

EtherNet/IP Network



The Ethernet Industrial (EtherNet/IP) network protocol is an open industrial-networking standard that supports both real-time I/O messaging and message exchange. The EtherNet/IP network uses off-the-shelf Ethernet communication chips and physical media.

| For these requirements | Select this interface |
|---|---|
| Control I/O modules and drives Act as an adapter for I/O on remote EtherNet/IP links Communicate with other EtherNet/IP devices (messages and HMI) Bridge EtherNet/IP links to route messages to devices on other networks | 1756-EN2F, 1756-EN2FK 1756-EN2T, 1756-EN2TK, 1756-EN2TXT 1756-EN2TP, 1756-EN2TPK, 1756-EN2TPXT 1756-EN2TR, 1756-EN2TRK, 1756-EN2TRXT 1756-EN4TR, 1756-EN4TRK, 1756-EN4TRXT 1756-ENBT, 1756-ENBTK |
| Support Device Level Ring (DLR) and linear topologies | 1756-EN2TR, 1756-EN2TRK, 1756-EN2TRXT 1756-EN3TR, 1756-EN3TRK 1756-EN4TR, 1756-EN4TRK, 1756-EN4TRXT |
| Support Parallel Redundancy Protocol (PRP) | 1756-EN2TP, 1756-EN2TPK, 1756-EN2TPXT 1756-EN4TR ⁽¹⁾ , 1756-EN4TRK ⁽¹⁾ , 1756-EN4TRXT ⁽¹⁾ |
| Support redundant adapters ⁽²⁾ | 1756-EN4TR, 1756-EN4TRK, 1756-EN4TRXT |
| Provide control in environments where temperatures range from -25...+70 °C (-13...+158 °F) | 1756-EN2TPXT 1756-EN2TRXT 1756-EN2TXT 1756-EN4TRXT |
| Secure access to a control system from within the plant network | 1756-EN4TR, 1756-EN4TRK, 1756-EN4TRXT |

(1) 1756-EN4TR supports PRP with revision 4.001 and higher firmware.

(2) Redundant adapters require version 3.x and higher firmware.

For more information on redundant adapters and Ethernet, see the ControlLogix EtherNet/IP Network User Manual, publication [1756-UM004](#).

EtherNet/IP Network Specifications

Table 1 - ControlLogix EtherNet/IP Connections Specifications⁽¹⁾

| Cat. No. | Connections | | CIP Unconnected Messages (backplane + Ethernet) |
|------------|-------------|--------------------------------|--|
| | TCP | CIP ⁽²⁾ | |
| 1756-ENBT | 64 | 128 | 64 + 64 |
| 1756-EN2F | 128 | 256 | 128 + 128 |
| 1756-EN2T | 128 | 256 | 128 + 128 |
| 1756-EN2TP | 128 | 256 | 128 + 128 |
| 1756-EN2TR | 128 | 256 | 128 + 128 |
| 1756-EN3TR | 128 | 256 | 128 + 128 |
| 1756-EN4TR | 512 | 1000 I/O 528 ⁽³⁾ | 256+256 |

(1) There are 1000 CIP™ I/O connections and 528 CIP messaging connections.

(2) CIP connections can be used for all explicit or all implicit applications. For example, a 1756-ENBT module has a total of 128 CIP connections that can be used for any combination of connections.

(3) There are 1000 explicit connections and 528 implicit connections.

Table 2 - ControlLogix EtherNet/IP Data Specifications⁽¹⁾

| Cat. No. | Produced/Consumed Tags | | Socket Services | SNMP Support (password required) | Duplicate IP Detection (starting revision) |
|------------|--|--|-----------------|----------------------------------|--|
| | Number of Multicast Tags, Max ⁽²⁾ | Unicast Available in RSLogix 5000 Software | | | |
| 1756-EN2F | 32 | Version 16.03.00 or later | Yes | Yes | All Revisions |
| 1756-EN2T | | Version 16.03.00 or later | Yes | | |
| 1756-EN2TP | | Version 24.00.00 or later | Yes | | |
| 1756-EN2TR | | Version 17.01.02 or later | Yes | | |
| 1756-EN3TR | | Version 18.02.00 or later | Yes | | |
| 1756-EN4TR | | Version 24.00.00 or later | Yes | | |
| 1756-ENBT | | Version 16.03.00 or later | No | | Revision 3.3 |

(1) Includes the K conformal coating catalog numbers and the XT extreme environment catalog numbers.

(2) Each controller can send a maximum of 32 multicast produced tags to one single consuming controller. If these same tags are sent to multiple consumers, the maximum number is 31.

Table 3 - ControlLogix EtherNet/IP Specifications⁽¹⁾

| Cat. No. | Firmware Revision | RSLogix 5000® Software Version | RSLinx® Software Version | Packet Rate Capacity (packets/ second) ⁽²⁾ | | Support for Extended Environment ⁽³⁾ | Integrated Motion on the EtherNet/IP Network Axes |
|--------------|-------------------|----------------------------------|--------------------------|--|---|---|---|
| | | | | I/O | HMI/MSG | | |
| 1756-ENBT | Any | 8.02.00 or later | 2.30 or later | 5000 | 900 | No | — |
| 1756-EN2F | 2.x | 15.02.00 or later | 2.51 or later | 10,000 | 2000 | No | — |
| | 3.6 or later | 18.02.00 or later ⁽⁴⁾ | | 25,000 ⁽⁵⁾ | | | Up to 8 axes supported ⁽⁵⁾ |
| 1756-EN2T | 2.x or earlier | 15.02.00 or later | 2.51 or later | 10,000 | | No | — |
| | 3.6 or later | 18.02.00 or later ⁽⁴⁾ | | 25,000 ⁽⁵⁾ | | | Up to 8 axes supported ⁽⁵⁾ |
| 1756-EN2TXT | 2.x | 15.02.00 or later | 2.51 or later | 10,000 | | Yes | — |
| | 3.6 or later | 18.02.00 or later ⁽⁴⁾ | | 25,000 ⁽⁵⁾ | | | Up to 8 axes supported ⁽⁵⁾ |
| 1756-EN2TP | Any | 24.00.00 or later ⁽⁴⁾ | 4.10 or later | 25,000 ⁽⁵⁾ | | No | Up to 8 axes supported ⁽⁵⁾ |
| 1756-EN2TPXT | 10.x or later | 24.00.00 or later | 4.10 or later | 25,000 ⁽⁵⁾ | | Yes | Up to 8 axes supported ⁽⁵⁾ |
| 1756-EN2TR | 2.x | 17.01.02 or later | 2.56 or later | 10,000 | | No | — |
| | 5.x or later | 18.02.00 or later ⁽⁴⁾ | | 25,000 ⁽⁵⁾ | | | Up to 8 axes supported ⁽⁵⁾ |
| 1756-EN2TRXT | 5.028 or later | 20.01.00 or later | 2.56 or later | 25,000 ⁽⁵⁾ | Yes | Up to 8 axes supported ⁽⁵⁾ | |
| 1756-EN3TR | 3.6 or later | 18.02.00 or later ⁽⁴⁾ | 2.56 or later | 25,000 ⁽⁵⁾ | No | Up to 128 axes supported ⁽⁵⁾ | |
| 1756-EN4TR | Any | 24.00.00 or later ⁽⁶⁾ | 4.10 or later | <ul style="list-style-type: none"> 50,000 without CIP Security™ 25,000 with integrity 15,000 with integrity and confidentiality | <ul style="list-style-type: none"> 3700 without CIP Security 2700 with integrity 1700 with integrity and confidentiality | No | Up to 256 axes supported ⁽⁵⁾ |
| 1756-EN4TRXT | Any | 24.00.00 or later ⁽⁶⁾ | 4.10 or later | <ul style="list-style-type: none"> 50,000 without CIP Security 25,000 with integrity 15,000 with integrity and confidentiality | <ul style="list-style-type: none"> 3700 without CIP Security 2700 with integrity 1700 with integrity and confidentiality | Yes | Up to 256 axes supported ⁽⁵⁾ |

(1) Includes the K conformal coating catalog numbers.

(2) I/O numbers are maximums; they assume no HMI/MSG. HMI/MSG numbers are maximums, they assume no I/O. Packet rates vary depending on packet size. For more details, see Troubleshoot EtherNet/IP Application Technique, publication [ENET-AT003](#), and the EDS file for a specific catalog number.

(3) Module operates in a broad temperature spectrum, -20...70 °C (-4...158 °F), and meets ANSI/ISA-S71.04-1985 Class G1, G2 and G3, as well as cULus, Class 1 Div 2, C-Tick, CE, ATEX Zone 2 and SIL 2 requirements for increased protection against salts, corrosives, moisture/condensation, humidity, and fungal growth.

(4) This version is required to use CIP Sync™ technology, Integrated Motion on the EtherNet/IP Network, or Exact Match keying.

(5) This value assumes the use of a1756-L8x or 1756-L7x ControlLogix controller. For a 1756-L6x ControlLogix controller, see ControlLogix Controllers User Manual, publication [1756-UM001](#).

(6) CIP Security requires FactoryTalk® Linx version 6.11.00 or later.

Table 4 - Technical Specifications - 1756 EtherNet/IP Modules⁽¹⁾

| Attribute | 1756-EN2F/B 1756-EN2F/C | 1756-EN2T/D, 1756-EN2TP/A | 1756-EN2TR/C, 1756-EN3TR/B | 1756-EN4TR/A | 1756-ENBT/A |
|---|---|---|-------------------------------|--|--|
| EtherNet/IP communication rate | 100 Mbps, no auto-negotiation | 10/100 Mbps | | 10/100 Mbps 1 Gbps | 10/100 Mbps |
| Current draw @ 5.1V DC | 1.2 A | 1 A | | 1.2 A | 700 mA |
| Current draw @ 24V DC | 3 mA | | | | |
| Power dissipation | 6.2 W | 5.1 W | | 6.12 W | 3.7 W |
| Thermal dissipation | 21.28 BTU/hr | 17.4 BTU/hr | | 20.9BTU/Hr | 12.6 BTU/hr |
| Isolation voltage | 30V (continuous), basic insulation type, USB to backplane Type tested at 980V AC for 60 s | 30V (continuous), basic insulation type, Ethernet to backplane, USB to Backplane, and USB to Ethernet ⁽²⁾ Type tested at 980V AC for 60 s | | 30V (continuous), basic insulation type, Ethernet to backplane, USB to backplane, and USB to Ethernet Type tested at 860V AC for 60 s | 30V (continuous), basic insulation type, Ethernet network to backplane Type tested @ 707V DC for 60 s |
| Slot width | 1 | | | | |
| Module location | Chassis-based, any slot | | | | |
| Chassis | 1756-A4, 1756-A7, 1756-A10, 1756-A13, 1756-A17 | | | | |
| Power supply, standard | 1756-PA72, 1756-PA75, 1756-PB72, 1756-PB75, 1756-PC75, 1756-PH75 | | | | |
| Power supply, redundant | 1756-PA75R, 1756-PB75R, 1756-PSCA2 | | | | |
| Ethernet port | 1 Ethernet fiber | 1 Ethernet RJ45 Category 5 | 2 Ethernet RJ45 Category 5 | 2 Ethernet RJ45 Category 5E | 1 Ethernet RJ45 Category 5 |
| Ethernet cable | Multimode fiber, LC connector | 802.3 compliant shielded or unshielded twisted-pair | | | |
| USB port ⁽³⁾ | USB full speed (12 Mbps) | | | | – |
| Wiring category ⁽⁴⁾ | 3 - on USB ports | 2 - on Ethernet ports 3 - on USB ports | | | 2 - on Ethernet ports |
| North American temp code | T4A | | | | |
| ATEX temp code | T4 | | | | |
| IECEX temp code | T4 | | | | |
| Enclosure type rating | None (open-style) | | | | |
| Transmitter launch power at Beginning of Life (BOL), min Allow -1 dB at End of Life (EOL) | -19 dBm into 62.5/125 μ m fiber, – = 0.275 -22.5 dBm into 50/125 μ m fiber, – = 0.20 | – | | | |

(1) Includes the K conformal coating catalog numbers.

(2) Applies only to these modules/series: 1756-EN2T/D, 1756-EN2TR/C, 1756-EN3TR/B.

(3) The USB port is intended for temporary local programming purposes only and not intended for permanent connection. Do not use the USB port in hazardous locations.

(4) Use this conductor category information for planning conductor routing as described in the system level installation manual. See the Industrial Automation Wiring and Grounding Guidelines, publication [1770-4.1](#).