

ControlLogix EtherNet/IP Module

Catalog Numbers 1756-EN2T, 1756-EN2F, 1756-EN2TXT

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About This Publication

This publication describes enhancements, anomalies, and other concepts related to the ControlLogix[®] EtherNet/IP module firmware.

To learn how to use these modules in a redundant system, refer to the ControlLogix Redundancy System Release Notes, publication [1756-RN628](#).

Required System Components

Use the following versions of software with these modules.

| Software | Compatible Version |
|---|--------------------|
| RSLogix [™] 5000 software | 18.00 or later |
| RSLinx [®] Classic software | 2.56 or later |
| RSNetWorx [™] for EtherNet/IP software | 10.0 or later |
| ControlFLASH [™] | 11.0 or later |
| USB CIP Driver | 3.03 or later |

Enhancements

These firmware revisions contains these enhancements:

- [Enhancements with Revision 5.028 on page 3](#)
- [Enhancements with Revision 5.008 on page 3](#)
- [Enhancements with Revision 5.007 on page 3](#)
- [Enhancements with Revision 4.002 on page 4](#)
- [Enhancements with Revision 3.006 on page 4](#)
- [Enhancements with Revision 3.004 on page 4](#)

Enhancements with Revision 5.028

| Revision | Adds support for |
|----------|--|
| 5.028 | Digitally signed firmware option for additional security When installing the firmware into your module, the ControlFLASH utility will give warnings that proceeding will make your module incompatible with some revisions of firmware. Once the upgrade is complete, your module will only accept upgrade attempts that include signed firmware. Any unsigned firmware updates will be rejected by the module. To allow backward compatibility, modules ship with unsigned firmware installed and must be upgraded to take advantage of this feature. |

Enhancements with Revision 5.008

| Revision | Adds support for |
|----------|--|
| 5.008 | Various security enhancements. |
| | Default gateway address used when IP address is set by using the switches. |

Enhancements with Revision 5.007

| Revision | Adds support for |
|----------|--|
| 5.007 | Sockets and the increased packet size in controller and communication module firmware. |
| | Improved Integrated Motion on the EtherNet/IP network and Precision Time Protocol (PTP) performance when using Stratix 6000™ or Stratix 2000™ Ethernet switches. |

Enhancements with Revision 4.002

| Revision | Adds support for |
|----------|---|
| 4.002 | Redundant I/O (does not apply to 1756-EN2F module). |

Enhancements with Revision 3.006

| Revision | Adds support for |
|----------|---|
| 3.006 | Backplane double data rate (DDR) communication. |

Enhancements with Revision 3.004

| Revision | Adds support for |
|----------|--|
| 3.004 | Unicast I/O for rack-optimized connections. |
| | CIP Sync for time synchronization applications. Lgx00115114 |
| | Enhanced module performance for greater throughput with Integrated Motion on the EtherNet/IP network. |
| | Enhanced manner in which the module's communication capacity is calculated and reported (from packets per second to a percentage of utilization). Important: To best calculate utilization, use RSNetWorx for EtherNet/IP software to plan your network. |
| | Enhanced ability of the modules to recover after various types of hardware faults. Lgx00103681 |
| | Enhanced compliance to ODVA standards. Lgx00104174, Lgx00104806 |

Corrected Anomalies

These firmware revisions contains these corrected anomalies:

- [Corrected Anomalies with Revision 5.007 on page 5](#)
- [Corrected Anomalies with Revision 4.003 on page 5](#)
- [Corrected Anomalies with Revision 4.002 on page 6](#)
- [Corrected Anomalies with Revision 3.004 on page 6](#)

Corrected Anomalies with Revision 5.007

| Revision | Anomaly |
|----------|--|
| 5.007 | <p>CORRECTED: When there are multiple consumers of connected data (multicast), connections may not reestablish correctly after being lost.</p> <p style="text-align: right;">Lgx00121220</p> |
| | <p>CORRECTED: A connection error occurred on a 1756-L7x controller in the same configuration with a 1738-ASCII module.</p> <p style="text-align: right;">Lgx00121409</p> |
| | <p>CORRECTED: Motion group sync is lost when the Ethernet cable is removed and inserted. The motion group does not get notified that the PTP clock is no longer synced until the cable is reinserted and the port transitions back into Master or Slave mode. A few sync updates are required to requalify as synced.</p> <p style="text-align: right;">Lgx00121776</p> |

Corrected Anomalies with Revision 4.003

| Revision | Anomaly |
|----------|---|
| 4.003 | <p>CORRECTED: The module's performance could degrade (possibly dropping connections and eventually asserting) when operating under heavy HMI load (close to 100% CPU) for a long period of time.</p> <p style="text-align: right;">Lgx00114874</p> |

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Corrected Anomalies with Revision 4.002

| Revision | Anomaly |
|----------|--|
| 4.002 | CORRECTED: Improved compatibility between IGMP reports and switches (IGMP reports created at a faster rate than some switches could process). Lgx00114187 |
| | CORRECTED: Restored third-party device support from firmware revision 2.x. With firmware revisions later than 2.x, TCP window size limit would prevent some third-party products (with smaller TCP windows) from connecting to the system. Lgx00112096 |

Corrected Anomalies with Revision 3.004

| Revision | Anomaly |
|----------|--|
| 3.004 | CORRECTED: Navigating to the Application Connections or Bridge Connections Web pages from the main tree results in loss of memory. Navigating to these same pages through the System Data menu does not result in memory loss. Lgx00104323 |
| | CORRECTED: The module asserts when it receives a specially crafted CIP message. 'Specially crafted' means that the message may have malformed attributes, and may be malicious. Lgx00102260 |
| | CORRECTED: I/O in rack connections prevented from entering the correct state during fault conditions. Lgx00104816, Lgx00105037 |
| | CORRECTED: Certain modules do not communicate correctly across the backplane. Lgx00106697 |
| | CORRECTED: More than 193 CIP connections prevented from being made through the module. Lgx00107086 |

Known Anomalies

This firmware revision contains these known anomalies.

Known Anomalies with Firmware Revision 3.004

| Revision | Anomaly |
|----------|---|
| 3.004 | Connections with an RPI of less than 1 μ s are listed as having an RPI of 0 in the Application Connections and Bridge Connections Web pages. To view the RPI in microseconds, open the detailed pages by clicking Diagnostics > Advanced Diagnostics > Miscellaneous > System Data. Click Connection Manager, followed by either Application Connections - Detailed Info, or Bridge Connections - Detailed Info. |
| | Generic CIP messages that set instance attributes 3 and 5 of the module's TCP/IP object may time out. To work around this, confirm the attributes' values by reading them and comparing them with the values to be set. |
| | When the network cable is disconnected from a 1756-EN2T or 1756-EN2F module, the Ethernet Link object (class code 0xF6) Interface Speed instance attribute (attribute 1) reports 10 rather than 0. To determine the state of the Ethernet link through CIP messaging, use the Link Status bit of the Interface Flags instance attribute (attribute 2). |

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Application Notes

IMPORTANT

Be sure that the speed and duplex settings on the 1756-EN2T and 1756-EN2F modules are configured identically to the settings on the switch port to which the module is connected. Both the module and the switch should be configured to autonegotiate, or both manually set to 100/Full.

A mismatch in speed and duplex settings could result in significant reduction of system performance.

The 1756-ENBT module with firmware revision 1.40 or earlier only supports autonegotiation. You must set the connected switch port to autonegotiation.

- With firmware revision 3.004, you can no longer use abbreviations of the SNMP (Simple Network Management Protocol) community strings. For example, with earlier firmware revisions, 'pub' could be used instead of 'public'. With this firmware revision, the full community string must be used.
- Connection timeouts could occur between Quality of Service (QoS) enabled products and older products that do not support QoS. Rockwell Automation has released firmware in various products to address this incompatibility.

Visit the Knowledgebase at

<http://www.rockwellautomation.com/knowledgebase/> and download Tech Note 66325 for a listing of compatible product firmware.

- If you use various 1756 EtherNet/IP communication modules in the same chassis, for example, a 1756-ENBT module with a 1756-EN2TR module, do not use the Rack Optimized communication format.

If you must use the Rack Optimized communication format, we recommend that you place the 1756-EN2TR module in a separate chassis from the 1756-ENBT module.

- Do not upgrade the firmware for more than one module simultaneously through the USB port.

- When you cycle power to a secondary 1756-EN2T module, do not manually browse a subnet by using an EtherNet/IP configured driver.

If you fail to follow this recommendation, an operating 1756-EN2T module may fault with a duplicate IP address error if power is applied to another device on the network that has an identical IP address.

- When using time synchronization with a Logix5000™ controller and RSLogix 5000 software, version 18 or later, or one of the following EtherNet/IP modules in a chassis, any others of these EtherNet/IP modules in that chassis must be at firmware revision 3.x or later.

EtherNet/IP modules that this restriction applies to include:

- 1756-EN2T
 - 1756-EN2F
 - 1756-EN2TXT
 - 1756-EN2TR
 - 1756-EN3TR
- Although you can create two entries in the RSLogix 5000 software controller organizer for the same remote Ethernet modules, one by specifying an IP address and one by specifying a host name that resolves to the same IP address, you will see a module in use error (16#0100) when you go online with the controller. To avoid IP address duplication, make sure that all entries have a unique IP address.
 - The firmware of both the primary and secondary Ethernet modules can be upgraded when the redundant chassis pair is disqualified. Neither the primary or secondary Ethernet modules can be upgraded when the redundancy chassis pair is qualifying or already synchronized.

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To upgrade the module, do one of the following:

- Use a module in the secondary chassis other than the EtherNet/IP module to perform the upgrade through the backplane.
- Remove the EtherNet/IP module from the secondary chassis and place it in a separate chassis to upgrade it.

TIP During the upgrade, communication with the EtherNet/IP module is lost.

- When updating a 1756-EN2F module from revision 1.003 to a revision later than 1.004, you must update to revision 1.004 before updating to the later revision.
- If you update the 1756-EN2F module to firmware revision 1.004 by using the module USB port, install the USB driver before the ControlFLASH firmware update tool times out.
- When updating the 1756-EN2T or 1756-EN2F module firmware from a revision earlier than 2.003 to a revision later than 2.003, you must update to revision 2.003 before updating to the later revision.

Additional Resources

These documents contain additional information concerning related products from Rockwell Automation.

| Resource | Description |
|--|---|
| ControlLogix EtherNet/IP Modules Installation Instructions, publication 1756-IN002 | Provides details about how to install the module, how to upgrade firmware, and controller technical specifications. |
| EtherNet/IP Network Configuration User Manual, publication ENET-UM001 | Provides information about how to use your module after installation. |
| Industrial Automation Wiring and Grounding Guidelines, publication 1770-4.1 | Provides general guidelines for installing a Rockwell Automation® industrial system. |
| Product Certifications website, http://www.ab.com | Provides declarations of conformity, certificates, and other certification details. |

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

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Rockwell Automation Support

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At <http://www.rockwellautomation.com/support>, you can find technical manuals, technical and application notes, sample code and links to software service packs, and a MySupport feature that you can customize to make the best use of these tools. You can also visit our Knowledgebase at <http://www.rockwellautomation.com/knowledgebase> for FAQs, technical information, support chat and forums, software updates, and to sign up for product notification updates.

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

Installation Assistance

If you experience a problem 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 product up and running.

| | |
|---------------------------------|--|
| United States or Canada | 1.440.646.3434 |
| Outside United States or Canada | Use the Worldwide Locator at http://www.rockwellautomation.com/support/americas/phone_en.html , or contact your local Rockwell Automation representative. |

New Product Satisfaction Return

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| | |
|-----------------------|---|
| United States | Contact your distributor. You must provide a Customer Support case number (call the phone number above to obtain one) to your distributor to complete the return process. |
| Outside United States | Please contact your local Rockwell Automation representative for the return procedure. |

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