Installation Instructions

ControlLogix EtherNet/IP Bridge Module

Catalog Number 1756-ENBT

Use this manual as a guide to install the ControlLogix™ EtherNet/IP Bridge module. Note that this manual covers hardware installation only. Refer to the *ControlLogix EtherNet/IP Bridge Module User Manual*, publication number 1756-UM050, for information on configuring the module.

The following table lists the contents of this manual and where to find specific information.

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Important User Information

Because of the variety of uses for the products described in this publication, those responsible for the application and use of this control equipment must satisfy themselves that all necessary steps have been taken to assure that each application and use meets all performance and safety requirements, including any applicable laws, regulations, codes and standards.

The illustrations, charts, sample programs and layout examples shown in this guide are intended solely for purposes of example. Since there are many variables and requirements associated with any particular installation, Allen-Bradley does not assume responsibility or liability (to include intellectual property liability) for actual use based upon the examples shown in this publication.

Allen-Bradley publication SGI-1.1, *Safety Guidelines for the Application, Installation and Maintenance of Solid-State Control* (available from your local Allen-Bradley office), describes some important differences between solid-state equipment and electromechanical devices that should be taken into consideration when applying products such as those described in this publication.

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Throughout this manual we use notes to make you aware of safety considerations:

WARNING

Identifies information about practices or circumstances that have the potential to create an explosion hazard.

ATTENTION

Identifies information about practices or circumstances that can lead to personal injury or death, property damage or economic loss

Warning and Attention statements help you to:

- identify a hazard
- avoid a hazard
- recognize the consequences

IMPORTANT Identifies information that is critical for successful application and understanding of the product.

European Communities (EC) Directive Compliance

If this product has the CE mark it is approved for installation within the European Union and EEA regions. It has been designed and tested to meet the following directives.

EMC Directive

This product is tested to meet the Council Directive 89/336/EC Electromagnetic Compatibility (EMC) by applying the following standards:

- EN 50081-2 EMC — Generic Emission Standard, Part 2 — Industrial Environment
- EN 50082-2 EMC — Generic Immunity Standard, Part 2 — Industrial Environment

This product is intended for use in an industrial environment.

Low Voltage Directive

This product is tested to meet Council Directive 73/23/EEC Low Voltage, by applying the safety requirements of EN 61131-2 Programmable Controllers, Part 2 - Equipment Requirements and Tests. For specific information required by EN 61131-2, see the appropriate sections in this publication, as well as Allen-Bradley publication 1770-4.1, *Industrial Automation Wiring and Grounding Guidelines*.

Environment and Enclosure

This equipment is intended to operate in a Pollution Degree 2 industrial control environment, in overvoltage category II applications, (as defined in IEC publication 60664-1) at altitudes up to 2000 meters without derating.

It must be mounted within a system enclosure, suitably designed for those specific environmental conditions that will be present, and appropriately designed to prevent personal injury resulting from accessibility to live parts. The interior of this enclosure must be accessible only by the use of a tool.

Note: See NEMA Standards publication 250 and IEC publication 60529, as applicable, for explanations of the degrees of protection provided by different types of enclosure.

Preventing Electrostatic Discharge

The EtherNet/IP Bridge module is sensitive to electrostatic discharge.

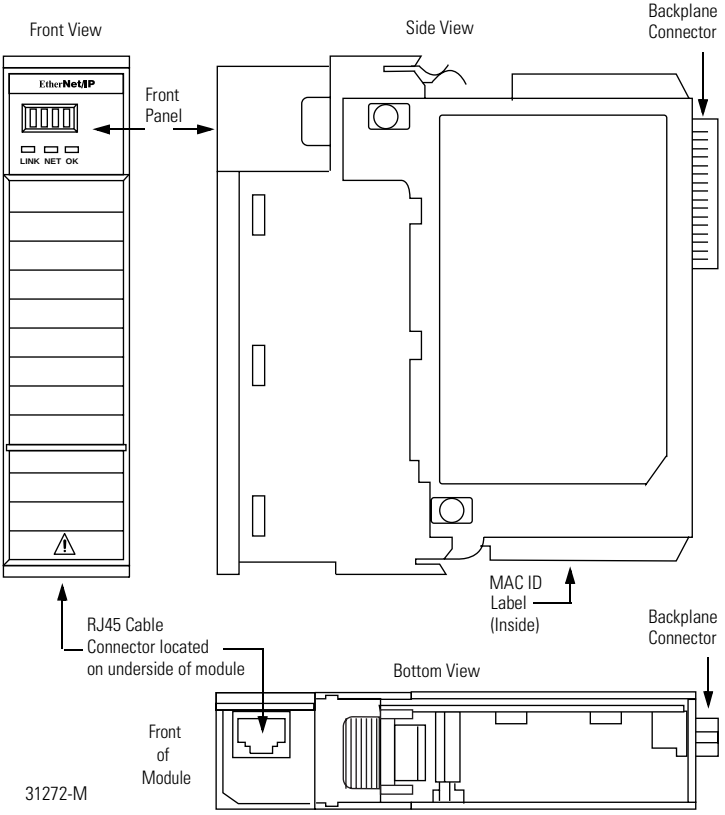
ATTENTION

This module is sensitive to electrostatic discharge. Electrostatic discharge can damage integrated circuits or semiconductors if you touch backplane connector pins. Follow these guidelines when you handle the module:

- Touch a grounded object to discharge static potential.
- Wear an approved wrist-strap grounding device.
- Do not touch the backplane connector or connector pins.
- Do not touch circuit components inside the module.
- If available, use a static-safe work station.
- When not in use, keep the module in its static-shield bag.

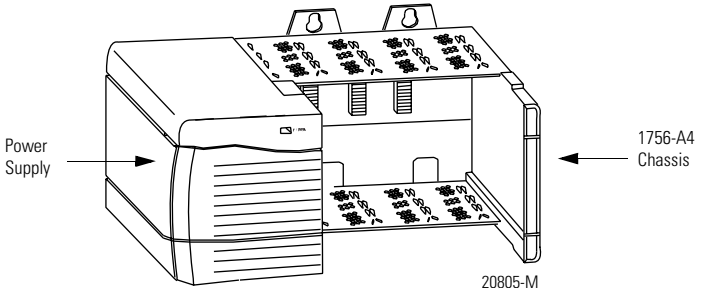
Identify Module Components

Use the following figure to identify the external features of the 1756-ENBT module.



Prepare the Chassis for Module Installation

Before you install the module, you must install and connect a ControlLogix chassis and power supply.

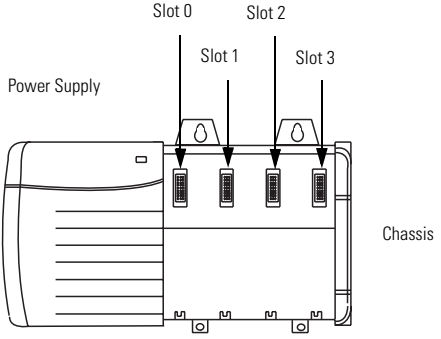


For information on installing these products, refer to the publications listed in the following table.

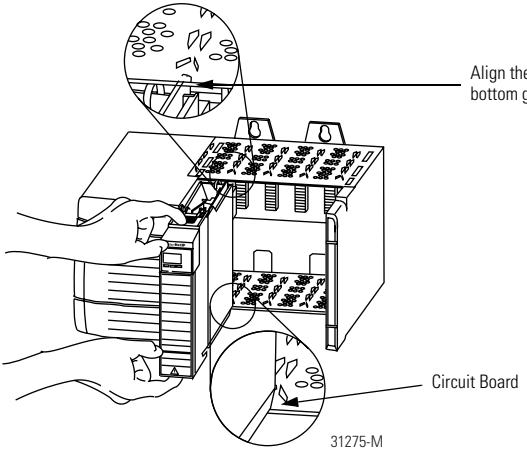
Chassis Type	Chassis Installation	Power Supply	Power Supply Installation
Series B: 1756-A4, -A7, -A10, -A13	Pub. No. 1756-IN080	1756-PA72/B	Pub. No. 1756-5.67
		1756-PB72/B	
		1756-PA75/A	Pub. No. 1756-5.78
		1756-PB75/A	

Determine Module Slot Location

You can install the module in any slot in the ControlLogix chassis. You can also install multiple 1756-ENBT modules in the same chassis. The figure below shows chassis slot numbering in a 4-slot chassis. Slot 0 is the first slot and is always the leftmost slot in the rack (the first slot to the right of the power supply).

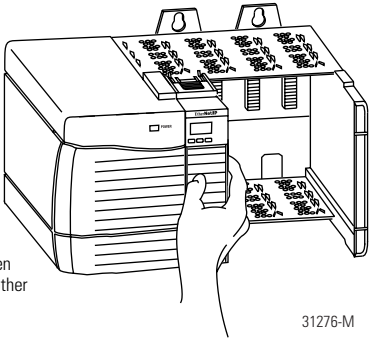


Install the Module in the Chassis



2

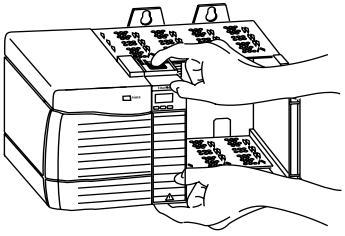
Slide the module into the chassis. Make sure the module backplane connector properly connects to the chassis backplane.



3

The module is properly installed when it is flush with the power supply or other installed modules.

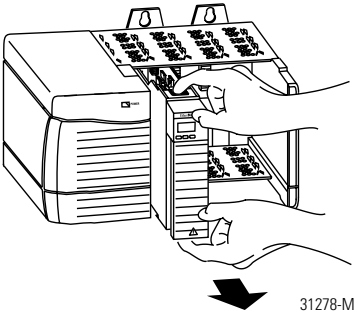
Removing or Replacing the Module (when applicable)



31277-M

1

Push on upper and lower module tabs to disengage them.



31278-M

2

Slide module out of chassis.

IMPORTANT If you are replacing an existing module with an identical one, and you want to resume identical system operation, you must install the new module in the same slot.

Installing or Removing the Module Under Power

This module is designed to be installed or removed while chassis power is applied.

WARNING

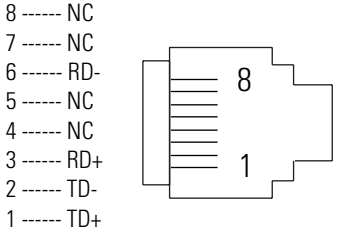
When you insert or remove a module while backplane power is on, an electrical arc may occur. An electrical arc can cause personal injury or property damage by:

- sending an erroneous signal to your system's field device causing unintended machine motion or loss of process control
- causing an explosion in a hazardous environment

Repeated electrical arcing causes excessive wear to contacts on both the module and its mating connector. Worn contacts may create electrical resistance that can affect module operation.

Wire the Ethernet Connector

Use an RJ45 connector to connect to the EtherNet/IP network. Wire the connector according to the following illustration:



RJ 45

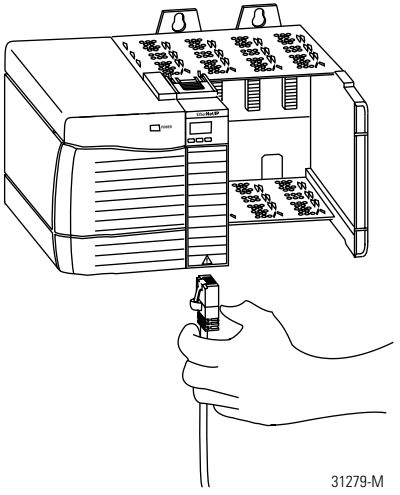
For detailed EtherNet/IP connection information, see the *EtherNet/IP Media Planning and Installation Guide*, publication number ENET-IN001.

Connect the Module to the EtherNet/IP Network

WARNING

If you connect or disconnect the Ethernet cable with power applied to this module or any device on the network, an electrical arc can occur. This could cause an explosion in hazardous location installations. Be sure that power is removed or the area is nonhazardous before proceeding.

Attach the RJ45 connector to the Ethernet port on the bottom of the module as shown below:

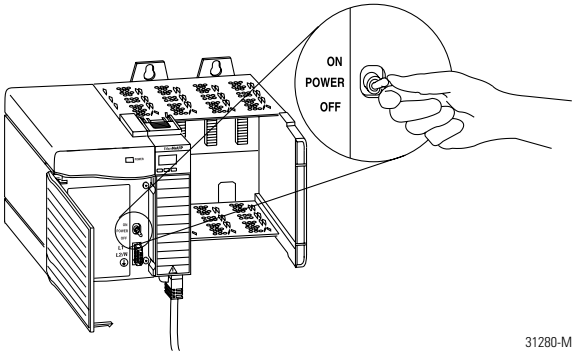


IMPORTANT

We recommend connecting the module to the network via a 100MB Ethernet switch, which will reduce collisions and lost packets and increase network bandwidth. For detailed EtherNet/IP connection information, see the following publications:

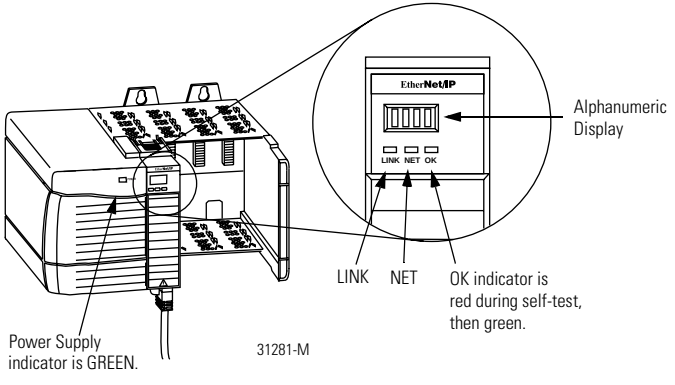
- *EtherNet/IP Performance and Application Guide*, publication ENET-AP001
- *EtherNet/IP Media Planning and Installation Guide*, publication ENET-IN001

Apply Chassis Power



Check Power Supply and Module Status

Check the LED indicators and alphanumeric display to determine if the power supply and module are operating properly.



The alphanumeric display should cycle through the following states: "TEST - PASS - OK - REV x.x," where "x.x" is the module's firmware revision. The display then alternates between "OK" and the module's EtherNet/IP address.

Troubleshooting the Module

If the alphanumeric display and LED indicators do not sequence through the expected states refer to the following troubleshooting tables. The three bi-color (red/green) LED status indicators on the 1756-ENBT module provide diagnostic information about the module and its connections to the network.

NET (Network) Status Indicator

The Network Status LED provides the following information:

State	Status	Description
Off	Not Powered, No IP Address	Module is not powered, or does not have an IP address. • Verify there is chassis power and the module is completely inserted into the chassis and backplane. • Make sure the module has been configured.
Flashing Green	No Connections	Module has obtained an IP address, but has no established connections.
Green	CIP Connections	Module has an IP address and at least one established connection.
Flashing Red	Connection Timeout	One or more of the connections in which the module is the target has timed out.
Red	Duplicate IP Address	Module has detected that its IP address is already in use. Assign a unique IP address to the module.

Link Status Indicator

The Link Status LED provides the following information:

State	Status	Description
Off	No data transmission	Module is not ready to communicate.
Green	Ready	Module is ready to communicate.
Flashing Green	Data transmission in progress	Module is communicating over the network.

OK Status Indicator

The OK Status LED provides the following module information:

State	Status	Description
Off	No Power	Module does not have 24V DC power. Verify there is chassis power and the module is completely inserted into chassis and backplane.
Flashing Green	Standby	Module is not configured.
Green	Operational	Module is operating correctly.
Flashing Red	Minor Fault	A recoverable fault has been detected. This could be caused by an error in the configuration.
Red	Major Fault	An unrecoverable fault has been detected. Recycle power to the module. If this does not clear the fault, replace the module.
Flashing Red and Green	Self Test	Module performing power-up self-test.

Where to Find Information on Configuring the Module

Now that you have installed your 1756-ENBT module, you must configure it. Refer to the configuration chapter of your *ControlLogix EtherNet/IP Bridge Module User Manual*, publication 1756-UM050.

Hazardous Location Information

The following information applies when operating this equipment in hazardous locations:

Products marked "CL I, DIV 2, GP A, B, C, D" are suitable for use in Class I Division 2 Groups A, B, C, D, Hazardous Locations and nonhazardous locations only. Each product is supplied with markings on the rating nameplate indicating the hazardous location temperature code. When combining products within a system, the most adverse temperature code (lowest "T" number) may be used to help determine the overall temperature code of the system. Combinations of equipment in your system are subject to investigation by the local Authority Having Jurisdiction at the time of installation.

WARNING

EXPLOSION HAZARD

- Do not disconnect equipment unless power has been removed or the area is known to be nonhazardous.
- Do not disconnect connections to this equipment unless power has been removed or the area is known to be nonhazardous. Secure any external connections that mate to this equipment by using screws, sliding latches, threaded connectors, or other means provided with this product.
- Substitution of components may impair suitability for Class I, Division 2.
- If this product contains batteries, they must only be changed in an area known to be nonhazardous.

Informations sur l'utilisation de cet équipement en environnements dangereux:

Les produits marqués "CL I, DIV 2, GP A, B, C, D" ne conviennent qu'à une utilisation en environnements de Classe I Division 2 Groupes A, B, C, D dangereux et non dangereux. Chaque produit est livré avec des marquages sur sa plaque d'identification qui indiquent le code de température pour les environnements dangereux. Lorsque plusieurs produits sont combinés dans un système, le code de température le plus défavorable (code de température le plus faible) peut être utilisé pour déterminer le code de température global du système. Les combinaisons d'équipements dans le système sont sujettes à inspection par les autorités locales qualifiées au moment de l'installation.

AVERTISSEMENT

RISQUE D'EXPLOSION

- Couper le courant ou s'assurer que l'environnement est classé non dangereux avant de débrancher l'équipement.
- Couper le courant ou s'assurer que l'environnement est classé non dangereux avant de débrancher les connecteurs. Fixer tous les connecteurs externes reliés à cet équipement à l'aide de vis, loquets coulissants, connecteurs filetés ou autres moyens fournis avec ce produit.
- La substitution de composants peut rendre cet équipement inadapté à une utilisation en environnement de Classe I, Division 2.
- S'assurer que l'environnement est classé non dangereux avant de changer les piles.

Specifications

Module Location	Any slot in the ControlLogix chassis
Maximum Backplane Current Load	700mA @ 5.1V DC 3mA @ 24V DC from I/O chassis backplane
Power Dissipation	3.65W maximum
Environmental Conditions: Operating Temperature Storage Temperature Relative Humidity	 0 to 60° C (32 to 140° F) -40 to 85° C (-40 to 185° F) 5 to 95%, non-condensing
Shock (Unpackaged)	30g operational 50g non-operational
Vibration (Unpackaged)	5g from 10 to 150 Hz
Conductors Wiring Category	802.3 compliant - twisted pair 2(1)
Ethernet Connector	RJ45 Category 5
User Manual	Publication 1756-UM050
Agency Certifications When product is marked	Listed Industrial Control Equipment Certified Process Control Equipment Certified Class I, Division 2, Groups A, B, C, D Approved Class I, Division 2, Groups A,B,C,D Marked for all applicable directives Marked for all applicable acts N223

(1) For information on conductor routing refer to publications 1770-4.1, *Industrial Automation Wiring and Grounding Guidelines,* and ENET-IN001, *EtherNet/IP Media Planning and Installation Manual.*

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