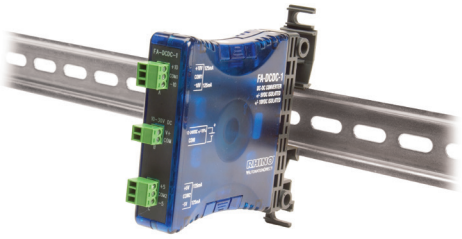
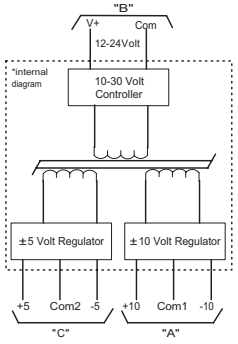
RHINO DC to DC Isolated Converter

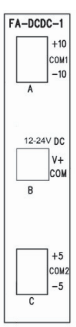
This isolated DC to DC power supply is used for eliminating ground loops or addressing isolation issues when interfacing to PLC analog I/O modules. The design features handle many types of configuration problems. The FA-DCDC-1 is a DIN rail mount, ±10VDC, ±5VDC isolated power supply, with each output rated at 125mA. The input voltage range is 12-24V DC ±15% at approximately 6.7 Watts.

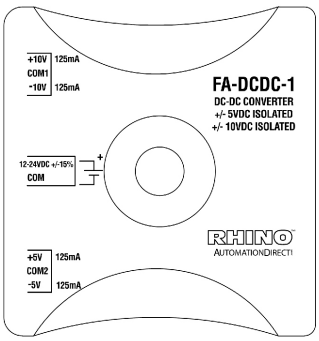


General Specifications	
Part Number [1]	FA-DCDC-1
Price	$116.00
Drawing Link	PDF
Input Voltage Range	12V to 24VDC ± 15%
Input Power [2]	6.7 Watts, Vin 27.6V, 125mA load each channel
Output Voltage [3] ***(25°C)***	+5V ±1%, 125mA load,-5V ±1% 125mA load +10V ±1% typical, ±2% maximum; -10V ±1% typical, ±2% maximum
Output Current	125mA [per output voltage]
Output Ripple	±5V channels: <10mV peak to peak, Vin 10.2V 125mA load on both channels ±10V channels: <25mV peak to peak, Vin 10.2V, 125mA load on both channels
Line Regulation [4]	±5V channels: <10mV, Vin 10.2V to 27.6V, 125mA load on both channels ±10V channels: <20mV, Vin 10.2V to 27.6V, 125mA load on both channels
Load Regulation [5]	±5V channels: <20mV, Vin 10.2V, 0 - 125mA load variation ±10V channels: <40mV, Vin 10.2V, 0 - 125mA load variation
Isolation	Input to Output: 1500V; ±5V to ±10V: 1500V
Inrush Current (50ms)	970mA, Vin 10.2V, 125mA load all channels
Holdup Time (all channels)	30mS minimum, Vin 10V, 125mA load all channels
Overshoot Protection	No overshoot - Turn on and turn off of Vin
Input Protection (reverse DC input voltage)	Up to -50V reverse. ± Vin reverse polarity connection.
Overload Protection	Auto shutdown. Short circuit. Cycle Vin post event
Output Protection	Indefinite duration. ±5V tied to ±10V
Peak Line Transient Voltage	100V for 10mS. Voltage spike on input
Operating Temperature	0 to 60°C [32 to 140°F] full rated
Storage Temperature	-20 to 70°C [-4 to 158°F]
Enclosure	Clear Lexan 221-111 with UN5016 transparent blue colorant
Mounting	35mm wide DIN rail: part # DN-R35S1 or DN-R35HS11; surface mount
Connection	3.5 mm screw terminal, 28-16 AWG, 1.7 lb-in torque
Relative Humidity	5 to 90% [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
Agency Standards and Approvals	UL/cUL listed, UL File No. E200031, UL508/CSA - C22.2 No. 142-M1987 for ordinary locations. Class I, Division 2, Groups A, B, C, D Hazardous Locations

Notes: [1] **All specifications are over the full operating temperature range [0°C to 60°C] unless stated otherwise.**
[2] **"Channel" means Output Voltage. For example: +5V is one channel and -10V is another.**
[3] **All output voltage channels are independent of each other. Changing loading on one will have no effect on the other voltage outputs.**
[4] **LINE Regulation: varying the Input Voltage over entire range [12V to 24V ± 15%] and the resultant change in the Output Voltage(s) under worst case load conditions [all output channels drawing 125mA].**
[5] **LOAD Regulation: varying the output loads from no-load to a worst case 125mA load and measuring the resultant change in the Output Voltage(s) under a worst case minimum Input Voltage [10.2V] condition.**







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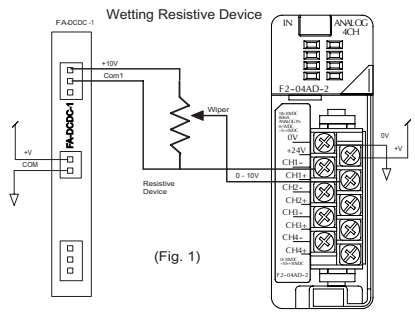
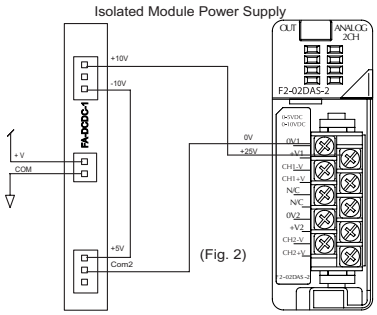
Applications



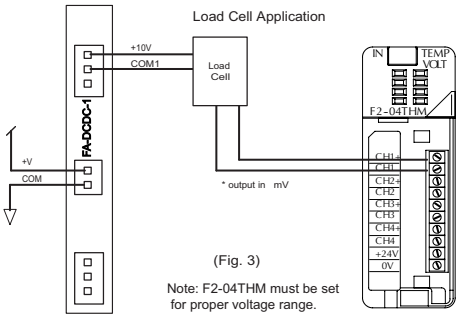
(Fig. 1)

When using a linear potentiometer, the +10V connects to the high side of the potentiometer and the COM1 becomes the zero volt reference. The wiper connects to the analog input. The result is 0 to 10V at the analog module input. (Fig. 1)



(Fig. 2)

Use in a solar/battery application where unregulated 12VDC is available and the analog module requires 24VDC for operation, connect the +10V to +24V module power, connect the -10V to the +5V and the COM2 to the 0V module power. (Fig. 2)



(Fig. 3)

Note: F2-04THM must be set for proper voltage range.

Use to power a load cell application. (Fig. 3)

THIS EQUIPMENT IS SUITABLE FOR USE IN CLASS I, DIVISION 2/ZONE 2, GROUPS A, B, C AND D, OR NON-HAZARDOUS LOCATIONS ONLY.

WARNING - EXPLOSION HAZARD - SUBSTITUTION OF COMPONENTS MAY IMPAIR SUITABILITY FOR CLASS I, DIVISION 2/ZONE 2.
WARNING - EXPLOSION HAZARD - DO NOT CONNECT OR DISCONNECT CONNECTORS OR OPERATE SWITCHES WHILE CIRCUIT IS LIVE UNLESS THE AREA IS KNOWN TO BE NON HAZARDOUS.