

MU300 Series Basic Module User Quick Start Manual

Thank you for using MU300 series PLC. Before using the product, please carefully read this manual so as to better understand it, fully use it, and ensure safety. This quick start manual is to offer you a quick guide to the design, installation, connection and maintenance of MU300 series PLC, convenient for on-site reference.

This manual is for the following MU200 series members:

MU300-0808BTA MU300-1210BTA
MU300-1210BRA MU300-2424BTA

Version: 1.2
Revision Date: 2024-11-11
BOM Code: R33011245

For detailed product information, please refer to *MU Series PLC User Manual*, *MEGcreator Programming Software User Manual*, and *MU Series PLC Programming Reference Manual*. For ordering the above user manuals, contact your Megmeet distributor or sales office.

1. Appearance and Part Names

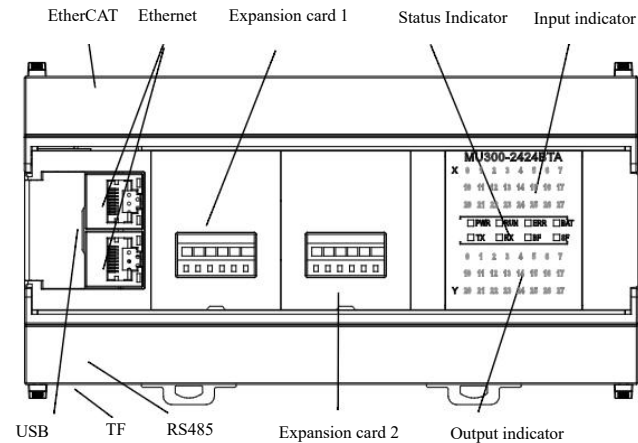


Fig 1-1 Appearance and part name of module

2. Model Description

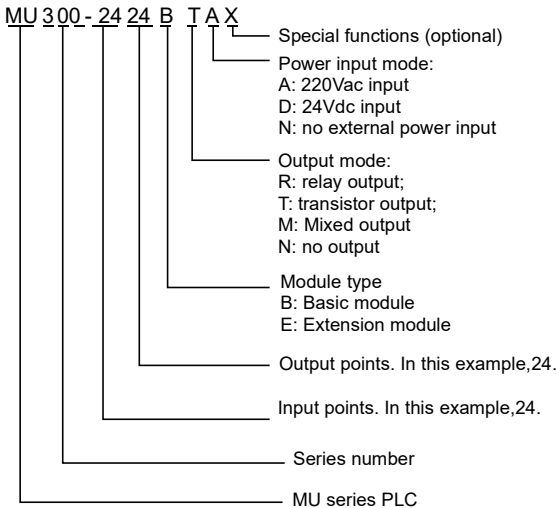


Fig 2-1 Model description

3. Installation Description

3.1 Environmental Temperature

Temperature range for PLC usage: 0°C~55°C. A well-ventilated place should be selected when the ambient temperature exceeds 55° C for a long time.

3.2 Installation Site

- ◆ Place without corrosion, flammable and explosive gas and liquid.
- ◆ Solid place without vibration.
- ◆ This controller is designed for II standard installation environment and 2-level pollution occasions.

3.3 Installation Method

The PLC must be installed horizontally on the backplane of the electrical cabinet, and maintain a distance of more than 20cm from the peripheral equipment or cabinet wall. The installation in other directions is not conducive to the PLC heat dissipation, and there can be no heating equipment under the PLC. As shown in the picture below:

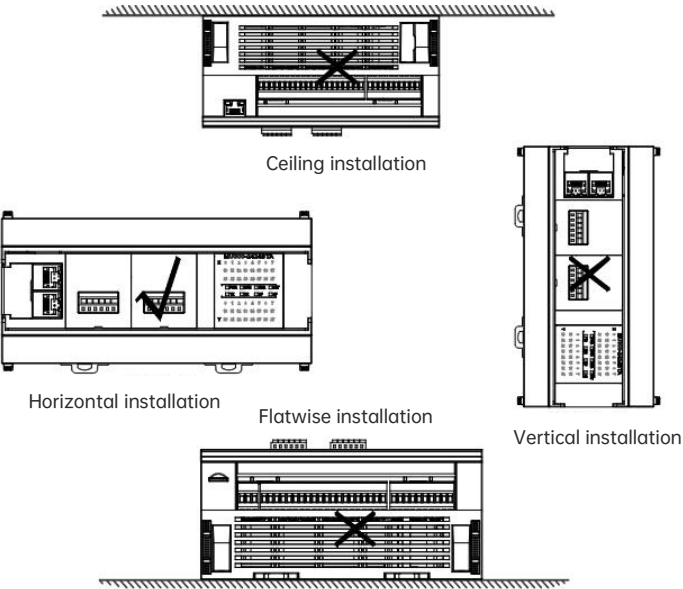


Fig 3-1 Installation position diagram

3.4 Installation Method

DIN rail mounting

Generally, you can mount the PLC onto a 35mm-wide rail (DIN). Open the DIN snap-fit at the bottom of the module and lock the bottom of the module onto the DIN rail; Rotate module close to the DIN guide rail and close the DIN snap-fit with a double-checking, as the following figure:

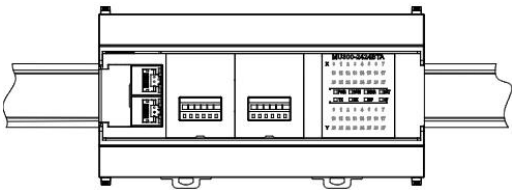


Fig 3-2 Diagram of installation on DIN rail

Screw fixing

Fixing the PLC with screws can stand greater shock than DIN rail mounting. M3 or M4 screws can be chosen to fix the PLC onto the backboard of the electric cabinet through the mounting holes on PLC enclosure, as the following figure.

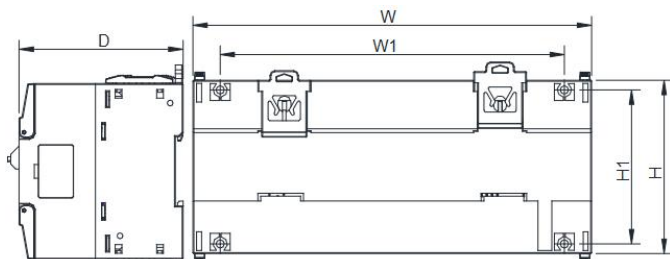


Fig 3-3 Dimensions of MU300 series main module

| Model | W | W1 | H | H1 | D |
|--------------------------------|-----|-------|----|----|----|
| MU300-0808BTA | 105 | 78.3 | 90 | 80 | 85 |
| MU300-1210BTA MU300-1210BRA | | | | | |
| MU300-2424BTA | 210 | 181.3 | 90 | 80 | 85 |

4. Cable specification

It is recommended to use stranded copper conductors and prefabricate insulated plugs to ensure connection quality. The following table lists the sectional areas and models of the recommended cables.

Table 4-1 Recommended Cable Parameter

| Cable | Recommended NO. | Cross-Section |
|----------------------|-----------------|------------------------|
| AC power line (L, N) | AWG17—AWG14 | 1.0—2.0mm ² |
| Ground line | AWG14 | 2.0mm ² |
| IO cable | AWG18—AWG20 | 0.5—0.8mm ² |
| Communication cable | AWG18—AWG20 | 0.5—0.8mm ² |

Fix the prepared cable head onto the PLC terminals with screws correctly. Fastening torque: 0.45~0.56Nm.

5. Power Consumption

MU300 basic modules own an internal power supply that give priority to itself and provides power to expansion module or other equipment. The power performance index is as follows:

Table 5-1 Power performance index

| Item | Unit | Min. | Rated | Max. |
|---------------------|------|------|-------|------|
| Input Voltage Range | VAC | 85 | 220 | 264 |
| Input Current | A | / | / | 1.2 |

MU300 basic module provides 24Vdc power supply for itself and all expansion module. At the same time, MU300 basic module can also provide 24Vdc power supply (24 V/0V) for input terminal or other equipment.

Table 5-2 Power performance index of main module

| Model | 24V/GND Output capacity for expansion module | 24V/0V Output capacity for external device |
|--------------------------------|--|--|
| MU300-0808BTA | 600mA | 400mA |
| MU300-1210BTA MU300-1210BRA | | |
| MU300-2424BRA | 1200mA | 400mA |

*The Max. capacity refers to the Max. output power provided by power supply when there is no load;

*The programming software provides a tool to calculate the load of power supply easily.

6. Indicator Definition

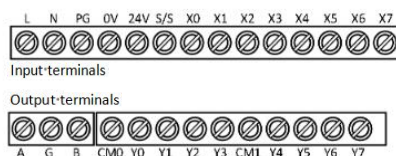
Indicators of the MU300 series CPU modules are divided into status indicator, communication indicator, and channel indicator. The following table defines indicators.

| Category | Name | Meaning |
|-------------------------|-------------|--|
| Status indicator | PWR | ON: module is powered on |
| | | OFF: module is powered off or power supply error |
| | RUN | Flash: execute user program |
| | | OFF: download program or PLC stops |
| | ERR | Flash: program execution error |
| | | OFF: system runs without error |
| | BAT | ON: low battery voltage alarm |
| | | OFF: normal battery voltage |
| Communication indicator | BF | Flash:EtherCAT error |
| | | OFF: EtherCAT works |
| Communication indicator | TX | Flashing during sending data from PORT1 |
| | RX | Flashing during receiving data from PORT1 |
| Channel indicator | X indicator | ON: corresponds to input channel 1 |
| | | OFF: corresponds to input channel 0 |
| | Y indicator | ON: corresponds to output channel 1 |
| | | OFF: corresponds to output channel 0 |

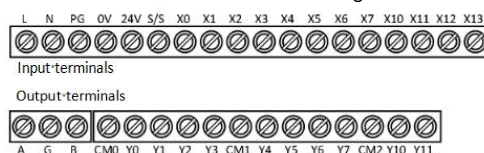
7. Terminal Introduction

The MU300 series terminal is a single row of 4mm pitch screw terminals. The silk screen of the terminal is shown in the following figure.

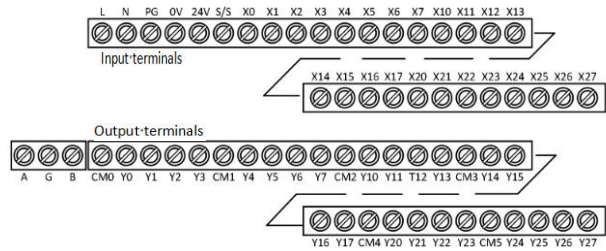
MU300-0808BTA terminal diagram:



MU300-1210BTA and MU300-1210BRA terminal diagram:



MU300-2424BTA terminal diagram:



8. Function Characteristic

| Model | MU300-0808BTA | MU300-1210BTA | MU300-1210BRA | MU300-2424BTA |
|-------------------|--|-----------------|---------------|-----------------|
| Function | | | | |
| High-speed input | X0~X3 200KHz | X0~X3 200KHz | | X0~X7 200KHz |
| High-speed output | Y0~Y3 200KHz | Y0~Y3 200KHz | / | Y0~Y7 200KHz |
| USB | Support for program download and monitoring with TYPE-C port. | | | |
| Ethernet | Two front ports integrated with switch, can be configured as EtherNet/IP master/slave or ModBUS TCP master/slave | | | |
| EtherCAT | Support 16-axis EtherCAT motion control; Min.EtherCAT cycle: 1000us, support up to 16 EtherCAT slaves | | | |
| CANopen | MUE-CAN expansion card needs to be installed. | | | |
| Expansion card | 1 | | | 2 |
| Expansion module* | 6 | | | 12 |
| TF card | Supported | | | |

*The expansion module is applicable to MU200 series.

9. Input and Output Characteristic of Switch Quantity

9.1 Input Characteristic and Signal Specification

Table 8-1 Input port specification

| Item | | Specification |
|------------------------|-------------------|---|
| Signal Input Mode | | Source type/leakage type, user can choose through the S/S terminal. |
| Electrical parameter | Detection Voltage | 24VDC |
| | Input Impedance | High-speed input port: 2.4K Ω other ports: 4.3K Ω |
| | Input as ON | External circuit resistance < 400 Ω |
| | Input as OFF | External circuit resistance > 24K Ω |
| Filter function | Digital filter | All ports support the digital filter function, and the filter time can be set |
| | Hardware filter | The ports have the hardware filter function, and the filter time is about 0.5ms |
| High-speed function | | Functions like high-speed counting, interrupt, pulse capture can be achieved The port counting frequency can be up to 200KHz |
| Common wiring terminal | | All input channels share one input common terminal |

MU300 series PLC can provide a S/S terminal, in which user can select the signal input mode to be source type or leakage type. Connect S/S terminal to + 24 V power supply, that is the input channel is set to leakage type mode, and the NPN type sensor can be connected. The internal equivalent circuit and external wiring of leakage mode is shown below:

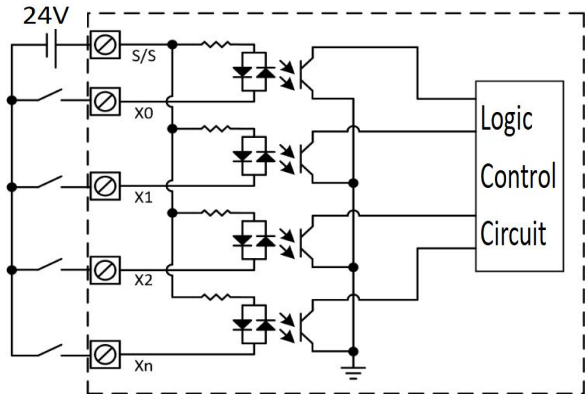


Fig 9-1 Wiring diagram of leakage-input quantity

Connect S/S terminal to - 24 V power supply, that is the input channel is set to source type mode, and the PNP type sensor can be connected. The internal equivalent circuit and external wiring of source mode is shown below

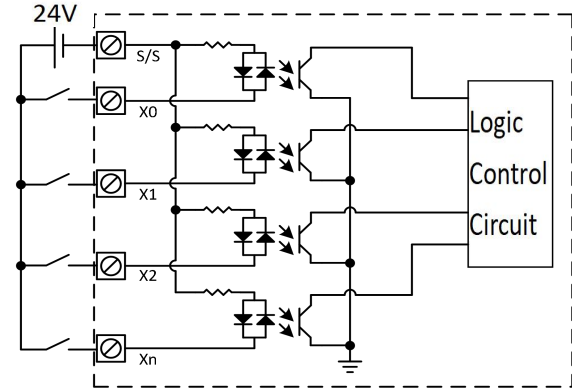


Fig 9-2 Wiring diagram of source-input switch quantity

9.2 Output Characteristic and Signal Specification

Table 9-2 Transistor output port

| Item | | Specification |
|-----------------------|----------------|--|
| External Power | | 5-24VDC |
| Electric isolation | | Optocoupler |
| Operation indication | | LED lights up when optocoupler is driven |
| Leakage current of | | Less than 0.1mA/30VDC |
| Min. load | | 5mA(5-24VDC) |
| Max. output current | Resistive load | High-speed output: 0.3A/point; Others: 0.3A/point; 0.8A/4 points; 1.2A/6 points; 1.6A/8 points |
| | Inductive load | 7.2W/24VDC |
| | Lamp load | High-speed output: 0.9W/24VDC Others: 1.5W/24VDC |
| Response time | ON->OFF | High-speed output: < 5us (Load current > 10 mA) |
| | OFF->ON | Others: < 0.5ms (Load current > 100 mA) |
| Max. output frequency | | High-speed output: 200KHz; Others: 1KHz |
| Fuse protection | | — |

Table 9-3 Relay output port

| Item | | Specification |
|------------------------------------|----------------|---|
| Rated voltage of loop power supply | | Below AC250V/DC30V |
| Circuit insulation | | Relay mechanical insulation |
| Operation indication | | LED lights up when the output contact of the relay pulls in. |
| Leakage current of open circuit | | — |
| Min. load | | 2mA (5VDC) |
| Max. output current | Resistive load | 2A/1 point, the total current of CM terminal at 8 points is less than 8A. |
| | Inductive load | AC220V/80VA |
| ON response time | | 20ms MAX |
| OFF response time | | 20ms MAX |

The output terminals of MU300 series PLC are composed of several groups, which are electrically isolated each other, and the output contacts of different groups are connected to different power circuits; The output type can be divided into relay and transistor. Transistor output can only be used in 24Vdc load circuit with the attention of power supply polarity. For the inductive load of DC circuit, adding freewheeling diode should be considered; For the inductive load of AC circuit, the RC instantaneous voltage absorption circuit should be considered in external circuit.

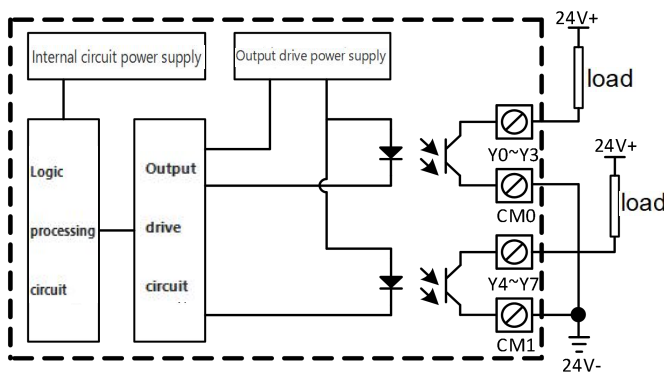


Fig 9-3 Internal equivalent diagram for pulse output

10. Expansion Card Function

MU300 Series basic modules support the expansion card function. 1 or 2 MUE series expansion cards can be installed in modules to meet the need of small IO points. The following expansion card types are supported:

| Model | Description |
|-----------|--|
| MUE-4X | 4-channel digital quantity input |
| MUE-4Y | 4-channel digital quantity output |
| MUE-4XY | 2-channel digital quantity input and 2-channel digital quantity output |
| MUE-2AD | 2-channel analog quantity input |
| MUE-2DA | 2-channel analog quantity output |
| MUE-2AM | 1-channel analog quantity input and 1-channel analog quantity output |
| MUE-RS232 | RS232 communication expansion card |
| MUE-RS485 | RS485 communication expansion card |

*The MU300-0808BTA, MU300-1210BTA and MU300-1210BRA modules support only one expansion card, and the other modules support two expansion cards.

11. Power-on Operation and Routine Maintenance

10.1 Power-on Operation

Check the connection item by item after wiring, to ensure that no foreign connections fall into the cabinet inside and heat flow:

1. Switch on the POWER of the PLC, PWR light should be light;
2. Start the PC software programming, and then download the prepared user program into the controller;
3. Set the PLC status to the RUN after verifying the download program, and the RUN indicator lights rapidly. However, ERR indicator lighting indicates that there is an error in the user program or system. Please troubleshoot the error according to the instructions in *MU300 Series Programmable Controller Programming Manual*;
4. Then connect to the external power supply and debug the system.

10.2 Routine Maintenance

Routine maintenance checking should pay attention to the following:

1. Ensure that the PLC working environment clean to avoid foreign bodies and dust into the machine.
2. Maintain good ventilation status of controller;
3. All wiring and terminal connections are firmly fixed in good condition.
4. Replace battery regularly;

12. Common Problem and Solution

When the controller can not work normally, please check in turn:

1. Check the power circuit connection and condition of related switches and protection circuit to ensure controller has been reliable power supply;
2. Check the user terminals wiring;
3. Whether the PLC is running.

Refer to the fault record. If the above checks are done and the controller still unable to work, you can refer to the table and working status of the controller for analysis.

Table 11-1 Common problem and solution

| Phenomenon | Possible cause | Solution |
|--|---|---|
| PWR and other indicators are OFF | Power supply voltage loss or low voltage | Check the power supply condition |
| | Disconnect the power switch or fuse blown | Check the switch, wire or fuse condition |
| | Abnormal power wiring | |
| | Power board damage | Check and confirm: Whether the voltage between LN terminals is within the normal range; whether exist short circuit or overload between 24V and 0V terminal |
| PWR indicator flash intermittently | Poor contact of power circuit | |
| | Over-connection of expansion modules, to cause current limiting | |
| | Short circuit in external power supply, to cause current limiting | |
| ERR indicator flashing | User program error | Re-edit program by MEGreator and download after exclusion |
| | Actual running time exceeds WDT setting | Increase WDT set time |
| | Expansion module fault | Check and rectify faults |
| Inconsistency between input status indicator and input terminal status | Over on-resistance of user circuit | Set the external-circuit electrical parameters to appropriate range, like shortening wire length, and nonuse of extremely thin wires |
| | Poor signal circuit contact | Check the cable connection and troubleshoot the fault |
| Output cannot be closed | Poor external wiring | |
| | Output channel damage | Swap with idle port |
| Inconsistency between output status indicator and output terminal status | Indicator damage or output channel damage | |
| Upload, download, and monitor disable | Poor cable connection | Use the special cable of Megmeet PLC |
| Non-response of expansion module | Unreliable connection | Check in power-down status, and power on after rectifying the fault |
| Serial port controls other equipment unsuccessfully | Poor cable connection or incorrect wiring signal property | Connect communication cables correctly |
| | Inconsistent settings of communication master and slave devices, such as baud rate, parity check, data bit, and address | Set the same communication parameter |
| | Communication protocol is inconsistent with the master and slave | Set the same communication protocol |
| High speed miscounting | In most cases, the input signal is interfered | Route the low voltage sensitive signal cable separately from the power cable |

Notice

1. The warranty range is confined to the PLC only.
2. Warranty period is 18 months, within which period Megmeet conducts free maintenance and repairing to the PLC that has any fault or damage under the normal operation conditions.
3. The start time of warranty period is the delivery date of the product, of which the product SN is the sole basis of judgment. PLC without a product SN shall be regarded as out of warranty.
4. Even within 18 months, maintenance will also be charged in the following situations:
 - Damages incurred to the PLC due to mis-operations, which are not in compliance with the User Manual;
 - Damages incurred to the PLC due to fire, flood, abnormal voltage, etc;
 - Damages incurred to the PLC due to the improper use of PLC functions.
 - Remove the PLC personally.
5. The service fee will be charged according to the actual costs. If there is any contract, the contract prevails.
6. If you have any question, please contact the distributor or our company directly.

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