

EX1N, 1S

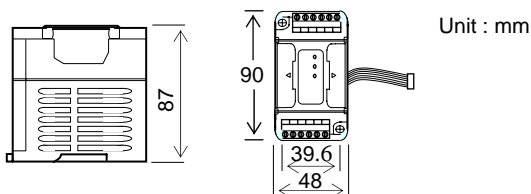
EX1s2AD USER'S GUIDE

☛ This manual contains text, diagrams and explanations which will guide the reader in the correct installation and operation of the Ex1s2AD special function block.

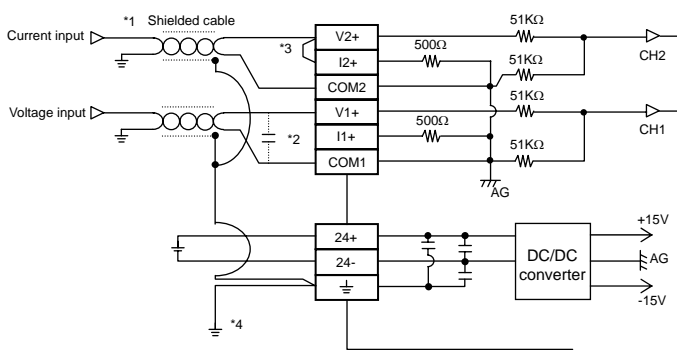
*** Introduction ***

- 1) The Ex1s2AD type analog input block (Hereafter referred to as the Ex1s2AD) converts 2 points of analog input values (voltage output and current output) into digital values, and transfers them to the PLC main unit.
- 2) The analog input is selected from the voltage input or the current input by the method of connecting wires.

*** External Dimensions ***



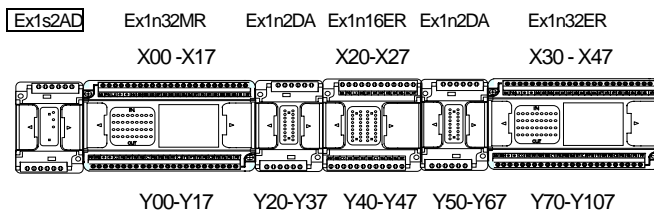
*** Wiring ***



- *1 Use a two-core, twisted, shielded cable for the analog input line, and separate it from other power lines or a lines easily induced.
- *2 If there is voltage ripple in the input or there is noise in the external wiring, connect a capacitor of approximately 0.1 to 0.47 μ F, 25V.
- *3 For the current input, make sure to short-circuit the "Vn+" terminal and the "In+" terminal (n: input channel No.).
- *4 Make sure to connect the terminal to the terminal of the PLC main unit to which Class D grounding (100 Ω or less) is performed.

*** Connection with PLC ***

- 1) The blocks not occupy any points.
- 2) Applicable PLC : Ex1s, Ex1n, Ex2n series.
- 3) The Ex1s2AD and the main unit are connected with the cable at the left of the main unit.



*** Specifications ***

1. Environment specification

Item	Content
Directric Withstand voltage	500V AC 1min(Between analog input terminals and case)

Environmental specifications other than the above-mentioned are the same as the main unit of the Programmable controller. (Refer to the manual of the Programmable controller)

2. Power supply specification and others

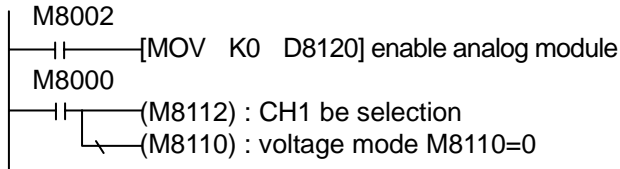
Item	Content
Analog circuits	24V DC \pm 10% 85mA (supplied from the External)
Digital circuits	5V DC 30mA (supplied from main unit)
Isolation	Photo-coupler isolation between analog and digital circuits.

3. Defining gain and offset

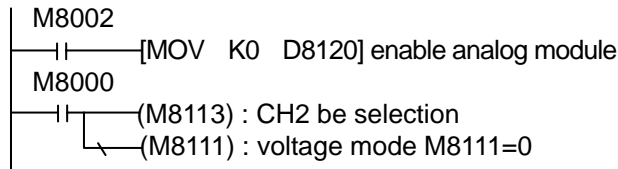
Item	Voltage input	Current input
Range of analog input	-10 to 10V DC (External load resistance 2K to 1M Ω)	-20 to 20mA (External load resistance 500 Ω or less)
Digital output	11bit (the 12th bit is positive and negative sign bit)	
Resolution	5Mv{10-(-10V)}/4000	10 μ A{20-(-20)}/4000
Integrated accuracy	\pm 1%(full scale -10V to 10V)	\pm 1%(full scale -20 to 20mA)
A/D conversion time	1CH / 2 scantime	
Input characteristics	Analogue value: -10V to 10V Digital value -2000 to 2000	Analogue value: -20mA to +20mA Digital value: -2000 to 2000

Program Example

◆ Voltage Mode



CH1 Digital value that is converted from analog values and stored in D8112.



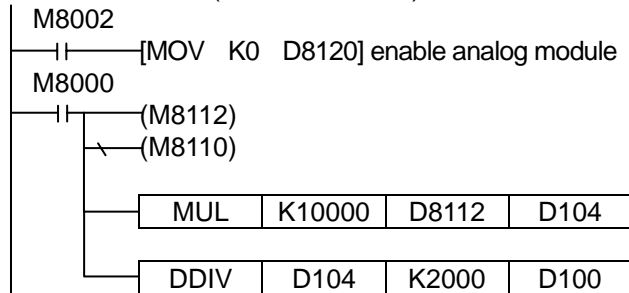
CH2 Digital value that is converted from analog values and stored in D8113.

CH1 real voltage input = $10V \times (D8112/2000)$

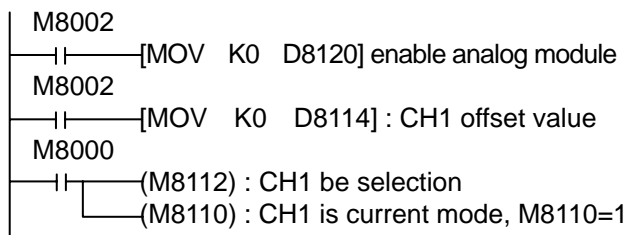
CH2 real voltage input = $10V \times (D8113/2000)$

If the digital value wanted to display in the range of $-10,000 \sim +10,000$ and stored in any D register, please see below program,

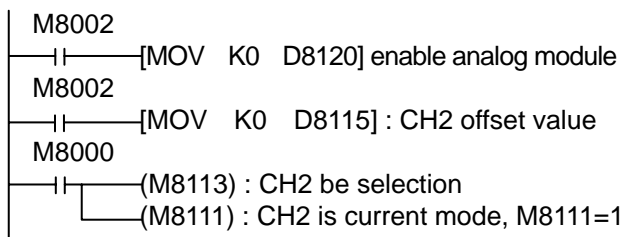
$$D100 = 10,000 \times (D8112 \text{ or } D8113) \div 2000$$



◆ Current Mode



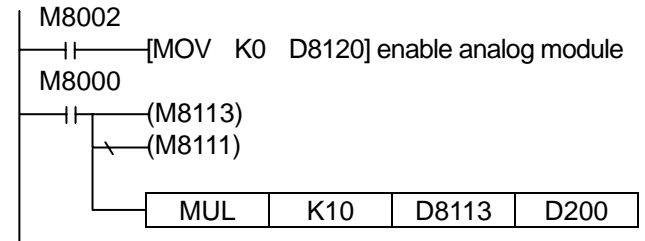
CH1 Digital value that is converted from analog values and stored in D8112. (resolution 0.01mA)



CH2 Digital value that is converted from analog values and stored in D8113. (resolution 0.01mA)

If the digital value wanted to display in the range of $-20.000mA \sim 20.000mA$ and stored in any D register, please see below program,

$$D200 = 10 \times (D8112 \text{ or } D8113)$$



- ◆ M8110 : CH1 voltage or current mode selection flag
- ◆ M8111 : CH2 voltage or current mode selection flag
- ◆ M8112 : CH1 of 2AD enable flag
- ◆ M8113 : CH2 of 2AD enable flag
- ◆ D8110 : CH1 Immediate Data
- ◆ D8111 : CH2 Immediate Data
- ◆ D8112 : CH1 data buffer (Average data)
- ◆ D8113 : CH2 data buffer (Average data)
- ◆ D8114 : CH1 offset value
- ◆ D8115 : CH2 offset value

Ex1s2AD-edoc0309v100b

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