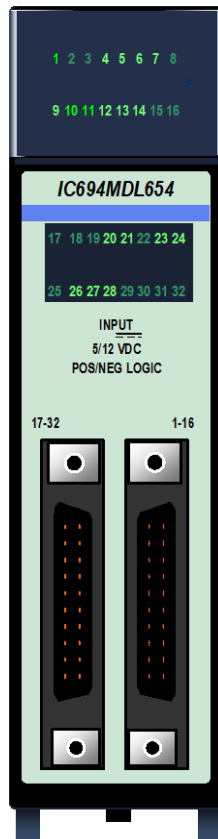# PACSystems™ RX3i

32-POINT, POSITIVE/NEGATIVE LOGIC, INPUT MODULES (IC694MDL654, IC694MDL655 & IC694MDL658)

EMERSON™

Warning Notes as Used in this Publication

Warning

Warning notices are used in this publication to emphasize that hazardous voltages, currents, temperatures, or other conditions that could cause personal injury exist in this equipment or may be associated with its use.
In situations where inattention could cause either personal injury or damage to equipment, a Warning notice is used.

Notes: Notes merely call attention to information that is especially significant to understanding and operating the equipment.

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Introduction

PACSystems RX3i 32-Point Positive/Negative Logic input modules provide 32 positive or negative logic input points in four isolated groups of eight. Each group is referenced to its own common connection.

5/12VDC (TTL) 32 Point Positive/Negative Logic Input module, IC694MDL654, shown at left, provides 32 discrete TTL voltage threshold input points that operate at levels up to 15V. A single, regulated +5V supply (current limited to approximately 150mA) 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 I/O connector, you can choose to power the inputs from this internal supply instead of powering them with an external user provided supply.

24VDC 32 Point Positive/Negative Logic Input module, IC694MDL655, provides 32 discrete input points that operate at levels up to 30V. Power to operate field devices can come from an external supply or from the module's isolated +24 VDC output.

48VDC 32 Point Positive/Negative Logic Input module, IC694MDL658, provides 32 discrete input points that operate at levels up to 60V. Power to operate field devices must be provided using an external supply.

The blue band on the front label indicates a low-voltage module.

These modules do not report special fault or alarm diagnostics. Green LEDs indicate the ON/OFF status of each input point. These modules can be installed in any I/O slot in the RX3i system.

Installation in Hazardous Locations

⚠ WARNING

- EQUIPMENT LABELED WITH REFERENCE TO CLASS I, GROUPS A, B, C & D, DIV. 2 HAZARDOUS LOCATIONS IS SUITABLE FOR USE IN CLASS I, DIVISION 2, GROUPS A, B, C, D OR NON-HAZARDOUS LOCATIONS ONLY
- EXPLOSION HAZARD - SUBSTITUTION OF COMPONENTS MAY IMPAIR SUITABILITY FOR CLASS I, DIVISION 2;
- EXPLOSION HAZARD - WHEN IN HAZARDOUS LOCATIONS, TURN OFF POWER BEFORE REPLACING OR WIRING MODULES; AND
- EXPLOSION HAZARD - DO NOT DISCONNECT EQUIPMENT UNLESS POWER HAS BEEN SWITCHED OFF OR THE AREA IS KNOWN TO BE NONHAZARDOUS.
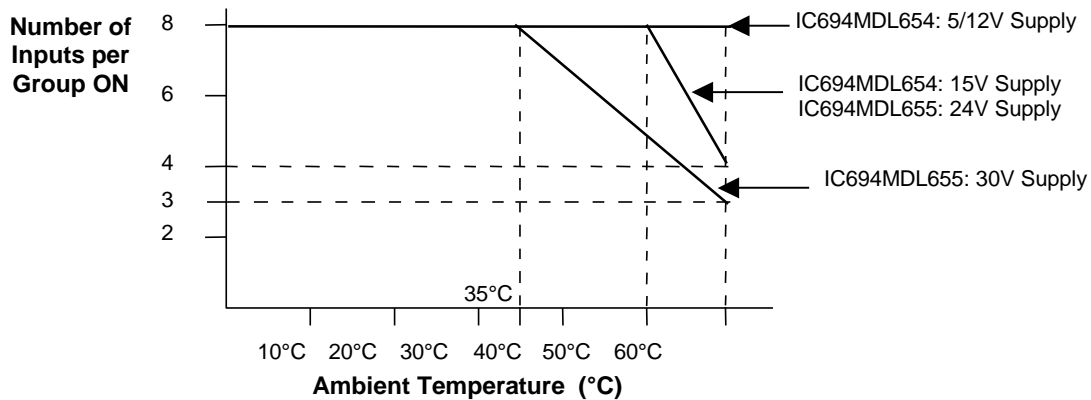
Specifications

Specification	IC694MDL654	IC694MDL655	IC694MDL658
Rated Voltage, Positive or Negative Logic	5 to12 volts DC	24 volts DC	48 volts DC
Input Voltage Range	0 to 15 volts DC	0 to 30 volts DC	0 to 60 volts DC
Input Current (typical ON current at rated voltage)	3.0mA @ 5VDC	7.0mA @ 24 VDC	1.7mA @ 48 VDC
	8.5mA @ 12VDC		
Input Characteristics			
On–state Voltage	4.2 to 15 volts DC	11.5 to 30 volts DC	34 to 60 volts DC
Off–state Voltage	0 to 2.6 volts DC	0 to 5 volts DC	0 to 10 volts DC
On–state Current	≥2.5mA (minimum) guaranteed on	≥3.2mA (minimum) guaranteed on	≥1.0mA (minimum) guaranteed on
Off–state Current	<1.2mA (maximum) guaranteed off	<1.1mA (maximum) guaranteed off	<0.4mA (maximum) guaranteed off
On or Off response Time *	1ms maximum	2ms maximum	2ms maximum
	* Within the module; does not include communications with CPU.		
Inputs per Module	32 (four groups of eight inputs each)		
Length of Cable	*98.4 feet (30 meters), maximum cable length for module IC694MDL654.*		

Specification	IC694MDL654	IC694MDL655	IC694MDL658
	For modules IC694MDL654 and MDL655, the maximum number of inputs per group that can be on at the same time depends on the ambient temperature as shown below. There is no thermal derating for module IC694MDL658.		
Isolation:			
Field to Backplane (optical) and to frame ground	250 VAC continuous; 1500 VAC for one minute For modules IC694MDL654 and IC694MDL655, if the 5V OUT / 24V OUT pin is used to connect to input devices in the field, the isolation is 50 VAC continuous; 500 VAC for one minute.		
Group to Group	50 VAC continuous; 500 VAC for one minute		
Internal Power Consumption	For MDL655, MDL658: 195mA (maximum) from +5V bus on backplane; (29mA + 0.5mA/point ON + 4.7mA/LED ON) For MDL654: 440mA (maximum) from +5V bus on backplane (if module isolated +5V supply used to power inputs and all 32 inputs ON)		
	For MDL654: 96mA (typical) from user input supply @ 5VDC and 32 inputs ON); 272mA (typical) from user input supply @ 12VDC and 32 inputs ON)		
Isolated +5V Supply	For MDL654: +5 volts DC +/-5%		
Current limit	For MDL654: 150mA (typical)		

Note: *Refer to the PACSystems RX3i System Manual, GFK-2314, for product standards and general specifications.*

Input Points vs. Temperature

### Figure 1: Input Point vs Temperature

Number of Inputs per Group ON vs **Ambient Temperature (°C)**

IC694MDL654: 5/12V Supply
IC694MDL654: 15V Supply
IC694MDL655: 24V Supply
IC694MDL655: 30V Supply

Release History

| Catalog Number	Date	Comments
IC694MDL655D IC694MDL658D	Sep 2019	Following Emerson's acquisition of this product, changes have been made to apply appropriate branding and registration of the product with required certification agencies. No changes to material, process, form, fit or functionality.
IC694MDL655C IC694MDL658C		RoHS Converted module. No change in form fit functionality.
IC694MDL654B IC694MDL655B IC694MDL658B		Tooling changed for one of Connector part. No change in form fit functionality.
IC694MDL654A IC694MDL655A IC694MDL658A		Initial Release

Field Wiring

Connections are made to two male 24–pin connectors (Fujitsu FCN–365P024–AU) on the front of the module. Inputs are arranged in four groups of eight. Each group has its own common connection. Within each group, four points attach to the A half of the connector and four points attach to the B half of the connector, as shown below.

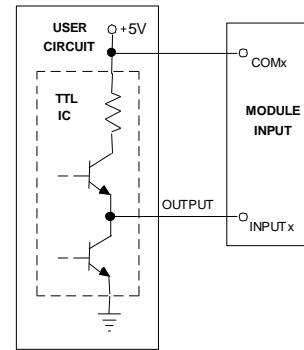**Figure 2: Field Wiring**
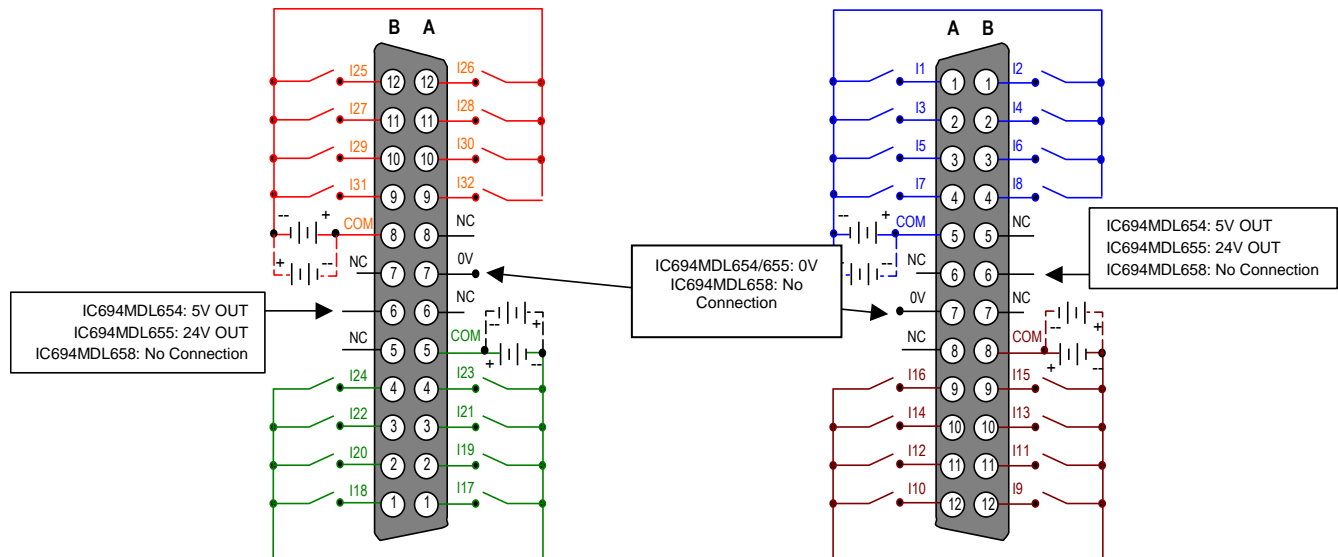
Figure 3: Cable connection
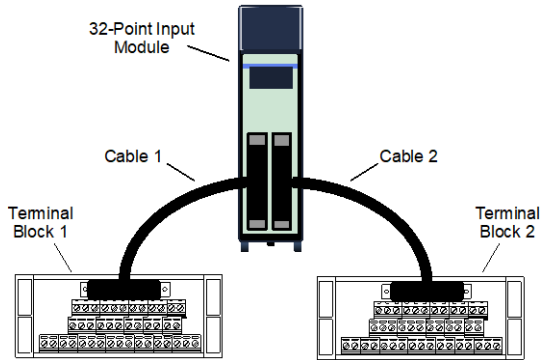
Wiring from each module connector to field devices is made through a cable. Prewired cables are available, or custom cables can be used. Input devices can be wired directly to the cables, or to intermediate Terminal Blocks, IC693ACC337, as shown here. Please see Appendix B of the PACSystems RX3i System Manual, GFK-2314, for information about prewired cables, custom cables, and Terminal Block IC693ACC337.

IC694MDL654: TTL Wiring

Conventional TTL wiring practices should be followed when installing module IC694MDL654. For noise immunity, I/O control lines connected to the module must be less than 30 meters in length (signal attenuation limits wiring length to less than this maximum).To be compatible with TTL outputs, the negative logic configuration should be used as shown at right.

Figure 4: TTL Wiring

Technical Support & Contact Information

Home link: http://www.Emerson.com/Industrial-Automation-Controls

Knowledge Base: https://www.emerson.com/Industrial-Automation-Controls/support

Note: If the product is purchased through an Authorized Channel Partner, please contact the seller directly for any support.

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