

Three phase Din-Rail meter

Thank you for choosing Blue Jay Technology Din-Rail energy meter. In order to use this instrument safely and correctly, please read this manual carefully and pay attention to the following points when using it:

- The meter must be installed and repaired by trained electrician operator;
- Must keep power line disconnect when wiring this meter;
- Please use a suitable detector to confirm no voltage leakage after wiring;

Following conditions can cause damage of device or working abnormal:

- Voltage, frequency over range;
- Reverse polarity of current or voltage input;
- Remove communication plug when meter powered;
- Terminals connect do not follow wiring guide;



Warning!!: Do not touch the terminals when the device is working!

1. Function introduction

The 19D-301 three-phase DIN-rail energy meter is an intelligent device for medium and low voltage systems (6-35KV and 0.4KV). It integrates data collection and control functions, provide LCD display show three-phase AC power measurement and calculation, consumption energy value. In addition, 19D-301 also provide optional function, user can choose multi-tariff record, Maximum Demand record, relay alarm output(1 channel) for different site condition. RS485 port support MODBUS-RTU or DL/T645-2007 protocol (can be customized).

2. Panel & Screen introduction

3 PHASE DIN-RAIL ENERGY METER

3x230/400V
50-60HZ

⊙ ⊙ ⊙ ⊙

⊙ ⊙ ⊙ ⊙

⊙ ⊙ ⊙ ⊙

⊙ ⊙ ⊙ ⊙

⏪

⏩

SET

⏴

1.- Central display area: mainly displays measurement data.
Energy, current, voltage, power, power factor, frequency, timer (depends on different sub-model, display value may parts of above parameter).

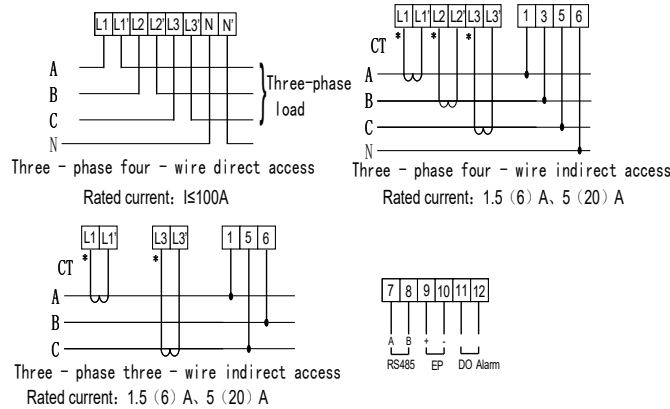
2.- Four LED indicators: Show meter condition (accept customized).

3.- Four keys button: for user set operation.

3. Install of meter

| Dimensions (L x W x H) | Din-rail | Notes |
|------------------------|----------|-------|
| 126.5x89.5x74.5 (mm) | 35mm | |

4. Wiring to grid



Wiring Notes!!

- Must choose suitable cable size to connection, please refer the meter measurement range and actual load condition.
- The communication wire must use shielded twisted pair.
- Communication line RS485+, RS485- cannot be reversed.
- If need long distance communication to host, must parallel connect 100~120ohms resistor in both terminal of host to slave.
- In 9600 baud rate, the cable length should less than 1200 meters.

5. Operation menu description

⏪ ⏩ for switching show screen value, in operation menu can move cursor and set value.

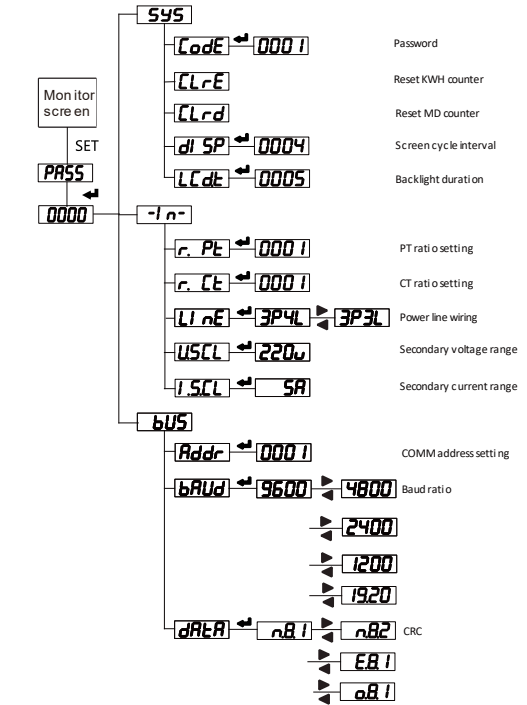
After changing the parameters, press the ⏴ key to confirm, and then press **SET** to exit the programming menu until screen show **SAuE** :

(1) Save and exit: Press ⏴ to save the setting parameters then return to display

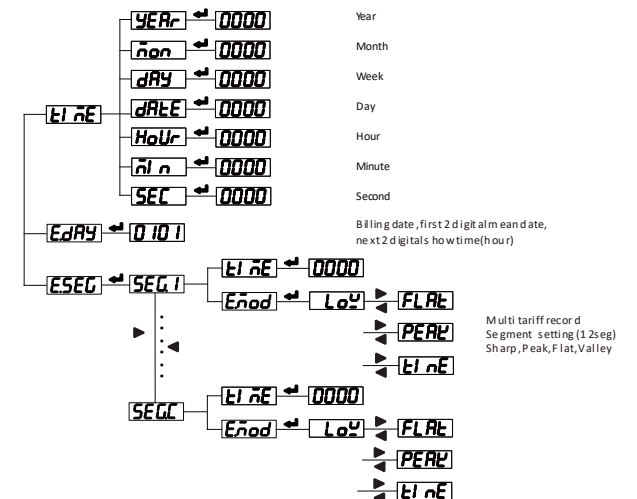
screen exit;

(2) Exit without saving: press **SET** to directly return display screen

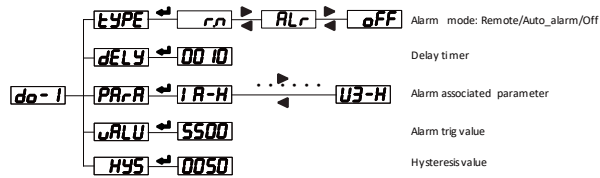
Main menu



Multi-tariff menu (optional)



Digital output menu(optional)



MODBUS register map

| Primary Side value | | | | |
|----------------------|------|-------|---|---------------------------------------|
| Add. | Data | Byte | | Instruction |
| 0x00 | Ua | float | 2 | Phase to Line Voltage, Unit: V |
| 0x02 | Ub | float | 2 | |
| 0x04 | Uc | float | 2 | |
| 0x06 | Uab | float | 2 | Phase to Phase Voltage, Unit: V |
| 0x08 | Ubc | float | 2 | |
| 0x0a | Uca | float | 2 | |
| 0x0c | Ia | float | 2 | Three phase Current, Unit: A |
| 0x0e | Ib | float | 2 | |
| 0x10 | Ic | float | 2 | |
| 0x12 | Pa | float | 2 | Active power, Unit: kW |
| 0x14 | Pb | float | 2 | |
| 0x16 | Pc | float | 2 | |
| 0x18 | PΣ | float | 2 | |
| 0x1a | Qa | float | 2 | Reactive power, Unit: kVar |
| 0x1c | Qb | float | 2 | |
| 0x1e | Qc | float | 2 | |
| 0x20 | QΣ | float | 2 | Apparent power, Unit: kVA |
| 0x22 | Sa | float | 2 | |
| 0x24 | Sb | float | 2 | |
| 0x26 | Sc | float | 2 | |
| 0x28 | SΣ | float | 2 | Power factor, 0~1.000 |
| 0x2a | PFa | float | 2 | |
| 0x2c | PFb | float | 2 | |
| 0x2e | PFc | float | 2 | |
| 0x30 | PFΣ | float | 2 | Frequency, Unit:0.01Hz |
| 0x32 | FR | float | 2 | |
| 0x34 | Ep+ | float | 2 | Positive active energy, Unit: kWh |
| 0x36 | Ep- | float | 2 | |
| 0x38 | Eq+ | float | 2 | Inductive reactive power, Unit: kVarh |
| 0x3a | Eq- | float | 2 | |
| Secondary Side value | | | | |
| 0x100 | Ua | int | 1 | Phase to Line Voltage, Unit: 0.1V |
| 0x101 | Ub | int | 1 | |
| 0x102 | Uc | int | 1 | |
| 0x103 | Uab | int | 1 | Phase to Phase Voltage, Unit: 0.1V |
| 0x104 | Ubc | int | 1 | |
| 0x105 | Uca | int | 1 | |
| 0x106 | Ia | int | 1 | Three phase Current, Unit: 0.001A |
| 0x107 | Ib | int | 1 | |

| | | | | |
|-------|-----|-----|---|-------------------------------------|
| 0x108 | Ic | int | 1 | Active power, Unit: W |
| 0x109 | Pa | int | 1 | |
| 0x10a | Pb | int | 1 | |
| 0x10b | Pc | int | 1 | |
| 0x10c | PΣ | int | 1 | Reactive power, Unit: Var |
| 0x10d | Qa | int | 1 | |
| 0x10e | Qb | int | 1 | |
| 0x10f | Qc | int | 1 | |
| 0x110 | QΣ | int | 1 | Apparent power, Unit: VA |
| 0x111 | Sa | int | 1 | |
| 0x112 | Sb | int | 1 | |
| 0x113 | Sc | int | 1 | |
| 0x114 | SΣ | int | 1 | Power factor, 0~1.000 |
| 0x115 | PFa | int | 1 | |
| 0x116 | PFb | int | 1 | |
| 0x117 | PFc | int | 1 | |
| 0x118 | PFΣ | int | 1 | Frequency, Unit:0.01Hz |
| 0x119 | FR | int | 1 | |
| 0x11a | Ep+ | int | 2 | Positive active energy, Unit: Wh |
| 0x11c | Ep- | int | 2 | |
| 0x11e | Eq+ | int | 2 | Inductive reactive power, Unit:Varh |
| 0x120 | Eq- | int | 2 | |

Other data in RS485 register

| Meter status | | | | |
|-------------------------------|-------------|-------|---|---|
| Add. | Data | Byte | | Instruction |
| 0x200 | DO | int | 1 | Digital output: Bit0~1 for channels 1~2 |
| 0x20A | TIME.year | int | 1 | Internal RTC real time clock: Year - Month - Day - Time - minutes - seconds |
| 0x20B | TIME.month | int | 1 | |
| 0x20C | TIME.date | int | 1 | |
| 0x20D | TIME.hour | int | 1 | |
| 0x20E | TIME.minute | int | 1 | |
| 0x20F | TIME.second | int | 1 | |
| 0x210 | TIME.day | int | 1 | |
| Advanced electrical parameter | | | | |
| 0x300 | Pde | float | 2 | Active power demand, Unit: W |
| 0x302 | Qde | float | 2 | Reactive power demand, Unit: var |
| 0x304 | Sde | float | 2 | Apparent power demand, Unit: var |
| 0x306 | Pdmax | float | 2 | active power demand in this month |
| 0x308 | Qdmax | float | 2 | reactive power demand in this month |
| 0x30a | Sdmax | float | 2 | apparent power demand in this month |
| 0x30c | | float | 2 | active power demand in last month |
| 0x30e | | float | 2 | reactive power demand in last month |
| 0x310 | | float | 2 | apparent power demand in last month |
| 0x312 | | float | 2 | active power demand in month before last month |
| 0x314 | | float | 2 | reactive power demand in month before last month |

| 0x316 | | float | 2 | apparent power demand in month before last month |
|---|-----------------------|-------|---|--|
| Multi- tariffs ratio data(secondary side) | | | | |
| 0x400 | Cumulative_tol(Total) | long | 2 | The total energy |
| 0x402 | Cumulative_T1(Sharp) | long | 2 | The total sharp energy |
| 0x404 | Cumulative_T2(Peak) | long | 2 | The total peak energy |
| 0x406 | Cumulative_T3(Flat) | long | 2 | The total flat energy |
| 0x408 | Cumulative_T4(Vally) | long | 2 | The total valley energy |
| 0x40a | Current_tol(Total) | long | 2 | Total energy of this month |
| 0x40c | Current_T1(Sharp) | long | 2 | Sharp energy of this month |
| 0x40e | Current_T2(Peak) | long | 2 | Peak energy of this month |
| 0x410 | Current_T3(Flat) | long | 2 | Flat energy of this month |
| 0x412 | Current_T4(Vally) | long | 2 | Valley energy of this month |
| 0x414 | Prior_tol(Total) | long | 2 | Total energy of last month |
| 0x416 | Prior_T1(Sharp) | long | 2 | Sharp energy of last month |
| 0x418 | Prior_T2(Peak) | long | 2 | Peak energy of last month |
| 0x41a | Prior_T3(Flat) | long | 2 | Flat energy of last month |
| 0x41c | Prior_T4(Vally) | long | 2 | Valley energy of last month |
| 0x41e | | long | 2 | Total energy of the month before last month |
| 0x420 | | long | 2 | Sharp energy of the month before last month |
| 0x422 | | long | 2 | Peak energy of the month before last month |
| 0x424 | | long | 2 | Flat energy of the month before last month |
| 0x426 | | long | 2 | Valley energy of the month before last month |

DO relay setting

| vALU Unit of Relay associated parameter | |
|---|---------------|
| Voltage parameter | Unit 0.1V |
| Current | Unit 0.01A |
| Active power | Unit 0.01kW |
| Reactive power | Unit 0.01kvar |
| Apparent power | Unit 0.01kVA |
| Power factor | Unit 0.001 |
| Frequency | Unit 0.01Hz |

Notes: Above parameters are secondary side values for CT access sub-model, and Primary side value for power line direct access sub-model.