



This Datasheet is for the

[IC693MDL654](#)

5/12 VDC (TTL) Positive/Negative Logic, 32 Point Input

<http://www.qualitrol.com/shop/p-14661-ic693mdl654.aspx>

Provides the wiring diagrams and installation guidelines for this GE Series 90-30 module.

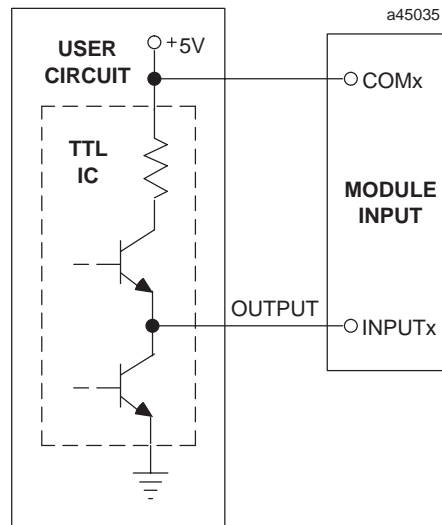
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5/12 VDC (TTL) Positive/Negative Logic, 32 Point Input IC693MDL654

The *5/12 volt DC (TTL) Positive/Negative Logic Input* module for the Series 90-30 Programmable Logic Controller provides 32 discrete TTL voltage threshold input points. The inputs are arranged in four isolated groups of eight (A1 - A8, B1 - B8, C1 - C8, and D1 - D8); each group has its own common. The inputs are positive or negative logic inputs and will operate at levels up to 15V. To be compatible with TTL outputs, the negative logic configuration should be used as shown in the following diagram.



A single, regulated +5V supply (current limited to approximately 150 mA) is available through the I/O connectors on the front of the module. This supply is generated on the module and is isolated from the backplane. Its power input comes from the +5V logic supply on the PLC backplane. By installing jumpers on the appropriate pins on the I/O connector, you can choose to power the inputs from this internal supply instead of powering them with an external user provided supply. If this internal supply is used to power the inputs, additional loading will be placed on the PLC's +5V power supply. Backplane isolation between the field side and logic side is provided by opto-couplers on the module. There are no special fault or alarm diagnostics reported. LED indicators (labeled A1 - A8, B1 - B8, C1 - C8, D1 - D8) at the top of the module provide the ON/OFF status of each input point.

This module is configured as a 32-point input type and uses 32 bits of discrete %I input data. Current into an input point results in a logic 1 in the input status table. This module can be installed in any I/O slot of a 5 or 10-slot baseplate in a Series 90-30 PLC system.

Connections to the input circuits are made from the user's input devices to two male (pin-type) 24-pin connectors (Fujitsu FCN-365P024-AU) mounted on the front of the module. The connector mounted on the right of the module (front view) interfaces with groups A and B. The connector on the left side of the module interfaces with groups C and D.

Wiring from the module's connectors to field devices is made through a cable having a mating female connector on one end and stripped and tinned wires on the other end. You can purchase a pair of pre-wired cables, catalog numbers IC693CBL327 and IC693CBL328 or, if required for your application, build your own cable. Refer to "Building Cables for 24-Pin Connectors" in the IC693CBL327/328 data sheet in Appendix C of this manual for more information.

Table 6-11. Specifications for IC693MDL654

Rated Voltage	5 to 12 volts DC, Positive or Negative Logic
Input Voltage Range	0 to 15 volts DC
Inputs per Module †	32 (four groups of eight inputs each) <i>98.4 feet (30 meters) , maximum cable length</i>
Isolation	1500 volts between field side and logic side 250 volts between groups
Input Current	3.0 mA (typical ON current @ 5 VDC) 8.5 mA (typical ON current @ 12 VDC)
Input Characteristics	
On-state Voltage	4.2 to 15 volts DC
Off-state Voltage	0 to 2.6 volts DC
On-state Current	2.5 mA (minimum)
Off-state Current	1.2 mA (maximum)
On response Time	1 ms maximum
Off response Time	1 ms maximum
Internal Power Consumption	195 mA (maximum) from +5V bus on backplane; (29 mA + 0.5 mA/point ON + 4.7 mA/LED ON) 440 mA (maximum) from +5V bus on backplane <i>(if module isolated +5V supply used to power inputs and all 32 inputs ON)</i> 96 mA (typical) from user input supply @ 5 VDC and all 32 inputs ON) 272 mA (typical) from user input supply @ 12 VDC and all 32 inputs ON)
Isolated +5V Supply	+5 volts DC ±5%
Current limit	150 mA (typical)

† Maximum number of inputs ON is dependent on ambient temperature as shown in the figure below.
Refer to data sheet GFK-0867C, or later revision for product standards and general specifications.

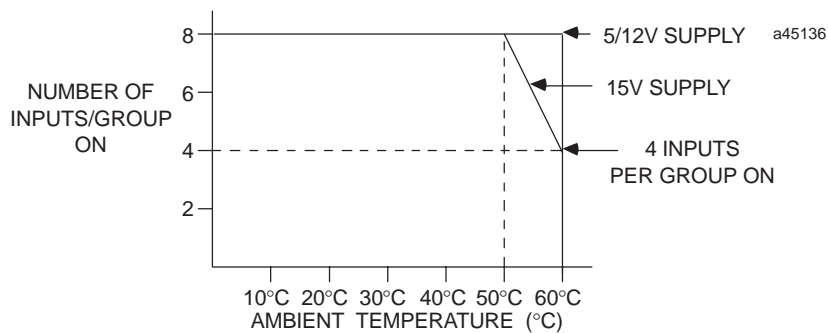


Figure 6-17. Input Points vs. Temperature for IC693MDL654

IC69MDL654 Input Module Field Wiring Information

The following figures provide wiring information for connecting user supplied input devices and power source to the 5/12 volt DC (TTL) pos/neg logic input module.

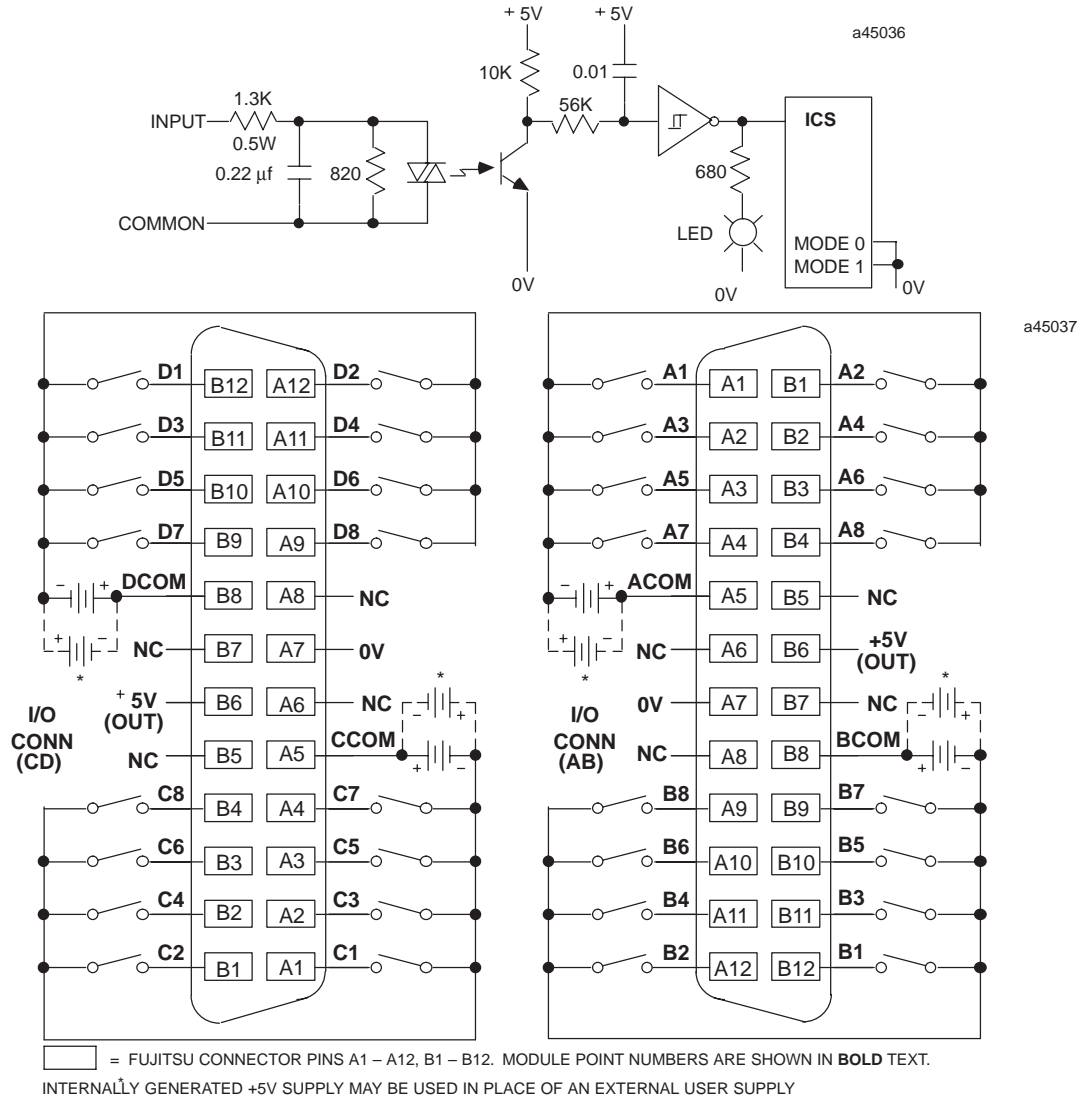


Figure 6-18. Field Wiring 5/12 Volt DC (TTL) Pos/Neg Logic 32-Point Input Module - IC69MDL654

Field Wiring Work Sheet for IC693MDL654

The following table is provided for the convenience of our customers as an aid to wiring 32-point I/O modules that have 24-pin connectors using cable IC693CBL315. It includes all of the required wiring information in one table. This table has the following information:

- *module point number:* A1 - A8, B1 - B8, C1 - C8, D1 - D8, voltage and common points
- *connector pin number:* A1 through A12, and B1 through B12
- *cable pair number:* pair 1 through pair 12
- *wire color code:* base color or base color with tracer color

Columns are also provided for circuit references and customer wire numbers. Please copy and use the work sheets on this and the following page as needed when wiring the 5/12 VDC (TTL) Positive/Negative Logic, 32 Point Input module.

Wiring for Module Groups A and B (connector on right front of module)

Reference	Module Point Number	Connector Pin Number	Cable Pair Number	Wire Color Code	Wire Number
	A1	A1	1	Brown	
	A2	B1	7	Violet	
	A3	A2	1	Brown/Black	
	A4	B2	7	Violet/Black	
	A5	A3	2	Red	
	A6	B3	8	White	
	A7	A4	2	Red/Black	
	A8	B4	8	White/Black	
	A Common	A5	3	Orange	
	N/C	B5	9	Gray	
	N/C	A6	3	Orange/Black	
	+5V OUT	B6	9	Gray/Black	
	0 VOLTS	A7	4	Yellow	
	N/C	B7	10	Pink	
	N/C	A8	4	Yellow/Black	
	B Common	B8	10	Pink/Black	
	B8	A9	5	Dark Green	
	B7	B9	11	Light Blue	
	B6	A10	5	Dark Green/Black	
	B5	B10	11	Light Blue/Black	
	B4	A11	6	Dark Blue	
	B3	B11	12	Light Green	
	B2	A12	6	Dark Blue/Black	
	B1	B12	12	Light Green/Black	

Wiring for Module Groups C and D (connector on left front of module)

Reference	Module Point Number	Connector Pin Number	Cable Pair Number	Wire Color Code	Wire Number
	C1	A1	1	Brown	
	C2	B1	7	Violet	
	C3	A2	1	Brown/Black	
	C4	B2	7	Violet/Black	
	C5	A3	2	Red	
	C6	B3	8	White	
	C7	A4	2	Red/Black	
	C8	B4	8	White/Black	
	C Common	A5	3	Orange	
	N/C	B5	9	Gray	
	N/C	A6	3	Orange/Black	
	+5V OUT	B6	9	Gray/Black	
	0 VOLTS	A7	4	Yellow	
	N/C	B7	10	Pink	
	N/C	A8	4	Yellow/Black	
	D Common	B8	10	Pink/Black	
	D8	A9	5	Dark Green	
	D7	B9	11	Light Blue	
	D6	A10	5	Dark Green/Black	
	D5	B10	11	Light Blue/Black	
	D4	A11	6	Dark Blue	
	D3	B11	12	Light Green	
	D2	A12	6	Dark Blue/Black	
	D1	B12	12	Light Green/Black	