



ControlLogix EtherNet/IP Bridge Module

Catalog Number 1756-ENBT

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About This Publication

This publication describes enhancements, anomalies (corrected and known), and other concepts related to the ControlLogix EtherNet/IP Bridge Module firmware.

Required System Components

Use the following versions of software with the 1756-ENBT module:

- RSLogix 5000 software
 - For I/O control, use version 8.02 or later. However, the 1756-ENBT module works with the 1756-ENET/B selection in version 7.0 if the Compatible or Disable keying options are used.
 - For Gateway applications, there are no software compatibility issues with RSLogix 5000 software.
- RSLinx software, version 2.30.01 or later.

Enhancements

Enhancements made to the 1756-ENBT module are listed according to the firmware revision number, the most recent first.

Revision 4.007

The enhancement with this revision decouples the link between a TCP connection and the associated CIP connection. As a result, TCP connections can be closed without affecting existing CIP connections.

Lgx00074715

Revision 4.003

The enhancements in firmware revision 4.003 relate to its use in a ControlLogix redundancy system. See the ControlLogix Redundancy System Release Notes, publication [1756-RN608](#), for more information.

Revision 3.9

This revision enables you to set the IP address or to upgrade firmware more quickly after power is applied to the module. This is achieved through the reduction of wait time required after module power is applied.

Revision 3.3

With this revision of firmware, the 1756-ENBT module supports the following features:

- Embedded Electronic Data Sheet (EDS) file - the module contains its own EDS file within its firmware. This feature requires the use of RSNetWorx software, version 5.0 or later.
- Dynamic Host Configuration Protocol (DHCP) - when connected to a network with a DHCP server, that server automatically assigns an IP address to the module. This feature requires the use of RSLogix 5000 (version 13 or later) or RSLinx (version 2.43 or later) software.
- Email - using a MSG instruction, the controller can send email through the module.

For more information, refer to the EtherNet/IP Modules User Manual, publication [ENET-UM001](#).

Revision 3.2

The following enhancements are enabled by firmware revision 3.2:

- The 1756-ENBT module supports duplicate IP address detection. When you change the IP address or connect the module to an EtherNet/IP network, the module checks to make sure that the IP address assigned to this module is not the same as that for any other device on the network. If the module determines that there is a conflict (some other device on the network already has the IP address), the EtherNet/IP port of the module goes into conflict mode, where the module's:
 - OK status indicator blinks red.
 - Network (NET) status indicator is solid red.
 - front display indicates the conflict.

For more information about this feature, refer to the EtherNet/IP Modules in Logix5000 Control Systems User Manual, publication [ENET-UM001](#).

- When used in a ControlLogix redundancy system, the 1756-ENBT module supports automatic IP address swapping. During a switchover, the module now swaps its IP address with its partner module in the other redundant chassis. The automatic IP address swapping lets you use the same IP address to communicate with a primary module regardless of which chassis is primary.

For more information on this feature, refer to the ControlLogix Redundancy System User Manual, publication [1756-UM523](#).

IMPORTANT

Automatic IP address swapping is compatible only with revision 13 (or later) of the ControlLogix redundancy release. To determine the exact revision of firmware to use with redundancy, refer to the ControlLogix Redundancy System Release Notes, publication [1756-RN608](#).

- We enhanced the embedded web pages for the 1756-ENBT module to make them easier to manage and easier to use.

Revision 2.3

The following are the enhancements in firmware revision 2.3:

- Beginning with this revision of the firmware, a sub-minor revision has been added when the revision number is scrolled on the display. For revision 2.3 firmware, the display will scroll 2.03.10, where 2 = major revision, .03 = minor revision, and .10 = sub-minor revision.

This does not affect how you use and refer to firmware revisions of released products; continue to use the major and minor revision numbers only. Electronic keying in RSLogix 5000 software keys to the major and minor revisions. The sub-minor number cannot be used for keying.

- Added redundancy support for EtherNet/IP explicit messaging in a ControlLogix redundancy system (such as in HMI applications). With this firmware revision, the 1756-ENBT module can be placed directly in a redundant chassis. Minimum 1756-ENBT requirements for ControlLogix redundancy support include:
 - hardware, CAT REV E01.
 - firmware, revision 2.3.

To learn how to use the 1756-ENBT module in a redundant system, refer to the ControlLogix Redundancy System Release Notes, publication [1756-RN608](#).

Corrected Anomalies

Anomalies corrected for the 1756-ENBT module are listed according to the firmware revision number, the most recent first.

Revision 4.007

These anomalies have been corrected with firmware revision 4.007.

Corrected Anomaly	Description
<p>Connecting to a device with a rapid response time may result in a timeout.</p>	<p>When connecting to a device with a more rapid response time (for example, a computer or a 1756-EN2T module), the 1756-ENBT module's attempt to open the TCP connection may time out.</p> <p>The timeout occurs because the faster device has sent a reply to the 1756-ENBT module before the 1756-ENBT module socket is fully open and the module is unprepared to receive the reply. The 1756-ENBT module misses the reply and the TCP connection times out.</p> <p>Firmware revision 4.007 corrects this issue by preparing the 1756-ENBT module to receive the reply earlier.</p> <p>Lgx00079880</p>
<p>Extensive access of the module's site affects functionality.</p>	<p>Module asserts when several users access the module's website at a given time.</p> <p>Firmware revision 4.007 corrects this anomaly by making more memory available for the website to function properly when accessed by several users.</p> <p>Lgx00080499</p>

Corrected Anomaly	Description
<p>Use of a 000.000.000 subnet mask results in a network error.</p>	<p>When the 1756-ENBT module's subnet mask is set to 000.000.000, the module is not recognized on the network.</p> <p>Firmware revision 4.007 corrects this issue by using a default subnet mask if 000.000.000 is entered.</p> <p>Lgx00078991</p>

Revision 4.006

These anomalies have been corrected with firmware revision 4.006.

Corrected Anomaly	Description
<p>Safety I/O connections dropped.</p>	<p>In some applications, the data from the backplane that is multi-cast by the 1756-ENBT module is delayed. This delay results in the Safety I/O connections being dropped by the controller. This anomaly is corrected by firmware revision 4.006.</p> <p>Lgx00074401</p>
<p>The use of many safety I/O modules results in STOP OS error.</p>	<p>When large numbers of safety I/O modules are used in an application, the 1756-ENBT may halt communication and a STOP OS error is displayed on the module. This error occurs because the interrupt stack size is exceeded. Firmware revision 4.006 corrects this anomaly by increasing the interrupt stack size.</p> <p>Lgx00075528</p>
<p>Module remains in power-up diagnostics.</p>	<p>In some cases, the 1756-ENBT module may not function past the power-up diagnostics. This situation is indicated by the four-character display on the front of the module reading "PASS" or "TEST", without changing to "OK" and displaying the IP address.</p> <p>The frequency of the power-up anomaly occurrence is significantly reduced when this firmware revision is used.</p> <p>Lgx00044304, Lgx00073621</p>

Revision 4.003

Firmware revision 4.003 corrects these anomalies.

Corrected Anomaly	Description
1756-ENBT module does not reply to a ping.	Sometimes you wouldn't get a reply when you pinged a 1756-ENBT module. Lgx00062979

Revision 3.8

The following are the corrected anomalies in firmware revision 3.8:

- Module appears to lock up during the power up process from short duration power cycles. The module status indicator is solid green and all other status indicators are off. No communication is possible from the Ethernet port or from the backplane. The display hangs with PASS.
- The following anomalies related to the writing of custom EtherNet/IP drivers have been corrected:
 - When a poorly-formed Class 3 message is received on the backplane or over an Ethernet network, the module may appear to lock up.
 - Bad UDP checksum would be created when the UDP do-not-fragment bit is set. This bit is only used when you write a custom EtherNet/IP driver.
 - When processing an open message that is not correctly sized, the module could lock up. The firmware now verifies the size of a forward open message and processes it without system lock up.

Revision 3.4

This firmware revision contains two corrected anomalies that apply to modules used in a redundant system:

- A secondary chassis synchronized even if a module wasn't connected to the EtherNet/IP network.
- It was possible for the module to erroneously report a duplicate IP address under these conditions:
 - High HMI traffic
 - Secondary chassis was powering up (depended on your configuration)

For more information, refer to the ControlLogix Redundancy System Release Notes, publication [1756-RN608](#).

Revision 3.3

This revision corrects an anomaly that occurs when you use Domain Name Server (DNS) services with firmware revision 3.2. In such instances, the module may lock up.

Revision 2.4

The following anomalies have been corrected in firmware revision 2.4:

- When multiple controllers own a remote 1756-ENBT rack using rack optimization, inputs from that remote rack may not update in the controller tag databases. No errors would be reported by the controllers.
- When using RSLinx software version 2.4x.x in certain conditions, an unusually high volume of messages appears to be processed by the 1756-ENBT module. The module may appear to be locked up due the high volume; however, it is really overloaded. The temporary workaround is to remove the Ethernet connector.

Revision 2.3

The following are the corrected anomalies in firmware revision 2.3:

- Erroneous generation of UDP checksum.
- The falsely-reported, module-in-use error when the product is running near capacity.

Known Anomalies

Known anomalies for the 1756-ENBT module are listed according to the firmware revision number. Known anomalies are listed with the most recent first.

Revision 4.003

The known anomalies in firmware revision 4.003 relate to its use in a ControlLogix redundancy system. See the ControlLogix Redundancy System Release Notes, publication [1756-RN608](#), for more information.

Application Notes

The following are notes that may apply to your application and use of the 1756-ENBT module.

Ethernet Switch Port Configuration

The 1756-ENBT module supports the following Ethernet settings:

- 10 M half-duplex
- 10 M full-duplex
- 100 M half-duplex
- 100 M full-duplex

Depending on the module and firmware revision, different port configurations are required.

Modules with Firmware Revision 1.40 or Earlier

Mode selection is done automatically based on the IEEE 802.3u autonegotiation protocol. If a module is connected to a port on a 10/100 M switch, you must set this port to autonegotiate.

If this port is set manually to one of the modes listed in the section Ethernet Switch Port Configuration, a mismatch between module and switch modes of operation may occur. This will result in significant reduction of system performance.

Modules with Firmware Revision 1.61 or Later

Starting with version 12.0 of RSLogix 5000 software, you can manually configure the communication rate and duplex of the 1756-ENBT module. Additionally, you can manually configure the communication rate and duplex on both the 1756-ENBT module and the switch port that is connected to the module. However, the configurations must match on both devices.

Changing Ports on an Ethernet Switch - Autonegotiation Setting Only

If you change the connection of the module from one port to another one, whether the new port is on the same or a different switch (or a hub), do the following.

1. Disconnect the cable from the port to which the module is currently connected.
2. Wait until the module Link Status indicator is off.
3. Connect the cable to the new port.

This procedure will restart the autonegotiation process at the module side. Another option is to restart the module itself.

Changing the Subnet Mask

After setting or changing the Subnet Mask on an already configured 1756-ENBT module, you must cycle power on the module for the Subnet Mask to take effect.

Diagnostic Counters

RSLogix 5000 software and RSLinx software display many diagnostic counters for the 1756-ENBT module. However, some of these fields are not supported by the module. The fields that are not supported are permanently displayed as 0.

IGMP Support

The 1756-ENBT module supports the following versions of IGMP (Internet Group Management Protocol):

- Version 1.0 (firmware revision 2.4 and earlier)
- Version 2.0 (firmware revision 3.2 and later)

Performance Considerations

- In general, the 1756-ENBT module is capable of supporting 5,000 packets/seconds. However, it is possible in some applications, depending on the combination of connection count, RPI settings, and communication formats, that the product may be able to achieve only 4,000 packets/seconds.
- When performing both implicit and explicit communication in an EtherNet/IP system by using the 1756-ENBT module, communication, such as that for HMI, may slow I/O communication performance in applications with high node count (64 and above). Adjust RPI values or use additional 1756-ENBT modules to achieve desired performance in the system.

Additional Resources

Resource	Description
EtherNet/IP Modules in Logix5000 Control Systems User Manual, publication ENET-UM001	Provides information about using all types of EtherNet/IP modules in a ControlLogix system.
ControlLogix Redundancy System User Manual, publication 1756-UM523	Provides information about redundancy in the ControlLogix system, including a section about using EtherNet/IP modules.
ControlLogix Redundancy System Release Notes, publication 1756-RN608	Provides information regarding the enhancements and anomalies specific to the use of the 1756-ENBT in a redundant system.
ControlLogix EtherNet/IP Bridge Module Installation Instructions, publication 1756-IN019	Provides information about installation procedures and product specifications.

You can view or download publications at <http://literature.rockwellautomation.com>. To order paper copies of technical documentation, contact your local Rockwell Automation distributor or sales representative.

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For an additional level of technical phone support for installation, configuration, and troubleshooting, we offer TechConnect Support programs. For more information, contact your local distributor or Rockwell Automation representative, or visit <http://support.rockwellautomation.com>.

Installation Assistance

If you experience a problem with a hardware module within the first 24 hours of installation, please review the information that's contained in this manual. You can also contact a special Customer Support number for initial help in getting your module up and running.

United States	1.440.646.3223 Monday – Friday, 8am – 5pm EST
Outside United States	Please contact your local Rockwell Automation representative for any technical support issues.

New Product Satisfaction Return

Rockwell tests all of its products to ensure that they are fully operational when shipped from the manufacturing facility. However, if your product is not functioning, it may need to be returned.

United States	Contact your distributor. You must provide a Customer Support case number (see phone number above to obtain one) to your distributor in order to complete the return process.
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Power, Control and Information Solutions Headquarters

Americas: Rockwell Automation, 1201 South Second Street, Milwaukee, WI 53204-2496 USA, Tel: (1) 414.382.2000, Fax: (1) 414.382.4444
Europe/Middle East/Africa: Rockwell Automation, Vorstlaan/Boulevard du Souverain 36, 1170 Brussels, Belgium, Tel: (32) 2 663 0600, Fax: (32) 2 663 0640
Asia Pacific: Rockwell Automation, Level 14, Core F, Cyberport 3, 100 Cyberport Road, Hong Kong, Tel: (852) 2887 4788, Fax: (852) 2508 1846

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