

Host Interface

Intelligent processing for this module is performed by the Bus Interface Unit or elsewhere in the system. The module uses 16 discrete input data bits (two bytes) and 8 discrete output data bits (one byte). The remaining 6 unused input data bits and 2 unused output data bits are not used. A Bus Interface Unit is required to exchange this I/O data in a byte format with the host and/or a local processor.

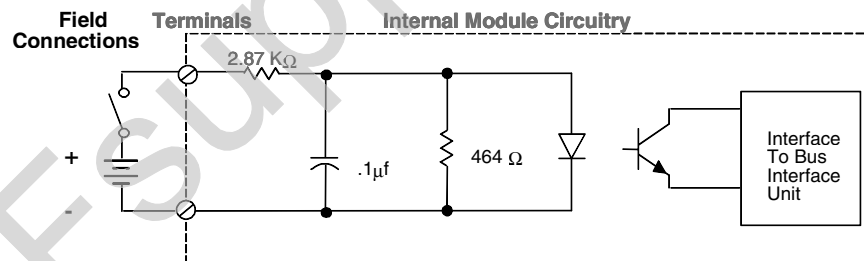
Compatibility

This module must be used with a Genius Bus Interface Unit IC670GBI002 (revision 2.20) or later. This module can be used with a Profibus Bus Interface Unit or Interbus-S Bus Interface Unit version 2.20 or later.

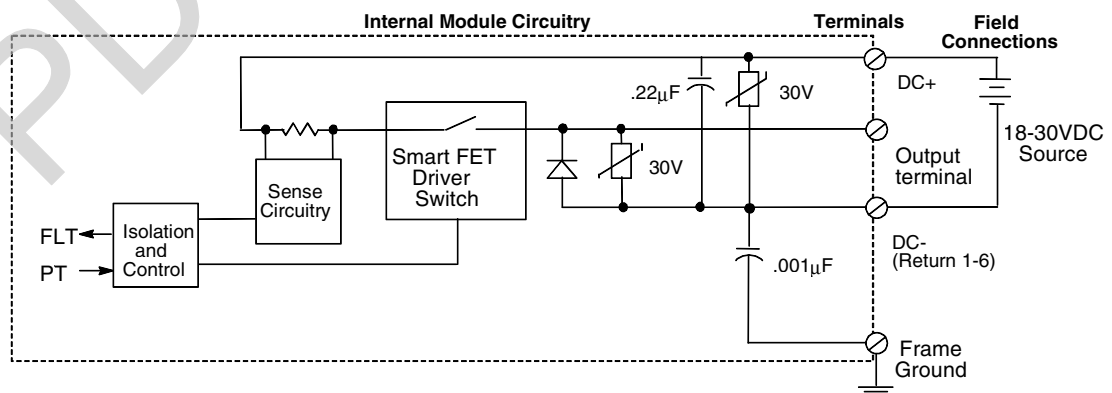
Module Operation

After checking the Board ID, the Bus Interface Unit sends output data to the module and receives input data from the module. Input, output, and Board ID data are in serial format. During transmission, the module automatically loops output data back to the Bus Interface Unit for verification. A serial to parallel conversion converts output data into the parallel format needed by the module. Conversely, a parallel to serial conversion converts input data into the serial format needed by the BIU. Opto-isolators isolate the module's inputs and outputs from the field. Power from the external power supply is used to drive the FET switches that source current to the loads.

Input Circuit



Output Circuit



A MOV across the power supply lines protects the module from transient voltage surges. Capacitors across the supply lines and from each supply line to frame ground provide further noise protection.

External Power Supply Requirements

The external power supply used with the module must provide sufficient field power for the module during short circuit events.

When a load is shorted, an inadequate external power supply may allow field power to drop below the specified operating range, causing misoperation of the module. The external power supply must be capable of providing short circuit energy without degradation of output voltage levels. The amount of energy required depends on the number of simultaneously-short-circuited points that might occur. Refer to power supply short circuit operation specifications prior to selecting the power supply to be used with the module.

Local energy storage (either batteries or capacitors) can be used to compensate for insufficient power supply characteristics.

Important Note: Additional best practices including minimizing wiring resistance from the external power supply to the module, preventing voltage drop during short circuit energy transfer.

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Module Specifications

Input Circuits	
Rated Input Voltage	24 VDC
Inputs per module	10 Pos/Neg Logic Inputs
Input Voltage Range	0 to +30 VDC
User Input Current	8.0mA per point @ 24 VDC
Isolation to case, ground, logic side	250 VAC continuous, 1500 VAC for 1 minute. No isolation between individual points in a group.
Indicators	1 LED per point shows individual point status
Input Impedance	2.87k typical
On-state voltage	+15 VDC to +30 VDC
OFF-state voltage	0 to +5 VDC
On-state current	3.0 mA to 8.0 mA
OFF-state current	0 to 1.5 mA
Response Time-On	25µs typical, 60µs maximum
Response Time-Off	100µs typical, 150µs maximum
Output Circuits	
Rated Output Voltage	24 VDC
Output Voltage Range	15 VDC to 30 VDC
Output Current	0.5 A maximum per point
Outputs per module	6
Indicators	1 Bi-color LED per point indicating on/off status of output circuits (green) and short/over current circuit fault (orange)
Isolation to case, ground, logic side	250 VAC continuous, 1500 VAC for 1 minute. No isolation between individual points in a group.
Steady State Overcurrent Trip Point	1.6 A typical, 0.7 A to 2.5 A max range
Maximum Load Current (resistive)	0.5 A @ 30 VDC
Output Voltage Drop	0.2 V maximum
Output Leakage Current	0.5 mA @ 30 VDC maximum
Response Time-On	100µs typical, 150µs maximum
Response Time-Off	400µs typical, 500µs maximum
Protection (each output)	short circuit protection, over current protection, MOV and freewheeling diodes
Input/Output Circuits	
Total Current Drawn from BIU	110mA
Indicators backplane	PWR LED indicates field and backplane power are present

Keying Locations

Optional keying locations for the 24 VDC Mixed Input/Output Module are shown below.

Keying Locations									
A	B	C	D	E	F	G	H	J	K
x		x				x	x		

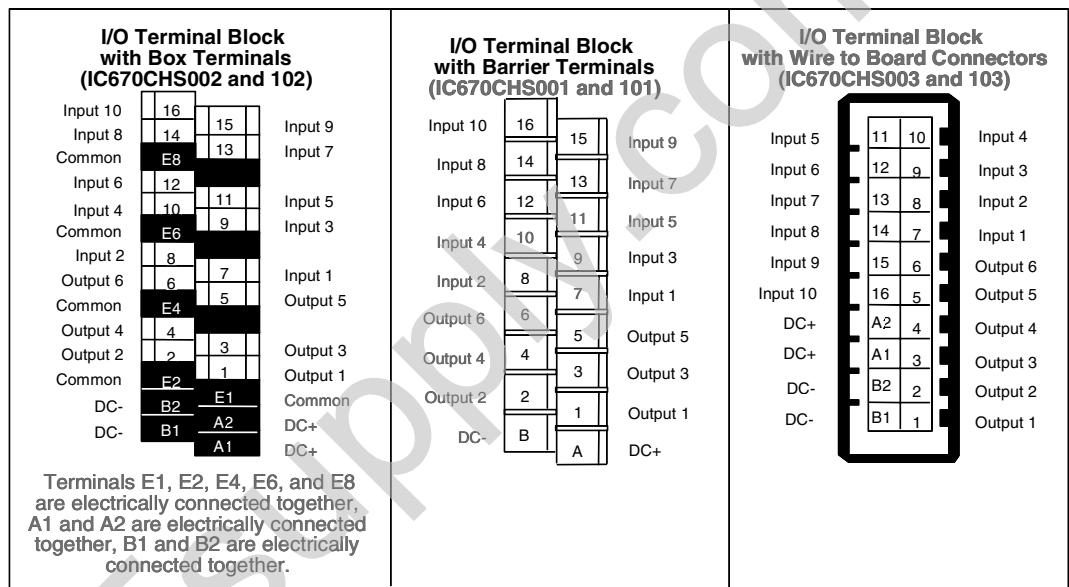
Field Wiring

The Terminal Block with box terminals has 25 terminals per module, each of which accommodates one AWG #14 (avg 2.1mm² cross section) to AWG #22 (avg 0.36mm² cross section) wire, or two wires up to AWG #18 (avg. 0.86mm² cross section). Using an external jumper reduces wire capacity from AWG #14 (2.10mm²) to AWG #16 (1.32mm²).

The I/O Terminal Block with barrier terminals has 18 terminals per module. Each terminal can accommodate one or two wires up to AWG #14 (avg 2.10mm² cross section).

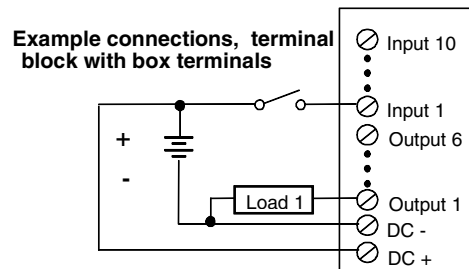
The I/O Terminal Block with Connectors has one 20-pin male connector per module.

The following illustration shows terminal assignments for the 24 VDC Electronic Short Circuit Protection Output Module. The eight outputs form one group, with a common return.



Wiring Example

The following illustration shows example wiring to the module.



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