Expansion I/O Installation

Logic Power

The expansion modules operate on power from the base unit via the expansion bus ribbon cable. All expansion points utilize optical isolators for total isolation. The LED indicators on the digital input and output boards are driven by the bus ribbon and represent the status as seen by the opto isolator.

The "field side" of the digital inputs require power (they may be internal jumpered to common power on terminal strip). The digital outputs will switch a live load and can be internally jumped to a common source.

The analog boards require an isolated power source for operation independant of the actual "loop" power. The required power can be connected to the same power supply as the base unit, or the same power supply as the instruments, if galvanic isolation is not required.

Mounting Expansion I/O Boards

There are optional I/O Expansion boards for increasing the point configuration of the unit. The size of these modules is 3.5" x 5.5" x 1.5". These modules are suitable for desktop or panel mount. The panel mounting bracket has two 0.187 inch holes spaced at 6.4 ".

Expansion I/O Hardware Addressing

Each I/O expansion card has a jumper selection (J1) for card address. Each card must be set for a unique address between 1 and 31. This address is used in the parameter setup of points (Module Addr) to indicate the associated board.

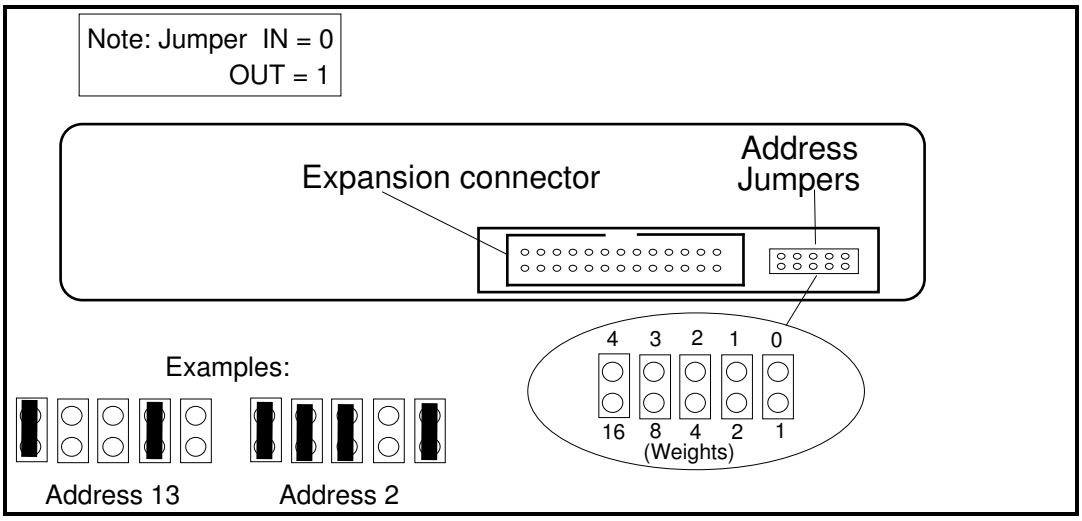

Figure.**Error! No text of specified style in document.**-1
Expansion Module Addressing

The expansion cards provide "pluggable" terminal strip connections to field wiring. Wire sizes up to size 14 AWG can be accommodated.

The expansion I/O cards connect to the base unit via a 26 conductor ribbon cable. Up to 31 cards can be connected on a single cable.

Digital Input Expansion Modules-

There are no internal jumpers or adjustments on the digital modules intended for field configuration. The Digital Input module comes with each point occupying 2 terminal strip positions and both legs isolated from power or ground.

Digital points can be configured to use an internally bused voltage, an externally supplied voltage, or "live" contacts. The modules operate with 8 - 100 VDC and 16 - 35 VAC.

DIGITAL INPUT, No internal jumpers

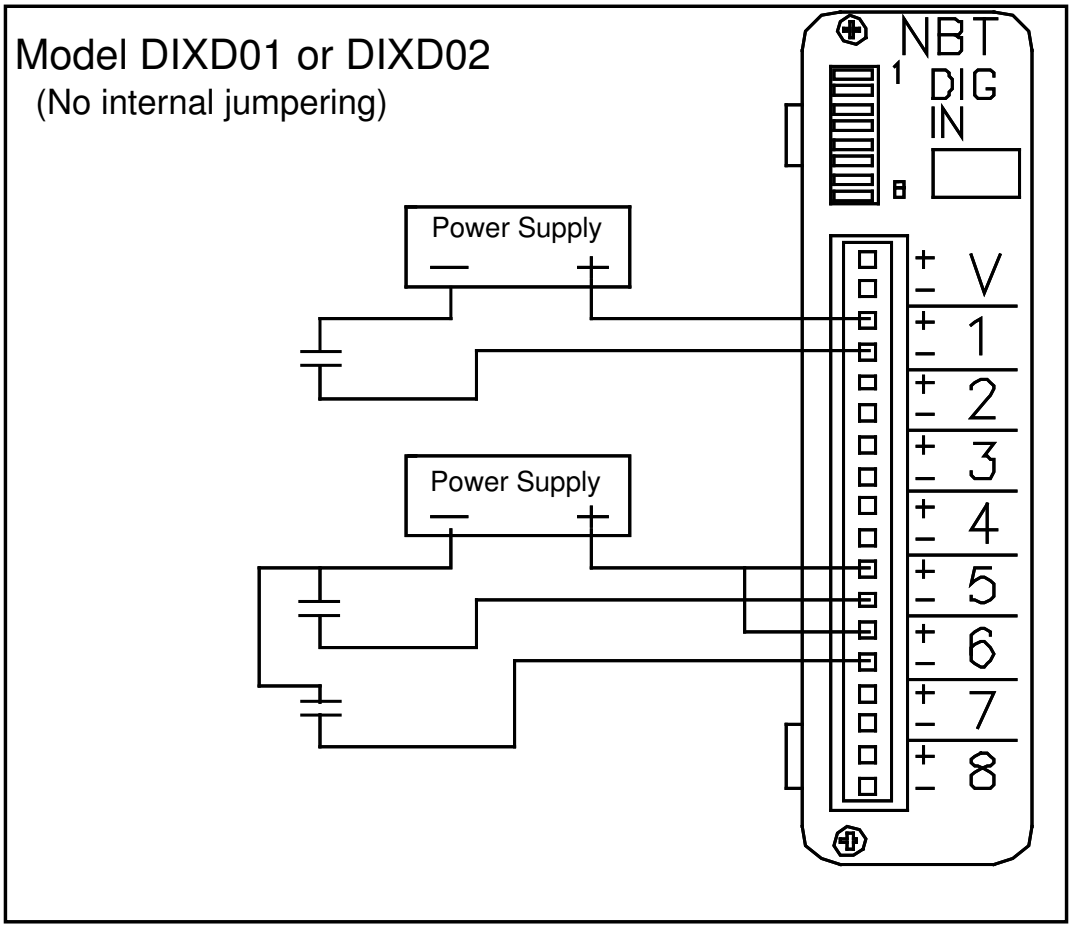

Figure.**Error! No text of specified style in document.**-2
Digital Input, no internal jumpers.

DIGITAL INPUT, with internal jumpers

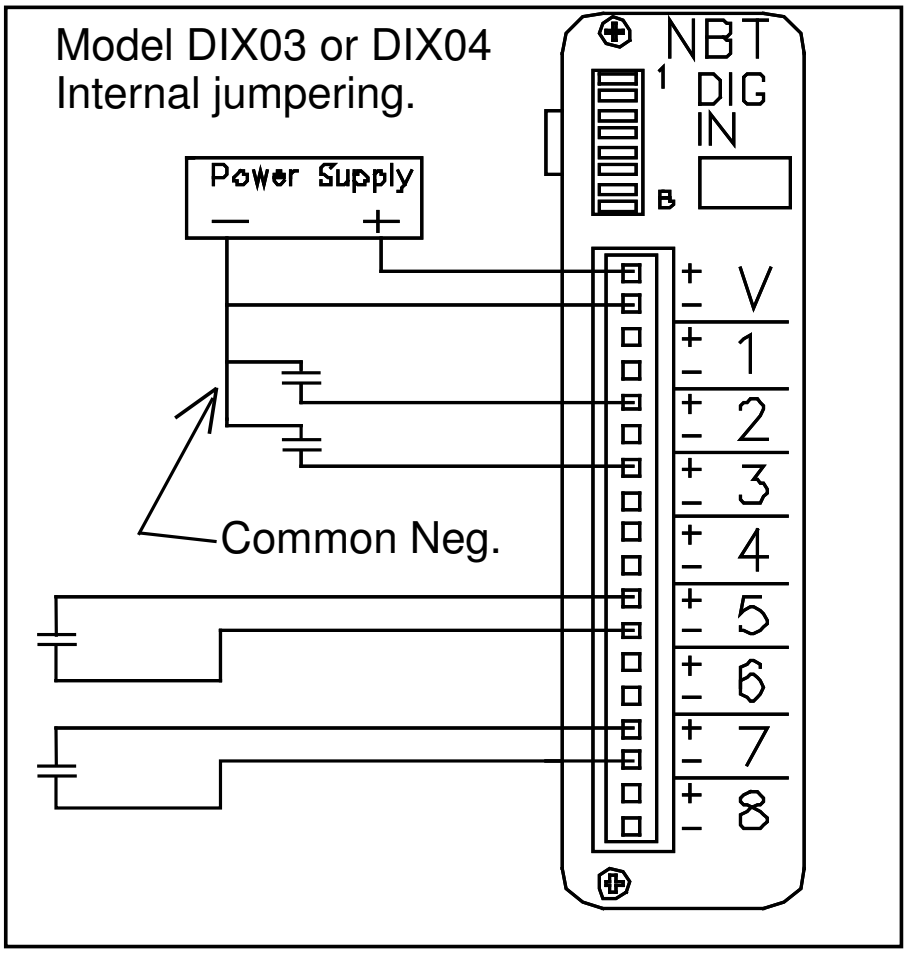

Figure.**Error! No text of specified style in document.**-3
Digital input with internal jumpers.

Digital Output Expansion Modules

There are no internal jumpers or adjustments on the digital modules intended for field configuration. The Digital Output module comes with each point occupying two terminal strip positions and both legs isolated from power or ground. Optional configurations can be ordered which bus either the high side or the low side to the +V or -V terminals respectively. This provides a switched live lead for direct connection to un-powered loads.

DIGITAL OUTPUT, No internal jumpers

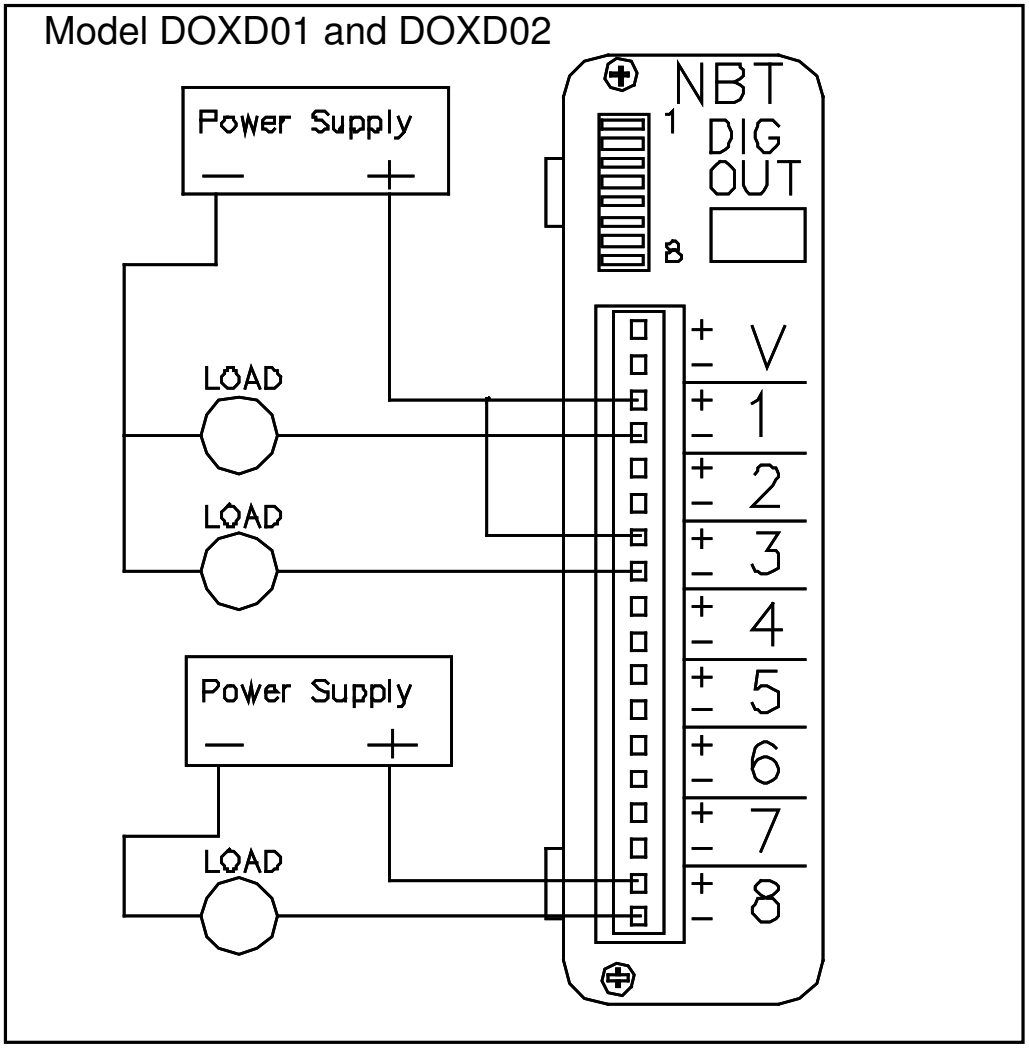

Figure.**Error! No text of specified style in document.**-4
Digital Output, without internal jumpers.

DC Digital Output points utilize medium or high power FET relay drivers, suitable for connection to external relay coils or small indication loads (24VDC 1.0 amp or 4.0 amp max). AC Digital Outputs use an optically isolated triac output (solid state relay) capable of handling up to 4.0 amps at 120VAC. Transient clamping is provided.

DIGITAL OUTPUT, with internal jumpers

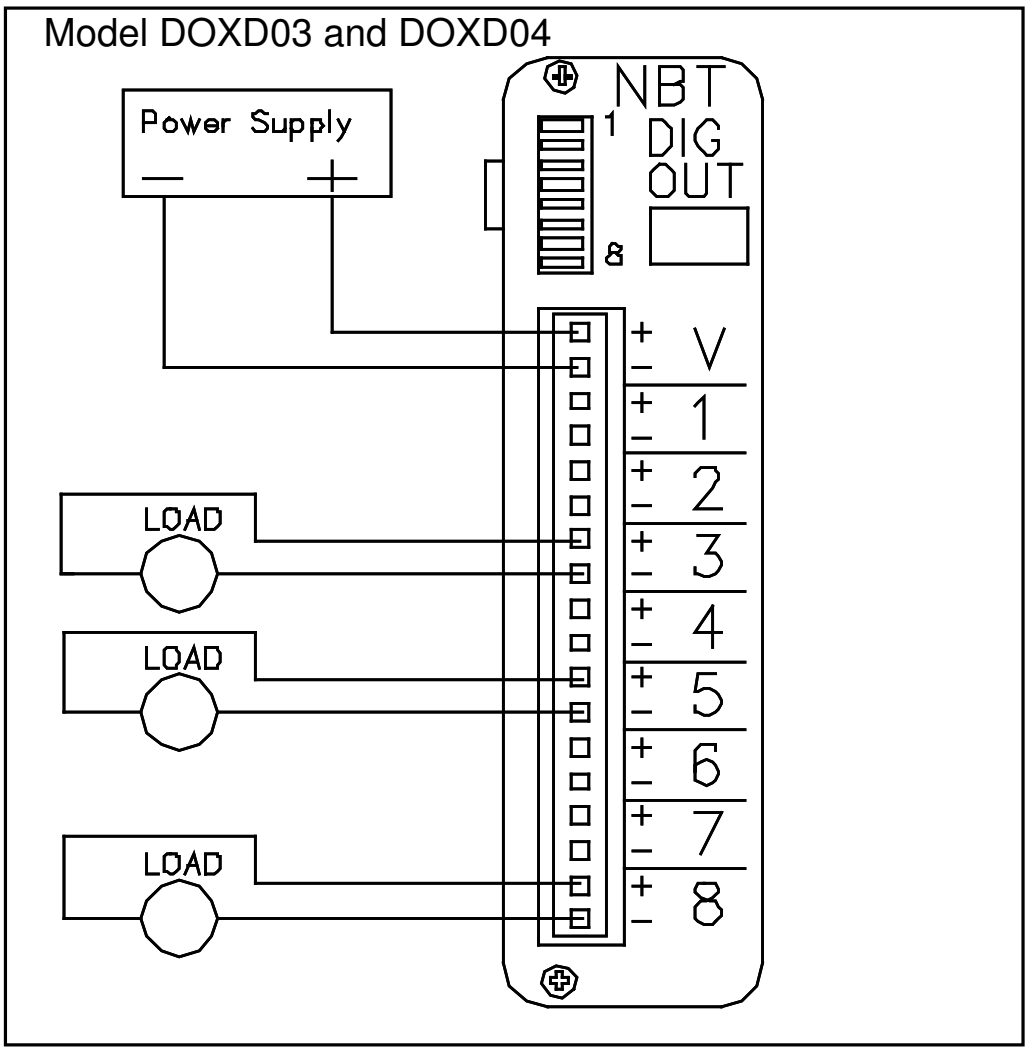

Figure.**Error! No text of specified style in document.**-5
Digital Output, with internal jumpers.

Note:	The field side expansion I/O power source must be sized to support the maximum load current.

Analog Input Expansion Modules-

There is a Full Scale trim pot (R8) located in the AI module. It is adjusted at the factory for correct calibrated value. Over a long term there may be minor trim adjustments required. The analog input value will go high with an open circuit.

Jumper JP2 is a 3 pin jumper located in the AI module.

JP2	1-2	selects bipolar operation of the A/D
	2-3	selects unipolar operation

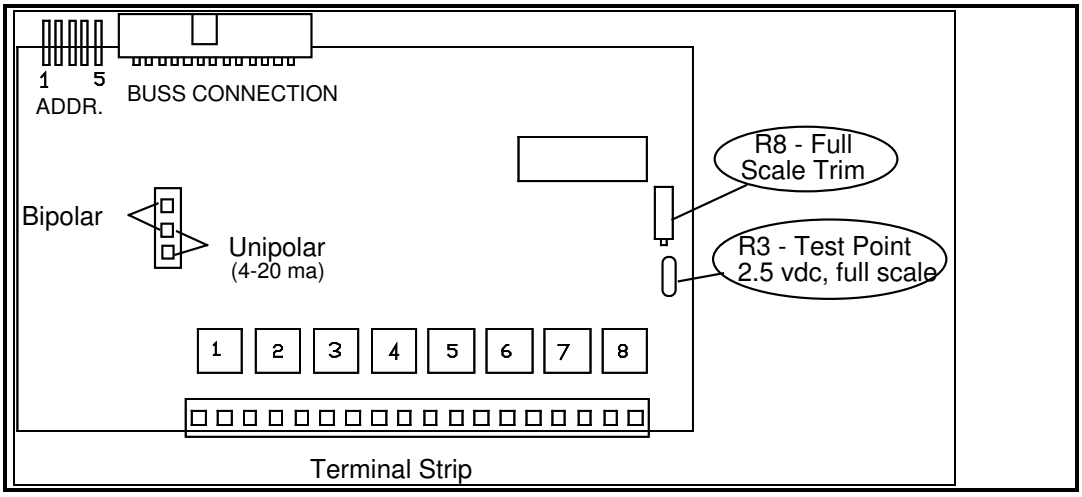

Figure.**Error! No text of specified style in document.**-6
Analog Input, jumper selection.

The AIXA01, AIXA02, AIXA03 and AIXA04 analog input modules require + 12 & - 12 VDC (or 24 VDC) for full range operation. Load current for a XAI module is approx. 30 ma.

Each expansion module uses an independent A/D converter with 10 or 12 bit resolution. Note that the points within a single expansion module are not optically isolated from each other. They each, however, can withstand continuous common mode voltages of +/- 200 VDC and momentary (10 sec) common mode voltages of +/- 500 VDC (SWC - Surge Withstand Capabiltiy). Optical Isolation allows the entire field side of the module to float to voltages of 500 volts.

Surge protectors are typically set at about 75 V. Contact the factory for other options.

ANALOG INPUT

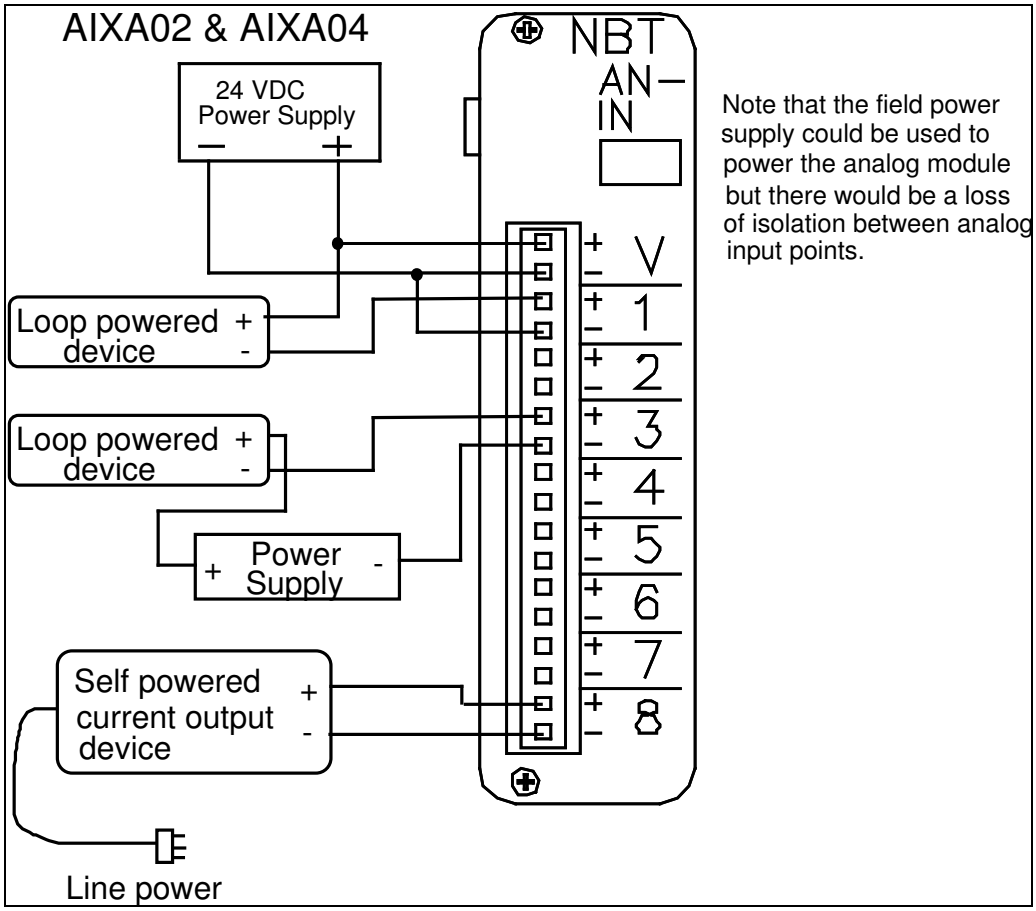

Figure.**Error! No text of specified style in document.**-7
Analog Input with internal jumpers

Analog Output Module-

Wiring connections are shown in Figure 8.15

There is a Full Scale trim pot (R6) located in the AO module. It is adjusted at the factory for correct value. Over a long term there may be minor adjustments required.

Jumpers are available on each point to select range and voltage or current mode.

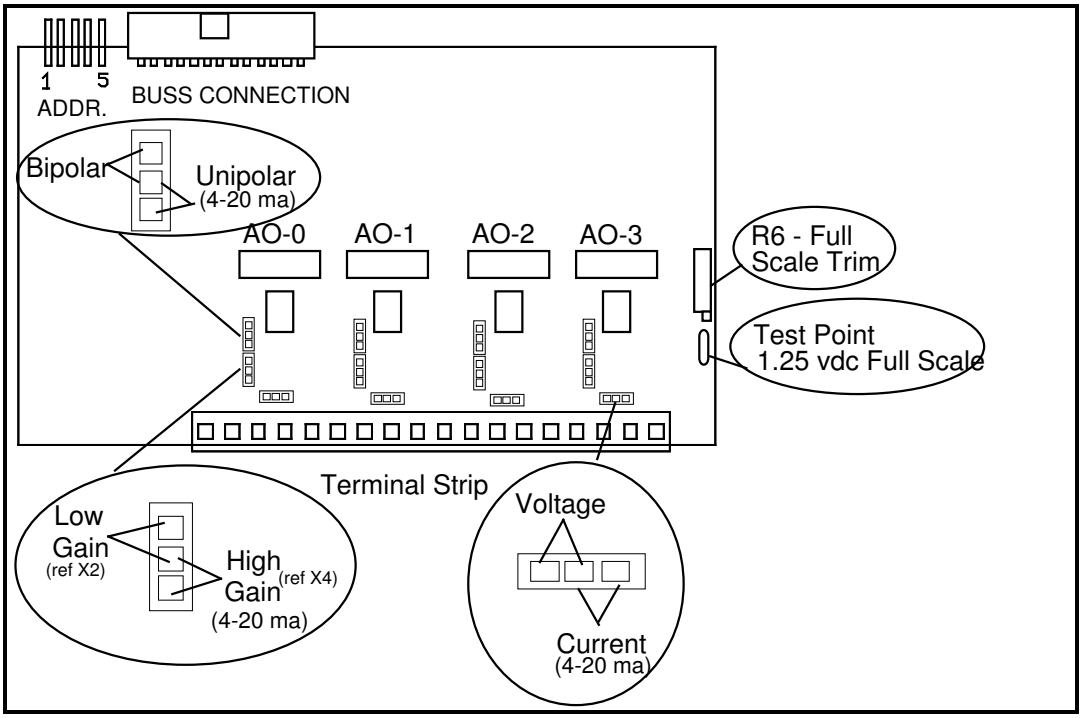

Figure.**Error! No text of specified style in document.**-8
Analog Output jumper selection.

ANALOG OUTPUT

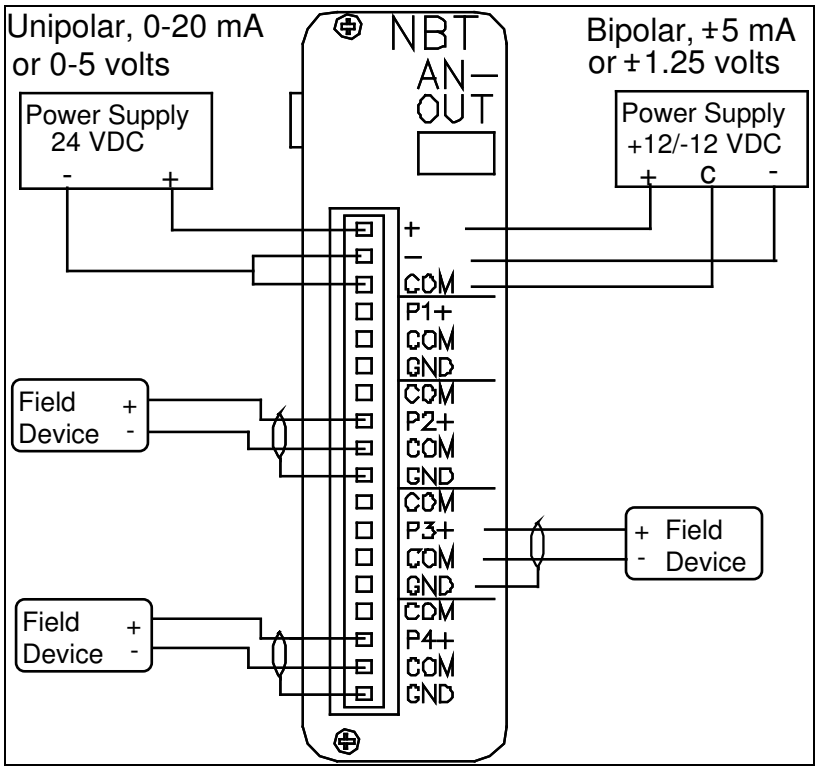

Figure.**Error! No text of specified style in document.**-9
Analog output wiring

The XAO analog output module requires a minimum of 16 VDC for unipolar operation. For bipolar operation, the power supply should be + 12 & - 12 VDC.

Analog Outputs can be ordered for most standard voltage and current ranges. Optional scaling can be configured on a per point basis. Resolutions are available in 10 or 12 bits. The field side of the Analog Output Module is optically isolated

Counter Input / High Speed Change Detect Module

'CHANGE DETECT CARD'

(LED's flash from top to bottom on power up.)

```
JPR2    ON= Hold pulse(see JP3) /OFF= CD on any edge
JPR3    ON= HOLD any 1          /OFF= HOLD any 0
JPR4    ON= LED=NORM(show input)/OFF= LED=show BUS DATA
```

NOTE: The Change Detect card is usable on all models.

'COUNTER/RATE CARD'

LED's flash from bottom to top on power up.)

This card provides four points of instantaneous counts and pulse rates. Prescaler options are 1,2,5,10. The bus interface is designed for using the first 4 inputs, providing count and rate inputs for each.

The Count for TS point n (1-4) is read as register n-1 (0-3). The associated Rate, is read as register n+3 (4-7). For example, Reg 0 is the instantaneous counts, and Reg 4 is the Rate value for input #1 of the card.
(Use CTR-IN point type for count inputs)

NOTE: (on= jumper in & off= jumper out)

Prescale Select:

For PRESCALE VALUE=	1,	2,	5, or	10
JPR2=	ON	OFF	ON	OFF
JPR3=	ON	ON	OFF	OFF

Select 1_SEC or 1_MIN intervals: JPR4=(OFF/ON)

Counter Scaling-

In Table 1, a CountIn point can have the Full Scale value set to a value of 0 to 255. The effect of a non-zero scale factor is to multiply the input count values by the Full Scale value. Thus if the Full Scale value is 15, each incoming pulse would cause the totalized value in the Max and Min columns to be increased by a value of 15.

Note that if the CountIn point has a decimal point specified as 1, then the effective value of each pulse would be 1.5 units.

An offset of 3 will supress the least significant 3 digits of the Totalized value. (Three is a special case value. Only 3 is such a special case) Thus a scale factor of 4750 and an offset of 3 would result in an accumulated value of 4.75 gallons (for example) per pulse.

SAMPLING

The CountIn point type creates a sample type of “Totalize” for any samples recorded, regardless of whether the SmplType column entry is a point number or 253, or 254.