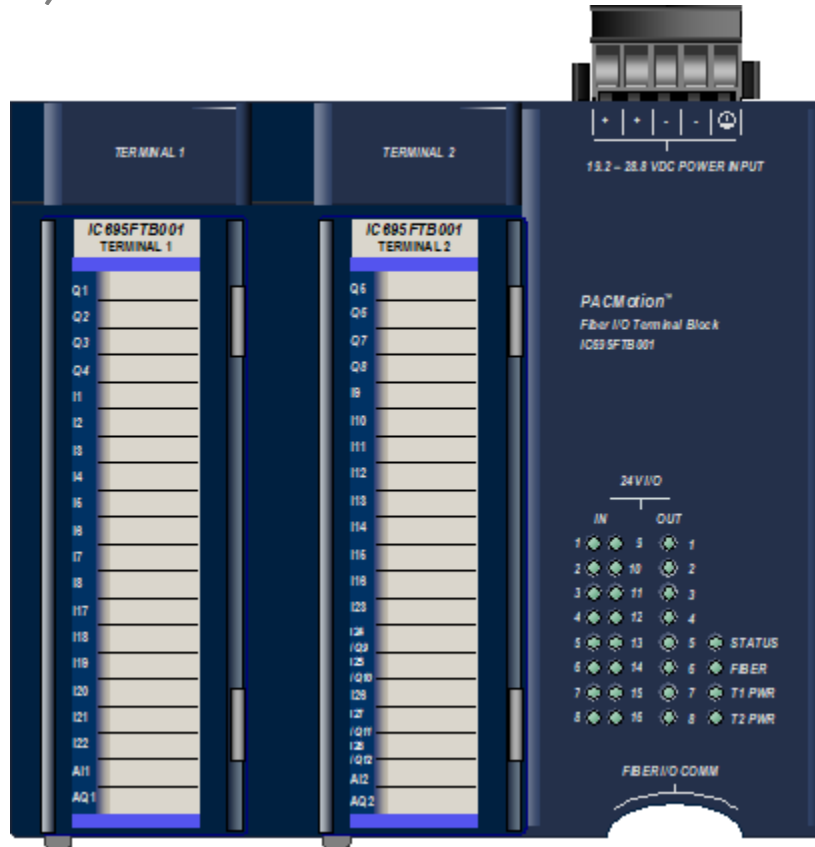# PACSystems™ RX3i

## FIBER I/O TERMINAL BLOCK
## (IC695FTB001)

# 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

The Fiber I/O Terminal Block (FTB) provides an active fiber interface that extends the I/O capability of the IC695PMM335 PACMotion Multi-Axis Motion Controller. The FTB provides a broad range of configurable I/O for the axes on the PMM335, supporting extensive distributed, configurable digital and analog I/O for complex machines.

The FTB allows motion-centric I/O to be distributed up to 100 meters from the RX3i rack. Servo amplifiers and motion I/O can be distributed with up to 100 meters between nodes, allowing 400 meters maximum from the controller.

In addition to simple I/O, FTB I/O is configurable for motion-specific functionality such as Touch Probe inputs, Over Travel Limit switches, Home switches, and A Quad B Encoder and Marker inputs.

In the event of a system malfunction, such as loss of communication with the PMM, the FTB sets its I/O to the user-configured state.

# Features

- Twelve differential high speed 5 volt inputs with fault detection. Six may be configured to operate as single ended inputs. Four may be configured to operate as differential inputs or outputs.
- Sixteen optically isolated 24 volt inputs.
- Eight optically isolated 24 volt outputs with integrated short circuit protection
- Two +/- 10 volt general-purpose analog inputs.
- Two +/- 10 volt general-purpose analog outputs.
- DIN rail mounting allows convenient location of I/O.
- Removable RX3i terminal block headers provide ease of use.
- A 5VDC power source for external quadrature encoders.

# Specifications

For RX3i environmental specifications, refer to the PACSystems Rx3i System Manual, GFK-2314.

| Specification | Description | Comments |
|---|---|---|
| Mounting Dimensions: | 35 mm DIN Rail | Must be mounted on a vertical surface for proper cooling |
| inches | 5.56 W x 4.94 H x 2.46 D | — |
| mm | 141.2 W x 125.5 H x 62.5 | — |
| Interface to PACMotion Module | Fiber Optic Cable | Maximum cable length is 100 meters; Interface uses a unique user selectable ID for each PMM/FTB pair to prevent cross-connection |
| Power Requirements | 19.2VDC —28.8VDC; 0.45 Amps @ 24V | One AWG #14 (2.1mm2) or two AWG #16 (1.3mm$^2$) copper wires per terminal |
| 24V Outputs | 8 optically isolated; source; open load & short detection | 2 groups of 4; 1.5 A max. per point; 4 A max. per group |
| 24V General Purpose Inputs | 16 optically isolated; source/sink | 4 groups of 4 |
| 5V Inputs / Outputs (differential) | 4 | RS422 Line Driver with short circuit protection; 48 mA max. |
| 5V Inputs | 8 (6 differential/single-ended; 2 differential) | RS422 / RS485 Line Receiver with fault detection |
| Analog Inputs | 2, ±10V differential | 14 bit resolution |
| Analog Outputs | 2, ±10V single-ended | 12 bit resolution |
| 24V Power Output | | Reverse polarity protected by replaceable fuse |
| 5V Power Output | 0.5 amp max. | electronic overload protected |

| Specification | Description | Comments |
|---|---|---|
| Quad Encoder Open Circuit Detection | Yes | — |
| I/O Function Assignment | Configurable | I/O functions are assigned during module hardware configuration |

## Revision History

| Catalog Number | Firmware Version | Date | Description |
|---|---|---|---|
| IC695FTB001-BA | 1.00 | 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. |
| IC695FTB001-AA | 1.00 | Nov 2008 | Initial Release |

## Functional Compatibility

| Subject | Description |
|---|---|
| CPU Version | Use of the FTB001 requires PACSystems Rx3i firmware release 5.60. |
| PMM Version | Use of the FTB001 requires PACMotion firmware release 1.00 or later. |
| Programmer Version | Use of FTB001 requires Machine Edition Logic Developer – PLC Version 5.90 or higher. The FTB001 is not compatible with LM90, Control, VersaPro or the DOS-based Motion Programmer (IC641SWP065). |

## Restrictions and Open Issues

| Restriction/Problem | Description |
|---|---|
| Analog Output 2 does not output Actual Motor Current | Analog Output 2 does not output Actual Motor Current. Instead, a 0x005F event is logged. The MC_WriteDwordParameter instance that sets analog Output 2 to output actual motor current does not report an error. Analog Output 1 correctly outputs actual motor current. |
| Analog Output Source not set back to default | If the user sets the Analog Output Source by calling the MC_WriteParameter function with parameter number 2104 or 2105, and then later stores hardware configuration, the output source is not set back to the default, which is the MC_WriteAnalogOutput value. To work around this issue, execute another MC_WriteParameter function call to reset the output source. |

## Related Documents

| | |
|---|---|
| PACSystems CPU Reference Manual | GFK-2222 |
| TCP/IP Ethernet Communications for PACSystems | GFK-2224 |
| Station Manager for PACSystems | GFK-2225 |
| PAC Machine Edition Logic Developer-PLC Getting Started | GFK-1918 |
| PACSystems RX3i Hardware and Installation Manual | GFK-2314 |
| Servo Products Specifications Guide | GFH-001 |
| AC Servo Motor βis Series - Descriptions Manual | GFZ-65302EN |

In addition to these manuals, product update documents describe individual product revisions. The most recent PACSystems documentation is available at the Emerson website: https://www.emerson.com/Industrial-Automation-Controls/support. PLCopen, www.plcopen.org

## Ordering Information

| Product | Catalogue Number | Description |
|---|---|---|
| Fiber I/O Terminal Block | IC695FTB001 | Motion I/O Expansion |
| Motion Controller | IC695PMM335 | PACMotion Motion Controller for RX3i |
| Fiber Optic Cables | ZA66L-6001-0023#L150R0 | FSSB and FTB I/O Cable 0.15 Meter |
| | ZA66L-6001-0023#L300R0 | FSSB and FTB I/O Cable 0.3 Meter |
| | ZA66L-6001-0023#L1R003 | FSSB and FTB I/O Cable 1 Meter |
| | ZA66L-6001-0023#L3R003 | FSSB and FTB I/O Cable 3 Meter |
| | ZA66L-6001-0026#L1R003 | FSSB and FTB I/O Cable Sheathed, 1 Meter |
| | ZA66L-6001-0026#L3R003 | FSSB and FTB I/O Cable Sheathed, 3 Meter |
| | ZA66L-6001-0026#L5R003 | FSSB and FTB I/O Cable Sheathed, 5 Meter |
| | ZA66L-6001-0026#L10R03 | FSSB and FTB I/O Cable Sheathed, 10 Meter |
| | ZA66L-6001-0026#L20R03 | FSSB and FTB I/O Cable Sheathed, 20 Meter |
| | ZA66L-6001-0026#L30R03 | FSSB and FTB I/O Cable Sheathed, 30 Meter |
| | ZA66L-6001-0026#L50R03 | FSSB and FTB I/O Cable Sheathed, 50 Meter |
| | ZA66L-6001-0026#L100R3 | FSSB and FTB I/O Cable Sheathed, 100 Meter |
| Terminal Header Options (ordered separately – two required per FTB) | | |
| IC694TBS032 | High Density 36 point Spring Clip Terminals | 14-26 AWG |
| IC694TBB032 | High Density 36 point Captive Screw Terminals | 14-26 AWG |
| IC694TBS132 | High Density Spring Clip Terminals, Extended Shroud | 14-28 AWG |
| IC694TBB132 | High Density Captive Screw Terminals, Extended Shroud | 14-28 AWG |

## Installation in Hazardous Locations

**The following information is for products bearing the UL marking for Hazardous Locations:**

> ⚠ **WARNING**
>
> - 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 CONNECT OR DISCONNECT EQUIPMENT UNLESS POWER HAS BEEN SWITCHED OFF OR THE AREA IS KNOWN TO BE NONHAZARDOUS.
>
> - 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.

## 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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