

60-D/A12A, 60-D/A12B Analog Output Boards

Contents of this Manual:

Section 1	Selecting an Analog Output Board	2
	1-1: Ordering Information	2
Section 2	Installation	3
	2-1: Mounting Instructions	3
	2-2: Electrical Wiring	4
	2-1: Range Selection	4
Section 3	Operating Information	5
	3-1: Addressing Analog Outputs	5
	3-2: Product Performance Specifications	5

Section 1

Selecting An Analog Output Board

The **60-D/A12B-4** has 4 digital to analog voltage conversion channels offering 12 bits of resolution. This is equivalent to saying that the output signal can be controlled to within .025% of full scale. The **60-D/A12B-4** analog voltage output board plugs onto an **IOMUX** controller. A two channel version of this board is also available for smaller system requirements. These two boards have field selectable voltages of 5 volts or 10 volts per board. Field selectable unipolar (0 to full scale) or bipolar (+/-) operation is available on a per channel basis. All of the power required to run the **60-D/A12B-4** is supplied by the **IOMUX**.

The **60-D/A12A-2** is a two channel 4-20 mA current output board. Each of the two channels on this board is fully isolated from each other and from the digital circuitry on the main **IOMUX** board.

Externally supplied power is used to drive each current output channel. This gives you complete flexibility in instrumentation options.

1-1: Ordering Information

Choose the analog output board that is right for your system:

- 60-D/A12A-2** Two channel 4-20 mA output board.
- 60-D/A12B-2** Two channel voltage output board.
- 60-D/A12B-4** Four channel voltage output board. Field selectable ranges include: 0-5V, 0-10V, +/-5V, +/-10V

Section 2

Installation

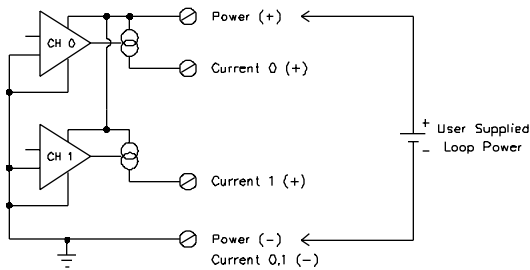
2-1: Mounting Instructions

Each of the three versions of the **60-D/A12** plugs onto either expansion port on an **IOMUX** controller. If the **60-D/A12** board is the only expansion board used, then it should be installed onto expansion port #1. Be sure to fasten the front end of the expansion board to the standoff on the **IOMUX** with the retaining screw provided.

2-2: Electrical Wiring

60-D/A12A-2

There are four connections provided for each output on the **60-D/A12A-2**. Two of these connections are for the user supplied loop power. The other two connections are for the current output. Power negative and current negative (common) are internally tied together. Both output channels are completely isolated from each other. You may use the same power supply for both channels if channel to channel isolation is not required.



Electrical Connections (60-IOMUX-FEB)

The screws on the **60-IOMUX-FEB** terminal backplane are labeled 'A' and 'B'. The 'A' terminal is the positive connection, and the 'B' is the negative. The second screw terminal group from the left (J2) is for field wiring connections to both expansion ports. The chart below details these connections.

Loop Output Connections

Channel	Expansion 1		Expansion 2	
	Out (+)	Common	Out (+)	Common
0	10A	10B	14A	14B
1	12A	12B	16A	16B

Loop Power Supply Connections

Channel	Expansion 1		Expansion 2	
	Pwr (+)	Pwr (-)	Pwr (+)	Pwr (-)
0	9A	9B	13A	13B
1	11A	11B	15A	15B

Electrical Connections (IOMUX-RTU)

The screws on the **60-TERM-1** screw terminal assembly are labeled 'A' and 'B'. The 'A' terminal is the positive connection, and the 'B' is the negative. The **60-TERM-1** provides screw terminals for both expansion ports. The chart below details these connections.

Loop Output Connections

Channel	Expansion 1		Expansion 2	
	Out (+)	Common	Out (+)	Common
0	2A	2B	6A	6B
1	4A	4B	8A	8B

Loop Power Supply Connections

Channel	Expansion 1		Expansion 2	
	Pwr (+)	Pwr (-)	Pwr (+)	Pwr (-)
0	1A	1B	5A	5B
1	3A	3B	7A	7B

60-D/A12B-2, -4

There are only two connections required for each voltage analog output on the **60-D/A12B**. These connections are the signal and analog ground output for each analog channel. Since power to operate the analog circuitry is supplied by the **IOMUX**, no other connections are required. The analog ground connection is common to all channels on this board, and to the analog ground on the analog to digital converter on any **60-A/D16** board that may be in use on the same **IOMUX**. Isolated analog inputs are available with the **60-MPLEX** isolated input system.

Electrical Connections (60-IOMUX-FEB)

The screws on the **60-IOMUX-FEB** terminal backplane are labeled 'A' and 'B'. The 'A' terminal is the positive connection, and the 'B' is the negative. The second screw terminal group from the left (J2) is for field wiring connections to both expansion ports. The chart below details these connections.

Output Connections

Channel	Expansion 1		Expansion 2	
	Out (+)	Common	Out (+)	Common
0	9A	9B	13A	13B
1	10A	10B	14A	14B
2	11A	11B	15A	15B
3	12A	12B	16A	16B

Electrical Connections (IOMUX-RTU)

The screws on the **60-TERM-1** screw terminal assembly are labeled 'A' and 'B'. The 'A' terminal is the positive connection, and the 'B' is the negative. The **60-TERM-1** provides screw terminals for both expansion ports. The chart below details these connections.

Output Connections

Channel	Expansion 1		Expansion 2	
	Out (+)	Common	Out (+)	Common
0	1A	1B	5A	5B
1	2A	2B	6A	6B
2	3A	3B	7A	7B
3	4A	4B	8A	8B

Note: Only channels 0 and 1 are populated on a **60-D/A12B-2**.

Full scale voltage range selection (all channels)

Shunt W1 Position	Left	Right
Channels 0 - 3	10 Volts	5 Volts

Unipolar/bipolar selection (per channel)

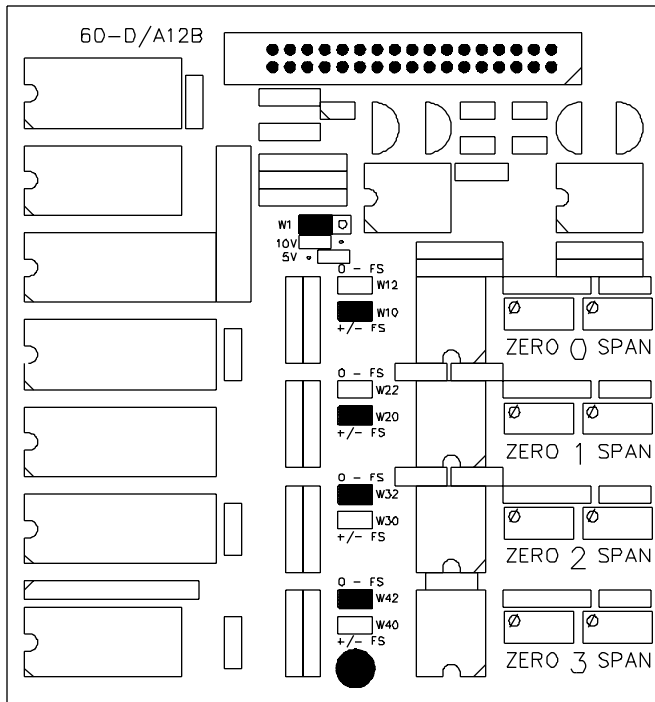
Channel #	0 to Full Scale	+/- Full Scale
0	W12	W10
1	W22	W20
2	W32	W30
3	W42	W40

2-3: 60-D/A12B Range Selection

The **60-D/A12B** has field movable jumpers for selecting range options. Jumper W1 determines the full scale voltage value, either five or ten volts, for all the output channels on the board. Unipolar or bipolar operation can be selected on a channel by channel basis. Refer to the following chart for details.

Figure 2-3 shows a typical configuration for a **60-D/A12B-4**. This configuration is shown to be:

- Full Scale = 10 volts (all channels)
- Channel 0 range = +/- 10 volts
- Channel 1 range = +/- 10 volts
- Channel 2 range = 0 to 10 volts
- Channel 3 range = 0 to 10 volts



Note: On some revisions of the **60-D/A12B** circuit board the on-board labeling for setting jumper W1 is incorrect. The correct W1 positions are shown here.

60-D/A12B Range Jumpers
Figure 2-3

Revision History

Filename: 60da12.chp
First printed: 10/86
Second printing

Printed February 1994