MU200 Series PLC Basic Module Quick Start

User Manual

Thank you for using MU200 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 MU200 series PLC, convenient for on-site reference.

This manual is for the following MU200 series members:

MU200-1616BTA MU200-1616BRA MU200-3232BTA
MU200-3232BRA MU200-2424BRA MU200-2424BTA
MU200-4040BRA MU200-4040BTA

Version：V1.0
Revision Date：2021-08-05
BOM Code：R33010738

For detailed product information, please refer to *MU200 Series PLC User Manual*, *MEGreator 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

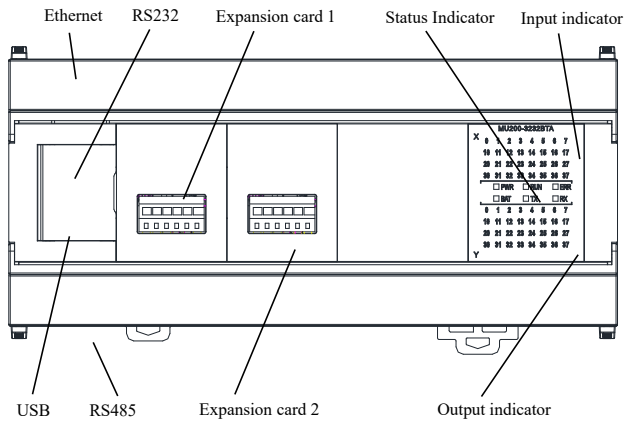


Fig 1-1Appearance and part name of module

2. Model Description

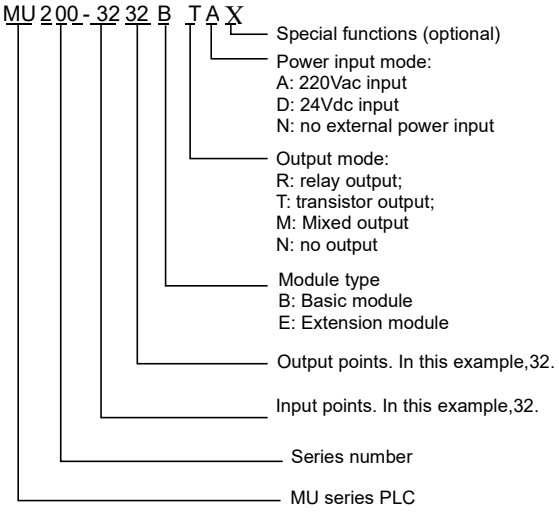


Fig 2-1 Model description

3. Installation Description

3.1 Environmental Temperature

Temperature range for PLC usage：0℃~55℃. 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:

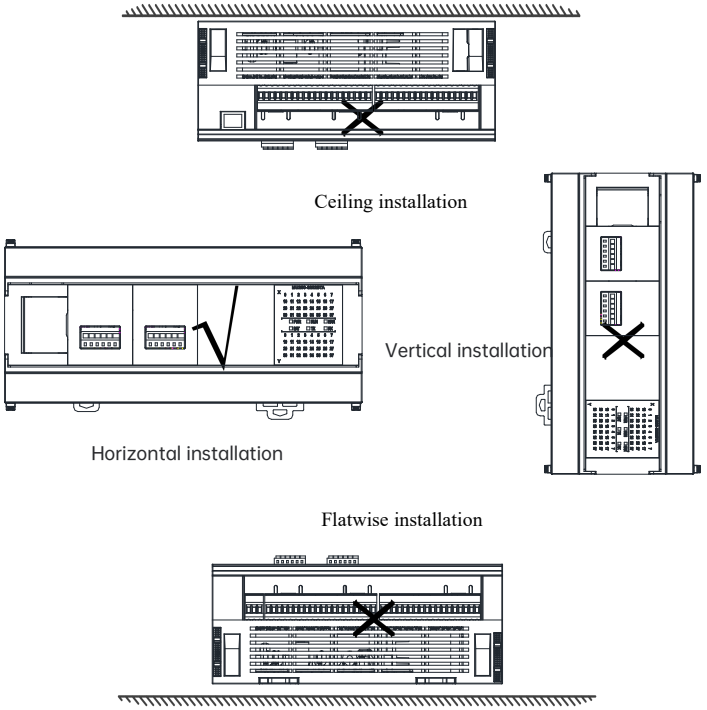


Fig 3-1 Installation position diagram

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：

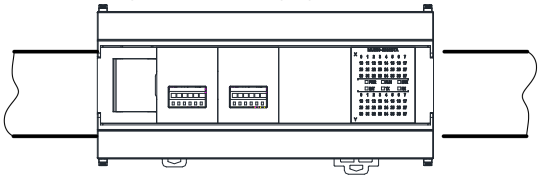


Fig 3-2 Diagram of installation on DIN rail

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.

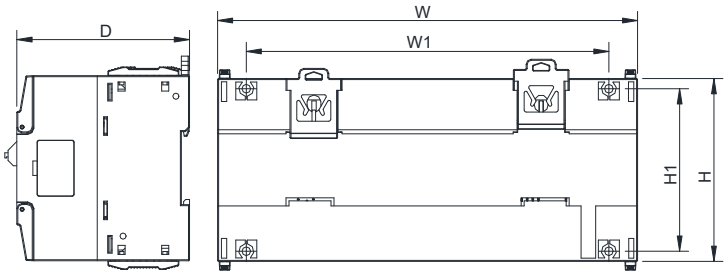


Fig 3-3 Dimensions of MU200 series main module

Model	W	W1	H	H1	D
MU200-1616BTA MU200-1616BRA	145	118.3	90	80	85
MU200-2424BTA MU200-2424BRA	180	153.3	90	80	85
MU200-3232BTA MU200-3232BRA	210	181.3	90	80	85
MU200-4040BTA MU200-4040BRA	-	-	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

MU200 main modules own an internal power supply module 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

MU200 main module provides 24Vdc power supply for itself and all expansion module. At the same time, MU200 main 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
MU200-1616BTA	800mA	300mA
MU200-1616BRA		
MU200-2424BTA	1200mA	400mA
MU200-2424BRA		
MU200-3232BTA		
MU200-3232BRA		
MU200-4040BTA		
MU200-4040BRA		

*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

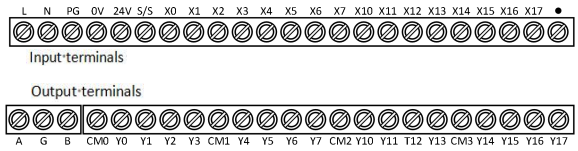
Indicators of the MU200 series CPU modules are divided into status indicator, communication indicator, and channel indicator. The following table defines indicators.

Category	Name	Meaning
Status indicator	PWR	ON(Always)：module is powered on
		OFF：module is powered off or power supply error
	RUN	Flash：execute user program
		OFF：download user program or PLC stops
	ERR	Flash：user program execution error
		OFF：system runs without error
	BAT	ON(Always)：low battery voltage alarm
		OFF：normal battery voltage
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

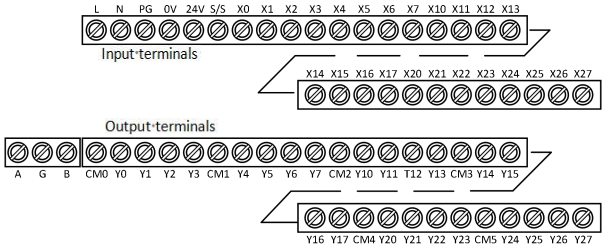
7. User Terminal Introduction

The MU200 series terminal is a single row of 4mm pitch screw terminals. The silk screen of the terminal is shown in the following figure.

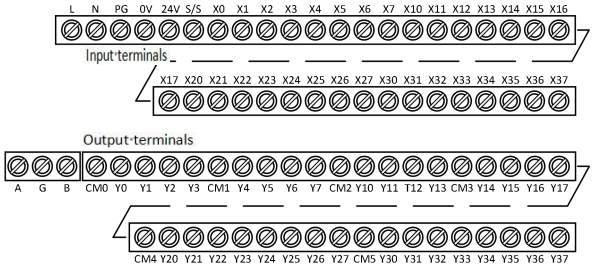
MU200-1616BTA/BRA terminal diagram:



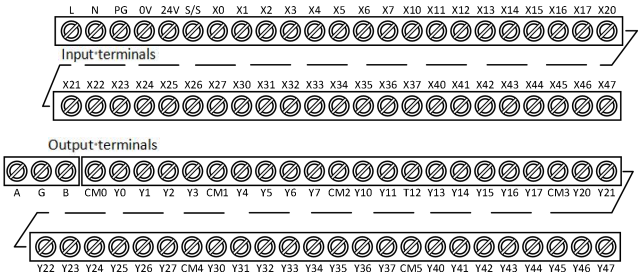
MU200-2424BTA/BRA terminal diagram:



MU200-3232BTA/BRA terminal diagram:



MU200-4040BTA/BRA terminal diagram:



8. Input and Output Characteristic of Switch Quantity

8.1 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	X0-X7ports: 2.4KΩ, other ports: 4.3KΩ
	Input ON	External circuit resistance is less than 400Ω
	Input OFF	External circuit resistance is greater than 24KΩ
Filter function	Digital filter	All ports own 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		X0-X7 can achieve functions like high-speed counting, interrupt, pulse capture The counting frequency of X0-X7 port can be up to 200KHz
Common wiring terminal		All input channels share one input common terminal

MU200 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

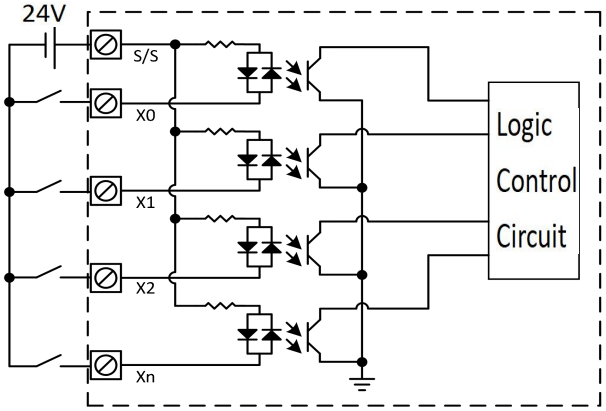


Fig 8-1 Wiring diagram of leakage-input switch quantity

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

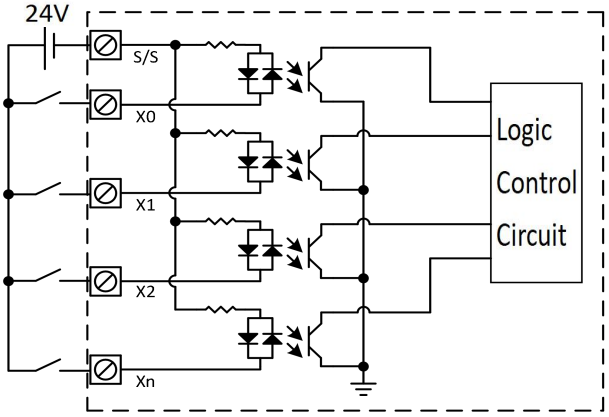


Fig 8-2 Wiring diagram of source-input switch quantity

8.2 Output Characteristic and Signal Specification

Table 8-2 Output port specification

Item		Specification
External Power		5-24VDC
Electric isolation		Optocoupler
Operation indication		LED is ON when optocoupler is driven
Leakage current of open circuit		Less than 0.1mA/30VDC
Minimum load		5mA(5-24VDC)
Max. output current	Resistive load	Y0-Y7：0.3A/1 point；Others：0.3A/1 point；0.8A/4 points；1.2A/6 points；1.6A/8 points
	Inductive load	7.2W/24VDC
	Lamp load	Y0-Y7：0.9W/24VDC Others：1.5W/24VDC
Response time	ON->OFF	Y0-Y7：Less than 5 us（Load current above 10 mA） Others：Less than 0.5ms（Load current above 100 mA）
	OFF->ON	
Max output frequency		Y0-Y7：200KHz；Others：1KHz
Fuse protection		NO

The output terminals of MU200 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.

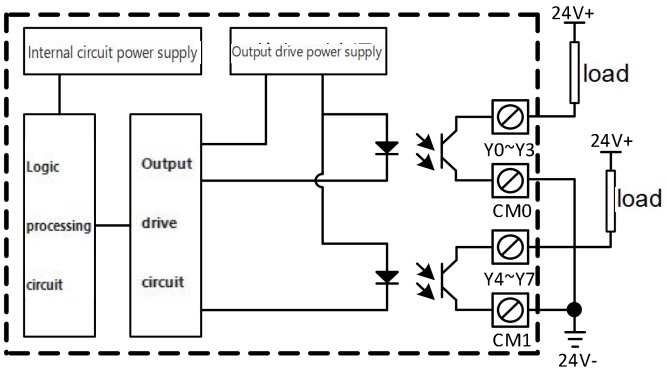


Fig 8-3 Internal equivalent diagram for pulse output

9. Expansion Card Function

MU200 Series controller main modules support 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:

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	4-channel analog quantity input
MUE-2DA	4-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	RS485communication expansion card

*The MU200-1616BTA and MU200-1616BRA modules support only one expansion card, and the other modules support two expansion cards.

10. 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, POWER 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 *MU200 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;

11. 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
POWER 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
POWER 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.

Shenzhen Megmeet Electrical Co.,Ltd

Add: 5th Floor, Block B Unisplendour Information Harbor, Langshan Road, Shenzhen, 518057, China
Tel: 400-666-2163 (+86) 0755-86600500
Fax: (+86)0755-86600999
Zip: 518067
Website: www.megmeet.com