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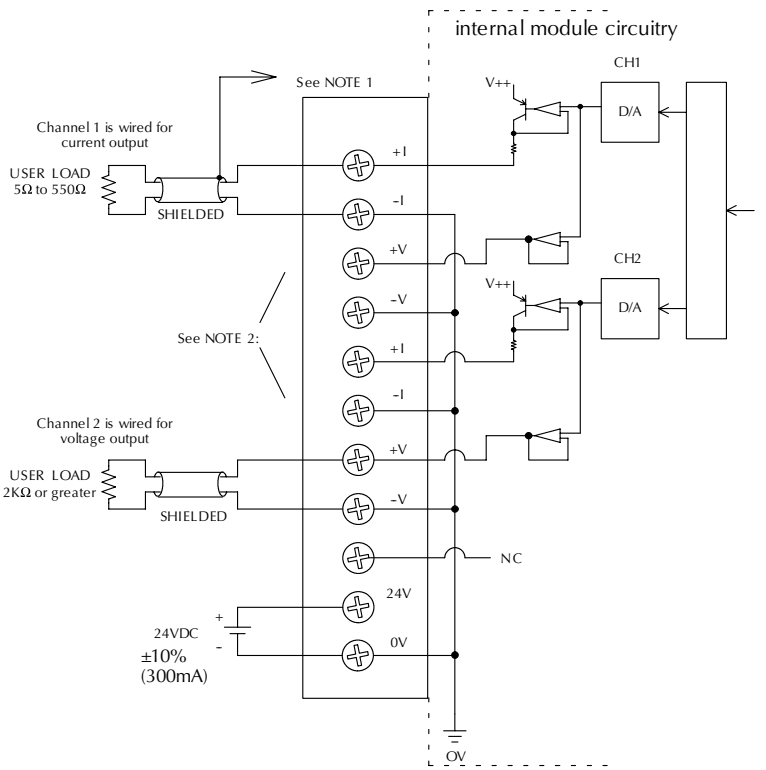
Analog Output Modules

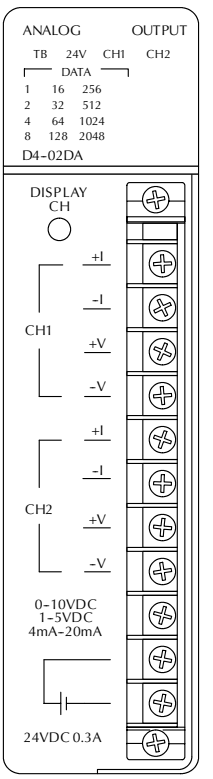
D4-02DA 2-Channel Analog Output $259.00	
Number of Channels	2 (independent)
Output Ranges	0-10V, 1-5V, 4-20 mA
Channels Individually Configurable	Range determined by field wiring connections used
Resolution	12 bit (1 to 4096)
Output Type	Single ended
Output Impedance	0.5 maximum, voltage output
Output Current	5 mA maximum, voltage output
Load Impedance	550ohm maximum, 5.0 minimum, current output 2Kohm minimum, voltage output
Linearity	± 0.1% maximum
Accuracy vs Temperature	± 70 ppm/°C maximum
Maximum Inaccuracy	± 0.2% maximum at 25°C
Conversion Method	Integration
Conversion Time	Start of scan, 30µS + one scan

PLC Update Rate	1 or 2 channels per scan
Digital Output Points Required	32 (Y) Output points (12 binary data bits times 2, eight unused bits.)
Base Power Required 5V	250mA
External Power Supply	24VDC, ± 10%, 300 mA, class2
Operating Temperature	32° to 140°F (0 to 60°C)
Storage Temperature	-4 to 158°F (-20 to 70° C)
Relative Humidity	5 to 95% (non-condensing)
Environmental Air	No corrosive gases permitted
Vibration	MIL STD 810C 514.2
Shock	MIL STD 810C 516.2
Insulation Resistance	10M, 500 VDC
Noise Immunity	NEMA ICS3-304

NOTE 1: Shields should be connected to the 0V of the module or to the 0V of the power supply
NOTE 2: Unused voltage & current outputs should remain open (no connections)

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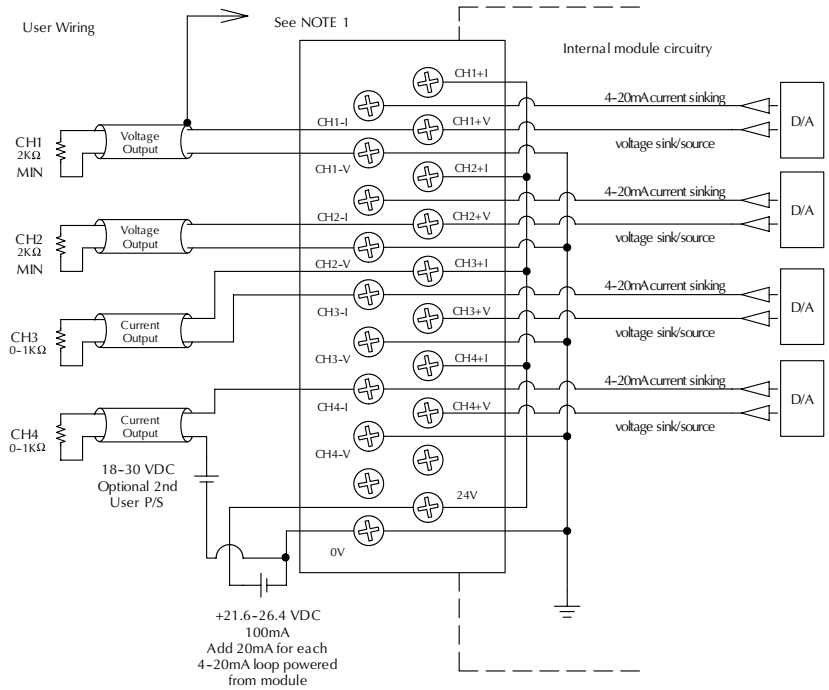
Analog Output Modules

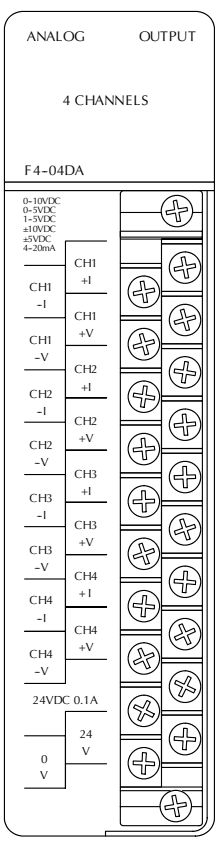
F4-04DA 4-Channel Analog Output $489.00	
Number of Channels	4
Output Ranges	0-5V, 0-10V, 4-20 mA
Channels Individually Configurable	Yes*
Resolution	12 bit (1 to 4,096)
Conversion Method	Successive approximation
Output Type	Single ended, 1 common
Output Impedance	0.2 typical, voltage output
Load Impedance	2Kohm minimum, voltage output 0ohm minimum, current output
Maximum Load/Power Supply	680/18V, 1Kohm/24V, 1.5K/36V,current output
Voltage Output Current	5mA sink or source
Short-circuit Current	15mA typical, voltage output
Linearity Error	± 0.1 count (± 0.25%) maximum
Gain Calibration Error	± 8 counts max., voltage output -8 to +11 counts max., current output
Offset Calibration Error	± 2 counts max., voltage output -5 to +9 counts max., current output

Note: The F4-04DA is not recommended for new applications. It is recommended that the F4-04DA-1 or F4-04DA-2 module be used.

Conversion Time	5µs max., settling time 0.3 ms max., digital out to analog out
Digital Output Points Required	16 (Y) output points (12 bits binary data and 4 channel select bits)
Base Power Required 5V	120 mA
External Power Supply	+24VDC (± 10%), 100 mA, class 2 (add 20 mA for each current loop used)
Accuracy vs. Temperature	± 50 ppm/°C maximum offset ±25 ppm/°C maximum full scale
Operating Temperature	32° to 140°F (0 to 60°C)
Storage Temperature	-4 to 158°F (-20 to 70° C)
Relative Humidity	5 to 95% (non-condensing)
Environmental Air	No corrosive gases permitted
Vibration	MIL STD 810C 514.2
Shock	MIL STD 810C 516.2
Insulation Resistance	10M, 500VDC
Noise Immunity	NEMA ICS3-304

One count in the specification table is equal to one least significant bit of the analog data value (1 in 4,096).
NOTE 1: Shields should be grounded at the signal source
NOTE 2: Unused channels should be connected to 0V or have current jumpers installed





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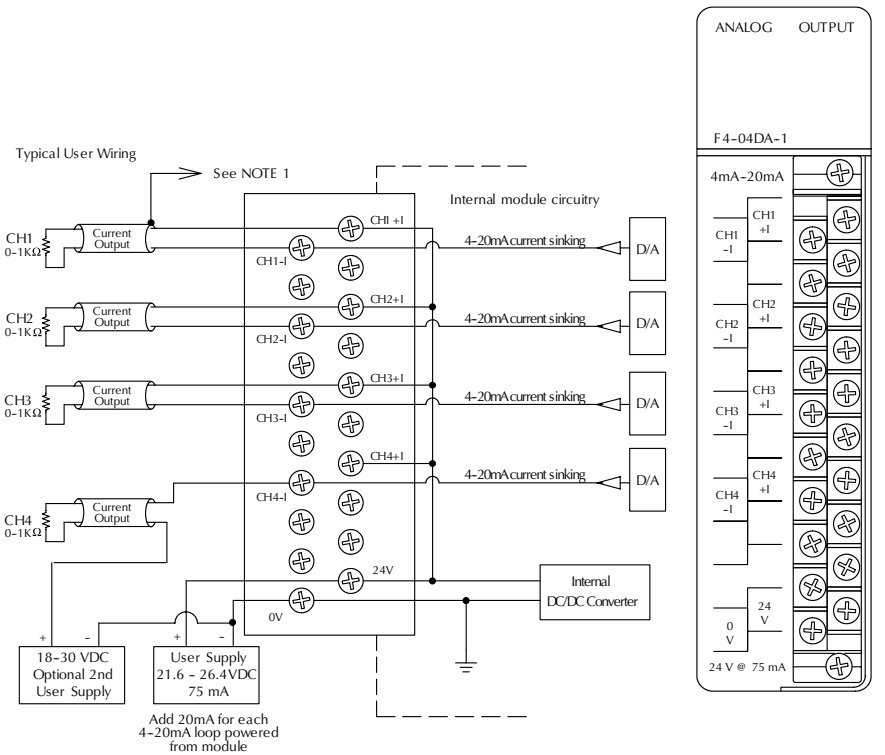
Analog Output Modules

F4-04DA-1 4-Channel Analog Current Output	$270.00
Number of Channels	4, single-ended (one common)
Output Range	4-20 mA current
Resolution	12 bit (1 to 4095)
Output Type	Outputs sink 4-20mA from external supply
External Load Resistance	0 minimum
Maximum Loop Supply	30VDC
Peak Output Voltage	40VDC (clamped, transient suppressor)
Maximum Load/Power Supply	620/18V, 910ohm/24V, 1200/30V
Linearity Error (best fit)	± 1count (±0.025%) maximum
Gain Calibration Error	± 5 counts maximum
Offset Calibration Error	± 3 counts maximum
Maximum Inaccuracy	±0.1% @ 77° F (25° C) ±0.3% @ 32 to 140° F (0 to 60° C)
Conversion Time	100µs max., settling time 2.0 ms max., digital out to analog out

Digital Output Points Required	16 (Y) output points (12 bits binary data, 4 active channel bits)
Base Power Required 5V	70 mA
External Power Supply	21.6-26.4 VDC, 75 mA, class 2 (add 20 mA for each current loop used)
Accuracy vs. Temperature	± 57 ppm/°C full scale calibration range (including maximum offset change, 2 counts)
Operating Temperature	32° to 140°F (0 to 60°C)
Storage Temperature	-4 to 158°F (-20 to 70° C)
Relative Humidity	5 to 95% (non-condensing)
Environmental Air	No corrosive gases permitted
Vibration	MIL STD 810C 514.2
Shock	MIL STD 810C 516.2
Noise Immunity	NEMA ICS3-304

One count in the specification table is equal to one least significant bit of the analog data value (1 in 4,096).
NOTE 1: Shields should be connected to the 0V of the User Power Supply at the module terminal block.
NOTE 2: Unused current outputs should remain open (no connections)

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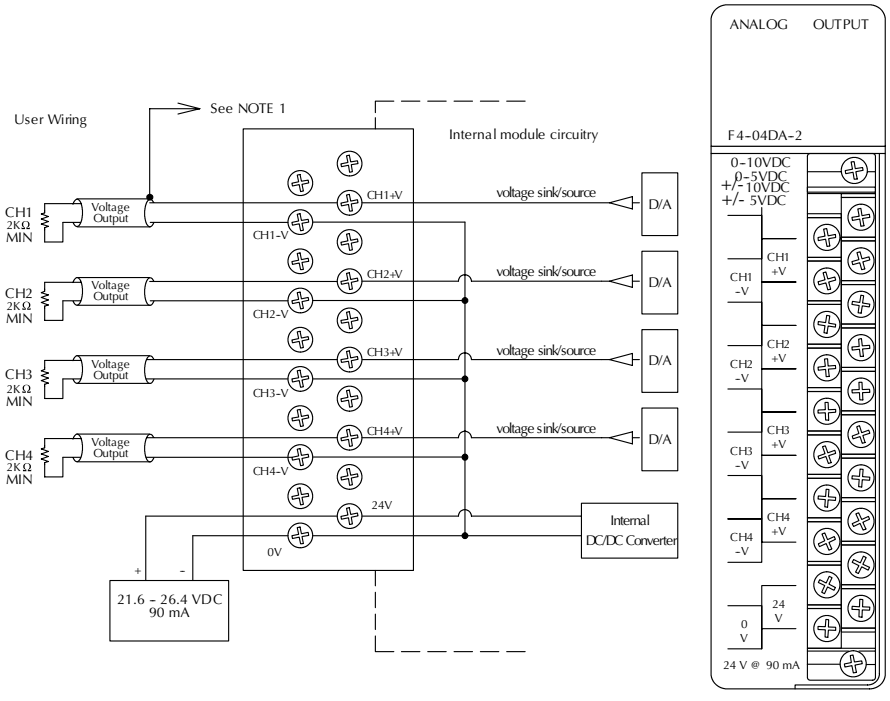


Analog Output Modules

F4-04DA-2 4-Channel Analog Voltage Output	$315.00
Number of Channels	4, single ended (one common)
Output Ranges	0-5V, 0-10V, ±5V, ±10V
Channels Individually Configurable	Yes
Resolution	12 bit (1 to 4,095)
Load Impedance	2K minimum
Load Capacitance	0.01uF maximum
Voltage Output Current	5.0mA sink or source
Short-circuit Current	15 mA typical
Linearity Error (End to End) and Relative Accuracy	± 1count (±0.025%) maximum
Offset Calibration Error	± 3 counts maximum, unipolar ± 4 counts maximum, bipolar
Full Scale Calibration Error	± 8 counts maximum (offset error included)
Maximum Inaccuracy	± 0.2% @ 77° F (25° C) ± 0.4% @ 32 to 140° F (0 to 60° C)

Conversion Time	5µs maximum, settling time 2.0 ms maximum, digital out to analog out
Digital Output Points Required	16 (Y) output points (12 bits binary data, 4 active channel bits or 2 active channel bits and 1 sign bit for bipolar)
Base Power Required 5V	90 mA
External Power Supply	21.6-26.4 VDC, 90 mA, class 2 (outputs fully loaded)
Accuracy vs. Temperature	± 57 ppm/°C full scale calibration change (including maximum offset change, 2 counts)
Operating Temperature	32° to 140°F (0 to 60°C)
Storage Temperature	-4 to 158°F (-20 to 70° C)
Relative Humidity	5 to 95% (non-condensing)
Environmental Air	No corrosive gases permitted
Vibration	MIL STD 810C 514.2
Shock	MIL STD 810C 516.2
Noise Immunity	NEMA ICS3-304

One count in the specification table is equal to one least significant bit of the analog data value (1 in 4096).
NOTE 1: Shields should be connected to the 0V of the module or the 0V of the P/S
NOTE 2: Unused voltage outputs should remain open (no connections)



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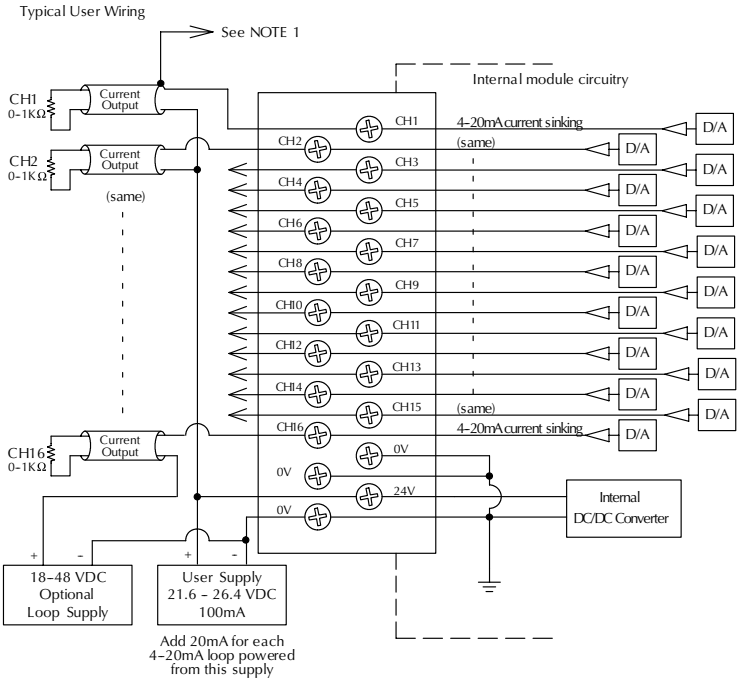
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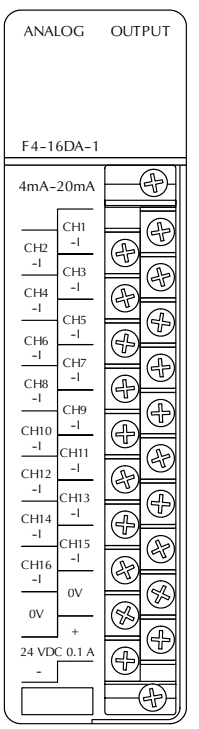
Analog Output Modules

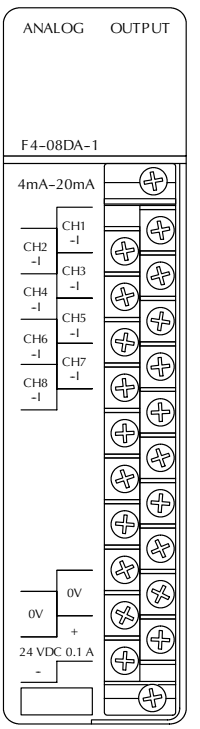
F4-08DA-1 8-Channel Analog Current Output $455.00 F4-16DA-1 16-Channel Analog Current Output $580.00	
Number of Channels ***F4-08DA-1*** ***F4-16DA-1***	8, single ended (one common) 16, single ended (one common)
Output Ranges	4-20mA current
Resolution	12 bit (1 to 4095)
Output Type	Outputs sink 4-20 mA from external supply
Peak Output Voltage	40VDC (no transient voltage suppression)
External Load Resistance	0-480 @ 18V, 220-740 @ 24V, 1550-1760 @48 V
Maximum Loop Supply	48VDC (with load resistance in proper range)
Crosstalk	-70dB, ± 1 count maximum
Linearity Error (End-to-End) & Relative accuracy	± 1 count maximum
Full Scale Calibration Error (offset error incl.)	±8 counts max. (20.0 mA at 25° C)
Offset Calibration Error	± 3 counts max. (4.0 mA at 25° C)
Maximum Inaccuracy	±0.2% @ 77° F (25° C) ±0.4% @ 32 to 140° F (0 to 60° C)

Conversion Time	400µs maximum, for full scale change 2.25 to 4.5 ms for digital out to analog out
Digital Output Points Required	**F4-16DA-1** 16 (Y) output points (12 bits binary data, 3 bits channel select , 1bit output enable) **F4-16DA-1** 32 (Y) output points 2 sets each (12 bits binary data, 3 bits channel select , 1bit output enable)
Base Power Required 5V	90 mA
External Power Supply	21.6-26.4 VDC, 100 mA, class 2 (add 20 mA for each current loop used)
Accuracy vs. Temperature	± 57 ppm/°C full scale calibration range (including maximum offset change, 2 counts)
Operating Temperature	32° to 140°F (0 to 60°C)
Storage Temperature	-4 to 158°F (-20 to 70° C)
Relative Humidity	5 to 95% (non-condensing)
Environmental Air	No corrosive gases permitted
Vibration	MIL STD 810C 514.2
Shock	MIL STD 810C 516.2
Noise Immunity	NEMA ICS3-304

One count in the specification table is equal to one least significant bit of the analog data value (1 in 4,096).
NOTE 1: Shields should be connected to the 0V of the User Power Supply at the module terminal block.
NOTE 2: Unused current outputs should remain open (no connections)







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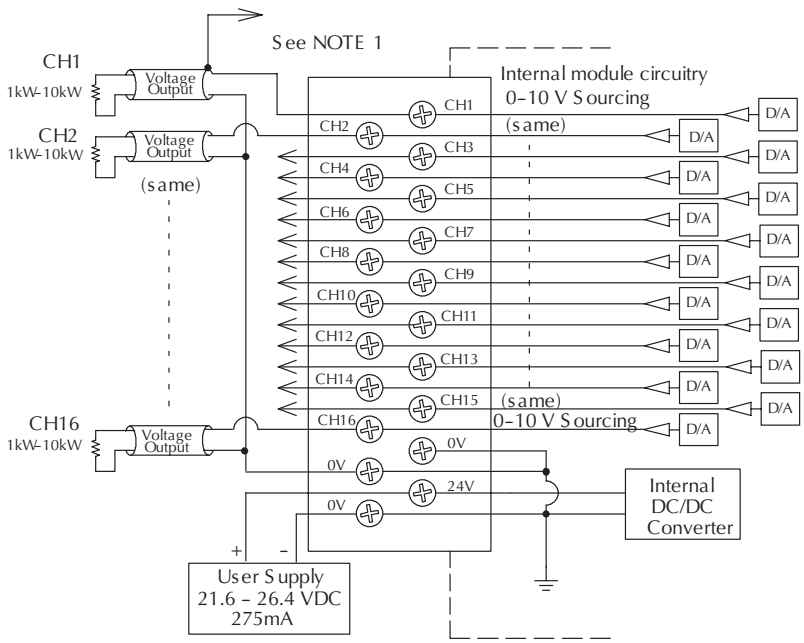
Analog Output Modules

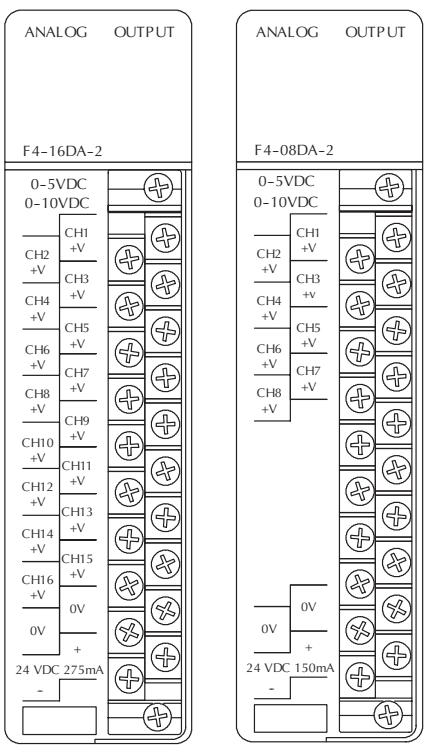
F4-08DA-2 8-Channel Analog Voltage Output $475.00 F4-16DA-2 16-Channel Analog Voltage Output $609.00	
Number of Channels ***F4-08DA-2*** ***F4-16DA-2***	8, single ended (one common) 16, single ended (one common)
Output Range	0-5VDC, 0-10VDC
Resolution	12 bit (1 to 4095)
Output Type	Voltage Sourcing 10mA max.
External Load Resistance	1K max./10K min. (example: 10volts@ 1K = 10mA load)
Crosstalk	-70dB, ± 1 count maximum
Linearity Error (End-to-End) and Relative Accuracy	± 1count maximum (10VDC at 25°C)
Full Scale Calibration Error (Offset Error Included)	± 6 counts max. (10VDC at 25°C)
Offset Calibration Error	± 3 counts max. (0VDC at 25°C)
Maximum Inaccuracy	±0.2% @ 77°F (25°C) ±0.4% @ 32 to 140°F (0 to 60°C)

Conversion Time	400µs maximum, for full scale change 4.5 to 9 ms for digital out to analog out
Digital Output Points Required	**F4-08DA-2** 16 (Y) output points 12 bits binary data, 3 bits channel select ,1 bit output enable) **F4-16DA-2** 32 (Y) output points (two sets each of 12 bits binary data, 3 bits channel select ,1 bit output enable)
Power Budget Require	80mA @ 5VDC (base power)
External Power Supply	21.6-26.4VDC, 150mA, class 2
Accuracy vs. Temperature	± 57 ppm/°C full scale calibration range (including maximum offset change, 2 counts)
Operating Temperature	32° to 140°F (0 to 60°C)
Storage Temperature	-4 to 158°F (-20 to 70°C)
Relative Humidity	5 to 95% (non-condensing)
Environmental Air	No corrosive gases permitted
Vibration	MIL STD 810C 514.2
Shock	MIL STD 810C 516.2
Noise Immunity	NEMA ICS3-304

One count in the specification table is equal to one least significant bit of the analog data value (1 in 4,096).
NOTE 1: Shields should be connected to the 0V of the User Power Supply at the module terminal block.

Typical User Wiring





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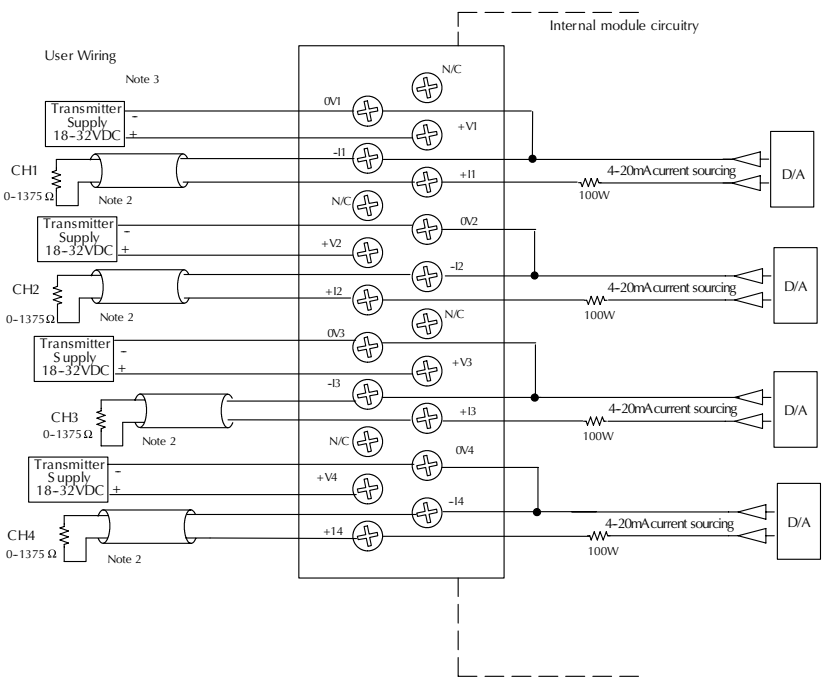
Analog Output Modules

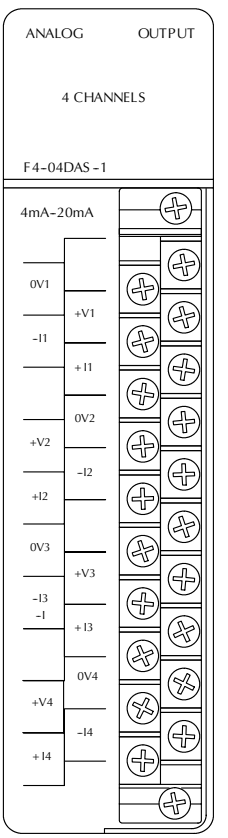
F4-04DAS-1 4-Ch. 4-20mA Isolated Analog Out	$425.00
Number of Channels	4, isolated current sourcing
Output Range	4-20mA current
Resolution	16 bit (1 to 65536)
Output Type	Outputs source 4-20 mA from external supply
Isolation Voltage	±750V continuous, channel to channel, channel to logic
Loop Supply	12-32VDC
Output Loop Compliance	Vin - 2.5V
Load Impedance	0-1375 (@ 32V)
Maximum Load/Power Supply	375/12V, 975/24V, 1375/32V
PLC Update Rate	1 channel per scan min., 4 per scan max.
Digital Output Points Required	32 (Y) output points 16 binary data, 2 channel identification , 1bit output enable)
Power Budget Requirement	60mA @ 5VDC (supplied by base)
External Power Supply	50mA per channel

Linearity Error (End-to-End)	± 10 count maximum (0.015% of full scale)
Conversion Settling Time	3ms to 0.1% of full scale
Gain Calibration Error	± 32 counts (± 0.05%)
Offset Calibration Error	± 13 counts (± 0.02%)
Output Drift	50ppm/°C
Maximum Inaccuracy	±0.07% @ 77° F (25° C) ±0.18% @ 32 to 140° F (0 to 60° C)
Operating Temperature	0 to 60°C (32° to 140°F)
Storage Temperature	-20 to 70° C (-4 to 158°F)
Relative Humidity	5 to 95% (non-condensing)
Environmental Air	No corrosive gases permitted
Vibration	MIL STD 810C 514.2
Shock	MIL STD 810C 516.2
Noise Immunity	NEMA ICS3-304

One count in the specification table is equal to one least significant bit of the analog data value (1 in 65536).
NOTE 1: Shields should be connected to the 0V.
NOTE 2: Load must be within compliance voltage.
NOTE 3: For non-isolated outputs, connect all 0V's together (0V1...0V4) and connect all +V's together (+V1...+V4).

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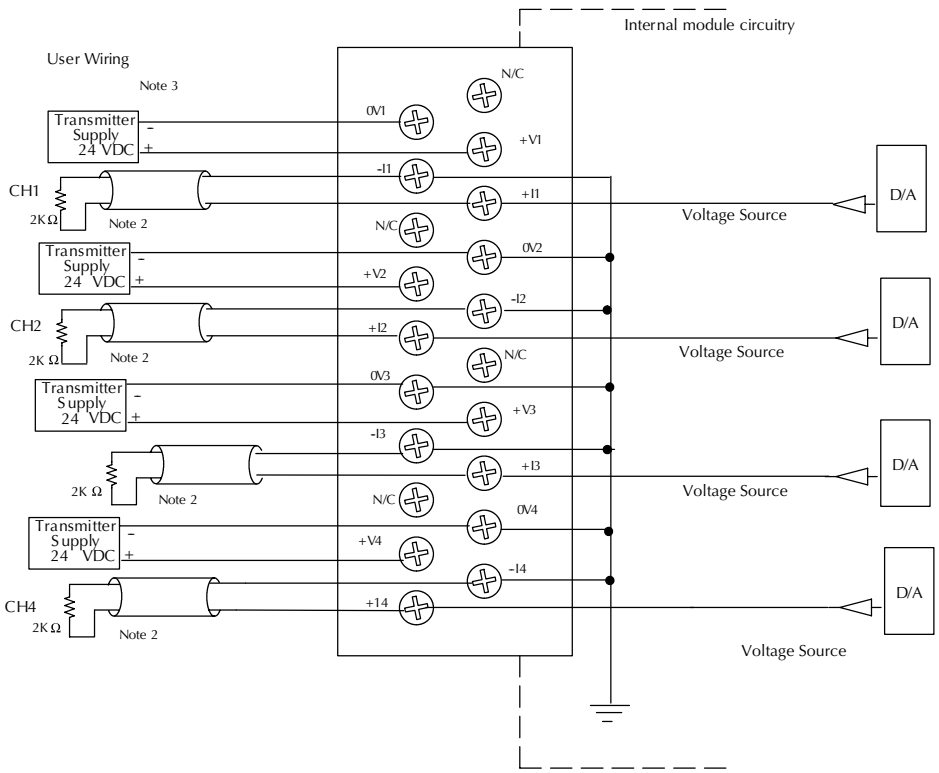
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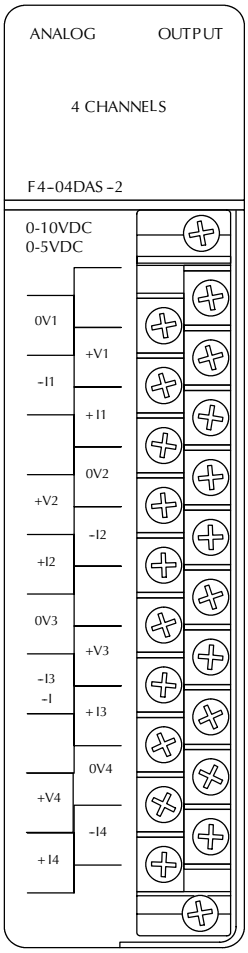
Analog Output Modules

F4-04DAS-2 4-Channel 0-5V/10V Isolated Analog Output $299.00	
Number of Channels	4, isolated
Output Range	0-5VDC, 0-10VDC
Resolution	16 bit (1 to 65536)
Isolation Voltage	±750V continuous, channel to channel, channel to logic
Load Impedance	2k min
PLC Update Rate	1 channel per scan min., 4 per scan max.
Digital Output Points Required	16 data bits, 2 channel ID, 1 output enable 32 (Y) output points
Power Budget Requirement	60mA @ 5VDC (supplied by base)
External Power Supply	60mA per channel, 21.6VDC-26.4VDC

Linearity Error (End-to-End)	± 10 count maximum (0.015% of full scale)
Conversion Settling Time	3ms to 0.1% of full scale
Gain Calibration Error	± 32 counts (± 0.05%)
Offset Calibration Error	± 13 counts (± 0.02%)
Maximum Inaccuracy	±0.07% @ 77° F (25° C) ±0.18% @ 32 to 140° F (0 to 60° C)
Operating Temperature	0 to 60°C (32° to 140°F)
Storage Temperature	-20 to 70° C (-4 to 158°F)
Relative Humidity	5 to 95% (non-condensing)
Environmental Air	No corrosive gases permitted
Vibration	MIL STD 810C 514.2
Shock	MIL STD 810C 516.2
Noise Immunity	NEMA ICS3-304

One count in the specification table is equal to one least significant bit of the analog data value (1 in 65536).
NOTE 1: Shields should be connected to the 0V.
NOTE 2: Load must be within compliance voltage.





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