



## Installation Instructions

# ControlLogix ControlNet Bridge

(Catalog Numbers 1756-CNB, -CNBR)

Use this document as a guide to install a ControlLogix™  
ControlNet™ bridge.

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This icon is used when additional information is available in another Allen-Bradley publication.

## Understand Compliance to European Union Directives

If this product bears the CE marking 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 Council Directive 89/336/EEC Electromagnetic Compatibility (EMC) and the following standards, in whole or in part, documented in a technical construction file:

- EN 50081-2EMC – Generic Emission Standard, Part 2 – Industrial Environment
- EN 50082-2EMC – 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 these Allen-Bradley publications:

Publication	Publication number
<i>Industrial Automation Wiring and Grounding Guidelines For Noise Immunity</i>	1770-4.1
<i>Guidelines for Handling Lithium Batteries</i>	AG-5.4
<i>Automation Systems Catalog</i>	B111

## Prepare to Install the Module

Before you install the module make sure you:

- know how to handle the module

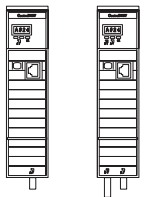


**ATTENTION:** This module is sensitive to electrostatic discharge. Electrostatic discharge can damage integrated circuits or semiconductors if you touch backplane connector pins. Follow these guidelines when you handle the module:

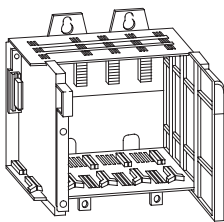
- Touch a grounded object to discharge static potential
- Wear an approved wrist-strap grounding device
- Do not touch the backplane connector or connector pins
- Do not touch circuit components inside the module
- If available, use a static-safe work station
- When not in use, keep the module in its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

- have these components

1756-CNBR or 1756-CNBR



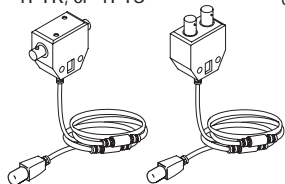
1756-A4, 1756-A7, or 1756-A10



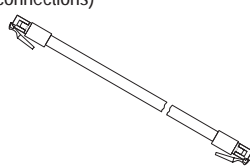
1756-PA72 or 1756-PB72



1786-TPR, -TPS,  
-TPYR, or -TPYS<sup>①</sup>



1786-CP (temporary network connections)



small screwdriver (optional)



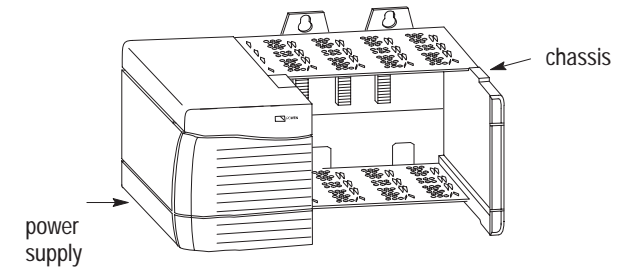
<sup>①</sup> 1786-TPS or 1786-TPYS tap(s) recommended for network connection.

## Install the Module

**Important:** These instructions assume that you have installed your ControlLogix power supply and chassis. If you have not installed them, install them now using:

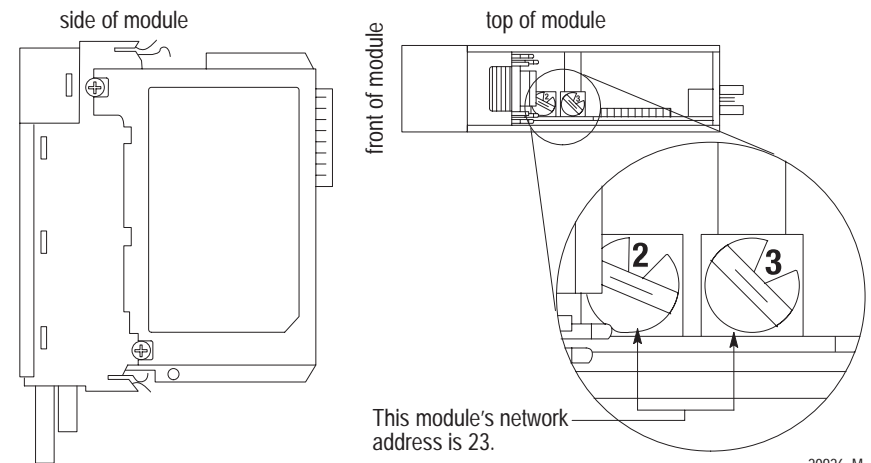


- *ControlLogix Chassis Installation Instructions*, publication 1756-5.2
- *ControlLogix Power Supplies Installation Instructions*, publication 1756-5.1



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1. Use your fingers or a small screwdriver to set the module's network address switches to a unique ControlNet network address. *You can select an address of 01 to 99; 00 is invalid.*



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**Important:** You can install or remove the module while chassis power is applied.



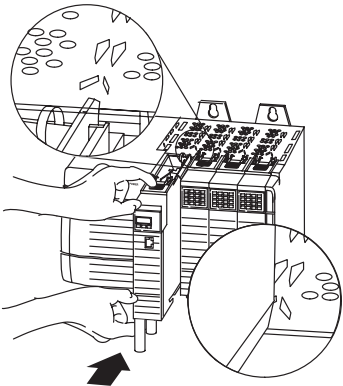
**ATTENTION:** When you insert or remove a module while backplane power is on, an electrical arc may occur. An electrical arc can cause personal injury or property damage by causing an explosion in a hazardous environment

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. The system-side passes a test of 50 cycles in a class III industrial mixed flowing gas chamber designed to simulate a 20 year life cycle.

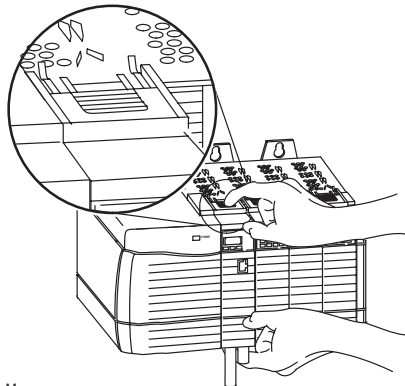
2. Place the module in the formed tracks on the top and bottom of any slot, and slide the module into the chassis. *Press firmly and evenly to seat the module in its backplane connector*



**ATTENTION:** Do not force the module into the backplane connector. If you cannot seat the module with firm pressure, check the alignment. Forcing the module can damage the backplane connector or the module.



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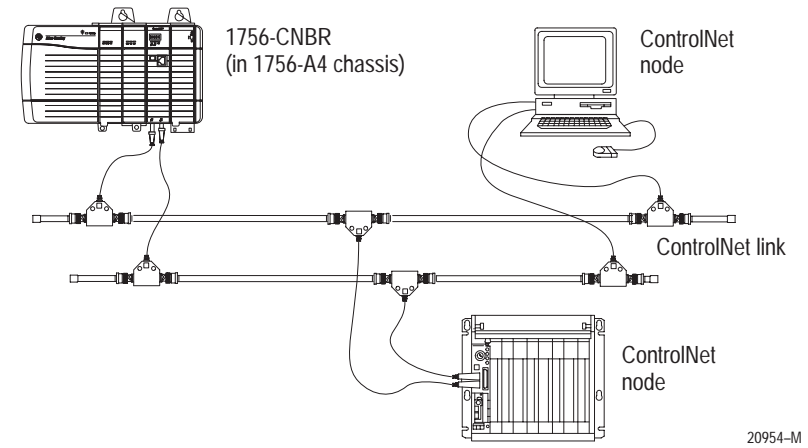


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## Connect the Module to the Network

You can connect the module to the ControlNet network using a tap (1786-TPR, -TPS<sup>①</sup>, -TPYR, -TPYS<sup>①</sup>) or a network access cable (1786-CP).

- ▶ Use the 1786-CP cable for temporary connections (i.e., programming software). For permanent connections, use a tap.



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When connecting the 1756-CNB module to a ControlNet network, you should also refer to this documentation:



- *ControlNet Coax Tap Installation Instructions*, publication 1786-5.7
- *ControlNet Cable System Planning and Installation Manual*, publication 1786-6.2.1

Connecting to the network using	See page
a tap	7
1786-CP cable	9

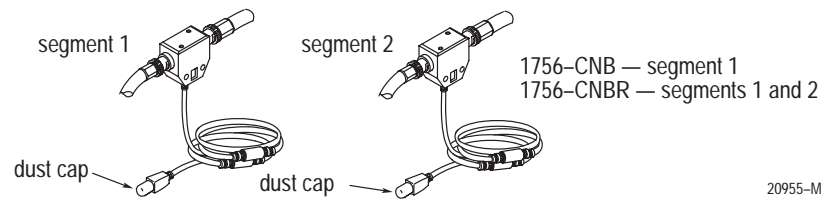
<sup>①</sup> For network connections, we recommend taps with a straight connector (1786-TPS or 1786-TPYS).

## Connecting to the Network Using a Tap

1. Remove and save the dust cap(s) from the ControlNet tap(s).



**ATTENTION:** Do not allow any metal portions of the tap to contact any conductive material. If you disconnect the tap from the module, place the dust cap back on the straight or right angle connector to prevent the connector from accidentally contacting a metallic grounded surface.



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2. Connect the tap's straight or right angle connector to the module's BNC connector.

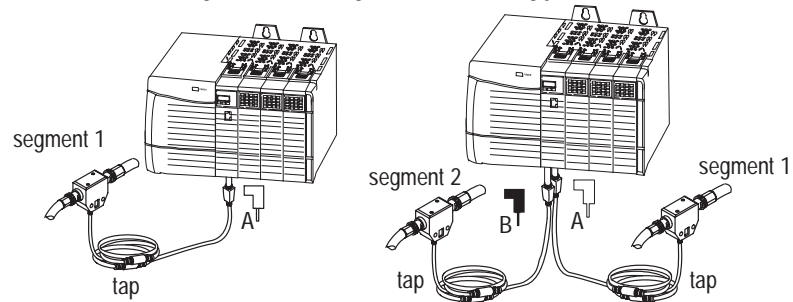
### If your node supports Connect the tap's connector

non-redundant media (1756-CNB, -CNBR)	to the <b>channel A</b> connector on the module (channel B on the 1756-CNBR is not used)①
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redundant media (1756-CNBR)	<ul style="list-style-type: none"> <li>• from <b>trunkline A to channel A</b> on the 1756-CNBR</li> <li>• from <b>trunkline B to channel B</b> on the 1756-CNBR</li> </ul>
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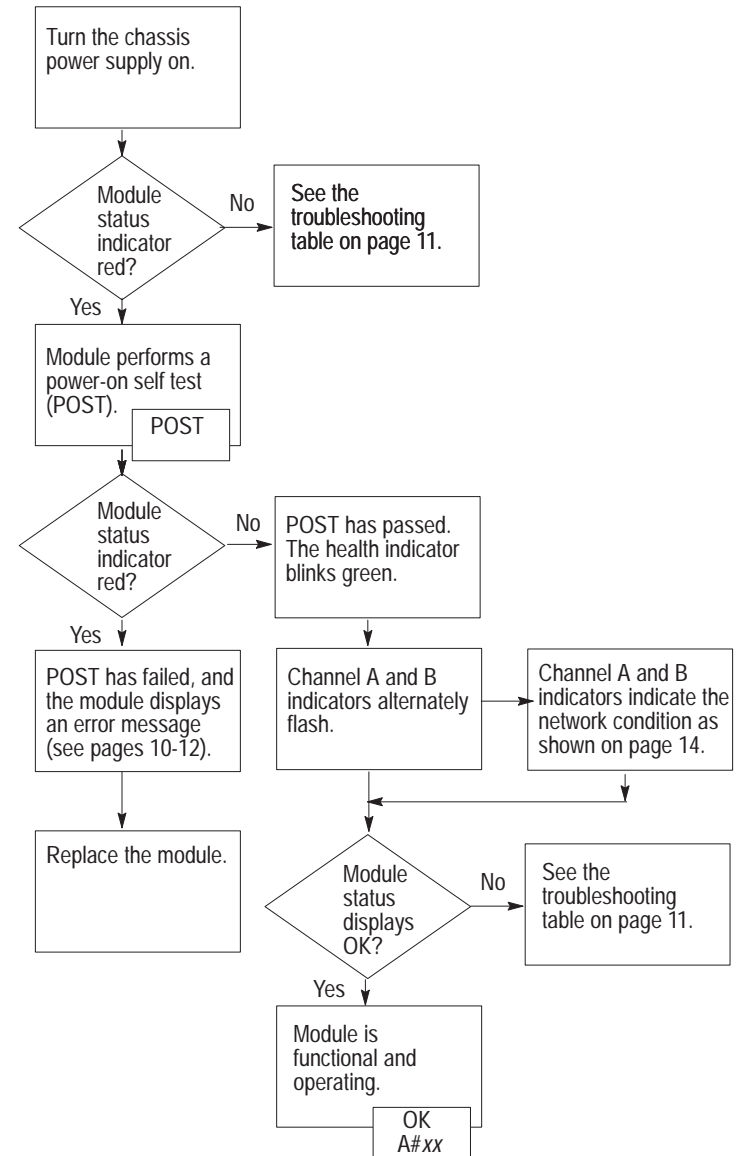
① While both channels are active, Allen-Bradley recommends using channel A for non-redundant media.

**Important:** To prevent inadvertent reversal of the tap connections (resulting in incorrect status displays and troubleshooting), check the tap drop cable for a label indicating the attached segment before making your connection.



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### 3. Apply power to the module and check module status.

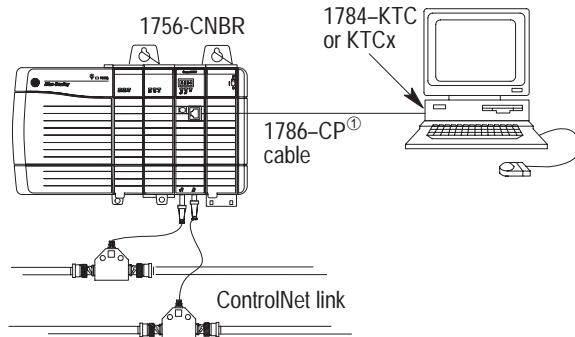




## Connecting to the Network Using 1786-CP Cable

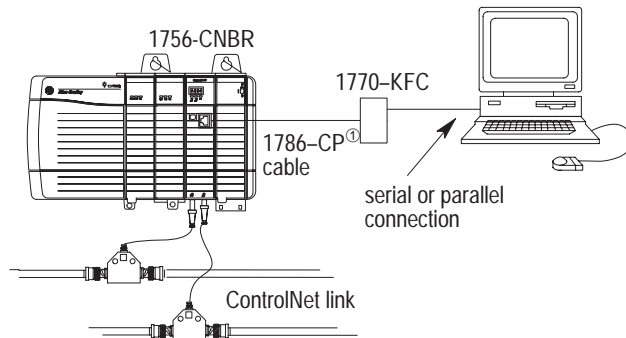
To connect a programming terminal to the network using the 1786-CP cable, you have these options:

- using a 1784-KTC or -KTCx communication card and a 1786-CP cable



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- using a 1770-KFC communication interface, a serial or parallel connection, and a 1786-CP cable



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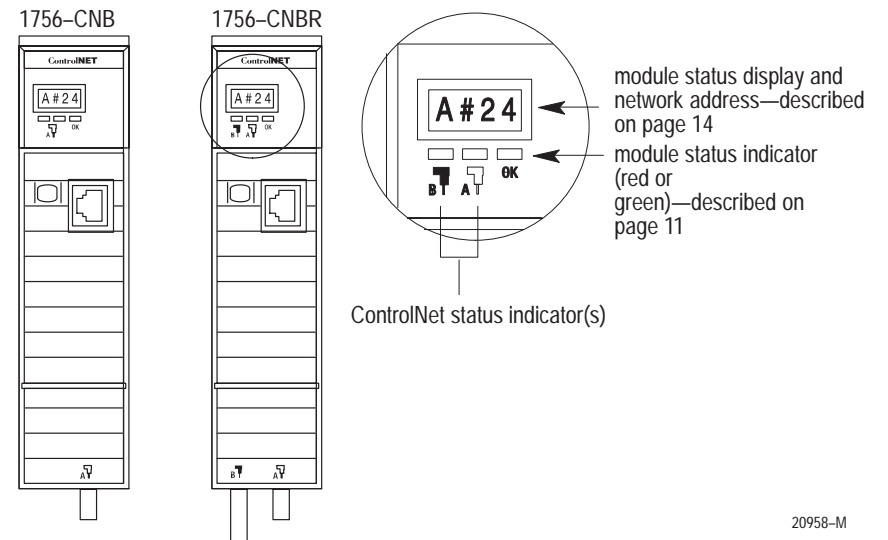
- ① The 1786-CP cable can be plugged into any ControlNet product's NAP to provide programming capability on the ControlNet network. A programming terminal connected through this cable is counted as a node and must have a unique address.





**ATTENTION:** Use the **1786-CP** cable when connecting a programming terminal to the network through NAPs. Using a commercially available RJ-style cable could result in possible network failures.



## Troubleshooting



The module has these diagnostic indicators:



## Module Status Indicators

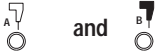

 Cause	Action
 None Off	Module not communicating due to a power supply fault or internal fault. 1. Check the power supply. 2. Check the cable connectors. 3. Make sure the module is firmly seated in the chassis. 4. If the indicator remains off, replace the module.
Red INIT POST X ADDR ERR RACK ERR CNP2 ERR BPIC ERR	Module is initializing Module is running Power-On Self Test (POST) Module failed POST because the RAM test failed. Replace the module. Module's network address is set to 00, an invalid ControlNet address. 1. (Optional, see page 5.) Turn chassis power supply off. 2. Remove the module from the chassis. 3. Set the network address switches to a unique address (01-99). 4. Install the module in the chassis. 5. If off, turn chassis power supply on. Module is unable to read the size data stored in the EEPROM because the EEPROM is uninitialized or invalid. Replace the chassis. The module has detected that it is unable to be the keeper for this network due to a firmware incompatibility. Change this node's address to a value of 2 or greater. Contact Allen-Bradley for a compatible firmware update. There is a hardware fault within the module. Replace the module. The module has detected improper backplane operation. This could be due to a noisy or defective backplane connection or bad hardware within the module. 1. Make sure your system is grounded properly. 2. Cycle power on the power supply or reset the counters using the ControlLogix Gateway configuration software. 3. Remove the module and make sure its backplane connectors aren't damaged. 4. If these steps fail to correct the problem, replace the module.



 ok		Cause	Action
Red	CNIC ERR None	There is a hardware fault within the module.	Replace the module.
Flashing Red	ROM UPDT DUPL NODE	Flash update is in progress. Module's network address is the same as another module's on the link.	None required 1. (Optional, see page 5.) Turn chassis power supply off. 2. Remove the module from the chassis. 3. Set the network address switches to a unique address (01-99). 4. Install the module in the chassis. 5. If off, turn chassis power supply on.
	BOOT	Module has invalid firmware.	Update module firmware with ControlFlash Update Utility.
Green	OK	Normal operation	None required

 ok		Cause	Action
Green or Flashing Green	BPA# ERR	Module detected a different slot address than that latched in at power-up. Excessive noise on the backplane causes this error.	<ol style="list-style-type: none"> <li>1. Make sure your system is grounded properly.</li> <li>2. Cycle power on the power supply or reset the counters using the ControlLogix Gateway configuration software.</li> <li>3. Remove the module and make sure its backplane connectors aren't damaged.</li> </ol>
	BPRX ERR	Too many CRC errors being generated by the multicast backplane receiver, so the backplane multicast receivers have been shut off.	Cycle power on the module or send a reset to the module. If condition persists, replace the module. (This error is caused by a module hardware fault or noisy backplane.)
	KPR ERR	The configured keeper object within the module is unable to operate on the attached network.	<ol style="list-style-type: none"> <li>1. Verify that this module is attached to the correct network.</li> <li>2. Rerun RSNetwork on this network to update the module's keeper object.</li> </ol>
	BW XCED	Module is receiving too much network traffic and connections are timing out. The network bandwidth has been exceeded.	None required (temporary condition) If this happens frequently, add another 1756-CNB or -CNBR and split the traffic between them.
	SW ERR	Module's network address has been changed since module power-up.	<ol style="list-style-type: none"> <li>1. (Optional, see page 5.) Turn chassis power supply off.</li> <li>2. Remove the module from the chassis.</li> <li>3. Set the network address switches to a unique address (01-99).</li> <li>4. Install the module in the chassis.</li> <li>5. If off, turn chassis power supply on.</li> </ol>
Flashing Green	NET ERR	Network cabling error or no other nodes on network.	Re-check your network cabling and make sure another node on the network is active (online).

### ControlNet Network Status Indicators

- steady – indicator is on continuously in the defined state.
- alternating – the two indicators alternate between the two defined states at the same time (applies to both indicators *viewed together*). The two indicators are always in opposite states, out of phase.
- flashing – the indicator alternates between the two defined states (applies to each indicator *viewed independent* of the other). If both indicators are flashing, they must flash together, in phase.

 and 	Cause	Action
Off	No power	None or power up
Steady red	Faulted unit	Cycle power or reset unit If fault persists, contact A-B representative or distributor.
Alternating red/green	Self-test	None
Alternating red/off	Incorrect node configuration	Check network address and other ControlNet configuration parameters

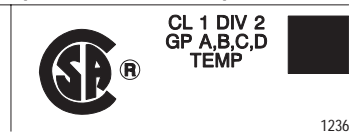
 or 	Cause	Action
Off	Channel disabled	Program network for redundant media, if required
Steady green	Normal operation	None
Flashing green/off	Temporary errors	None; unit will self-correct
Flashing red/off	Node is not configured to go on line	Make sure the Keeper node is present and working <sup>①</sup>
	Media fault	Check media for broken cables, loose connectors, missing terminators, etc.
Flashing red/green	No other nodes present on network	Add other nodes to the network
	Incorrect network configuration	Cycle power or reset unit If fault persists, contact A-B representative or distributor.

<sup>①</sup> The Keeper node is the node responsible for distributing ControlNet configuration data to all nodes on the network.

## CSA Hazardous Location Approval

CSA certifies products for general use as well as for use in hazardous locations. **Actual CSA certification is indicated by the product label** and not by statements in any user documentation.

### Example CSA certification product label



12364-I

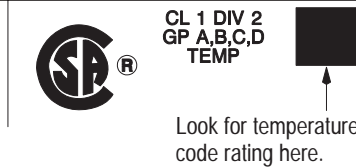
To comply with CSA certification for use in hazardous locations, the following information becomes a part of the product literature for CSA-certified Allen-Bradley industrial control products.

- This equipment is suitable for use in Class I, Division 2, Groups A, B, C, D, or non-hazardous locations only.
- The products having the appropriate CSA markings (i.e., Class I Division 2, Groups A, B, C, D), are certified for use in other equipment where the suitability of combination (i.e., application or use) is determined by the CSA or the local inspection office having jurisdiction.

### Important:

Due to the modular nature of a control system, the product with the highest temperature rating determines the overall temperature code rating of a control system in a Class I, Division 2 location. The temperature code rating is marked on the product label.

### Temperature Code Rating



12365-I

The following warnings apply to products having CSA certification for use in hazardous locations.



### ATTENTION: Explosion hazard—

- Substitution of components may impair suitability for Class I, Division 2.
- Do not replace components unless power has been switched off or the area is known to be non-hazardous.
- Do not disconnect equipment unless power has been switched off or the area is known to be non-hazardous.
- Do not disconnect connectors unless power has been switched off or the area is known to be non-hazardous. Secure any user-supplied connectors that mate to external circuits on an Allen-Bradley product using screws, sliding latches, threaded connectors, or other means such that any connection can withstand a 15 Newton (3.4 lb.) separating force applied for a minimum of one minute.

## Approbation d'utilisation dans des emplacements dangereux par la CSA

La CSA certifie les produits d'utilisation générale aussi bien que ceux qui s'utilisent dans des emplacements dangereux. **La certification CSA en vigueur est indiquée par l'étiquette du produit** et non par des affirmations dans la documentation à l'usage des utilisateurs.

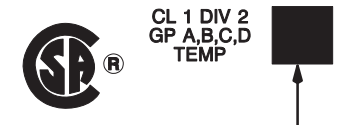
Pour satisfaire à la certification de la CSA dans des endroits dangereux, les informations suivantes font partie intégrante de la documentation des produits industriels de contrôle Allen-Bradley certifiés par la CSA.

- Cet équipement convient à l'utilisation dans des emplacements de Classe 1, Division 2, Groupes A, B, C, D, ou ne convient qu'à l'utilisation dans des endroits non dangereux.
- Les produits portant le marquage approprié de la CSA (c'est à dire, Classe 1, Division 2, Groupes A, B, C, D) sont certifiés à l'utilisation pour d'autres équipements où la convenance de combinaison (application ou utilisation) est déterminée par la CSA ou le bureau local d'inspection qualifié.

### Important:

Par suite de la nature modulaire du système de contrôle, le produit ayant le taux le plus élevé de température détermine le taux d'ensemble du code de température du système de contrôle dans un emplacement de Classe 1, Division 2. Le taux du code de température est indiqué sur l'étiquette du produit.

### Taux du code de température



Le taux du code de température est indiqué ici

12364-1

12365-1

Les avertissements suivants s'appliquent aux produits ayant la certification CSA pour leur utilisation dans des emplacements dangereux.






### ATTENTION: Risque d'explosion —

- La substitution de composants peut rendre ce matériel inacceptable pour les emplacements de Classe 1, Division 2.
- Couper le courant ou s'assurer que l'emplacement est désigné non dangereux avant de remplacer les composants.
- Avant de débrancher l'équipement, couper le courant ou s'assurer que l'emplacement est désigné non dangereux.
- Avant de débrancher les connecteurs, couper le courant ou s'assurer que l'emplacement est reconnu non dangereux. Attacher tous connecteurs fournis par l'utilisateur et reliés aux circuits externes d'un appareil Allen-Bradley à l'aide de vis, loquets coulissants, connecteurs filetés ou autres moyens permettant aux connexions de résister à une force de séparation de 15 newtons (3,4 lb. - 1,5 kg) appliquée pendant au moins une minute.



## Specifications

		1756-CNB	1756-CNBR
<b>ControlNet interface</b>	connectors	<ul style="list-style-type: none"> <li>• 1 BNC connector for non-redundant media operation</li> <li>• 1 NAP (RF-45 8-pin with shield)</li> </ul>	<ul style="list-style-type: none"> <li>• 2 BNC connectors for redundant media operation</li> <li>• 1 NAP (RF-45 8-pin with shield)</li> </ul>
	cable	quad-shield RG-6 coaxial cable	
	ground isolation	transformer	
<b>electrical</b>	power dissipation	5.14 V	
	thermal dissipation	17.5 BTU/hr	
	backplane current	970 mA @ 5.1 V 1.7 mA @ 24 V	1.0 A @ 5.1 V 1.7 mA @ 24 V
<b>environmental</b>	operational temperature	0 to 60°C (32 to 140°F)	
	storage temperature	-40 to 85°C (-40 to 185°F)	
	relative humidity	5 to 95% (without condensation)	
<b>physical</b>	location	any slot in a 1756 chassis	
	weight	0.260 kg (0.57 lb)	0.293 kg (0.64 lb)
<b>agency certification</b> (when product or packaging is marked)	<ul style="list-style-type: none"> <li>•   Class 1 Div 2 Hazardous<sup>①</sup></li> <li>•  marked for all applicable directives</li> </ul>		

<sup>①</sup> CSA certification— Class I, Division 2, Group A, B, C, D or nonhazardous locations.

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CSA logo is a registered trademark of the Canadian Standards Association.



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