

# Section 17: Terminal Blocks and Interconnect Cables

This chapter describes the following:

- High-Density The module-Mounted Terminal Blocks (Section 17.1)
- Terminal Block Quick Connect (TBQC) system (Section 17.2)
  - for RX3i and Series 90-30 20-terminal discrete modules
  - for RX3i and Series 90-30 32-point discrete modules with dual D-Connectors
  - for RX3i and Series 90-30 Modules with 36 terminals
- Pre-fabricated interconnect cable suitable for connecting the I/O Modules to the Remote TBQC terminal blocks
- How to build a custom interconnect cable.
- Terminal Block Selection Options

Unless otherwise stated, RX3i I/O modules are provided with a suitable terminal block. Refer to the section in this manual which discusses the specific I/O module of interest.

In the case of high-density discrete I/O modules, the user has some terminal block selection options, so terminal blocks are purchased separately. The user may select:

- A module-mounted terminal block, in which case all field wiring will be directly attached to the I/O module
- An interposing terminal strip with an interconnect cable, allowing all field wiring to be landed on the interposing terminal strip, which is then attached to the I/O module via a pre-fabricated or custom cable. This allows for quick connection of the I/O module to previously wired terminal strips. It also provides a solution where wiring directly to the I/O module is not possible due to space limitations or due to the rigidity or thickness of the wire bundle.

## 17.1 High-Density The module-Mounted Terminal Blocks

Terminal Block Type	Catalog Number
Box-style Terminal Block, 36 Terminals	IC694TBB032
Spring-style Terminal Block, 36 Terminals	IC694TBS032
Extended Box-style Terminal Block, 36 Terminals	IC694TBB132
Extended Spring-style Terminal Block, 36 Terminals	IC694TBS132

## 17.1.1 Terminal Blocks for High-Density RX3i Modules

### 17.1.1.1 Extended High-Density vs. High-Density Terminal Blocks

Extended High-Density Terminal Blocks IC694TBB132 and IC694TBS132 are functionally identical to High-Density Terminal Blocks IC694TBB032 and IC694TBS032. Both attach directly to the I/O module. The Extended High-Density Terminal Blocks have an outer cover that is approximately 13 mm (½ in) deeper. This is to accommodate wires with thicker insulation, such as wires typically used with AC I/O modules.

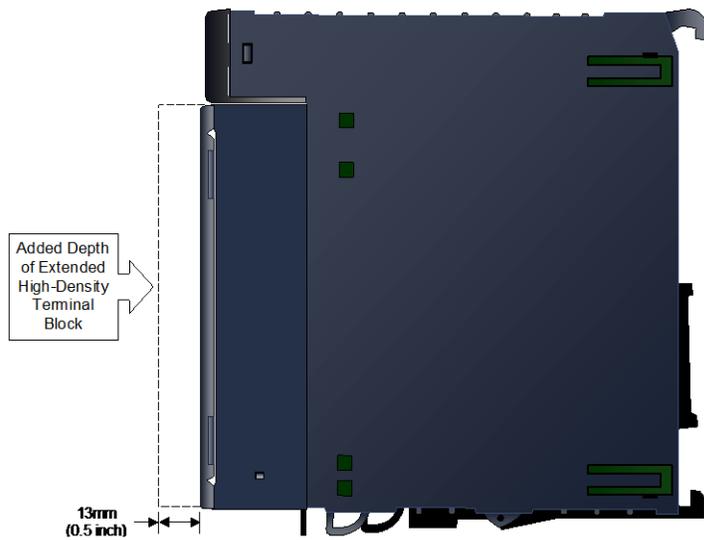


Figure 423: Additional Depth due to Extended High-Density Terminal Blocks

Figure 424 compares the space for wiring on a High-Density Terminal Block (left) and an Extended High-Density Terminal Block (right), seen from the bottom of the module.

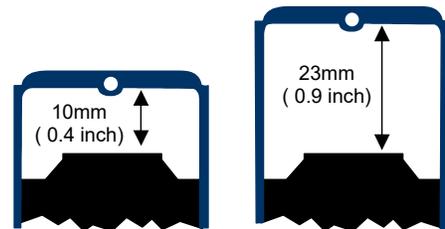


Figure 424: Depth Comparison: High-Density vs Extended High-Density Terminal Block

## 17.1.1.2 IC694TBB032 and TBB132 Box-Style Terminal Blocks, 36 Terminals

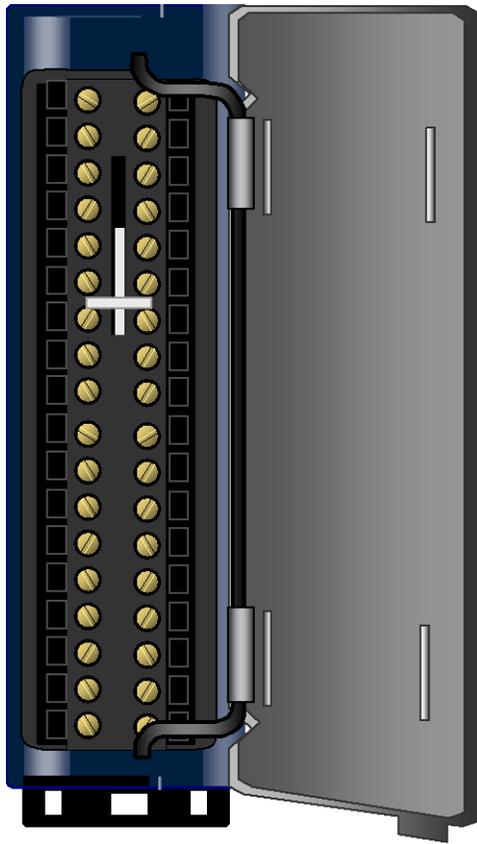


Figure 425: 36-Terminal Box-Style Terminal Block

Box-Style Terminal Blocks, IC694TBB032 and IC694TBB132, are used with high-density PACSystems RX3i modules and equivalent Series 90-30 PLC modules. These terminal blocks provide 36 screw terminals for field wiring to the module.

Terminal Blocks IC694TBB032 and TBB132 are functionally identical. Terminal Block IC694TBB032 comes with a standard-depth outer cover. When installed, it is the same depth as most other PACSystems and Series 90-30 PLC modules.

Extended Terminal Block IC694TBB132 comes with an outer cover that is approximately 13 mm (½ in) deeper than Terminal Block IC694TBB032, to accommodate wires with thicker insulation, such as that typically used with AC I/O modules.

### 17.1.1.2.1 Specifications: TBB032 and TBB132

Torque	0.79 Nm (7 in-lb)
Wire strip length	7.87 mm (0.310 in)
Wire gauges supported	#14-26 AWG (solid or stranded)

### 17.1.1.2.2 Connecting Field Wiring to a Box-Style High-Density Terminal Block

The bottom of the terminal block can be used as a gauge for the wire strip length, as displayed in Figure 426. The stripped wire must be fully inserted into the terminal block so that the insulation meets the stop position inside the terminal, and the end of the wire is bent. Tightening the terminal screw raises the wire and clamps it in place.

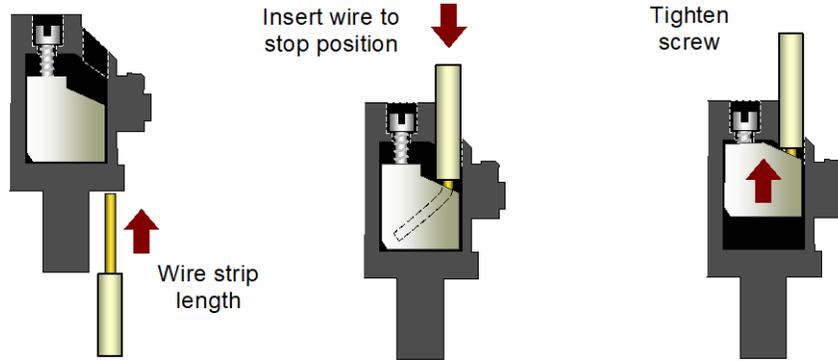


Figure 426: Wire Preparation and Insertion into Box-Style Terminal Block

### 17.1.1.3 IC694TBS032 and TBS132 Spring-Style Terminal Blocks, 36 Terminals

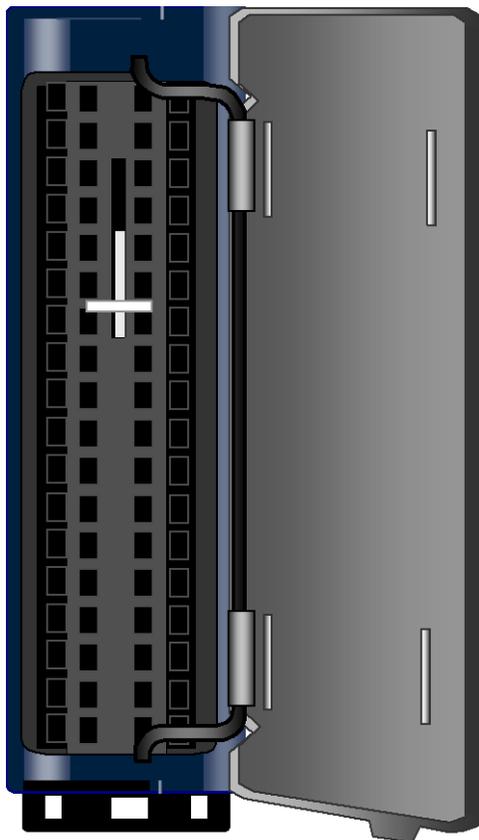


Figure 427: 36-Terminal Spring-Style Terminal Block

*Spring-Style Terminal Blocks*, IC694TBS032 and IC694TBS132, are used with High-Density PACSystems RX3i modules and equivalent Series 90-30 PLC modules. These terminal blocks provide 36 spring style terminals for field wiring to the module.

Terminal Blocks IC694TBS032 and TBS132 are functionally identical. Terminal Block IC694TBS032 comes with a standard-depth outer cover. When installed, it is the same depth as most other PACSystems and Series 90-30 PLC modules.

Extended Terminal Block IC694TBS132 comes with an outer cover that is approximately ½ inch (13mm) deeper than Terminal Block IC694TBS032, to accommodate wires with thicker insulation, such as that typically used with AC I/O modules.

#### 17.1.1.3.1 Specifications: TBS032 and TBS132

Wire strip length	7.87 mm (0.310 in)
Wire gauges supported	#14-28 AWG (solid or stranded)

## 17.1.2 Installing and Removing High-Density Terminal Blocks

This section has special installation instructions for High-Density Terminal Blocks. Refer to Chapter 2 for general installation information.

### **WARNING**

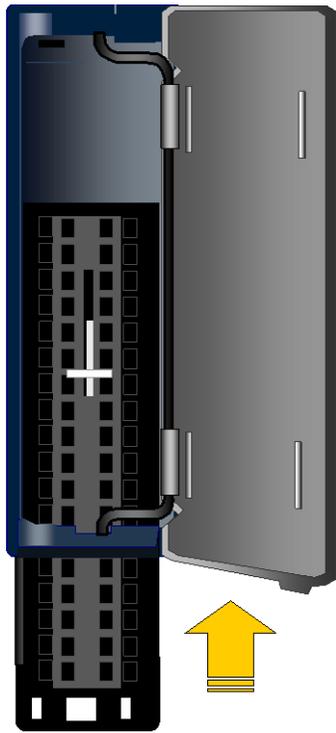
Field power must be turned off when installing or removing a Terminal Block assembly.

### 17.1.2.1 Installing or Removing the Terminal Block Assembly of a The module

To install or remove the terminal block module assembly

1. Install the small catalog number label (for example: “MDL240”) supplied with the module in the slot on the top of the Terminal Block.
2. Complete the module wiring and secure the wire bundles to the tie downs on the bottom of the Terminal Block.

### 17.1.2.2 Inserting a Terminal Block in its Cover



- To insert a terminal block in the cover
- 1) Align the top of the Terminal Block with the bottom of the cover, making sure that the notches in the Terminal Block match up with the grooves in the cover.
- 2) Slide the Terminal Block upward until it clicks into place.

Figure 428: Inserting Terminal Block into its Cover

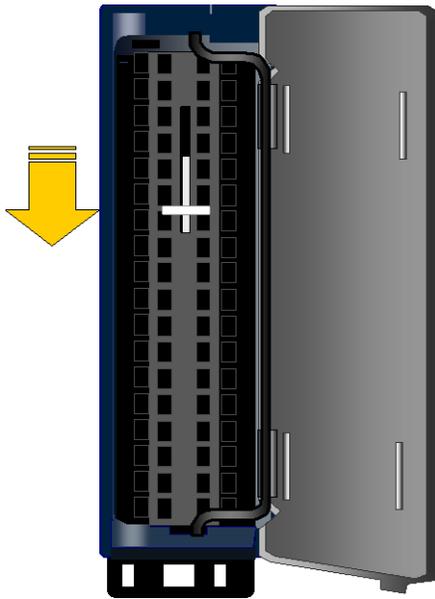
### 17.1.2.3 Installing a High-Density Terminal Block Assembly

- To install a high-density terminal block assembly
- 1) Press the terminal block assembly straight toward the module until it is partially seated.
- 2) Open the door on the front of the terminal block and push the latch (refer to below) up very firmly until it reaches the top of the slot and clicks into place.
- 3) Check to be sure the terminal block is fully seated.



Figure 429: Installing a High-Density Terminal Block

### 17.1.2.4 Removing a High-Density Terminal Block from the module



- To install a high-density terminal block assembly
  - 1) Open the terminal block door.
  - 2) Push the white plastic latch (Figure 430, center) down very firmly until the terminal block is released.
  - 3) Pull the terminal block straight out and away from the module until the contacts have separated.

Figure 430: Removing a High-Density Terminal Block

### 17.1.2.5 Removing a Terminal Block from its Cover

- To remove a Terminal Block from its cover
  - 1) Grasp the sides of the Terminal Block cover.
  - 2) Pull down on the bottom of the Terminal Block.

## 17.2 Terminal Block Quick Connect (TBQC) System

The optional Terminal Block Quick Connect (TBQC) system allows the listed discrete and analog I/O modules to be quickly connected to external TBQC terminal blocks via an interconnecting cable. The TBQC system significantly reduces wiring costs by reducing wiring time and eliminating wiring errors. The TBQC terminal blocks also have integrated test points to simplify wiring troubleshooting.

There are three distinct TBQC product offerings (not interchangeable):

- 1) The Low-Density TBQC products (IC693ACC329 -333) provide 20-terminal remote connector blocks. They are compatible primarily with Low-Density Discrete I/O Modules that come equipped with a 20-terminal connector header. They connect to the I/O module via an unshielded cable. The original 20-terminal connector may be retained on the I/O module, or may be replaced with a faceplate containing a compatible D-connector (catalog number IC693ACC334). Using the D-connector faceplate greatly simplifies the wiring effort.
- 2) IC693ACC337 is a variant of (1) above. It provides a 24-terminal remote connector and a pair of interconnecting cables that are compatible with those 32-point discrete I/O modules that come equipped with a pair of D-connectors. They connect to the I/O module via a pair of unshielded cables.