch input | B channel active switch input (24 channels) |
| UNB | | |

5.5 AMC100-KD30/KD48

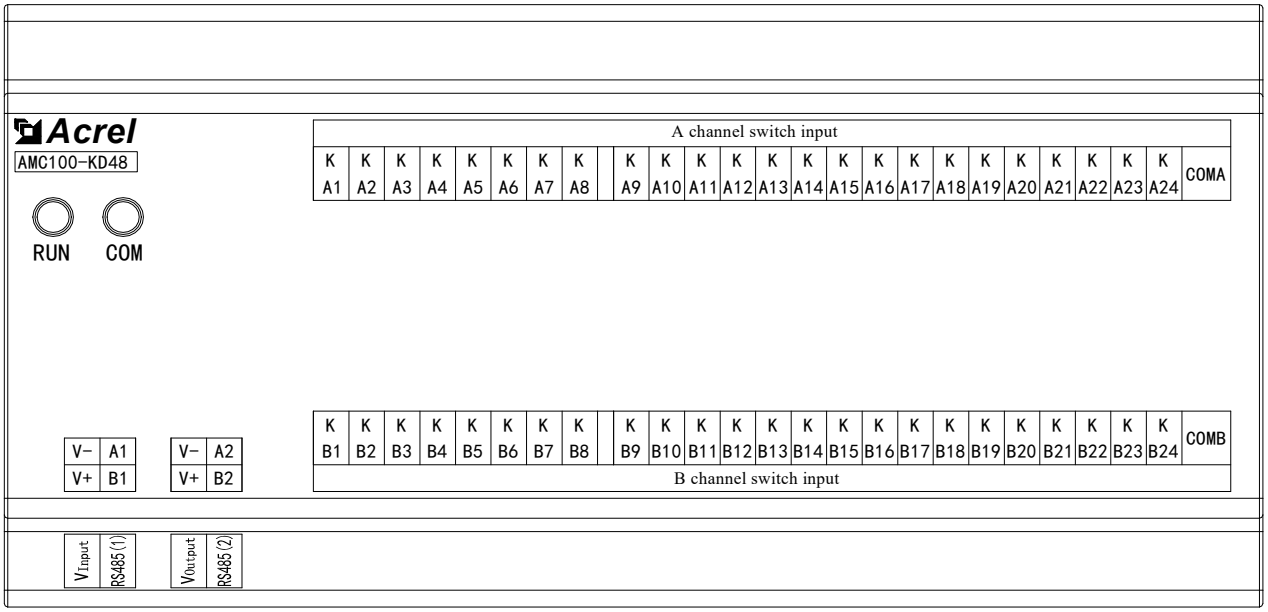
AMC100-KD30




| Definition | State | Remark |
|---|---|---|
| V+ | Auxiliary supply | Powered by AMC100-ZD<br>Or powered by DC12-24V power supply |
| V- | | |
| A1 | RS485(1) | Connect the pre-module |
| B1 | | |
| A2 | RS485(2) | Connect the subsequent sub-module |
| B2 | | |
| KA1-KA15 | A channel switch input | A passive switch input (15 channels) |
| COMA | | |
| KB1-KB15 | B channel switch input | B passive switch input (15 channels) |
| COMB | | |


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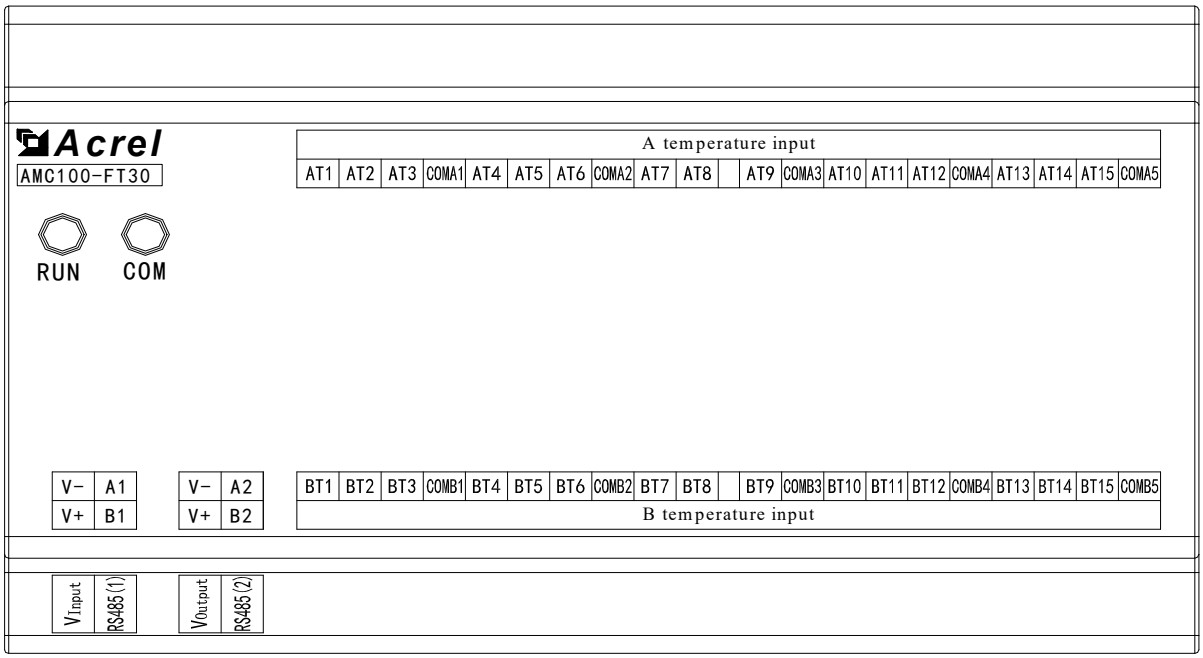
AMC100-KD48




| Definition | State | Remark |
|---|---|---|
| V+ | Auxiliary supply | Powered by AMC100-ZD<br>Or powered by DC12-24V power supply |
| V- | | |
| A1 | RS485(1) | Connect the pre-module |
| B1 | | |
| A2 | RS485(2) | Connect the subsequent sub-module |
| B2 | | |
| KA1-KA24 | A channel switch input | A passive switch input (24 channels) |
| COMA | | |
| KB1-KB24 | B channel switch input | B passive switch input (24 channels) |
| COMB | | |

5.6 AMC100-FT30/FT48

AMC100-FT30

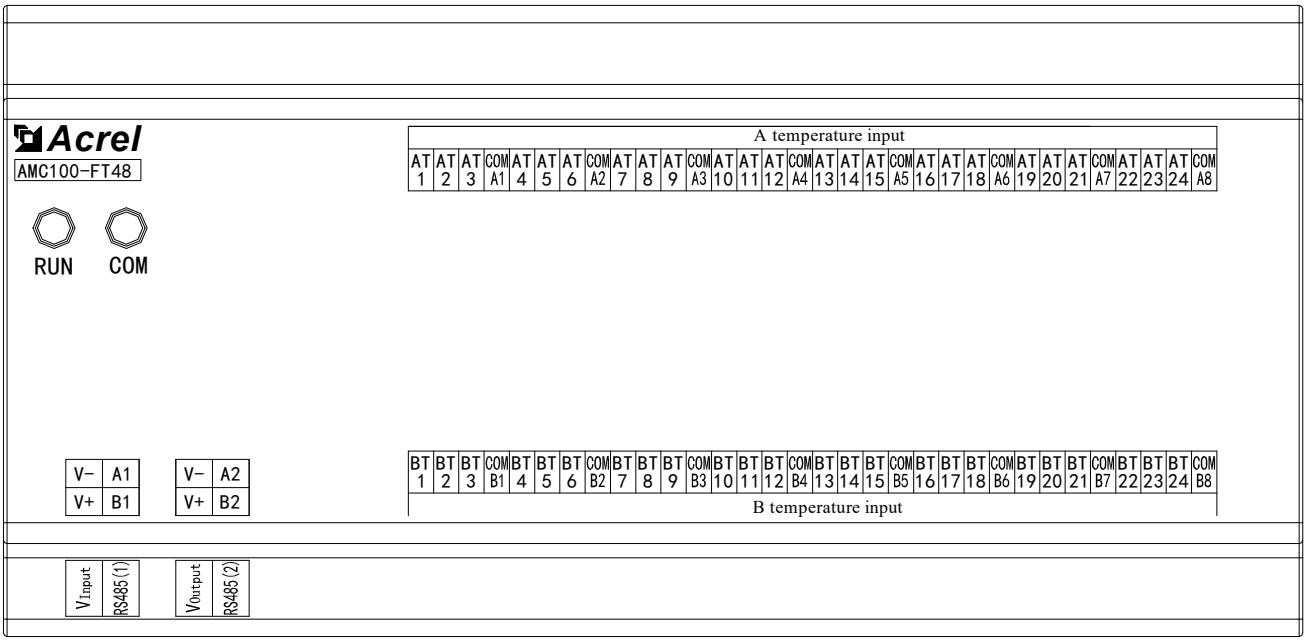




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| Definition | State | Remark |
|---|---|---|
| V+ | Auxiliary power | Powered by AMC100-ZD<br>Or powered by DC12-24V power supply |
| V- | | |
| A1 | RS485(1) | Connect the pre-module |
| B1 | | |
| A2 | RS485(2) | Connect the subsequent sub-module |
| B2 | | |
| AT1-AT15 | A channel temperature input | A temperature input(15 channels) |
| BT1-BT15 | B channel temperature input | A temperature input(15 channels) |

AMC100-FT48




| Definition | State | Remark |
|---|---|---|
| V+ | Auxiliary supply | Powered by AMC100-ZD<br>Or powered by DC12-24V power supply |
| V- | | |
| A1 | RS485(1) | Connect the pre-module |
| B1 | | |
| A2 | RS485(2) | Connect the subsequent sub-module |
| B2 | | |
| AT1-AT24 | A temperature input | A temperature input(24 channels) |
| BT1-BT24 | B temperature input | A temperature input(24 channels) |


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## 6 Communication agreement

This protocol provides the physical connection and communication protocol of AMC100 series DC precision power distribution monitoring device and data terminal equipment for data exchange. The protocol mode is similar to Modbus_RTU communication protocol.

6.1 Sketch of the Protocol

The communication protocol used by AMC100 series DC devices defines in detail the data sequence definition of address code, function code and check code, which are the necessary content of specific data exchange. This protocol uses a master-slave response connection (half-duplex) on a single communication line, which means that signals are transmitted in two opposite directions on a single communication line. First, the host computer's signal is addressed to a unique terminal (slave), and then a reply from the terminal is transmitted in the opposite direction to the host.

This protocol only allows communication between the host (PC, PLC, etc.) and the terminal equipment, and does not allow data exchange between independent terminal equipment, so that the terminal equipment will not occupy the communication line during their initialization, but only to respond to the query signal reaching the local machine.

6.2 Transmission mode

Information is transmitted asynchronously and in bytes. The communication information transmitted between the host and the slave is in 11-bit word format, including 1 start bit, 8 data bits (the smallest significant bit is sent first), parity bit (no parity), and 1 stop bit.

Data frame format

| Address code | Function code | Data area | CRC verification code |
|---|---|---|---|
| 1 byte | 1 byte | n byte | 2 byte |

6.2.1 Address field

The address field is at the beginning of the frame and consists of one byte (8-bit binary code) with decimal values ranging from 0 to 255. In our system, only 1 to 247 is used, and other addresses are reserved. These bits indicate the address of the user-specified terminal device that will receive data from the host connected to it. The address of each terminal device must be unique; only the terminal addressed will respond to queries containing that address. When the terminal sends back a response, the slave address data in the response tells the host which terminal is communicating with it.

6.2.2 Functional domain

The function domain code tells the terminal being addressed what function to perform. The following table lists the functional codes used in this series of devices and their meanings and functions.

| Code | Meaning | Behavior |
|---|---|---|
| 03 | Read data register | Get the current binary value of one or more registers |
| 16 | Preset multiple registers | Set the binary value to a series of multiple registers |

6.2.3 Data field

Data fields contain data required by the terminal to perform specific functions or collected by the terminal in response to queries. The contents of this data may be numeric values, reference addresses, or Settings. For example, the function field code tells the terminal to read a register, while the data field needs to indicate which register to start from and how much data to read. The embedded address and data vary according to the type and content of the slave.

6.2.4 Error checking field

This domain allows hosts and terminals to check for errors during transmission. Sometimes, due to electrical noise and other interference, a set of data may change on the line as it is transmitted from one device to another. Error checking ensures that the host or terminal does not respond to the data that has changed during transmission. This improves the security and efficiency of the system. Error checking uses the 16-bit cyclic redundancy method (CRC16).

6.2.5 Method of error detection

The error check field takes two bytes and contains a 16-bit binary value. The CRC value is calculated by the transmission device and then attached to the data frame. The receiving device recalculates the CRC value when it receives the data and then compares it with the value in the RECEIVED CRC domain. If the two values are not equal, an error occurs.

In CRC operation, a 16-bit register is first preset as all 1, and then 8 bits in each byte of the data frame are continuously evaluated with the current value of the register. Only 8 data bits in each byte participate in CRC generation, and CRC is not affected by the start and end bits as well as the possible parity bits. When CRC is generated, the 8 bits of each byte are xOR with the contents in the register, and then the result is shifted to the lower


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level, the higher level is supplemented by "0", the lowest level (LSB) is moved out and detected, if it is 1, the register is xOR with a preset fixed value (0A001H), if the lowest level is 0, Do nothing.

The above process repeated, until the end of the eight times perform shift operation, when the last one (eighth) after, an 8-bit bytes and register under the current value of exclusive or operation, another eight times for the same shift xor operation, when all the bytes of a data frame processing, generate the final value is CRC value. The process for generating a CRC is:

(1)Presets a 16-bit register as FFFFH (all 1), called CRC register.

The 8 bits of the first byte in the data frame are XOR calculated with the low bytes in the CRC register, and the result is saved back to the CRC register. The CRC register is moved to the right one bit, the highest bit is filled with 0, and the lowest displacement is detected.

If the lowest order is 0, repeat the third step (next shift); If the lowest bit is 1: The CRC register is XOR with a preset fixed value (0A001H).

Repeat steps 3 and 4 until 8 shifts. This completes a full eight bits.

(2) Repeat steps 2 through 5 to process the next 8 bits until all bytes are processed. The final value of the CRC register is the value of CRC.

In addition, there is another method to calculate CRC using a preset table. Its main characteristic is fast calculation, but the table requires large storage space. This method will not be described here, please refer to the relevant information.

6.3 Function Code Introduction

6.3.1 Function code 03H: read register

This feature allows users to obtain data and system parameters collected and recorded by the device. There is no limit to the number of data requested by a host at a time, but the number cannot exceed the defined address range.

The following example is a collection of three basic data (2 bytes for each address in the data frame) from machine read 01: Uab, Ubc, and Uca, where the address of Uab is 03H, Ubc is 04H, and Uca is 05H.

| Host send | | Send Message |
|---|---|---|
| Address code | | 01H |
| Function s code | | 03H |
| Start address | High byte | 00H |
| | Low byte | 03H |
| Number of registers | High byte | 00H |
| | Low byte | 03H |
| CRC Check code | Low byte | F5H |
| | High byte | CBH |

| Return from the machine | | Returned messages |
|---|---|---|
| Address code | | 01H |
| Function code | | 03H |
| Number of bytes | | 06H |
| Register data | High byte | 0EH |
| | Low byte | EEH |
| Register data | High byte | 0EH |
| | Low byte | E8H |
| Register data | Low byte | 0EH |
| | High byte | E9H |
| CRC Check code | High byte | 8FH |
| | Low byte | 7EH |

6.3.2 Function code 10H: write multiple registers

Function code 10H allows the user to change the contents of multiple registers, system parameters in the instrument, switching output state can be written by this function number. A host can write up to 16 (32 bytes) of data at a time.

The following example is a meter with a preset address of 01 that simultaneously outputs the switch DO. The address of the status indicator register for the output of the switch quantity is 0045H, and the first bit corresponds to DO.


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| Host send | | Send Message |
|---|---|---|
| Address code | | 01H |
| Function s code | | 10H |
| Start address | High byte | 00H |
| | Low byte | 45H |
| Number of registers | High byte | 00H |
| | Low byte | 45H |
| Number of bytes | | 02H |
| 0045H Data to be written | High byte | 00H |
| | Low byte | 01H |
| CRC Check code | Low byte | 69H |
| | High byte | 05H |

| Return from the machine | | Returned messages |
|---|---|---|
| Address code | | 01H |
| Function code | | 10H |
| Start address | High byte | 00H |
| | Low byte | 45H |
| Number of registers | High byte | 00H |
| | Low byte | 01H |
| CRC Check code | Low byte | 10H |
| | High byte | 10H |

6.4 Correspondence address

6.4.1 AMC100-ZD

Telemetry, remote control

Parameter area (0x0000 ~ 0x006A)

| Number | Variate | Address | R/W | Length (bytes) | Unit | Date type |
|---|---|---|---|---|---|---|
| 1 | 1 relay output | 0x0000 | R/W | 2 | | u16 |
| 2 | 2 relay output | 0x0001 | R/W | 2 | | u16 |
| 3 | 3 relay output | 0x0002 | R/W | 2 | | u16 |
| 4 | 4 relay output | 0x0003 | R/W | 2 | | u16 |
| 5 | Power reset | 0x0004 | R/W | 2 | | u16 |
| 6 | Address1 | 0x0005 | R/W | 2 | 1-247 | u16 |
| 7 | Baud rate1 | 0x0006 | R/W | 2 | Factory default 57600 0-115200 1-2400 2-4800 3-9600 4-19200 5-38400 6-57600 7-115200 | u16 |
| 8 | Check method1 | 0x0007 | R/W | 2 | 0-none 1-odd 2-even | u16 |
| 9 | Address2 | 0x0008 | R/W | 2 | 1-247 | u16 |
| 10 | Baud rate2 | 0x0009 | R/W | 2 | Factory default 57600 0-115200 1-2400 2-4800 3-9600 4-19200 5-38400 6-57600 7-115200 | u16 |
| 11 | Check method2 | 0x000A | R/W | 2 | 0-none 1-odd 2-even | u16 |
| 12 | Current zero | 0x000B | R/W | 2 | 0x8801 first road | u16 |
| 13 | Rated voltage | 0x000C | R/W | 2 | V | u16 |
| 14 | Rated current1 | 0x000D | R/W | 2 | A | u16 |
| 15 | Rated current2 | 0x000E | R/W | 2 | A | u16 |
| 16 | Voltage transformation ratio | 0x000F | R/W | 2 | | u16 |
| 17 | Incoming wire ratio1① | 0x0010 | R/W | 2 | | u16 |
| 18 | Incoming wire ratio2 | 0x0011 | R/W | 2 | | u16 |
| 19 | Outgoing mode (single and double) | 0x0012 | R/W | 2 | 0-single 1-double | u16 |
| 20 | Zero screen value | 0x0013 | R/W | 2 | 0.1% | u16 |
| 21 | **Humidity alarm threshold** | 0x14-0x15 | R/W | 4 | % | float |
| 22 | **Humidity alarm threshold** | 0x16-0x17 | R/W | 4 | ℃ | float |
| 23 | Slave address 1-20 | 0x18-0x2B | R/W | 40 | Set the address of the slave | u16 |


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| | | | | | | |
|---|---|---|---|---|---|---|
| | | | | | connected later | |
| 24 | Spare | 0x002C | R/W | 2 | | u16 |
| 25 | Spare | 0x002D | R/W | 2 | | u16 |
| 26 | Spare | 0x002E | R/W | 2 | | u16 |
| 27 | Spare | 0x002F | R/W | 2 | | u16 |
| Incoming line alarm on side A | Spare | 0x0030 | R/W | 4 | | float |
| | Spare | 0x0032 | R/W | 4 | | float |
| | Spare | 0x0034 | R/W | 4 | | float |
| | Spare | 0x0036 | R/W | 4 | | float |
| | Spare | 0x0038 | R/W | 4 | | float |
| | Spare | 0x003A | R/W | 4 | | float |
| | Spare | 0x003C | R/W | 4 | | float |
| | Power overload | 0x003E | R/W | 4 | kW | float |
| | Current H2 | 0x0040 | R/W | 4 | A | float |
| | Current H1 | 0x0042 | R/W | 4 | A | float |
| | Current L1 | 0x0044 | R/W | 4 | A | float |
| | Current L2 | 0x0046 | R/W | 4 | A | float |
| | Over-voltage | 0x0048 | R/W | 4 | V | float |
| | Under-voltage | 0x004A | R/W | 4 | V | float |
| | Spare | 0x004C | R/W | 4 | | float |
| Incoming line alarm on side B | Spare | 0x004E | R/W | 4 | | float |
| | Spare | 0x0050 | R/W | 4 | | float |
| | Spare | 0x0052 | R/W | 4 | | float |
| | Spare | 0x0054 | R/W | 4 | | float |
| | Spare | 0x0056 | R/W | 4 | | float |
| | Spare | 0x0058 | R/W | 4 | | float |
| | Spare | 0x005A | R/W | 4 | | float |
| | Power overload | 0x005C | R/W | 4 | kW | float |
| | Current H2 | 0x005E | R/W | 4 | A | float |
| | Current H1 | 0x0060 | R/W | 4 | A | float |
| | Current L1 | 0x0062 | R/W | 4 | A | float |
| | Current L2 | 0x0064 | R/W | 4 | A | float |
| | Over-voltage | 0x0066 | R/W | 4 | V | float |
| | Under-voltage | 0x0068 | R/W | 4 | V | float |
| | Spare | 0x006A | R/W | 4 | | float |

**①Note：AMC100-ZD CT setting is different according to transformer model such as 100A/5V CT set to 100、200A/5V set to 200.**

Electrical parameter data area (0x0100 ~ 0x011E)

| Number | Variate | Address | R/W | Length (bytes) | Unit | Date type |
|---|---|---|---|---|---|---|
| A | Voltage | 0x0100 | R | 4 | V | float |
| | Current | 0x0102 | R | 4 | A | float |
| | Active | 0x0104 | R | 4 | kW | float |
| | EP_imp | 0x0106 | R | 4 | kWh | u32 |
| | EP_exp | 0x0108 | R | 4 | kWh | u32 |
| | EP_T | 0x010A | R | 4 | kWh | u32 |
| | Load percentage | 0x010C | R | 4 | % | float |


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| | | | | | | |
|---|---|---|---|---|---|---|
| B | Voltage | 0x010E | R | 4 | V | float |
| | Current | 0x0110 | R | 4 | A | float |
| | Active | 0x0112 | R | 4 | kW | float |
| | EP_imp | 0x0114 | R | 4 | kWh | u32 |
| | EP_exp | 0x0116 | R | 4 | kWh | u32 |
| | EP_T | 0x0118 | R | 4 | kWh | u32 |
| | Load percentage | 0x011A | R | 4 | % | float |
| | Temperature | 0x011C | R | 4 | % | float |
| | Humidity | 0x011E | R | 4 | % | float |

Alarm parameter reading

| **Variate** | **Address** | **R/W** | **Length (bytes)** | **Date type** | Status bit | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Main module | 0x01B0 | R | 2 | u8 | Bit15 | Bit14 | Bit13 | Bit12 | Bit11 | Bit10 | Bit9 | Bit8 |
| | | | | | **Humidity** | **Temperature** | | | DO4 | DO3 | DO2 | DO1 |
| | | | | | Bit7 | Bit6 | Bit5 | Bit4 | Bit3 | Bit2 | Bit1 | Bit0 |
| | | | | | DI8 | DI7 | DI6 | DI5 | DI4 | DI3 | DI2 | DI1 |
| A side incoming line alarm | 0x01B1 | R | 2 | u8 | Bit15 | Bit14 | Bit13 | Bit12 | Bit11 | Bit10 | Bit9 | Bit8 |
| | | | | | | | | | | | | |
| | | | | | Bit7 | Bit6 | Bit5 | Bit4 | Bit3 | Bit2 | Bit1 | Bit0 |
| | | | | | | Power overload | Current H2 | Current H1 | Current L1 | Current L2 | Over-voltage | Under-voltage |
| B side incoming line alarm | 0x01B2 | R | 2 | u16 | Bit15 | Bit14 | Bit13 | Bit12 | Bit11 | Bit10 | Bit9 | Bit8 |
| | | | | | | | | | | | | |
| | | | | | Bit7 | Bit6 | Bit5 | Bit4 | Bit3 | Bit2 | Bit1 | Bit0 |
| | | | | | | Power overload | Current H2 | Current H1 | Current L1 | Current L2 | Over-voltage | Under-voltage |
| Spare | 0x01B3 | R | 2 | u16 | | | | | | | | |
| Spare | 0x01B4 | R | 2 | u16 | | | | | | | | |
| Spare | 0x01B5 | R | 2 | u16 | | | | | | | | |
| Slave communication alarm | 0x01B6 | R | 2 | u16 | Bit15 | Bit14 | Bit13 | Bit12 | Bit11 | Bit10 | Bit9 | Bit8 |
| | | | | | | | | | | | | |
| | | | | | Bit7 | Bit6 | Bit5 | Bit4 | Bit3 | Bit2 | Bit1 | Bit0 |
| | | | | | | | | | Bit20 | Bit19 | Bit18 | Bit17 |
| | 0x01B7 | | 2 | u16 | Bit15 | Bit14 | Bit13 | Bit12 | Bit11 | Bit10 | Bit9 | Bit8 |
| | | | | | Bit16 | Bit15 | Bit14 | Bit13 | Bit12 | Bit11 | Bit10 | Bit9 |
| | | | | | Bit7 | Bit6 | Bit5 | Bit4 | Bit3 | Bit2 | Bit1 | Bit0 |
| | | | | | Bit8 | Bit7 | Bit6 | Bit5 | Bit4 | Bit3 | Bit2 | Bit1 |

6.4.2 AMC100-FDK48(30)/FD48(30)

Telemetry, remote control

Parameter area (0x0000 ~ 0x007F) **When the module is FDK30/FD30,CT and load values can be set as 1-15 and 25-39 channel parameters.**


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| Address | Variate | Remark | Length (bytes) | Unit | Date type |
|---|---|---|---|---|---|
| 0x0000 | Address | R/W | 2 | 1-254, 0 is the universal address | u16 |
| 0x0001 | Baud rate | R/W | 2 | 0 115200 1-2400 2-4800 3-9600 4-19200 5-38400 6-57600 7-115200 | u16 |
| 0x0002 | Check method | R/W | 2 | 0-None 1-odd 2-even | u16 |
| 0x0003 | Spare | R/W | 2 | | u16 |
| 0x0004 | Power reset | R/W | 2 | 0x6601--0x6630 Clear the power of the 1st--48th channel 0x66F1 Clear the 1-24 channel 0x66F2 Clear the 25--48 channel 0x66FF Clear the 1-48 channel | u16 |
| 0x0005 | Mask value | R/W | 2 | | u16 |
| 0x0006 | Current zero | R/W | 2 | 0x8801--0x8830 Clear the power of the 1st--48th channel 0x88F1 Clear the 1-24 channel 0x88F2 Clear the 25--48 channel 0x88FF Clear the 1-48 channel | u16 |
| 0x0007 | Spare | R/W | 2 | | u16 |
| 0x0008 | Switch A | R/W | 2 | V | u16 |
| 0x0009 | Over current ratio B2 | R/W | 2 | % | u16 |
| 0x000A | Over current ratio B1 | R/W | 2 | % | u16 |
| 0x000B | Low current ratio B1 | R/W | 2 | % | u16 |
| 0x000C | Low current ratio B2 | R/W | 2 | % | u16 |
| 0x000D | PT1 | R/W | 2 | Voltage transformation ratio | u16 |
| 0x000E | CT1① | R/W | 2 | Current transformation ratio of 1 circuit | u16 |
| 0x000F | CT2 | R/W | 2 | Current transformation ratio of 2 circuit | u16 |
| 0x0010 | CT3 | R/W | 2 | Current transformation ratio of 3 circuit | u16 |
| 0x0011 | CT4 | R/W | 2 | Current transformation ratio of 4 circuit | u16 |
| 0x0012 | CT5 | R/W | 2 | Current transformation ratio of 5 circuit | u16 |
| 0x0013 | CT6 | R/W | 2 | Current transformation ratio of 6 circuit | u16 |
| 0x0014 | CT7 | R/W | 2 | Current transformation ratio of 7 circuit | u16 |
| 0x0015 | CT8 | R/W | 2 | Current transformation ratio of 8 circuit | u16 |
| 0x0016 | CT9 | R/W | 2 | Current transformation ratio of 9 circuit | u16 |
| 0x0017 | CT10 | R/W | 2 | Current transformation ratio of 10 circuit | u16 |
| 0x0018 | CT11 | R/W | 2 | Current transformation ratio of 11 circuit | u16 |
| 0x0019 | CT12 | R/W | 2 | Current transformation ratio of 12 circuit | u16 |
| 0x001A | CT13 | R/W | 2 | Current transformation ratio of 13 circuit | u16 |
| 0x001B | CT14 | R/W | 2 | Current transformation ratio of 14 circuit | u16 |
| 0x001C | CT15 | R/W | 2 | Current transformation ratio of 15 circuit | u16 |
| 0x001D | CT16 | R/W | 2 | Current transformation ratio of 16 circuit | u16 |
| 0x001E | CT17 | R/W | 2 | Current transformation ratio of 17 circuit | u16 |
| 0x001F | CT18 | R/W | 2 | Current transformation ratio of 18 circuit | u16 |
| 0x0020 | CT19 | R/W | 2 | Current transformation ratio of 19 circuit | u16 |
| 0x0021 | CT20 | R/W | 2 | Current transformation ratio of 20 circuit | u16 |
| 0x0022 | CT21 | R/W | 2 | Current transformation ratio of 21 circuit | u16 |


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| | | | | | |
|---|---|---|---|---|---|
| 0x0023 | CT22 | R/W | 2 | Current transformation ratio of 22 circuit | u16 |
| 0x0024 | CT23 | R/W | 2 | Current transformation ratio of 23 circuit | u16 |
| 0x0025 | CT24 | R/W | 2 | Current transformation ratio of 24 circuit | u16 |
| 0x0026 | ALLCT1 | R/W | 2 | The default value is 1, when it is greater than 1, all CT values become ALLCT values, when it is 0, all CT values become 1, and ALLCT becomes 1 again after updating, without affecting other CT values | u16 |
| 0x0027 | Rated load value of 1 circuit | R/W | 2 | If the Load parameter is set to 0, the alarm of this road will be turned off, and the load percentage of this road will be 0 the load percentage=current I /rated load value | u16 |
| 0x0028 | Rated load value of 2 circuit | R/W | 2 | A | u16 |
| 0x0029 | Rated load value of 3 circuit | R/W | 2 | A | u16 |
| 0x002A | Rated load value of 4 circuit | R/W | 2 | A | u16 |
| 0x002B | Rated load value of 5 circuit | R/W | 2 | A | u16 |
| 0x002C | Rated load value of 6 circuit | R/W | 2 | A | u16 |
| 0x002D | Rated load value of 7 circuit | R/W | 2 | A | u16 |
| 0x002E | Rated load value of 8 circuit | R/W | 2 | A | u16 |
| 0x002F | Rated load value of 9 circuit | R/W | 2 | A | u16 |
| 0x0030 | Rated load value of 10 circuit | R/W | 2 | A | u16 |
| 0x0031 | Rated load value of 11 circuit | R/W | 2 | A | u16 |
| 0x0032 | Rated load value of 12 circuit | R/W | 2 | A | u16 |
| 0x0033 | Rated load value of 13 circuit | R/W | 2 | A | u16 |
| 0x0034 | Rated load value of 14 circuit | R/W | 2 | A | u16 |
| 0x0035 | Rated load value of 15 circuit | R/W | 2 | A | u16 |
| 0x0036 | Rated load value of 16 circuit | R/W | 2 | A | u16 |
| 0x0037 | Rated load value of 17 circuit | R/W | 2 | A | u16 |
| 0x0038 | Rated load value of 18 circuit | R/W | 2 | A | u16 |
| 0x0039 | Rated load value of 19 circuit | R/W | 2 | A | u16 |
| 0x003A | Rated load value of 20 circuit | R/W | 2 | A | u16 |
| 0x003B | Rated load value of 21 circuit | R/W | 2 | A | u16 |
| 0x003C | Rated load value of 22 circuit | R/W | 2 | A | u16 |
| 0x003D | Rated load value of 23 | R/W | 2 | A | u16 |


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| | | | | | |
|---|---|---|---|---|---|
| | circuit | | | | |
| 0x003E | Rated load value of 24 circuit | R/W | 2 | | u16 |
| 0x003F | ALLLoadV1 | R/W | 2 | | u16 |
| 0x0040 | Spare | R/W | 2 | | u16 |
| 0x0041 | Spare | R/W | 2 | | u16 |
| 0x0042 | Spare | R/W | 2 | | u16 |
| 0x0043 | Spare | R/W | 2 | | u16 |
| 0x0044 | Spare | R/W | 2 | | u16 |
| 0x0045 | Spare | R/W | 2 | | u16 |
| 0x0046 | Spare | R/W | 2 | | u16 |
| 0x0047 | Spare | R/W | 2 | | u16 |
| 0x0048 | Switch B | R/W | 2 | V | u16 |
| 0x0049 | Over current ratio B2 | R/W | 2 | % | u16 |
| 0x004A | Over current ratio B1 | R/W | 2 | % | u16 |
| 0x004B | Low current ratio B1 | R/W | 2 | % | u16 |
| 0x004C | Low current ratio B2 | R/W | 2 | % | u16 |
| 0x004D | PT2 | R/W | 2 | Voltage transformation ratio | u16 |
| 0x004E | CT25 | R/W | 2 | Current transformation ratio of 25 circuit | u16 |
| 0x004F | CT26 | R/W | 2 | Current transformation ratio of 26 circuit | u16 |
| 0x0050 | CT27 | R/W | 2 | Current transformation ratio of 27 circuit | u16 |
| 0x0051 | CT28 | R/W | 2 | Current transformation ratio of 28 circuit | u16 |
| 0x0052 | CT29 | R/W | 2 | Current transformation ratio of 29 circuit | u16 |
| 0x0053 | CT30 | R/W | 2 | Current transformation ratio of 30 circuit | u16 |
| 0x0054 | CT31 | R/W | 2 | Current transformation ratio of 31 circuit | u16 |
| 0x0055 | CT32 | R/W | 2 | Current transformation ratio of 32 circuit | u16 |
| 0x0056 | CT33 | R/W | 2 | Current transformation ratio of 33 circuit | u16 |
| 0x0057 | CT34 | R/W | 2 | Current transformation ratio of 34 circuit | u16 |
| 0x0058 | CT35 | R/W | 2 | Current transformation ratio of 35 circuit | u16 |
| 0x0059 | CT36 | R/W | 2 | Current transformation ratio of 36 circuit | u16 |
| 0x005A | CT37 | R/W | 2 | Current transformation ratio of 37 circuit | u16 |
| 0x005B | CT38 | R/W | 2 | Current transformation ratio of 38 circuit | u16 |
| 0x005C | CT39 | R/W | 2 | Current transformation ratio of 39 circuit | u16 |
| 0x005D | CT40 | R/W | 2 | Current transformation ratio of 40 circuit | u16 |
| 0x005E | CT41 | R/W | 2 | Current transformation ratio of 41 circuit | u16 |
| 0x005F | CT42 | R/W | 2 | Current transformation ratio of 42 circuit | u16 |
| 0x0060 | CT43 | R/W | 2 | Current transformation ratio of 43 circuit | u16 |
| 0x0061 | CT44 | R/W | 2 | Current transformation ratio of 44 circuit | u16 |
| 0x0062 | CT45 | R/W | 2 | Current transformation ratio of 45 circuit | u16 |
| 0x0063 | CT46 | R/W | 2 | Current transformation ratio of 46 circuit | u16 |
| 0x0064 | CT47 | R/W | 2 | Current transformation ratio of 47 circuit | u16 |


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| | | | | | |
|---|---|---|---|---|---|
| 0x0065 | CT48 | R/W | 2 | Current transformation ratio of 48 circuit | u16 |
| 0x0066 | ALLCT2 | R/W | 2 | 25-48 CT sets | u16 |
| 0x0067 | Rated load value of 25 circuit | R/W | 2 | A | u16 |
| 0x0068 | Rated load value of 26 circuit | R/W | 2 | A | u16 |
| 0x0069 | Rated load value of 27 circuit | R/W | 2 | A | u16 |
| 0x006A | Rated load value of 28 circuit | R/W | 2 | A | u16 |
| 0x006B | Rated load value of 29 circuit | R/W | 2 | A | u16 |
| 0x006C | Rated load value of 30 circuit | R/W | 2 | A | u16 |
| 0x006D | Rated load value of 31 circuit | R/W | 2 | A | u16 |
| 0x006E | Rated load value of 32 circuit | R/W | 2 | A | u16 |
| 0x006F | Rated load value of 33 circuit | R/W | 2 | A | u16 |
| 0x0070 | Rated load value of 34 circuit | R/W | 2 | A | u16 |
| 0x0071 | Rated load value of 35 circuit | R/W | 2 | A | u16 |
| 0x0072 | Rated load value of 36 circuit | R/W | 2 | A | u16 |
| 0x0073 | Rated load value of 37 circuit | R/W | 2 | A | u16 |
| 0x0074 | Rated load value of 38 circuit | R/W | 2 | A | u16 |
| 0x0075 | Rated load value of 39 circuit | R/W | 2 | A | u16 |
| 0x0076 | Rated load value of 40 circuit | R/W | 2 | A | u16 |
| 0x0077 | Rated load value of 41 circuit | R/W | 2 | A | u16 |
| 0x0078 | Rated load value of 42 circuit | R/W | 2 | A | u16 |
| 0x0079 | Rated load value of 43 circuit | R/W | 2 | A | u16 |
| 0x007A | Rated load value of 44 circuit | R/W | 2 | A | u16 |
| 0x007B | Rated load value of 45 circuit | R/W | 2 | A | u16 |
| 0x007C | Rated load value of 46 circuit | R/W | 2 | A | u16 |
| 0x007D | Rated load value of 47 circuit | R/W | 2 | A | u16 |
| 0x007E | Rated load value of 48 circuit | R/W | 2 | A | u16 |
| 0x007F | ALLLoadV2 | R/W | 2 | A | u16 |

**①Note：AMC100-ZD CT setting is different according to transformer model such as 100A/5V CT set to 100、200A/5V set to 200.**

Electrical parameter data area (0x0090 ~ 0x03EF) **When the module is FDK30/FD30,the valid data are 1-25 and 25-39 channels.When the module address is set to 20-29,the valid data is 1-30 channels.**


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| Number | Number | Variate | Remark | Length (bytes) | Unit | Date type |
|---|---|---|---|---|---|---|
| 1 | 0x0090 | U(Voltage) | R | 4 | V | float |
| | 0x0091 | | | | | |
| | 0x0092 | I(Current) | R | 4 | A | |
| | 0x0093 | | | | | |
| | 0x0094 | P(active power) | R | 4 | kW | |
| | 0x0095 | | | | | |
| | 0x0096 | | | | | |
| | 0x0097 | | | | | |
| | 0x0098 | | | | | |
| | 0x0099 | | | | | |
| | 0x009A | | | | | |
| | 0x009B | | | | | |
| | 0x009C | EP(active energy) | R | 4 | 0.01kWh | u32 |
| | 0x009D | | | | | |
| | 0x009E | | | | | |
| | 0x009F | | | | | |
| | 0x00A0 | | | | | |
| | 0x00A1 | Load(Load percentage) | R load ratio=I/load value without decimal point | 2 | % | u16 |
| 2 | 0x00A2 | U(Voltage) | R | 4 | V | float |
| | 0x00A3 | | | | | |
| | 0x00A4 | I(Current) | R | 4 | A | |
| | 0x00A5 | | | | | |
| | 0x00A6 | P(active power) | R | 4 | kW | |
| | 0x00A7 | | | | | |
| | 0x00A8 | | | | | |
| | 0x00A9 | | | | | |
| | 0x00AA | | | | | |
| | 0x00AB | | | | | |
| | 0x00AC | | | | | |
| | 0x00AD | | | | | |
| | 0x00AE | EP(active energy) | R | 4 | 0.01kWh | u32 |
| | 0x00AF | | | | | |
| | 0x00B0 | | | | | |
| | 0x00B1 | | | | | |
| | 0x00B2 | | | | | |
| | 0x00B3 | Load(Load percentage) | R load ratio=I/load value without decimal point | 2 | % | u16 |
| 3 | 0x00B4 | U(Voltage) | R | 4 | V | float |
| | 0x00B5 | | | | | |
| | 0x00B6 | I(Current) | R | 4 | A | |
| | 0x00B7 | | | | | |
| | 0x00B8 | P(active power) | R | 4 | kW | |
| | 0x00B9 | | | | | |
| | 0x00BA | | | | | |
| | 0x00BB | | | | | |
| | 0x00BC | | | | | |
| | 0x00BD | | | | | |
| | 0x00BE | | | | | |
| | 0x00BF | | | | | |


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| | | | | | | |
|---|---|---|---|---|---|---|
| | 0x00C0 | EP(active energy) | R | 4 | 0.01kWh | u32 |
| | 0x00C1 | | | | | |
| | 0x00C2 | | | | | |
| | 0x00C3 | | | | | |
| | 0x00C4 | | | | | |
| | 0x00C5 | Load(Load percentage) | R load ratio=I/load value without decimal point | 2 | % | u16 |
| 4 | 0x00C6 | U(Voltage) | R | 4 | V | float |
| | 0x00C7 | | | | | |
| | 0x00C8 | I(Current) | R | 4 | A | |
| | 0x00C9 | | | | | |
| | 0x00CA | P(active power) | R | 4 | kW | |
| | 0x00CB | | | | | |
| | 0x00CC | | | | | |
| | 0x00CD | | | | | |
| | 0x00CE | | | | | |
| | 0x00CF | | | | | |
| | 0x00D0 | | | | | |
| | 0x00D1 | | | | | |
| | 0x00D2 | EP(active energy) | R | 4 | 0.01kWh | u32 |
| | 0x00D3 | | | | | |
| | 0x00D4 | | | | | |
| | 0x00D5 | | | | | |
| | 0x00D6 | | | | | |
| | 0x00D7 | Load(Load percentage) | R load ratio=I/load value without decimal point | 2 | % | u16 |
| 5 | 0x00D8 | U(Voltage) | R | 4 | V | float |
| | 0x00D9 | | | | | |
| | 0x00DA | I(Current) | R | 4 | A | |
| | 0x00DB | | | | | |
| | 0x00DC | P(active power) | R | 4 | kW | |
| | 0x00DD | | | | | |
| | 0x00DE | | | | | |
| | 0x00DF | | | | | |
| | 0x00E0 | | | | | |
| | 0x00E1 | | | | | |
| | 0x00E2 | | | | | |
| | 0x00E3 | | | | | |
| | 0x00E4 | EP(active energy) | R | 4 | 0.01kWh | u32 |
| | 0x00E5 | | | | | |
| | 0x00E6 | | | | | |
| | 0x00E7 | | | | | |
| | 0x00E8 | | | | | |
| | 0x00E9 | Load(Load percentage) | R load ratio=I/load value without decimal point | 2 | % | u16 |
| 6 | 0x00EA | U(Voltage) | R | 4 | V | float |
| | 0x00EB | | | | | |
| | 0x00EC | I(Current) | R | 4 | A | |
| | 0x00ED | | | | | |
| | 0x00EE | P(active power) | R | 4 | kW | |
| | 0x00EF | | | | | |


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| | | | | | | |
|---|---|---|---|---|---|---|
| | 0x00F0 | | | | | |
| | 0x00F1 | | | | | |
| | 0x00F2 | | | | | |
| | 0x00F3 | | | | | |
| | 0x00F4 | | | | | |
| | 0x00F5 | | | | | |
| | 0x00F6 | EP(active energy) | R | 4 | 0.01kWh | u32 |
| | 0x00F7 | | | | | |
| | 0x00F8 | | | | | |
| | 0x00F9 | | | | | |
| | 0x00FA | | | | | |
| | 0x00FB | Load(Load percentage) | R load ratio=I/load value without decimal point | 2 | % | u16 |
| 7 | 0x00FC | U(Voltage) | R | 4 | V | float |
| | 0x00FD | | | | | |
| | 0x00FE | I(Current) | R | 4 | A | |
| | 0x00FF | | | | | |
| | 0x0100 | P(active power) | R | 4 | kW | |
| | 0x0101 | | | | | |
| | 0x0102 | | | | | |
| | 0x0103 | | | | | |
| | 0x0104 | | | | | |
| | 0x0105 | | | | | |
| | 0x0106 | | | | | |
| | 0x0107 | | | | | |
| | 0x0108 | EP(active energy) | R | 4 | 0.01kWh | u32 |
| | 0x0109 | | | | | |
| | 0x010A | | | | | |
| | 0x010B | | | | | |
| | 0x010C | | | | | |
| | 0x010D | Load(Load percentage) | R load ratio=I/load value without decimal point | 2 | % | u16 |
| 8 | 0x010E | U(Voltage) | R | 4 | V | float |
| | 0x010F | | | | | |
| | 0x0110 | I(Current) | R | 4 | A | |
| | 0x0111 | | | | | |
| | 0x0112 | P(active power) | R | 4 | kW | |
| | 0x0113 | | | | | |
| | 0x0114 | | | | | |
| | 0x0115 | | | | | |
| | 0x0116 | | | | | |
| | 0x0117 | | | | | |
| | 0x0118 | | | | | |
| | 0x0119 | | | | | |
| | 0x011A | EP(active energy) | R | 4 | 0.01kWh | u32 |
| | 0x011B | | | | | |
| | 0x011C | | | | | |
| | 0x011D | | | | | |
| | 0x011E | | | | | |
| | 0x011F | Load(Load percentage) | R load ratio=I/load value without decimal point | 2 | % | u16 |


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| | | | | | | |
|---|---|---|---|---|---|---|
| 9 | 0x0120 | U(Voltage) | R | 4 | V | float |
| | 0x0121 | | | | | |
| | 0x0122 | I(Current) | R | 4 | A | |
| | 0x0123 | | | | | |
| | 0x0124 | P(active power) | R | 4 | kW | |
| | 0x0125 | | | | | |
| | 0x0126 | | | | | |
| | 0x0127 | | | | | |
| | 0x0128 | | | | | |
| | 0x0129 | | | | | |
| | 0x012A | | | | | |
| | 0x012B | | | | | |
| | 0x012C | EP(active energy) | R | 4 | 0.01kWh | u32 |
| | 0x012D | | | | | |
| | 0x012E | | | | | |
| | 0x012F | | | | | |
| | 0x0130 | | | | | |
| | 0x0131 | Load(Load percentage) | R load ratio=I/load value without decimal point | 2 | % | u16 |
| 10 | 0x0132 | U(Voltage) | R | 4 | V | float |
| | 0x0133 | | | | | |
| | 0x0134 | I(Current) | R | 4 | A | |
| | 0x0135 | | | | | |
| | 0x0136 | P(active power) | R | 4 | kW | |
| | 0x0137 | | | | | |
| | 0x0138 | | | | | |
| | 0x0139 | | | | | |
| | 0x013A | | | | | |
| | 0x013B | | | | | |
| | 0x013C | | | | | |
| | 0x013D | | | | | |
| | 0x013E | EP(active energy) | R | 4 | 0.01kWh | u32 |
| | 0x013F | | | | | |
| | 0x0140 | | | | | |
| | 0x0141 | | | | | |
| | 0x0142 | | | | | |
| | 0x0143 | Load(Load percentage) | R load ratio=I/load value without decimal point | 2 | % | u16 |
| 11 | 0x0144 | U(Voltage) | R | 4 | V | float |
| | 0x0145 | | | | | |
| | 0x0146 | I(Current) | R | 4 | A | |
| | 0x0147 | | | | | |
| | 0x0148 | P(active power) | R | 4 | kW | |
| | 0x0149 | | | | | |
| | 0x014A | | | | | |
| | 0x014B | | | | | |
| | 0x014C | | | | | |
| | 0x014D | | | | | |
| | 0x014E | | | | | |
| | 0x014F | | | | | |


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| | | | | | | |
|---|---|---|---|---|---|---|
| | 0x0150 | EP(active energy) | R | 4 | 0.01kWh | u32 |
| | 0x0151 | | | | | |
| | 0x0152 | | | | | |
| | 0x0153 | | | | | |
| | 0x0154 | | | | | |
| | 0x0155 | Load(Load percentage) | R load ratio=I/load value without decimal point | 2 | % | u16 |
| 12 | 0x0156 | U(Voltage) | R | 4 | V | float |
| | 0x0157 | | | | | |
| | 0x0158 | I(Current) | R | 4 | A | |
| | 0x0159 | | | | | |
| | 0x015A | P(active power) | R | 4 | kW | |
| | 0x015B | | | | | |
| | 0x015C | | | | | |
| | 0x015D | | | | | |
| | 0x015E | | | | | |
| | 0x015F | | | | | |
| | 0x0160 | | | | | |
| | 0x0161 | | | | | |
| | 0x0162 | EP(active energy) | R | 4 | 0.01kWh | u32 |
| | 0x0163 | | | | | |
| | 0x0164 | | | | | |
| | 0x0165 | | | | | |
| | 0x0166 | | | | | |
| | 0x0167 | Load(Load percentage) | R load ratio=I/load value without decimal point | 2 | % | u16 |
| 13 | 0x0168 | U(Voltage) | R | 4 | V | float |
| | 0x0169 | | | | | |
| | 0x016A | I(Current) | R | 4 | A | |
| | 0x016B | | | | | |
| | 0x016C | P(active power) | R | 4 | kW | |
| | 0x016D | | | | | |
| | 0x016E | | | | | |
| | 0x016F | | | | | |
| | 0x0170 | | | | | |
| | 0x0171 | | | | | |
| | 0x0172 | | | | | |
| | 0x0173 | | | | | |
| | 0x0174 | EP(active energy) | R | 4 | 0.01kWh | u32 |
| | 0x0175 | | | | | |
| | 0x0176 | | | | | |
| | 0x0177 | | | | | |
| | 0x0178 | | | | | |
| | 0x0179 | Load(Load percentage) | R load ratio=I/load value without decimal point | 2 | % | u16 |
| 14 | 0x017A | U(Voltage) | R | 4 | V | float |
| | 0x017B | | | | | |
| | 0x017C | I(Current) | R | 4 | A | |
| | 0x017D | | | | | |
| | 0x017E | P(active power) | R | 4 | kW | |
| | 0x017F | | | | | |


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| | | | | | | |
|---|---|---|---|---|---|---|
| | 0x0180 | | | | | |
| | 0x0181 | | | | | |
| | 0x0182 | | | | | |
| | 0x0183 | | | | | |
| | 0x0184 | | | | | |
| | 0x0185 | | | | | |
| | 0x0186 | EP(active energy) | R | 4 | 0.01kWh | u32 |
| | 0x0187 | | | | | |
| | 0x0188 | | | | | |
| | 0x0189 | | | | | |
| | 0x018A | | | | | |
| | 0x018B | Load(Load percentage) | R load ratio=I/load value without decimal point | 2 | % | u16 |
| 15 | 0x018C | U(Voltage) | R | 4 | V | float |
| | 0x018D | | | | | |
| | 0x018E | I(Current) | R | 4 | A | |
| | 0x018F | | | | | |
| | 0x0190 | P(active power) | R | 4 | kW | |
| | 0x0191 | | | | | |
| | 0x0192 | | | | | |
| | 0x0193 | | | | | |
| | 0x0194 | | | | | |
| | 0x0195 | | | | | |
| | 0x0196 | | | | | |
| | 0x0197 | | | | | |
| | 0x0198 | EP(active energy) | R | 4 | 0.01kWh | u32 |
| | 0x0199 | | | | | |
| | 0x019A | | | | | |
| | 0x019B | | | | | |
| | 0x019C | | | | | |
| | 0x019D | Load(Load percentage) | R load ratio=I/load value without decimal point | 2 | % | u16 |
| 16 | 0x019E | U(Voltage) | R | 4 | V | float |
| | 0x019F | | | | | |
| | 0x01A0 | I(Current) | R | 4 | A | |
| | 0x01A1 | | | | | |
| | 0x01A2 | P(active power) | R | 4 | kW | |
| | 0x01A3 | | | | | |
| | 0x01A4 | | | | | |
| | 0x01A5 | | | | | |
| | 0x01A6 | | | | | |
| | 0x01A7 | | | | | |
| | 0x01A8 | | | | | |
| | 0x01A9 | | | | | |
| | 0x01AA | EP(active energy) | R | 4 | 0.01kWh | u32 |
| | 0x01AB | | | | | |
| | 0x01AC | | | | | |
| | 0x01AD | | | | | |
| | 0x01AE | | | | | |
| | 0x01AF | Load(Load percentage) | R load ratio=I/load value without decimal point | 2 | % | u16 |


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| | | | | | | |
|---|---|---|---|---|---|---|
| 17 | 0x01B0 | U(Voltage) | R | 4 | V | float |
| | 0x01B1 | | | | | |
| | 0x01B2 | I(Current) | R | 4 | A | |
| | 0x01B3 | | | | | |
| | 0x01B4 | P(active power) | R | 4 | kW | |
| | 0x01B5 | | | | | |
| | 0x01B6 | | | | | |
| | 0x01B7 | | | | | |
| | 0x01B8 | | | | | |
| | 0x01B9 | | | | | |
| | 0x01BA | | | | | |
| | 0x01BB | | | | | |
| | 0x01BC | EP(active energy) | R | 4 | 0.01kWh | u32 |
| | 0x01BD | | | | | |
| | 0x01BE | | | | | |
| | 0x01BF | | | | | |
| | 0x01C0 | | | | | |
| | 0x01C1 | Load(Load percentage) | R load ratio=I/load value without decimal point | 2 | % | u16 |
| 18 | 0x01C2 | U(Voltage) | R | 4 | V | float |
| | 0x01C3 | | | | | |
| | 0x01C4 | I(Current) | R | 4 | A | |
| | 0x01C5 | | | | | |
| | 0x01C6 | P(active power) | R | 4 | kW | |
| | 0x01C7 | | | | | |
| | 0x01C8 | | | | | |
| | 0x01C9 | | | | | |
| | 0x01CA | | | | | |
| | 0x01CB | | | | | |
| | 0x01CC | | | | | |
| | 0x01CD | | | | | |
| | 0x01CE | EP(active energy) | R | 4 | 0.01kWh | u32 |
| | 0x01CF | | | | | |
| | 0x01D0 | | | | | |
| | 0x01D1 | | | | | |
| | 0x01D2 | | | | | |
| | 0x01D3 | Load(Load percentage) | R load ratio=I/load value without decimal point | 2 | % | u16 |
| 19 | 0x01D4 | U(Voltage) | R | 4 | V | float |
| | 0x01D5 | | | | | |
| | 0x01D6 | I(Current) | R | 4 | A | |
| | 0x01D7 | | | | | |
| | 0x01D8 | P(active power) | R | 4 | kW | |
| | 0x01D9 | | | | | |
| | 0x01DA | | | | | |
| | 0x01DB | | | | | |
| | 0x01DC | | | | | |
| | 0x01DD | | | | | |
| | 0x01DE | | | | | |
| | 0x01DF | | | | | |


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| | | | | | | |
|---|---|---|---|---|---|---|
| | 0x01E0 | EP(active energy) | R | 4 | 0.01kWh | u32 |
| | 0x01E1 | | | | | |
| | 0x01E2 | | | | | |
| | 0x01E3 | | | | | |
| | 0x01E4 | | | | | |
| | 0x01E5 | Load(Load percentage) | R load ratio=I/load value without decimal point | 2 | % | u16 |
| 20 | 0x01E6 | U(Voltage) | R | 4 | V | float |
| | 0x01E7 | | | | | |
| | 0x01E8 | I(Current) | R | 4 | A | |
| | 0x01E9 | | | | | |
| | 0x01EA | P(active power) | R | 4 | kW | |
| | 0x01EB | | | | | |
| | 0x01EC | | | | | |
| | 0x01ED | | | | | |
| | 0x01EE | | | | | |
| | 0x01EF | | | | | |
| | 0x01F0 | | | | | |
| | 0x01F1 | | | | | |
| | 0x01F2 | EP(active energy) | R | 4 | 0.01kWh | u32 |
| | 0x01F3 | | | | | |
| | 0x01F4 | | | | | |
| | 0x01F5 | | | | | |
| | 0x01F6 | | | | | |
| | 0x01F7 | Load(Load percentage) | R load ratio=I/load value without decimal point | 2 | % | u16 |
| 21 | 0x01F8 | U(Voltage) | R | 4 | V | float |
| | 0x01F9 | | | | | |
| | 0x01FA | I(Current) | R | 4 | A | |
| | 0x01FB | | | | | |
| | 0x01FC | P(active power) | R | 4 | kW | |
| | 0x01FD | | | | | |
| | 0x01FE | | | | | |
| | 0x01FF | | | | | |
| | 0x0200 | | | | | |
| | 0x0201 | | | | | |
| | 0x0202 | | | | | |
| | 0x0203 | | | | | |
| | 0x0204 | EP(active energy) | R | 4 | 0.01kWh | u32 |
| | 0x0205 | | | | | |
| | 0x0206 | | | | | |
| | 0x0207 | | | | | |
| | 0x0208 | | | | | |
| | 0x0209 | Load(Load percentage) | R load ratio=I/load value without decimal point | 2 | % | u16 |
| 22 | 0x020A | U(Voltage) | R | 4 | V | float |
| | 0x020B | | | | | |
| | 0x020C | I(Current) | R | 4 | A | |
| | 0x020D | | | | | |
| | 0x020E | P(active power) | R | 4 | kW | |
| | 0x020F | | | | | |


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| | | | | | | |
|---|---|---|---|---|---|---|
| | 0x0210 | | | | | |
| | 0x0211 | | | | | |
| | 0x0212 | | | | | |
| | 0x0213 | | | | | |
| | 0x0214 | | | | | |
| | 0x0215 | | | | | |
| | 0x0216 | EP(active energy) | R | 4 | 0.01kWh | u32 |
| | 0x0217 | | | | | |
| | 0x0218 | | | | | |
| | 0x0219 | | | | | |
| | 0x021A | | | | | |
| | 0x021B | Load(Load percentage) | R load ratio=I/load value without decimal point | 2 | % | u16 |
| 23 | 0x021C | U(Voltage) | R | 4 | V | float |
| | 0x021D | | | | | |
| | 0x021E | I(Current) | R | 4 | A | |
| | 0x021F | | | | | |
| | 0x0220 | P(active power) | R | 4 | kW | |
| | 0x0221 | | | | | |
| | 0x0222 | | | | | |
| | 0x0223 | | | | | |
| | 0x0224 | | | | | |
| | 0x0225 | | | | | |
| | 0x0226 | | | | | |
| | 0x0227 | | | | | |
| | 0x0228 | EP(active energy) | R | 4 | 0.01kWh | u32 |
| | 0x0229 | | | | | |
| | 0x022A | | | | | |
| | 0x022B | | | | | |
| | 0x022C | | | | | |
| | 0x022D | Load(Load percentage) | R load ratio=I/load value without decimal point | 2 | % | u16 |
| 24 | 0x022E | U(Voltage) | R | 4 | V | float |
| | 0x022F | | | | | |
| | 0x0230 | I(Current) | R | 4 | A | |
| | 0x0231 | | | | | |
| | 0x0232 | P(active power) | R | 4 | kW | |
| | 0x0233 | | | | | |
| | 0x0234 | | | | | |
| | 0x0235 | | | | | |
| | 0x0236 | | | | | |
| | 0x0237 | | | | | |
| | 0x0238 | | | | | |
| | 0x0239 | | | | | |
| | 0x023A | EP(active energy) | R | 4 | 0.01kWh | u32 |
| | 0x023B | | | | | |
| | 0x023C | | | | | |
| | 0x023D | | | | | |
| | 0x023E | | | | | |
| | 0x023F | Load(Load percentage) | R load ratio=I/load value without decimal point | 2 | % | u16 |


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| | | | | | | |
|---|---|---|---|---|---|---|
| 25 | 0x0240 | U(Voltage) | R | 4 | V | float |
| | 0x0241 | | | | | |
| | 0x0242 | I(Current) | R | 4 | A | |
| | 0x0243 | | | | | |
| | 0x0244 | P(active power) | R | 4 | kW | |
| | 0x0245 | | | | | |
| | 0x0246 | | | | | |
| | 0x0247 | | | | | |
| | 0x0248 | | | | | |
| | 0x0249 | | | | | |
| | 0x024A | | | | | |
| | 0x024B | | | | | |
| | 0x024C | EP(active energy) | R | 4 | 0.01kWh | u32 |
| | 0x024D | | | | | |
| | 0x024E | | | | | |
| | 0x024F | | | | | |
| | 0x0250 | | | | | |
| | 0x0251 | Load(Load percentage) | R load ratio=I/load value without decimal point | 2 | % | u16 |
| 26 | 0x0252 | U(Voltage) | R | 4 | V | float |
| | 0x0253 | | | | | |
| | 0x0254 | I(Current) | R | 4 | A | |
| | 0x0255 | | | | | |
| | 0x0256 | P(active power) | R | 4 | kW | |
| | 0x0257 | | | | | |
| | 0x0258 | | | | | |
| | 0x0259 | | | | | |
| | 0x025A | | | | | |
| | 0x025B | | | | | |
| | 0x025C | | | | | |
| | 0x025D | | | | | |
| | 0x025E | EP(active energy) | R | 4 | 0.01kWh | u32 |
| | 0x025F | | | | | |
| | 0x0260 | | | | | |
| | 0x0261 | | | | | |
| | 0x0262 | | | | | |
| | 0x0263 | Load(Load percentage) | R load ratio=I/load value without decimal point | 2 | % | u16 |
| 27 | 0x0264 | U(Voltage) | R | 4 | V | float |
| | 0x0265 | | | | | |
| | 0x0266 | I(Current) | R | 4 | A | |
| | 0x0267 | | | | | |
| | 0x0268 | P(active power) | R | 4 | kW | |
| | 0x0269 | | | | | |
| | 0x026A | | | | | |
| | 0x026B | | | | | |
| | 0x026C | | | | | |
| | 0x026D | | | | | |
| | 0x026E | | | | | |
| | 0x026F | | | | | |


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| | | | | | | |
|---|---|---|---|---|---|---|
| | 0x0270 | EP(active energy) | R | 4 | 0.01kWh | u32 |
| | 0x0271 | | | | | |
| | 0x0272 | | | | | |
| | 0x0273 | | | | | |
| | 0x0274 | | | | | |
| | 0x0275 | Load(Load percentage) | R load ratio=I/load value without decimal point | 2 | % | u16 |
| 28 | 0x0276 | U(Voltage) | R | 4 | V | float |
| | 0x0277 | | | | | |
| | 0x0278 | I(Current) | R | 4 | A | |
| | 0x0279 | | | | | |
| | 0x027A | P(active power) | R | 4 | kW | |
| | 0x027B | | | | | |
| | 0x027C | | | | | |
| | 0x027D | | | | | |
| | 0x027E | | | | | |
| | 0x027F | | | | | |
| | 0x0280 | | | | | |
| | 0x0281 | | | | | |
| | 0x0282 | EP(active energy) | R | 4 | 0.01kWh | u32 |
| | 0x0283 | | | | | |
| | 0x0284 | | | | | |
| | 0x0285 | | | | | |
| | 0x0286 | | | | | |
| | 0x0287 | Load(Load percentage) | R load ratio=I/load value without decimal point | 2 | % | u16 |
| 29 | 0x0288 | U(Voltage) | R | 4 | V | float |
| | 0x0289 | | | | | |
| | 0x028A | I(Current) | R | 4 | A | |
| | 0x028B | | | | | |
| | 0x028C | P(active power) | R | 4 | kW | |
| | 0x028D | | | | | |
| | 0x028E | | | | | |
| | 0x028F | | | | | |
| | 0x0290 | | | | | |
| | 0x0291 | | | | | |
| | 0x0292 | | | | | |
| | 0x0293 | | | | | |
| | 0x0294 | EP(active energy) | R | 4 | 0.01kWh | u32 |
| | 0x0295 | | | | | |
| | 0x0296 | | | | | |
| | 0x0297 | | | | | |
| | 0x0298 | | | | | |
| | 0x0299 | Load(Load percentage) | R load ratio=I/load value without decimal point | 2 | % | u16 |
| 30 | 0x029A | U(Voltage) | R | 4 | V | float |
| | 0x029B | | | | | |
| | 0x029C | I(Current) | R | 4 | A | |
| | 0x029D | | | | | |
| | 0x029E | P(active power) | R | 4 | kW | |
| | 0x029F | | | | | |


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| | | | | | | |
|---|---|---|---|---|---|---|
| | 0x02A0 | | | | | |
| | 0x02A1 | | | | | |
| | 0x02A2 | | | | | |
| | 0x02A3 | | | | | |
| | 0x02A4 | | | | | |
| | 0x02A5 | | | | | |
| | 0x02A6 | EP(active energy) | R | 4 | 0.01kWh | u32 |
| | 0x02A7 | | | | | |
| | 0x02A8 | | | | | |
| | 0x02A9 | | | | | |
| | 0x02AA | | | | | |
| | 0x02AB | Load(Load percentage) | R load ratio=I/load value without decimal point | 2 | % | u16 |
| 31 | 0x02AC | U(Voltage) | R | 4 | V | float |
| | 0x02AD | | | | | |
| | 0x02AE | I(Current) | R | 4 | A | |
| | 0x02AF | | | | | |
| | 0x02B0 | P(active power) | R | 4 | kW | |
| | 0x02B1 | | | | | |
| | 0x02B2 | | | | | |
| | 0x02B3 | | | | | |
| | 0x02B4 | | | | | |
| | 0x02B5 | | | | | |
| | 0x02B6 | | | | | |
| | 0x02B7 | | | | | |
| | 0x02B8 | EP(active energy) | R | 4 | 0.01kWh | u32 |
| | 0x02B9 | | | | | |
| | 0x02BA | | | | | |
| | 0x02BB | | | | | |
| | 0x02BC | | | | | |
| | 0x02BD | Load(Load percentage) | R load ratio=I/load value without decimal point | 2 | % | u16 |
| 32 | 0x02BE | U(Voltage) | R | 4 | V | float |
| | 0x02BF | | | | | |
| | 0x02C0 | I(Current) | R | 4 | A | |
| | 0x02C1 | | | | | |
| | 0x02C2 | P(active power) | R | 4 | kW | |
| | 0x02C3 | | | | | |
| | 0x02C4 | | | | | |
| | 0x02C5 | | | | | |
| | 0x02C6 | | | | | |
| | 0x02C7 | | | | | |
| | 0x02C8 | | | | | |
| | 0x02C9 | | | | | |
| | 0x02CA | EP(active energy) | R | 4 | 0.01kWh | u32 |
| | 0x02CB | | | | | |
| | 0x02CC | | | | | |
| | 0x02CD | | | | | |
| | 0x02CE | | | | | |
| | 0x02CF | Load(Load percentage) | R load ratio=I/load value without decimal point | 2 | % | u16 |


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| | | | | | | |
|---|---|---|---|---|---|---|
| 33 | 0x02D0 | U(Voltage) | R | 4 | V | float |
| | 0x02D1 | | | | | |
| | 0x02D2 | I(Current) | R | 4 | A | |
| | 0x02D3 | | | | | |
| | 0x02D4 | P(active power) | R | 4 | kW | |
| | 0x02D5 | | | | | |
| | 0x02D6 | | | | | |
| | 0x02D7 | | | | | |
| | 0x02D8 | | | | | |
| | 0x02D9 | | | | | |
| | 0x02DA | | | | | |
| | 0x02DB | | | | | |
| | 0x02DC | EP(active energy) | R | 4 | 0.01kWh | u32 |
| | 0x02DD | | | | | |
| | 0x02DE | | | | | |
| | 0x02DF | | | | | |
| | 0x02E0 | | | | | |
| | 0x02E1 | Load(Load percentage) | R load ratio=I/load value without decimal point | 2 | % | u16 |
| 34 | 0x02E2 | U(Voltage) | R | 4 | V | float |
| | 0x02E3 | | | | | |
| | 0x02E4 | I(Current) | R | 4 | A | |
| | 0x02E5 | | | | | |
| | 0x02E6 | P(active power) | R | 4 | kW | |
| | 0x02E7 | | | | | |
| | 0x02E8 | | | | | |
| | 0x02E9 | | | | | |
| | 0x02EA | | | | | |
| | 0x02EB | | | | | |
| | 0x02EC | | | | | |
| | 0x02ED | | | | | |
| | 0x02EE | EP(active energy) | R | 4 | 0.01kWh | u32 |
| | 0x02EF | | | | | |
| | 0x02F0 | | | | | |
| | 0x02F1 | | | | | |
| | 0x02F2 | | | | | |
| | 0x02F3 | Load(Load percentage) | R load ratio=I/load value without decimal point | 2 | % | u16 |
| 35 | 0x02F4 | U(Voltage) | R | 4 | V | float |
| | 0x02F5 | | | | | |
| | 0x02F6 | I(Current) | R | 4 | A | |
| | 0x02F7 | | | | | |
| | 0x02F8 | P(active power) | R | 4 | kW | |
| | 0x02F9 | | | | | |
| | 0x02FA | | | | | |
| | 0x02FB | | | | | |
| | 0x02FC | | | | | |
| | 0x02FD | | | | | |
| | 0x02FE | | | | | |
| | 0x02FF | | | | | |


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| | | | | | | |
|---|---|---|---|---|---|---|
| | 0x0300 | EP(active energy) | R | 4 | 0.01kWh | u32 |
| | 0x0301 | | | | | |
| | 0x0302 | | | | | |
| | 0x0303 | | | | | |
| | 0x0304 | | | | | |
| | 0x0305 | Load(Load percentage) | R load ratio=I/load value without decimal point | 2 | % | u16 |
| 36 | 0x0306 | U(Voltage) | R | 4 | V | float |
| | 0x0307 | | | | | |
| | 0x0308 | I(Current) | R | 4 | A | |
| | 0x0309 | | | | | |
| | 0x030A | P(active power) | R | 4 | kW | |
| | 0x030B | | | | | |
| | 0x030C | | | | | |
| | 0x030D | | | | | |
| | 0x030E | | | | | |
| | 0x030F | | | | | |
| | 0x0310 | | | | | |
| | 0x0311 | | | | | |
| | 0x0312 | EP(active energy) | R | 4 | 0.01kWh | u32 |
| | 0x0313 | | | | | |
| | 0x0314 | | | | | |
| | 0x0315 | | | | | |
| | 0x0316 | | | | | |
| | 0x0317 | Load(Load percentage) | R load ratio=I/load value without decimal point | 2 | % | u16 |
| 37 | 0x0318 | U(Voltage) | R | 4 | V | float |
| | 0x0319 | | | | | |
| | 0x031A | I(Current) | R | 4 | A | |
| | 0x031B | | | | | |
| | 0x031C | P(active power) | R | 4 | kW | |
| | 0x031D | | | | | |
| | 0x031E | | | | | |
| | 0x031F | | | | | |
| | 0x0320 | | | | | |
| | 0x0321 | | | | | |
| | 0x0322 | | | | | |
| | 0x0323 | | | | | |
| | 0x0324 | EP(active energy) | R | 4 | 0.01kWh | u32 |
| | 0x0325 | | | | | |
| | 0x0326 | | | | | |
| | 0x0327 | | | | | |
| | 0x0328 | | | | | |
| | 0x0329 | Load(Load percentage) | R load ratio=I/load value without decimal point | 2 | % | u16 |
| 38 | 0x032A | U(Voltage) | R | 4 | V | float |
| | 0x032B | | | | | |
| | 0x032C | I(Current) | R | 4 | A | |
| | 0x032D | | | | | |
| | 0x032E | P(active power) | R | 4 | kW | |
| | 0x032F | | | | | |


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|---|---|---|---|---|---|---|
| | 0x0330 | | | | | |
| | 0x0331 | | | | | |
| | 0x0332 | | | | | |
| | 0x0333 | | | | | |
| | 0x0334 | | | | | |
| | 0x0335 | | | | | |
| | 0x0336 | EP(active energy) | R | 4 | 0.01kWh | u32 |
| | 0x0337 | | | | | |
| | 0x0338 | | | | | |
| | 0x0339 | | | | | |
| | 0x033A | | | | | |
| | 0x033B | Load(Load percentage) | R load ratio=I/load value without decimal point | 2 | % | u16 |
| 39 | 0x033C | U(Voltage) | R | 4 | V | float |
| | 0x033D | | | | | |
| | 0x033E | I(Current) | R | 4 | A | |
| | 0x033F | | | | | |
| | 0x0340 | P(active power) | R | 4 | kW | |
| | 0x0341 | | | | | |
| | 0x0342 | | | | | |
| | 0x0343 | | | | | |
| | 0x0344 | | | | | |
| | 0x0345 | | | | | |
| | 0x0346 | | | | | |
| | 0x0347 | | | | | |
| | 0x0348 | EP(active energy) | R | 4 | 0.01kWh | u32 |
| | 0x0349 | | | | | |
| | 0x034A | | | | | |
| | 0x034B | | | | | |
| | 0x034C | | | | | |
| | 0x034D | Load(Load percentage) | R load ratio=I/load value without decimal point | 2 | % | u16 |
| 40 | 0x034E | U(Voltage) | R | 4 | V | float |
| | 0x034F | | | | | |
| | 0x0350 | I(Current) | R | 4 | A | |
| | 0x0351 | | | | | |
| | 0x0352 | P(active power) | R | 4 | kW | |
| | 0x0353 | | | | | |
| | 0x0354 | | | | | |
| | 0x0355 | | | | | |
| | 0x0356 | | | | | |
| | 0x0357 | | | | | |
| | 0x0358 | | | | | |
| | 0x0359 | | | | | |
| | 0x035A | EP(active energy) | R | 4 | 0.01kWh | u32 |
| | 0x035B | | | | | |
| | 0x035C | | | | | |
| | 0x035D | | | | | |
| | 0x035E | | | | | |
| | 0x035F | Load(Load percentage) | R load ratio=I/load value without decimal point | 2 | % | u16 |


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| | | | | | | |
|---|---|---|---|---|---|---|
| 41 | 0x0360 | U(Voltage) | R | 4 | V | float |
| | 0x0361 | | | | | |
| | 0x0362 | I(Current) | R | 4 | A | |
| | 0x0363 | | | | | |
| | 0x0364 | P(active power) | R | 4 | kW | |
| | 0x0365 | | | | | |
| | 0x0366 | | | | | |
| | 0x0367 | | | | | |
| | 0x0368 | | | | | |
| | 0x0369 | | | | | |
| | 0x036A | | | | | |
| | 0x036B | | | | | |
| | 0x036C | EP(active energy) | R | 4 | 0.01kWh | u32 |
| | 0x036D | | | | | |
| | 0x036E | | | | | |
| | 0x036F | | | | | |
| | 0x0370 | | | | | |
| | 0x0371 | Load(Load percentage) | R load ratio=I/load value without decimal point | 2 | % | u16 |
| 42 | 0x0372 | U(Voltage) | R | 4 | V | float |
| | 0x0373 | | | | | |
| | 0x0374 | I(Current) | R | 4 | A | |
| | 0x0375 | | | | | |
| | 0x0376 | P(active power) | R | 4 | kW | |
| | 0x0377 | | | | | |
| | 0x0378 | | | | | |
| | 0x0379 | | | | | |
| | 0x037A | | | | | |
| | 0x037B | | | | | |
| | 0x037C | | | | | |
| | 0x037D | | | | | |
| | 0x037E | EP(active energy) | R | 4 | 0.01kWh | u32 |
| | 0x037F | | | | | |
| | 0x0380 | | | | | |
| | 0x0381 | | | | | |
| | 0x0382 | | | | | |
| | 0x0383 | Load(Load percentage) | R load ratio=I/load value without decimal point | 2 | % | u16 |
| 43 | 0x0384 | U(Voltage) | R | 4 | V | float |
| | 0x0385 | | | | | |
| | 0x0386 | I(Current) | R | 4 | A | |
| | 0x0387 | | | | | |
| | 0x0388 | P(active power) | R | 4 | kW | |
| | 0x0389 | | | | | |
| | 0x038A | | | | | |
| | 0x038B | | | | | |
| | 0x038C | | | | | |
| | 0x038D | | | | | |
| | 0x038E | | | | | |
| | 0x038F | | | | | |


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| | | | | | | |
|---|---|---|---|---|---|---|
| | 0x0390 | EP(active energy) | R | 4 | 0.01kWh | u32 |
| | 0x0391 | | | | | |
| | 0x0392 | | | | | |
| | 0x0393 | | | | | |
| | 0x0394 | | | | | |
| | 0x0395 | Load(Load percentage) | R load ratio=I/load value without decimal point | 2 | % | u16 |
| 44 | 0x0396 | U(Voltage) | R | 4 | V | float |
| | 0x0397 | | | | | |
| | 0x0398 | I(Current) | R | 4 | A | |
| | 0x0399 | | | | | |
| | 0x039A | P(active power) | R | 4 | kW | |
| | 0x039B | | | | | |
| | 0x039C | | | | | |
| | 0x039D | | | | | |
| | 0x039E | | | | | |
| | 0x039F | | | | | |
| | 0x03A0 | | | | | |
| | 0x03A1 | | | | | |
| | 0x03A2 | EP(active energy) | R | 4 | 0.01kWh | u32 |
| | 0x03A3 | | | | | |
| | 0x03A4 | | | | | |
| | 0x03A5 | | | | | |
| | 0x03A6 | | | | | |
| | 0x03A7 | Load(Load percentage) | R load ratio=I/load value without decimal point | 2 | % | u16 |
| 45 | 0x03A8 | U(Voltage) | R | 4 | V | float |
| | 0x03A9 | | | | | |
| | 0x03AA | I(Current) | R | 4 | A | |
| | 0x03AB | | | | | |
| | 0x03AC | P(active power) | R | 4 | kW | |
| | 0x03AD | | | | | |
| | 0x03AE | | | | | |
| | 0x03AF | | | | | |
| | 0x03B0 | | | | | |
| | 0x03B1 | | | | | |
| | 0x03B2 | | | | | |
| | 0x03B3 | | | | | |
| | 0x03B4 | EP(active energy) | R | 4 | 0.01kWh | u32 |
| | 0x03B5 | | | | | |
| | 0x03B6 | | | | | |
| | 0x03B7 | | | | | |
| | 0x03B8 | | | | | |
| | 0x03B9 | Load(Load percentage) | R load ratio=I/load value without decimal point | 2 | % | u16 |
| 46 | 0x03BA | U(Voltage) | R | 4 | V | float |
| | 0x03BB | | | | | |
| | 0x03BC | I(Current) | R | 4 | A | |
| | 0x03BD | | | | | |
| | 0x03BE | P(active power) | R | 4 | kW | |
| | 0x03BF | | | | | |


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| | | | | | | |
|---|---|---|---|---|---|---|
| | 0x03C0 | | | | | |
| | 0x03C1 | | | | | |
| | 0x03C2 | | | | | |
| | 0x03C3 | | | | | |
| | 0x03C4 | | | | | |
| | 0x03C5 | | | | | |
| | 0x03C6 | EP(active energy) | R | 4 | 0.01kWh | u32 |
| | 0x03C7 | | | | | |
| | 0x03C8 | | | | | |
| | 0x03C9 | | | | | |
| | 0x03CA | | | | | |
| | 0x03CB | Load(Load percentage) | R load ratio=I/load value without decimal point | 2 | % | u16 |
| 47 | 0x03CC | U(Voltage) | R | 4 | V | float |
| | 0x03CD | | | | | |
| | 0x03CE | I(Current) | R | 4 | A | |
| | 0x03CF | | | | | |
| | 0x03D0 | P(active power) | R | 4 | kW | |
| | 0x03D1 | | | | | |
| | 0x03D2 | | | | | |
| | 0x03D3 | | | | | |
| | 0x03D4 | | | | | |
| | 0x03D5 | | | | | |
| | 0x03D6 | | | | | |
| | 0x03D7 | | | | | |
| | 0x03D8 | EP(active energy) | R | 4 | 0.01kWh | u32 |
| | 0x03D9 | | | | | |
| | 0x03DA | | | | | |
| | 0x03DB | | | | | |
| | 0x03DC | | | | | |
| | 0x03DD | Load(Load percentage) | R load ratio=I/load value without decimal point | 2 | % | u16 |
| 48 | 0x03DE | U(Voltage) | R | 4 | V | float |
| | 0x03DF | | | | | |
| | 0x03E0 | I(Current) | R | 4 | A | |
| | 0x03E1 | | | | | |
| | 0x03E2 | P(active power) | R | 4 | kW | |
| | 0x03E3 | | | | | |
| | 0x03E4 | | | | | |
| | 0x03E5 | | | | | |
| | 0x03E6 | | | | | |
| | 0x03E7 | | | | | |
| | 0x03E8 | | | | | |
| | 0x03E9 | | | | | |
| | 0x03EA | EP(active energy) | R | 4 | 0.01kWh | u32 |
| | 0x03EB | | | | | |
| | 0x03EC | | | | | |
| | 0x03ED | | | | | |
| | 0x03EE | | | | | |
| | 0x03EF | Load(Load percentage) | R load ratio=I/load value without decimal point | 2 | % | u16 |


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The alarm status data (0x03F0～0x0420) **When the module is FDK30/FD30,the effective alarm data are 1-15 and 25-39 channels of data,When the address is set to 20-29, the effective alarm data is 1-30 channels.When the module is FD48(30),the status bit of switching value is always 0 and no acquisition is required.**

Alarm status assignment

| Bit15 | Bit14 | Bit13 | Bit12 | Bit11 | Bit10 | Bit9 | Bit8 |
|---|---|---|---|---|---|---|---|
| | | | | | | | |
| Bit7 | Bit6 | Bit5 | Bit4 | Bit3 | Bit2 | Bit1 | Bit0 |
| | | | Switching value | Over current level II alarm | Over current level I alarm | Under current level I alarm | Under current level II alarm |

| Number | Address | Variate | Remark | Length (bytes) | Type |
|---|---|---|---|---|---|
| 1 | 0x03F0 | ALMData1（channel 1 alarm status） | R | 2 | u16 |
| 2 | 0x03F1 | ALMData2（channel 2 alarm status） | R | 2 | u16 |
| 3 | 0x03F2 | ALMData3（channel 3 alarm status） | R | 2 | u16 |
| 4 | 0x03F3 | ALMData4（channel 4 alarm status） | R | 2 | u16 |
| 5 | 0x03F4 | ALMData5（channel 5 alarm status） | R | 2 | u16 |
| 6 | 0x03F5 | ALMData6（channel 6 alarm status） | R | 2 | u16 |
| 7 | 0x03F6 | ALMData7（channel 7 alarm status） | R | 2 | u16 |
| 8 | 0x03F7 | ALMData8（channel 8 alarm status） | R | 2 | u16 |
| 9 | 0x03F8 | ALMData9（channel 9 alarm status） | R | 2 | u16 |
| 10 | 0x03F9 | ALMData10（channel 10 alarm status） | R | 2 | u16 |
| 11 | 0x03FA | ALMData11（channel 11 alarm status） | R | 2 | u16 |
| 12 | 0x03FB | ALMData12（channel 12 alarm status） | R | 2 | u16 |
| 13 | 0x03FC | ALMData13（channel 13alarm status） | R | 2 | u16 |
| 14 | 0x03FD | ALMData14（channel 14 alarm status） | R | 2 | u16 |
| 15 | 0x03FE | ALMData15（channel 15 alarm status） | R | 2 | u16 |
| 16 | 0x03FF | ALMData16（channel 16 alarm status） | R | 2 | u16 |
| 17 | 0x0400 | ALMData17（channel 17 alarm status） | R | 2 | u16 |
| 18 | 0x0401 | ALMData18（channel 18 alarm status） | R | 2 | u16 |
| 19 | 0x0402 | ALMData19（channel 19 alarm status） | R | 2 | u16 |
| 20 | 0x0403 | ALMData20（channel 20 alarm status） | R | 2 | u16 |
| 21 | 0x0404 | ALMData21（channel 21 alarm status） | R | 2 | u16 |
| 22 | 0x0405 | ALMData22（channel 22 alarm status） | R | 2 | u16 |
| 23 | 0x0406 | ALMData23（channel 23 alarm status） | R | 2 | u16 |
| 24 | 0x0407 | ALMData24（channel 24 alarm status） | R | 2 | u16 |
| 25 | 0x0408 | ALMData25（channel 25 alarm status） | R | 2 | u16 |
| 26 | 0x0409 | ALMData26（channel 26 alarm status） | R | 2 | u16 |
| 27 | 0x040A | ALMData27（channel 27 alarm status） | R | 2 | u16 |
| 28 | 0x040B | ALMData28（channel 28 alarm status） | R | 2 | u16 |
| 29 | 0x040C | ALMData29（channel 29 alarm status） | R | 2 | u16 |
| 30 | 0x040D | ALMData30（channel 30 alarm status） | R | 2 | u16 |
| 31 | 0x040E | ALMData31（channel 31 alarm status） | R | 2 | u16 |
| 32 | 0x040F | ALMData32（channel 32 alarm status） | R | 2 | u16 |


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| | | | | | |
|---|---|---|---|---|---|
| 33 | 0x0410 | ALMData33（channel 33 alarm status） | R | 2 | u16 |
| 34 | 0x0411 | ALMData34（channel 34 alarm status） | R | 2 | u16 |
| 35 | 0x0412 | ALMData35（channel 35 alarm status） | R | 2 | u16 |
| 36 | 0x0413 | ALMData36（channel 36 alarm status） | R | 2 | u16 |
| 37 | 0x0414 | ALMData37（channel 37 alarm status） | R | 2 | u16 |
| 38 | 0x0415 | ALMData38（channel 38 alarm status） | R | 2 | u16 |
| 39 | 0x0416 | ALMData39（channel 39 alarm status） | R | 2 | u16 |
| 40 | 0x0417 | ALMData40（channel 40 alarm status） | R | 2 | u16 |
| 41 | 0x0418 | ALMData41（channel 41 alarm status） | R | 2 | u16 |
| 42 | 0x0419 | ALMData42（channel 42 alarm status） | R | 2 | u16 |
| 43 | 0x041A | ALMData43（channel 43 alarm status） | R | 2 | u16 |
| 44 | 0x041B | ALMData44（channel 44 alarm status） | R | 2 | u16 |
| 45 | 0x041C | ALMData45（channel 45 alarm status） | R | 2 | u16 |
| 46 | 0x041D | ALMData46（channel 46 alarm status） | R | 2 | u16 |
| 47 | 0x041E | ALMData47（channel 47 alarm status） | R | 2 | u16 |
| 48 | 0x041F | ALMData48（channel 48 alarm status） | R | 2 | u16 |
| | 0x0420 | | | | |

## 7 Matters need attention

7.1 The device should be installed in a dry, clean place away from heat source and strong electromagnetic field.
7.2 Attention should be paid to the phase sequence and polarity of AC voltage and current when the device is connected, otherwise the measurement will be inaccurate.
7.3 The current input must use CT, and the variable ratio parameters of incoming CT must be set through communication.
7.4 The accuracy of CT affects the measurement accuracy of this device.The angular difference of CT will affect the measuring accuracy of power and electric energy.
7.5 2A fuse should be installed for direct access systems without PT.
7.6 The CT grounding terminal of the current input on the device should be led to the grounding terminal separately. It is not allowed to connect the current input grounding terminal in parallel and then lead to the grounding terminal on the device.
7.7 Communication cable should use shielded twisted pair.

## 8 Common fault diagnosis and troubleshooting methods

8.1 The measurement of the device is not accurate

*Check whether the wiring of voltage and current is correct, and whether the incoming and outgoing lines of current input are correct;

*Check whether the CT setting of the device corresponds to the actual CT used externally;

8.2 The voltage and current are measured correctly, but the power is not measured accurately.

*Check whether the current input direction is correct;

*Check whether the corresponding phase of each current loop is correct;The outgoing circuit shall be adjusted according to actual access.

8.3 Abnormal communication

*Check whether the communication cable is connected normally;

*Check whether the A and B terminals of communication are interlaced;

*Check whether the address of the device is set correctly and the communication baud rate is set correctly;

*When the communication of multiple devices is abnormal, first try whether the single communication is normal;

8.4 There is incoming voltage, current, and power, but electricity has no value.

*Check the CT ratio setting of the incoming line.


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Change record：

| Before change | After change | Change content |
|---|---|---|
| V1.0 | V1.1 | 1、Fixed some errors in the text;<br>2、Delete the measurement accuracy in FT30/48 technical parameters; |


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