



This Datasheet for the

IC670MDL643

5/12VDC Pos/Neg Logic Input 16 Pt. Grouped

<http://www.qualitrol.com/shop/p-14518-ic670mdl643.aspx>

Provides the wiring diagrams and installation guidelines for this GE Field Control module.

For further information, please contact Qualitrol Technical Support at

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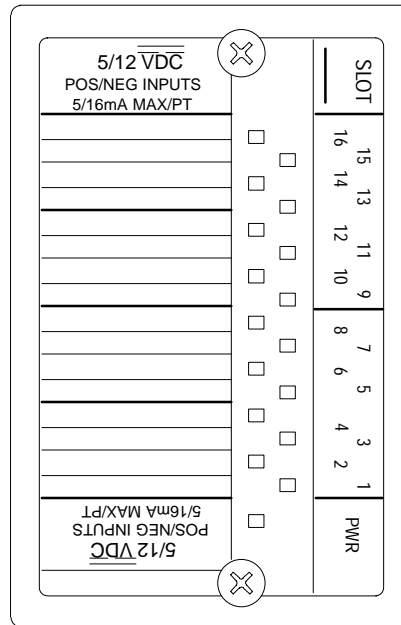
Discrete Input Module

IC670MDL643

GFK-1299B
June 1997

5/12 VDC Positive/Negative Input Module

The 5/12 VDC Positive/Negative Input Module (IC670MDL643) provides 16 discrete inputs arranged in 2 groups of 8. Each point may be driven by positive or negative logic.



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Power Sources

The module receives power from the Bus Interface Unit to run its own 5-volt logic. An external 5VDC or 12VDC supply is needed to power the input devices.

LEDs

Individual LEDs (logic side), visible through the transparent portion of the module top, indicate the on/off status of each input. The PWR LED is on when field and backplane power are present.

Host Interface

Intelligent processing for this module is performed by the Bus Interface Unit or elsewhere in the system. This includes configuring features such as input defaults and fault reporting. The module has 16 bits (two bytes) of discrete input data. A Bus Interface Unit is required to provide this input data to the host and/or local processor.

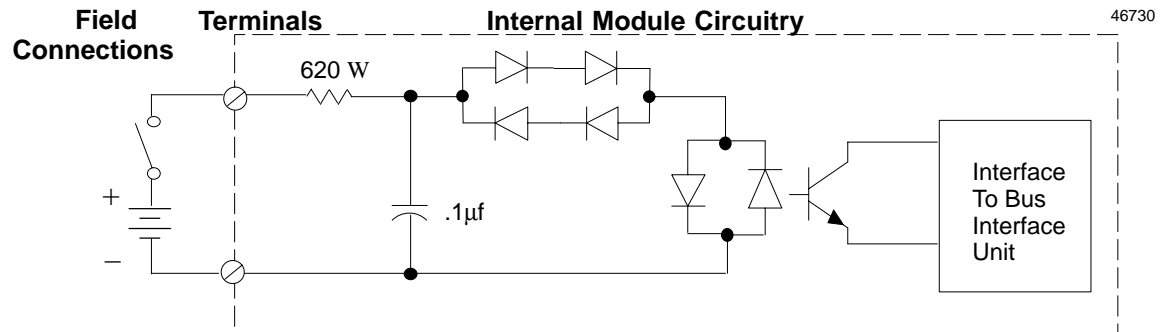
5/12 VDC Positive/Negative Input Module

Module Operation

A network of resistors, capacitors, and diodes establishes input thresholds and provide input filtering. Optoisolators provide isolation between the field inputs and the module's logic components. Data from all 16 inputs is placed into a data buffer. The module's circuit LEDs show the current states of the 16 inputs in this data buffer.

Parallel-to-serial converters change input data from the data buffer into the serial format needed by the Bus Interface Unit.

After checking the Board ID and verifying that the module is receiving appropriate logic power from the Bus Interface Unit (which is reflected by the state of the module's Power LED), the Bus Interface Module then reads the filtered, converted input data.



Orientation of the power supply depends upon whether inputs use positive or negative logic.

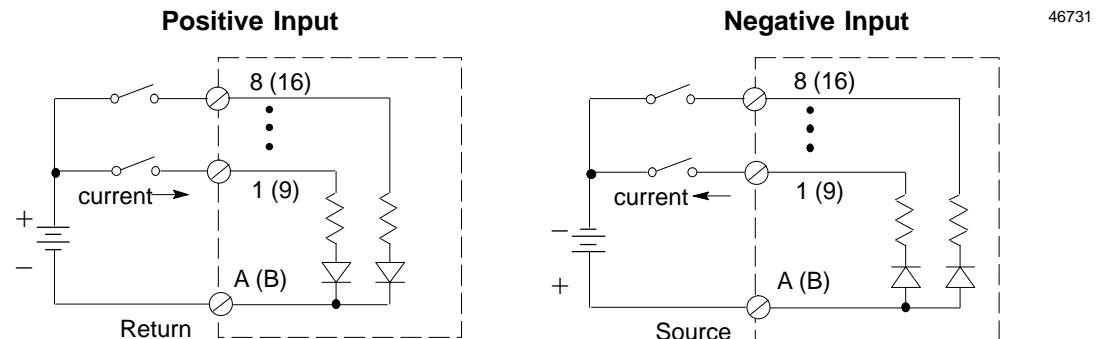
Input Groups

Each group of 8 inputs can be either positive or negative inputs. For example, group 1 (inputs 1- 8) may be positive logic and group 2 (inputs 9- 16) may be negative logic. Both types of signal produce a logic 1 (true) when the switch is closed. Each group may also support different logic levels. For example, group 1 may be +5 VDC and group 2 may be -12 VDC.

Selection of positive or negative operation is made by the manner in which the external power supply is connected to the inputs and to the I/O Terminal Block, as shown below

Positive inputs receive current from input devices and supply current to the common or negative power bus. Input devices are connected between the positive power bus and the input terminals.

Negative inputs provide current to input devices and accept current from the common or positive power bus. Input devices are connected between the negative power bus and the input terminal.



5/12 VDC Positive/Negative Input Module

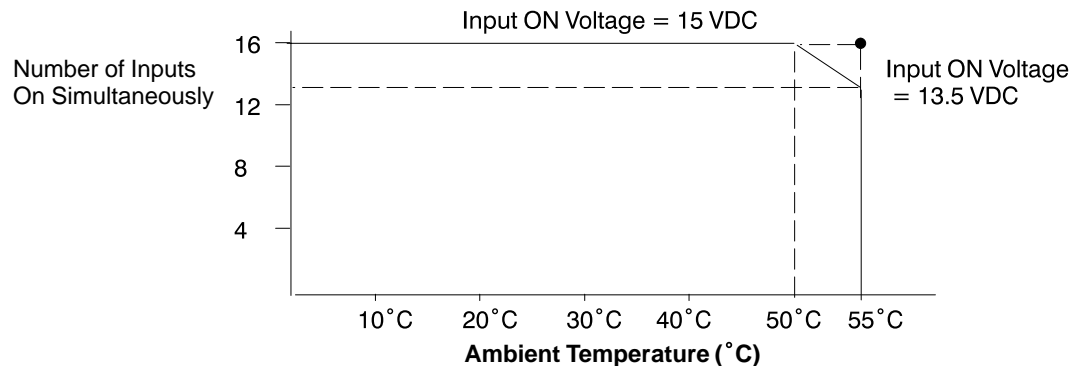
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Module Specifications

Module Characteristics	
Rated Voltage	5/12 VDC
Input Voltage Range	0-15 VDC
User Input Current	5 mA @ 5 VDC and 16 mA @ 15 VDC typical
Isolation: User input to logic, User input to frame ground Group to group Point to point	250 VAC continuous, 1500 VAC for 1 minute. 150 VAC continuous No isolation between individual points in a group.
Indicators	1 LED per point shows individual point status PWR LED indicates presence of backplane and user power
Current drawn from Bus Interface Unit Power Supply	80 mA
Input Characteristics	
Input Impedance	1K Ohms typical
On state voltage	Positive logic: +3.6 VDC to +15 VDC Negative logic: -3.6 VDC to -15 VDC
Off state voltage	Positive logic: 0 to +1.6 VDC Negative logic: 0 to -1.6 VDC
On state Current Off state Current	2.5 mA to 16 mA 0 mA to 0.3 mA
On response time Off response time	300 μ S typical, 550 μ S maximum 1 mS typical, 1.2 mS maximum

Number of Inputs On

Ambient temperatures above 50°C limit the number of inputs that can be ON at the same time:



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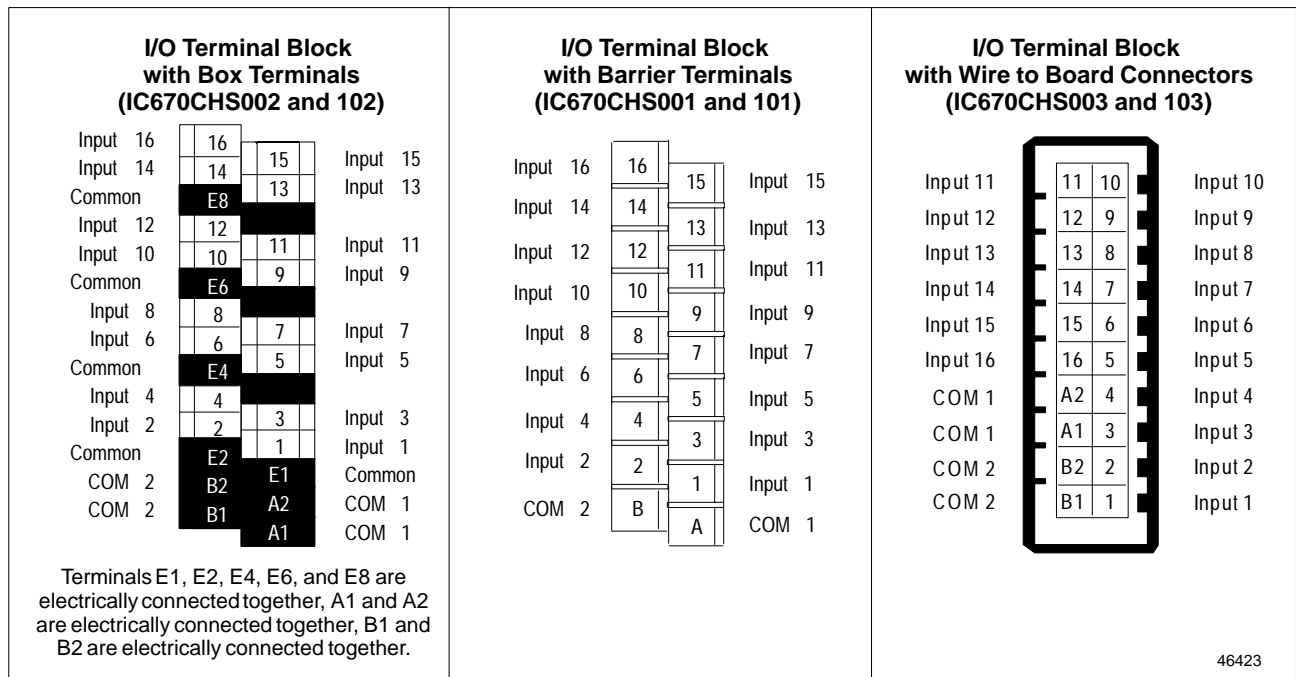
Keying Locations

Optional keying locations for the 5/12 VDC Positive/Negative Input Module are:

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

Field Wiring

The following illustration shows terminal assignments for the 5/12 VDC Positive/Negative Input Module.



The Terminal Block with box terminals has 25 terminals for each 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). When an external jumper is used, single-wire capacity is reduced 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 2.1mm² cross section).

The I/O Terminal Block with Connectors has one 20-pin male connector per module. The mating connector is Amp part number 178289-8. Any tin-plated contact in the AMP D-3000 series can be used with the connector (Amp part number 1-175217-5 for high contact force receptacle for 20-24 gauge (0.20-0.56mm²) wires), 1-175218-5 for high contact force receptacle for 16-20 gauge (0.56-1.42mm²).

5/12 VDC Positive/Negative Input Module

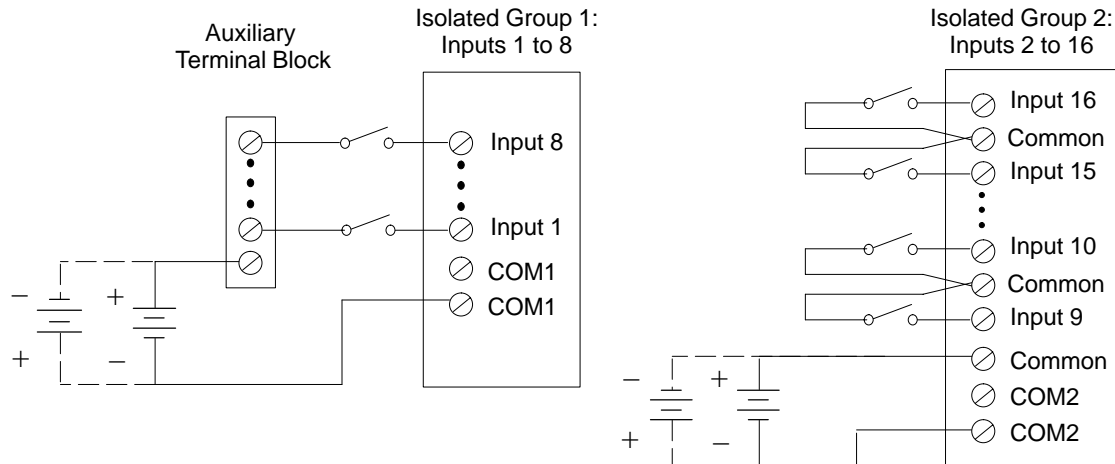
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Wiring Examples with Auxiliary Terminal Blocks

An Auxiliary Terminal Block may be used to provide additional wiring terminals. Auxiliary Terminal Blocks have all terminals connected internally. The Auxiliary Terminal Block with box terminals has 13 terminals; each 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). The Auxiliary Terminal Block with barrier terminals has nine terminals; each accommodates one or two wires up to AWG #14 (avg 2.1mm² cross section).

Example Connections for Wiring Two Isolated Groups

For an I/O Terminal Block with Box Terminals, an Auxiliary Terminal Block with Box Terminals can be used for power connections for one of the groups. Two external power supplies are used to provide isolation between inputs 1–8 and 9–16. Because all terminals on an Auxiliary Terminal Block are common, it can only be used for one group when isolation is needed. For the other group, an external terminal strip or the common terminals on the base might be used.

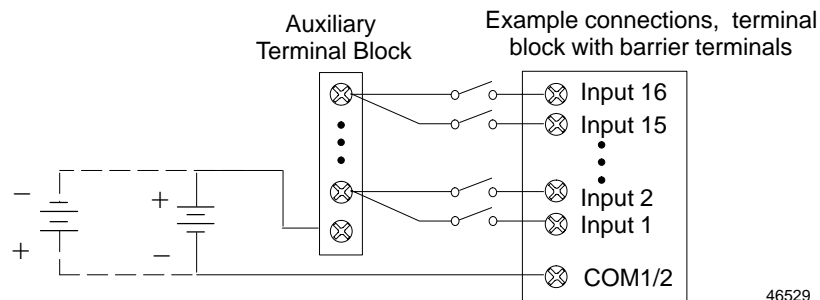


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For an I/O Terminal Block with Barrier Terminals or an I/O Terminal Block with Wire to Board Connectors, an Auxiliary Terminal Block can be used for one isolated group as shown on the left above. An external terminal strip must be used for the other group.

Example Connections for Wiring Without Isolation

If two isolated groups are not needed, an Auxiliary Terminal Block might be used for the power connections for all 16 points. The following example shows a Terminal Block and Auxiliary Terminal Block with Barrier Terminals.



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