

Analog Output Module

The Analog Output Expansion Module gives the MicroLYNX the ability to control drives that require an analog control signal such as variable frequency drives, servos and brush-type DC motor drives. It adds two 0 to +5 volt output channels to the functionality of the MicroLYNX. Each channel features 12 bit resolution and may be programmed to one of three operational modes: voltage, velocity or position. Each of these modes may be set to a 2.5V centerpoint for plus or minus operation.



In many cases, this module may save the expense and complexity of using a PLC by enabling MicroLYNX to handle applications such as Indexing Conveyor, Material Handling and Feed Rate Override.

Electrical Specifications

Analog Output Voltage 0 to +5 Volts @ 50mA Max.
 Resolution 12 bits
 Offset ± 3 LSB
 Integral Linearity Error ± 2 LSB
 Differential Linearity Error $\pm 3/4$ LSB

Pin #	Connector Option	
	8 Pin Terminal Block	10 Pin Header
1	Ground	Ground
2	CH1 (slots 1-2), CH3 (slot 3)	Ground
3	Ground	CH1 (slots 1-2), CH3 (slot 3)
4	Ground	Ground
5	CH2 (slots 1-2), CH4 (slot 3)	Ground
6	Ground	CH2 (slots 1-2), CH4 (slot 3)
7	NC	NC
8	NC	Ground
9		NC
10		NC

Table 11.11: Analog Output Module Pinout

Installing the Analog Output Module

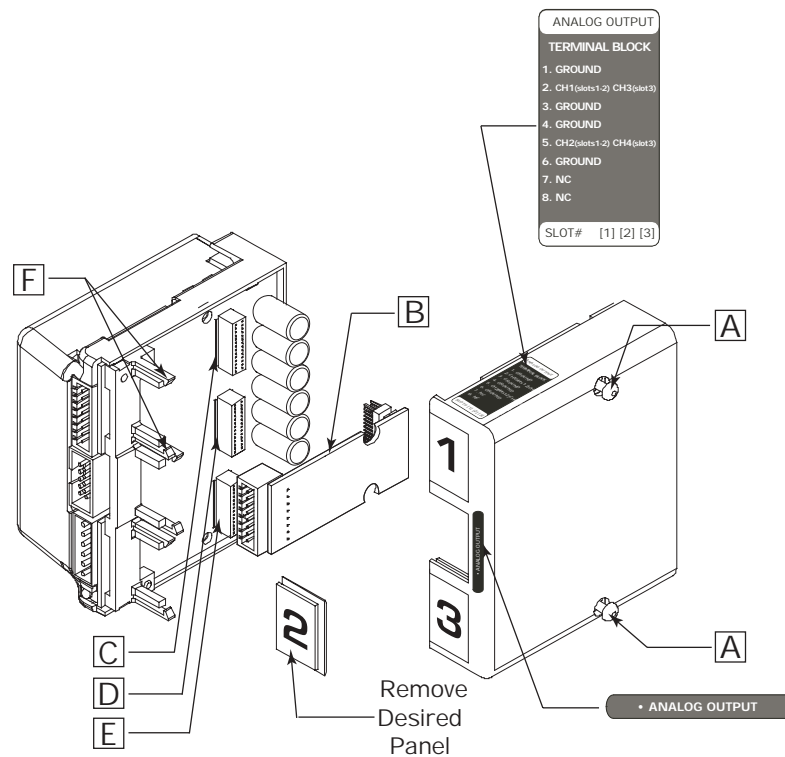


Figure 11.17: Installing the Analog Output Module

To Install the Module:

- 1) Remove the two retaining screws (A) from the cover.
- 2) Remove the blank panel (1, 2, or 3) from the desired slot you want to use.
- 3) Carefully press the Expansion Module (B) into place by plugging the 28 pin connector into the desired receptacle (C, D, or E) and snapping it into place under the retaining clips (F).
- 4) Reinstall the MicroLYNX cover.
- 5) Affix the labels supplied with the Module as shown.

Analog Output Commands

The Analog output module adds 3 new commands to the MicroLynx code and is available in Firmware 1.528 or higher.

The commands are AOUT, VAE and DAS.

MNEMONIC	Description	OPCODE
AOUT <chan> = <value>*AUNIT If DAS = 1 or 2	Analog OUT	7Ch (124)
AOUT <chan> = Velocity*AUNIT*MUNIT AOUT <chan> = Position*AUNIT*MUNIT Converts using this formula if DAS = 3,4,5 or 6	Analog OUT	7Ch (124)

Outputs scaled <value> to the Digital to Analog Board. (Converts scaled <value> from D to A) DAS = 1 or 2
or

Converts using this formula if DAS = 3: Velocity*AUNIT*MUNIT = 0 to 4095 counts

Converts using this formula if DAS = 4: Velocity*AUNIT*MUNIT = -2048 to +2047 counts

Converts using this formula if DAS = 5: Position*AUNIT*MUNIT = 0 to 4095 counts

Converts using this formula if DAS = 6: Position*AUNIT*MUNIT = -2048 to +2047 counts

MNEMONIC	Description	OPCODE
VAE = 0 or 1 0 for DAS 1 & 2 1 for DAS 3, 4, 5 or 6	Velocity or position to Analog Enable	C2h (194)

Enables Velocity or Position to be sent to the digital to analog channel that has a DAS type of 3 to 6.

MNEMONIC	Description	OPCODE
DAS chan = AUNIT,type	Digital to Analog Output Setup	B4h (180)

type = 1 to 6 (all types produce 0 to 5 volts)

1 = Volts, absolute <value>.

2 = Volts, plus or minus centered around 2.5 volts

3 = Velocity, absolute Velocity.

4 = Velocity, plus or minus centered around 2.5 volts

5 = Position, absolute Position.

6 = Position, plus or minus centered around 2.5 volts

For setting up Digital to Analog channels:

chan = 1,2 when in slot 2

chan = 3,4 when in slot 3

value = 0 to 4095 when AUNIT = 1

value = 32 bit IEEE floating point when AUNIT not 0 or not 1

AUNIT = 1 or 32 bit IEEE floating point. NOT ZERO

4095 / USER_UNITS; Absolute types (DAS=1, 3, 5)

4095 / (USER_UNITS * 2); plus or minus types (DAS = 2, 4, 6)

Absolute Type Examples (For 0 to 5 Volt Output)

Result: With DAS=1 and AUNIT = 4095/5 and VAE = 0.

AOUT <chan> = <value>

AOUT <chan> = 1 volt when <value> = 1; AOUT = 2.75 volts when <value> = 2.75.

Result: With DAS = 3 and AUNIT = 4095/5*51200 and MSEL=256 and MUNIT = 51200 and VAE = 1.

AOUT <chan> = 1 volt when Velocity = 1; AOUT = 2.75 volts when Velocity = 2.75.

Result: With DAS = 5 and AUNIT = 4095/5*51200 and MSEL=256 and MUNIT = 51200 and VAE = 1.

AOUT <chan> = 1 volt when Position = 1; AOUT = 2.75 volts when Position = 2.75.

Plus or Minus Type Examples

Set an analog value (as if controlling a speed of 0 to 10000 steps/sec in a separate drive) and control direction:

AOUT <chan> = <value>

Result: With DAS = 2 and AUNIT = 4095/20000 and VAE = 0.

AOUT <chan> = 2.5 volts when <value> = 0;

AOUT <chan> = 5 volts when <value> = +10000;

AOUT <chan> = 0 volts when <value> = -10000.

Result: With DAS = 4 and AUNIT = 4095/20000 and MSEL = 2 and MUNIT = 1 and VAE = 1.

AOUT <chan> = 2.5 volt when Velocity = 0;

AOUT <chan> = 5 volts when Velocity = 10000;

AOUT <chan> = 0 volts when Velocity = -10000

Result: With DAS = 6 and AUNIT = 4095/20000 and MSEL = 2 and MUNIT = 1 and VAE = 1.

AOUT <chan> = 2.5 volt when Position = 0;

AOUT <chan> = 5 volts when Position = 10000

AOUT <chan> = 0 volts when Position = -10000