

MU200 Series Analog Quantity Expansion Card
User Manual

Thank you for using MU200 series expansion cards independently developed and produced by MEGMEET, which mainly works with main module to complete analog quantity input and output functions. Before using the MU200 series PLC product, please carefully read this manual so as to better understand it, fully use it, and ensure safety.

This manual is suitable for the following MU200 series members:

MUE-2AD	2-channel analog quantity input expansion card
MUE-2DA	2-channel analog quantity output expansion card
MUE-2AM	1-channel analog quantity input and 1-channel analog quantity output expansion card

Version Number: A00

Data: 2022-08-25

BOM Code: R33010805

For detailed product information, please refer to *MU200 Series PLC User Manual*, *MU200 Series PLC Programming Reference Manual*. For ordering the above user manuals, contact your Megmeet distributor or download from MEGMEET website (www.megmeet.com).

1. Terminal Definition

	<p>Description for MUE-2AD Terminal</p> <table border="1"> <tr> <td>V1+, V2+</td> <td>Voltage input+ of CH1 and CH2</td> </tr> <tr> <td>I1-, I2+</td> <td>Current input- of CH1 and CH2</td> </tr> <tr> <td>V11-, V12-</td> <td>Voltage&current input- of CH1 and CH2</td> </tr> </table>	V1+, V2+	Voltage input+ of CH1 and CH2	I1-, I2+	Current input- of CH1 and CH2	V11-, V12-	Voltage¤t input- of CH1 and CH2						
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IO+	Current output+ of CH2												
VIO-	Voltage¤t output- of CH2												

Fig 1-1 Terminal definition and description of expansion card

2. Installation

- ◆ Pull upward from the left edge of expansion card to open the cover plate one by one when the main module is powered off;
- ◆ Insert the expansion card pin header into the base accurately and vertically;
- ◆ Install two tapping screws to fix the expansion card and cover the plate;
- ◆ Wire external signal.

! Note: Do not plug or remove with power-on!

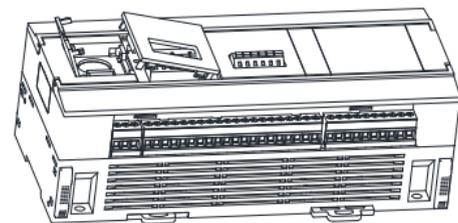


Fig 2-1 Expansion card installation diagram

3. Cable Connection and Specification

It is recommended to use shielded twisted-pair cables to ensure connection quality. The following table lists the sectional areas and models of the recommended cables.

Table 3-1 Model of recommended cable

Cable	Cross-section	Cable number	Strip length	Terminal
Signal line	0.8~1.0mm ²	AWG18、20	8.0~9.0mm	Tinning

Note: Insert the wire smoothly instead of explosive force.

4. Wiring Requirement

Figure 4-1 shows the wiring requirement for user terminal.

Note for wiring:

- ① It is recommended to use shielded twisted-pair cable as analog signal line and stay away from power supply.
- ② Do not short-circuit voltage and current terminals in any mode.

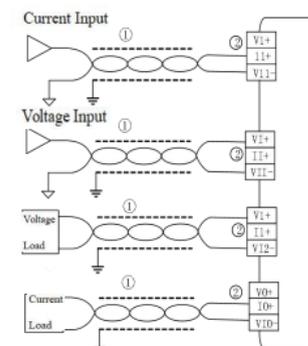


Fig 4-1 Terminal wiring diagram

5. Input Characteristic

5.1 Performance

Table 5-1 Performance of analog quantity input

Item	Technical Specification	
Input range for analog quantity	Voltage: 0~+10V, 0~+5V, 1~5V Current: 0~20mA, 4~20mA	
Digital input	Default: 0~10000	
Resolution	5mV (Voltage) / 10uA (Current)	
Conversion speed	2ms/channel	
Conversion precision	±1% (full scale)	
Input impedance	Voltage	500K Ω
	Current	250 Ω

5.2 Function of Input Comparer

Each channel needs to set the upper-lower limit levels of comparer and backlash values (after calibration). The flag bit of the input comparer status register is set when an input lower-upper limit comparer action occurs. The input lower-upper limit comparer performs as shown below.

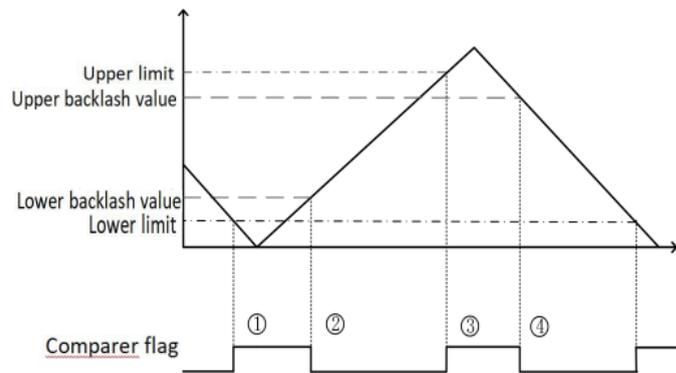


Fig 5-2 Input comparer function diagram

5.3 Disconnection detection function

The disconnection detection function is supported only when the input range is 1 ~ 5V or 4 ~ 20 mA.

The functions are as follows:

- ① If the input signal is lower than 0.3V or 1mA, the input disconnection status register is set to 1;
- ② If the input signal is greater than 0.3V or 1mA, the input disconnection status register is reset to 0;

6. Output Characteristic

Table 6-1 Performance of analog quantity input

Item	Technical Specification
Input range for analog quantity	Voltage: 0 ~ +10V, 0 ~ +5V, 1 ~ 5V Current: 0 ~ 20mA, 4 ~ 20mA
Digital input	Default: 0~10000
Resolution	5mV (Voltage) /10uA(Current)
Conversion speed	2ms/channel
Conversion precision	±1% (full scale)
Min. load (Voltage)	1K Ω
Max. load (Current)	500 Ω

7. Calibration Function

The default range of digital quantity in different modes is 0 to 10000, which can be set to other range by user with calibration function. For the calculation method, see Formula 7-1.

$$D = \frac{S_U - S_L}{U_U - U_L} \times (U - U_L) + S_L \quad (7-1)$$

Among that, D = Input (output) digital quantity value corresponding to voltage or current

U = Actual input (output) voltage or current value

U_U = Upper range U_L = Lower range

S_U = Upper calibration S_L = Lower calibration

Note 1: Table 7-1 Upper and lower range table for each mode

Mode	0-10V	0-5V	1-5V	4-20mA
U_U	10V	5V	5V	20mA
U_L	0	0	1V	4mA

Note 2: Default upper calibration:10000, Default lower calibration: 0. If the upper and lower limits of the calibration are set according to the default, the full scale ranges from 0 to 10000 in 4 to 20mA mode. As shown in the following picture.

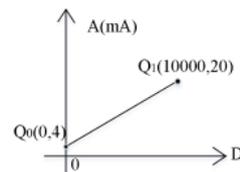


Fig 7-1 Scaling relation

Note 3: The above calibration limits are only for customer calibration and physical scaling. The actual analog quantity input result may exceed this limits because of the over-range input signal.

8. Routine Inspection

1. Check that the wiring meets requirements.
2. Check that the expansion card is properly inserted in the extension port of main module.
3. Check the application, make sure that the correct module configuration and parameter setting range are selected.
4. Set the MU200 main module to RUN to check the ERR light status.

9. Indicator and Fault Inspection

Phenomenon	Probable cause	Coping strategy
ERR light flashes	No expansion card connection in background configuration	Check the expansion card information in the PLC information column in the background to ensure that the configuration is correct
	Expansion card configuration error in background	
No expansion card	No insertion of	Connect the expansion

in PLC information column/Information inconsistency	expansion card	card to the main module accurately.
	Expansion card damage	Contact the manufacturer
Analog quantity input error	Input disconnection	Use the element monitoring table to view the module status address information, check the wiring and remove fault
	Comparer over-limit	
Input over-limit		
Analog quantity output error	Output over-limit	

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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