



LX3V-2DAV-BD

User manual



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1. Mounting instruction

Before the installation make sure that the PLC host and the equipment connected to BD module have been powered off. Please install the BD module in the corresponding position of the PLC, and lock the two standard screws.

Caution

- 1) This BD module only support the following firmware versions or later. Users can check the PLC firmware version in D8001.
 - LX3VP:25103;
 - LX3VE: 25201;
 - LX3V-A2:25014;
 - LX3V-A1: 22006;
 - LX2V: 24005;

When mounting module to PLC, all the lights are blinking after power ON PLC please purchase new PLC.

- 2) When output current, make sure that the load resistance should be less than 500Ω ; otherwise the output will be lower.
- 3) Please fixed BD module on the PLC, poor contact may lead to failure.
- 4) BD module and top cover of PLC's tightening torque is $0.3 \sim 0.6$ N.m.

Warning

Make sure to power off the PLC before mounting or removing the BD module and put the cover in right place.

2. Special feature

- 1) LX3V-2DAV-BD module equips with 2 channels analog output. This module will be mounted in the PLC.
- 2) The output voltage of LX3V-2DAV-BD module between $-10V$ to $10V$, and the digital value will be saved in special system address, but the numerical relationship between input and output value cannot be changed.

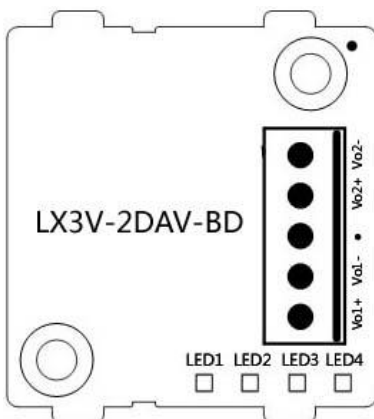
Table 2- 1

Expansion port 1 (far away from PLC light)

Address	Description	
M8112	The flag of switching output mode in CH1 OFF: Voltage output mode (-10V~10V, -2000~2000)	ON: Disabl ed
M8113	The flag of switching output mode in CH2 OFF: Voltage output mode (-10V~10V, -2000~2000)	
D8112	The digital value of channel 1; (-10V~10V, -2000~2000)	
D8113	The digital value of channel 2; (-10V~10V, -2000~2000)	
Expansion port 2 (near PLC light)		
Address	Description	
M8116	The flag of switching output mode in CH1 OFF: Voltage output mode (-10V~10V, -2000~2000)	ON: Disable d
M8117	The flag of switching output mode in CH2 OFF: Voltage out mode (-10V~10V, -2000~2000)	
D8116	The digital value of channel 1; (-10V~10V, -2000~2000)	
D8117	The digital value of channel 2; (-10V~10V, -2000~2000)	

3. Dimension

Table 3- 1



Out-2DAV Output voltage range: -10V~10V	
Vo1+	Anode of the channel 1 voltage output
Vo1-	Cathode of the channel 1 voltage output
•	No connection
Vo2+	Cathode of the channel 2 voltage output
Vo2-	Cathode of the channel 2 voltage output

LED lights indicating

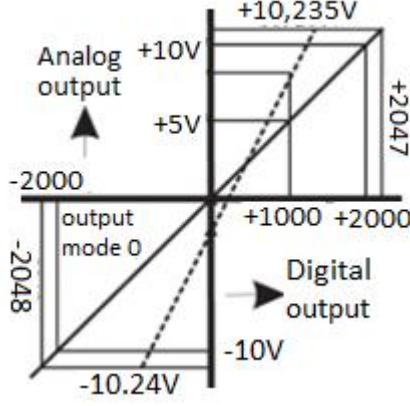
- 1) LED1: ON when power ON.
- 2) LED2: flashes when communications.
- 3) LED3 (AD 1): On indicates enable, OFF indicates disable, flicker indicates exceeding the measurement range.
- 4) LED4 (AD 2): On indicates enable, OFF indicates disable, flicker indicates exceeding the measurement range.

If the BD module is plugged into the old firmware version when on the host, all LEDs will be flashing.

4. Specifications

- 1) Please refer to the LX3V user manual for the general specification of LX3V-2DAV-BD.
- 2) LX3V-2DAV-BD is powered supply by LX3V main unit.

Table 4- 1

Specification	
Item	Voltage output
Input range	DC-10V~10V (the external load resistance is no less than 2KΩ)
Digital output	12 bit binary
Resolution	5mV[10V default scope 1/2000]
Precision	Full scale $\pm 1\%$
A/D conversion time	1 scan time (The analog digital conversion is completed by the END order)
Characteristic	
Insulation	No insulation in each PLC channel
Occupied points	Zero point

5. Wire

Warning

Make sure cut off the electricity before installation/disassembly, to prevent electric shock or product damages.

Caution

- 1) Please keep the signal cable from the high-voltage cable at lease 100mm.

- 2) The shielding wire cable shall be grounded. But their grounding point can be the same with high-voltage lines.
- 3) Welding is forbidden at the end of any cable. Ensure the number of connected cables does not exceed the designed number of the unit.
- 4) Never connect cable with forbidden size.
- 5) Fix the cable, so that the stress does not act on the terminal board or the cable connection area.
- 6) The screwing torque of the terminal is from 0.5 to 0.6N.m. Fasten tight to prevent malfunction.
- 7) Keep the redundant terminals empty.

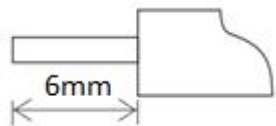
5.1 Suitable cable

Use AWG25-16 to connect the output equipment

The maximal screwing torque is from 0.5 to 0.6N.m

The use of different types of cables might cause poor contact between the terminals. It is better to use pressed terminals.

Table 5- 1

Line type	Cross sectional area(mm ²)	End-of-pipe treatment	
AWG26	0.1288	Stranded cable: stripped jacket, rub Conductor, then connect the cable.	
.....	Single-core cable: stripped jacket, Then connect the cable.	

5.2 Output mode

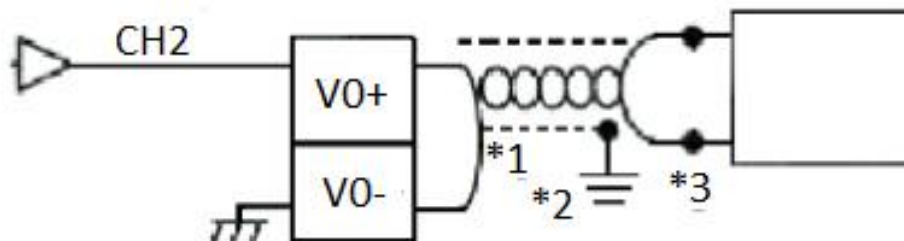


Figure 5- 1

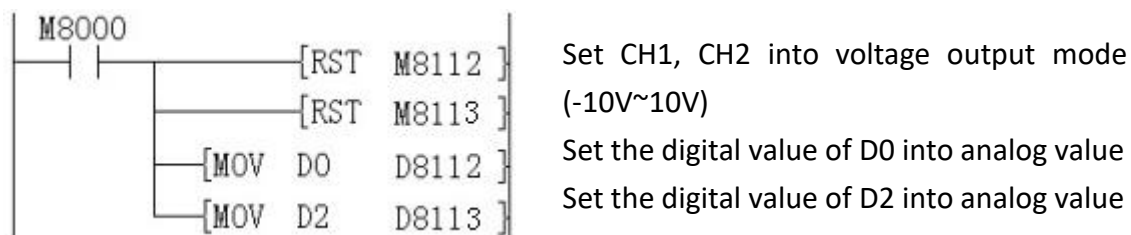
6.Examples

The output analog of all channels (-10V~10V) is stored inside the data memory (D8112, D8113) in the form of data. Values will be automatically stored when the “END” order is sent out. The value is calculated by the designated analog data conversion characteristics of the special auxiliary relays M8112 and M8113.

6.1 Basic Program Examples

Caution

- 1) Start M8112 and M8113; designate the analog data conversion characteristics of CH1 and CH2.
- 2) After execution of analog data conversion, do not change the values of D8112 or D8113 through operator program, programming tools or graphic operating terminal.
- 3) The following program will be set into voltage output mode, and the data of D0 and D2 will be converted into analog value.



If the data are not stored into D0 or D2, then D8112, D8113 can be simultaneously used on setting values and other orders, such as timer/counter.

6.2. Examples of Applications

Since the LX3V-2DAV-BD does not have offset and gain functions, if it needs for the values out of the standard specifications, Additional programming orders will be needed to multiply or divide the converted value.

Caution

- 1) Since the use of additional programming orders, the converted precision and resolution of the analog value are different with the specifications;
- 2) The original range of the analog output does not change;

Voltage Output Mode

- 1) Under the voltage output mode, the 2DAV will convert the figures -2000~2000 into analog output -10V~10V. If the figure data used in the application is -A~A, then the range must be

converted into -2000~2000, as is shown in the following program examples. The figures converted from the analog values are stored in D8112;

- 2) Since the data range is converted from -A~A into -2000~2000, therefore the precision of the analog output is no longer just 5mV;

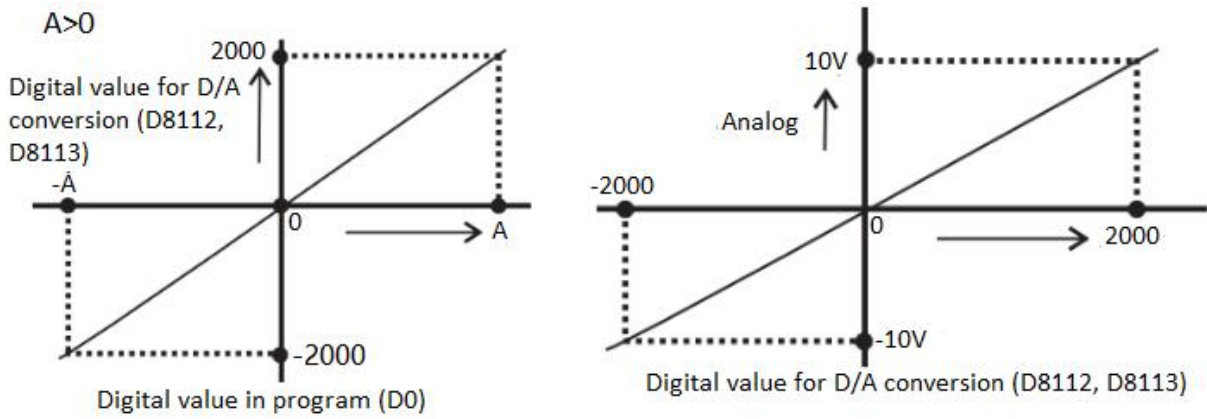


Figure 6-1

If the digital range used in D0 is 0~A, then the data used in the user's applications are:

$$\begin{aligned}
 D8114 &= 2000 \times D0 \div A \\
 &= 2000 \times D0 \div 10000 \text{ (when } A=10000\text{)} \\
 &= D0 \div 5
 \end{aligned}$$

