ControlNet-to-DeviceNet Linking Device

Catalog No. 1788-CN2DN

Product Overview

The ControlNet-to-DeviceNet (CN2DN) linking device connects a ControlNet™ network to a DeviceNet™ network. The DeviceNet network consists of multiple DeviceNet devices, such as RediSTATIONs, photoeyes, etc. The ControlNet network consists of controllers, such as PLC® processors, HMIs, drives, I/O devices, and so on.

The CN2DN linking device has two broad functions, supporting **closed-loop control**, and **configuration and monitoring**.

To the Installer

Use this document as a guide when you install the 1788-CN2DN.

Handling the CN2DN

We recommend that you adhere to this precautionary information.

> ⚠ **ATTENTION:** This module contains ESD (Electrostatic Discharge) sensitive parts and assemblies. Static control precautions are required when installing or testing this assembly. Component damage may result if these procedures are not followed.

Precautionary Statements - 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.

System Requirements

This section describes the required hardware and software components you need before you can use the CN2DN linking device.

Hardware

- ControlNet-to-DeviceNet linking device
- PC access to ControlNet through RSLinx™
- ControlNet and DeviceNet cabling

Software

- Windows NT® 4.0 with service pack 3 or higher
- RSLinx 2.10 or later; this is the driver for the Allen-Bradley PC interfaces.
- RSNetWorx™ for ControlNet version 2.0 or later; this is the ControlNet configuration tool.
- RSNetWorx™ for DeviceNet version 2.11 or later; this is the DeviceNet configuration tool.

Compatibility Information

The 1788-CN2DN linking device is compatible with DeviceNet and ControlNet specifications as of this writing.

Related Publications

Title	Publication Number
ControlNet Cable System, Planning and Installation Manual	1786-6.2.1
DeviceNet Cable System, Planning and Installation Manual	DN-6.7.2-MAY99
ControlLogix ControlNet Bridge Installation Manual	1756-5.71
ControlLogix ControlNet Interface Module User Manual	1756-6.5.3

CN2DN Hardware Description

Figure 1 shows the components of the CN2DN linking device.

Figure 1 CN2DN Linking Device
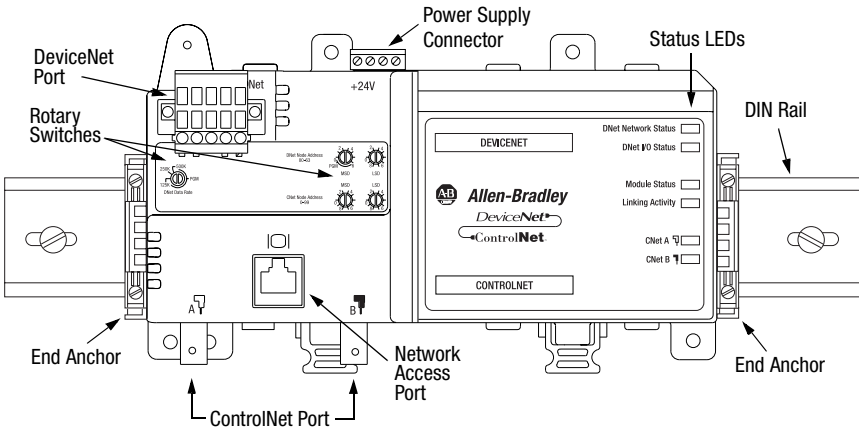
The CN2DN module is designed to be mounted on a 35 mm steel DIN rail. End anchors are provided to keep the module in position.

The device has one ControlNet port with support for redundant media as well as a ControlNet network access port. Rotary switches are used to set the ControlNet node address. The CNet Status LEDs display the current status of each of the redundant media channels.

The CN2DN has one DeviceNet port. Rotary switches are used to set the DeviceNet node address and the data rate. DNet LEDs display the current status of the network and the I/O channel.

Module Status and Linking Activity LEDs are also provided. For information about the LEDs, see "Interpreting the Status Indicators" beginning on page 27.

The power supply connector is wired to 24V dc.

Installing the CN2DN Module

The CN2DN module has a clip for mounting on a standard 35 mm steel DIN rail. Follow these steps to mount the CN2DN onto the DIN rail.

Important: You must use a steel DIN rail (A-B P/N 199-DR1 or equivalent) to meet vibration specifications listed on page 34.
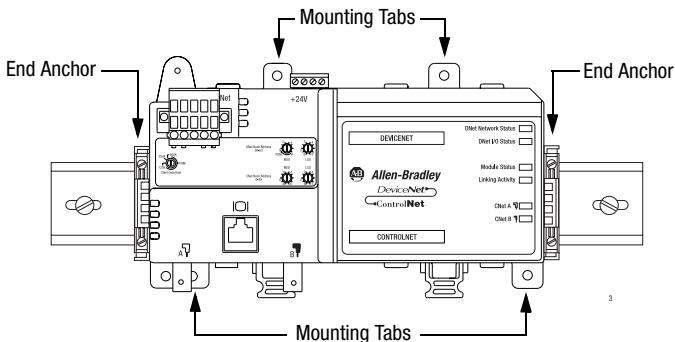
1. Press the module straight onto the DIN rail at the desired location. Be sure that both latches snap into place.

Figure 2 Mounting the CN2DN Module on the DIN Rail
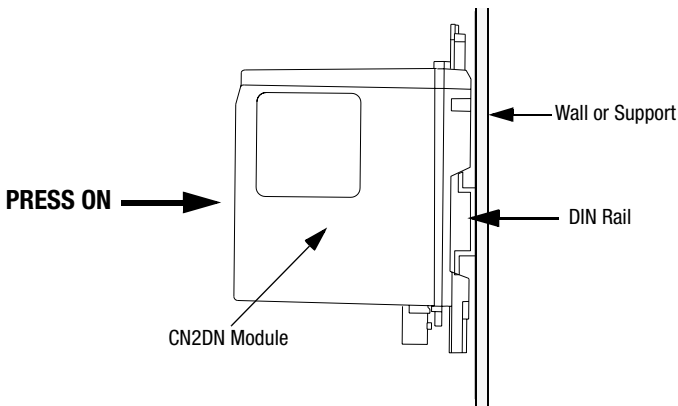
2. Use the supplied end anchors to lock the module into place.

Figure 3 End Anchors and Mounting Tabs

Note that for very high shock applications the module may be bolted to the panel through the four mounting tabs on the base.

Removing the CN2DN module

To remove the CN2DN module, simultaneously pull the 2 DIN rail latches away from the rail and pull the module off the panel. (Note: This may require two screwdrivers to open the latches.)

Connecting Power

The CN2DN linking device requires 18-26V dc input power. The CN2DN filters and regulates the supplied power. The power connector is a 4-pin redundant screw terminal connector. The pinout for the power connector is shown in Figure 4.

Figure 4 Power Connector Pinout
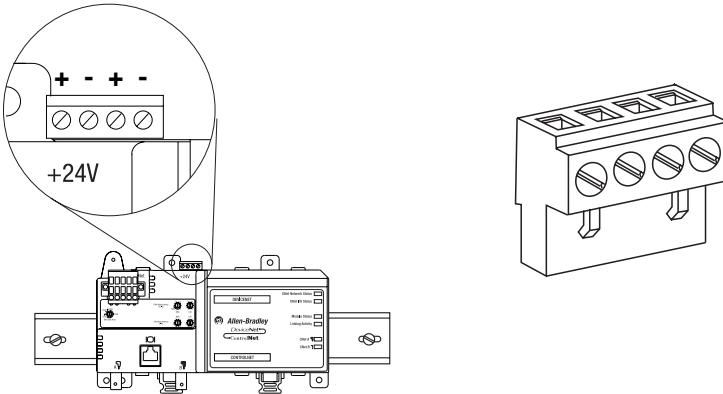
Connect the primary power supply to the left + and - pair. The right + and - pair may be used to chain the primary power supply to other devices.

Important: The connection to downstream devices will not be made unless the connector is plugged in to the CN2DN.

ControlNet Connections

BNC Connectors

The BNC connectors on the unit should be connected to a ControlNet network through a tap. The BNC connectors must be used to connect the CN2DN linking device to the ControlNet network.

> ⚠ **ATTENTION:** If you connect the product to a cable system that does not support redundant media, connect the tap dropline to the BNC connector labeled channel A. channel B is left open when using single media.
>
> If the cable system is redundant, connect all channel A connectors to one cable, and all channel B connectors to the other cable.

Refer to publication number 1786-6.2.1, ControlNet Cable System Planning and Installation Manual, for further information.

Figure 5 ControlNet Connections

Network Access Port (NAP)
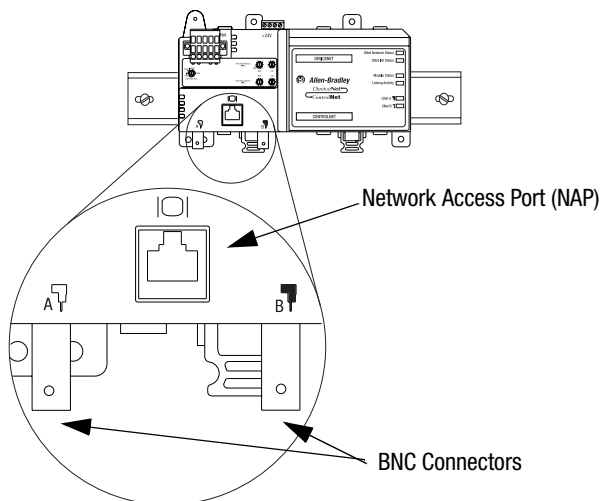
BNC Connectors

Network Access Port (NAP)

The CN2DN includes a Network Access Port (NAP) with an RJ-45 connector for connecting programming terminals to devices on the ControlNet network. You can use the NAP to temporarily connect a device such as a laptop computer to the network.

Important: Do not connect the CN2DN to more than one ControlNet network at a time. Attempting to connect to a second network will cause the CN2DN to operate erratically.

Figure 6 shows an example of a typical ControlNet network connection.

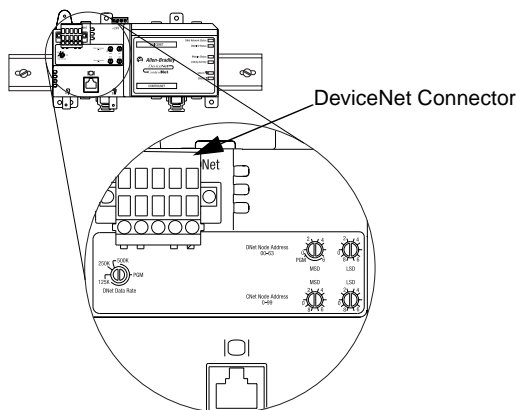**Figure 6 Typical CN2DN Connections to a ControlNet Network**
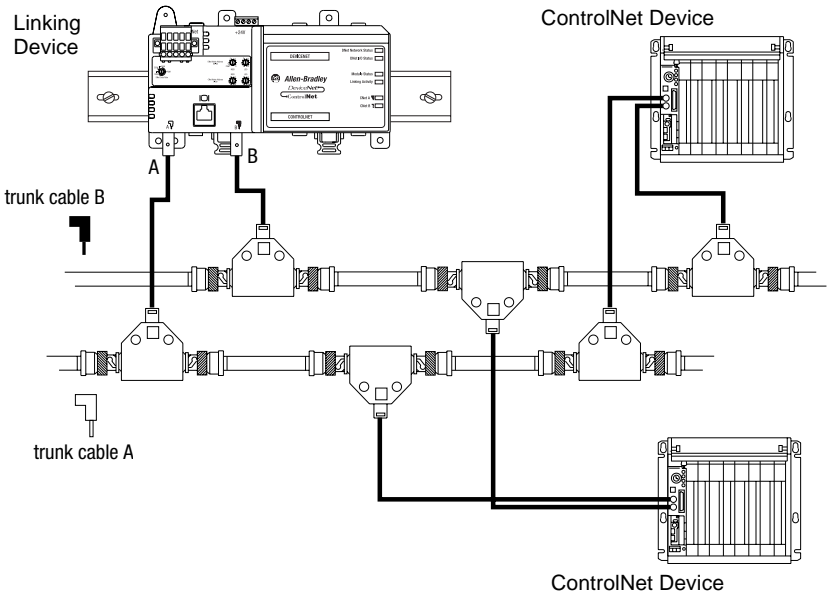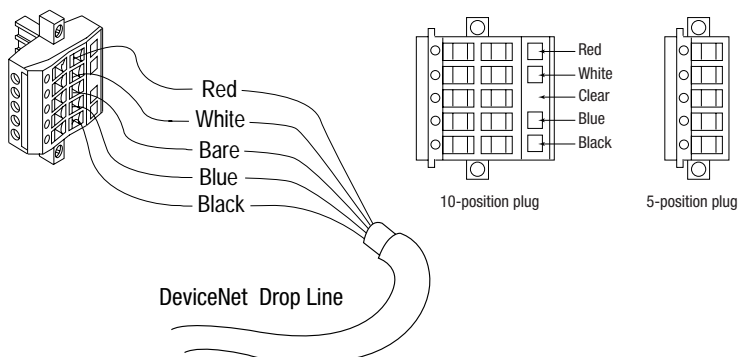
DeviceNet Connections

The location of the DeviceNet connector is shown in figure 7.

Figure 7 DeviceNet Connector on the CN2DN

Use an open-style 5- or 10-position linear plug to connect to the DeviceNet network. An open-style 10-position linear plug is provided with your CN2DN. Wire the connector as shown in figure 8.

Figure 8 Connector Pinout to CN2DN

Refer to publication number DN-6.7.2, DeviceNet Cable System Planning and Installation Manual, for further information.

Setting the Node Address Switches

Important: When using a 1788-CN2DN, the ControlNet network must have an
"Active Keeper" to keep track of network scheduling, clock
synchronization, etc.

Refer to publication 1756-5.71, ControlLogix ControlNet Bridge, for
information on configuring a 1756-CNB module.

CN2DN ControlNet Address

Choose and set a ControlNet network address for the CN2DN. Refer to figure 9.

Important: ControlNet addresses must be in the range 01-99.
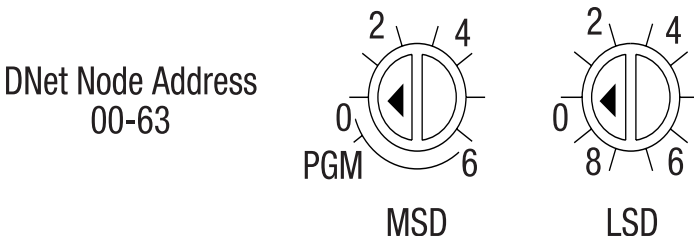
Figure 9 CNet Node Address Switches

CNet Node Address
0-99

MSD   LSD
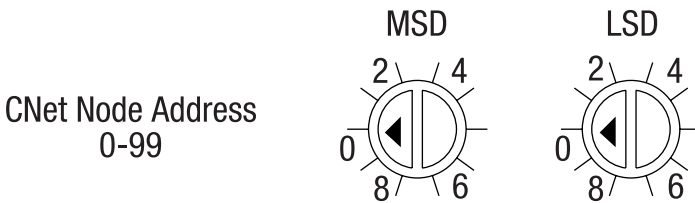
CN2DN DeviceNet Address

Choose and set a DeviceNet network address for the CN2DN. Refer to figure 10:

Important: DeviceNet addresses must be in the range 00-63.

Figure 10 DNet Node Address Switches

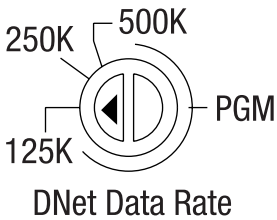DNet Node Address
00-63

MSD   LSD

Setting the DNet Data Rate

Set the data rate for your DeviceNet network: 125K, 250K, or 500K. Data rate settings in the PGM area are not supported.

Refer to figure 11:
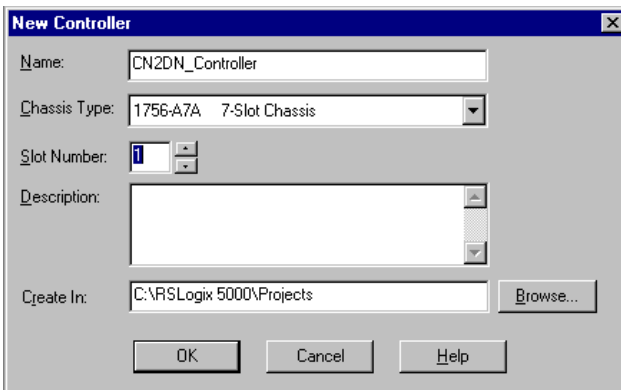
Figure 11 DNet Data Rate Switch

The Example Installation

This installation manual provides an example showing how to link the DeviceNet network to a ControlNet network to communicate with a Logix5550 controller. A 1756-CNB interface module must be in the chassis with the Logix5550 controller. Note that this is but one example. The CN2DN linking device can be used with any Allen-Bradley controller that is provided with a ControlNet interface.

RSLogix5000™ Setup

1. Open the **RSLogix5000** software.

2. From the **File** menu select **New**.

The **New Controller** pop-up window will appear.

New Controller	✕
Name:	CN2DN_Controller
Chassis Type:	1756-A7A 7-Slot Chassis
Slot Number:	1
Description:	
Create In:	C:\RSLogix 5000\Projects Browse...
	OK Cancel Help

3. Enter the appropriate information in the following fields:

- **Name** (enter a controller name of your choice)
- **Chassis Type** (select the chassis size from the pull-down list)
- **Slot Number** (select the controller's slot number from the pull-down list)
- **Description** (this field is optional)
- **Create In** (select the folder where the project will be saved)

4. Click on **OK**.

The software will save the New Controller data and the following screen will appear:
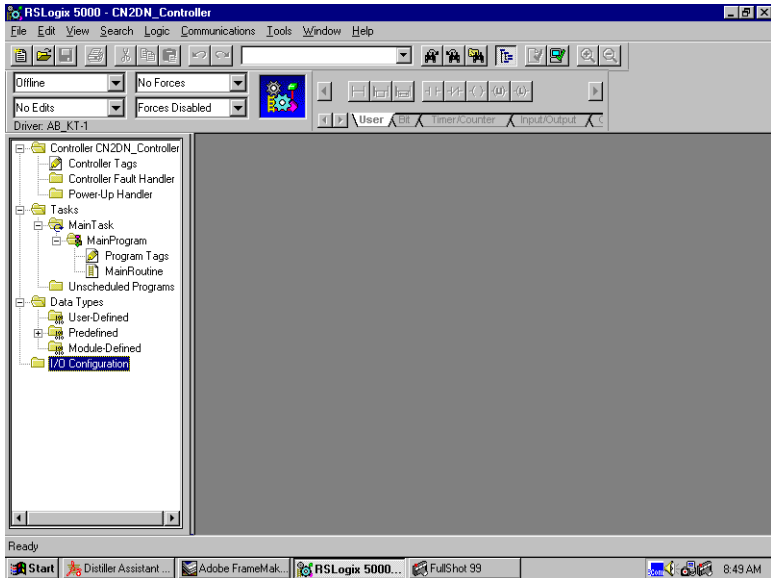
I/O Configuration

Next, you must add the 1756-CNB interface module to the I/O configuration of the controller. Then you will add the 1788-CN2DN linking device as a "child" of the 1756-CNB module.

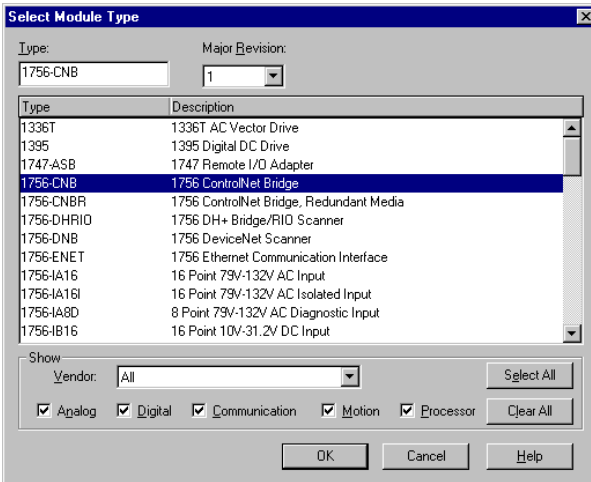To add the 1756-CNB module to the I/O Configuration, perform the following steps:

1. Right-click on the **I/O Configuration** folder at the bottom of the project window, as seen in the figure above.
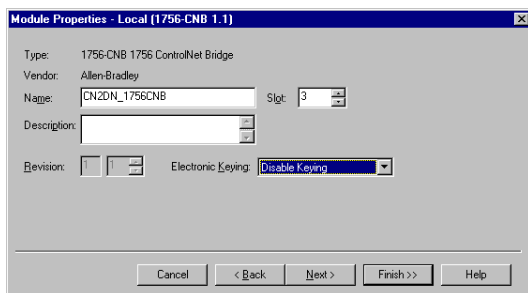
The following pop-up menu will appear.

2. Select **New Module**.

The **Select Module Type** window will appear:

3. Select the **1756 ControlNet Bridge** from the list and click on **OK**.

The **Module Properties** window will appear:

4. Enter a **Name** for the ControlNet 1756-CNB module and select the chassis **Slot** it occupies.

5. Disable Electronic Keying.

6. Click on the [Finish >>] button.

The 1756-CNB module will be added to the I/O Configuration folder.
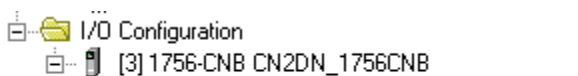
Now add the 1788-CN2DN linking device to the I/O configuration by performing the following steps:

1. Right-click on the 1756-CNB module you have just created.
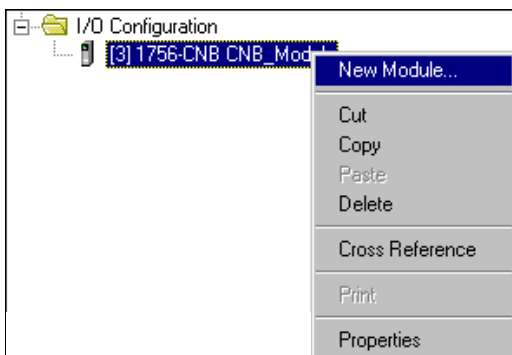
2. Select **New Module** from the pop-up window.

The **Select Module Type** window will appear.
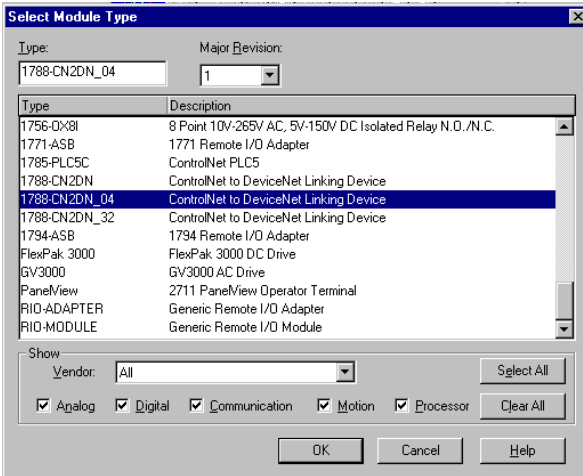
3. Select the **1788-CN2DN ControlNet to DeviceNet Linking Device** and click on **OK** (the 1788-CN2DN_04 Device is recommended).

The **Module Properties** window will appear.
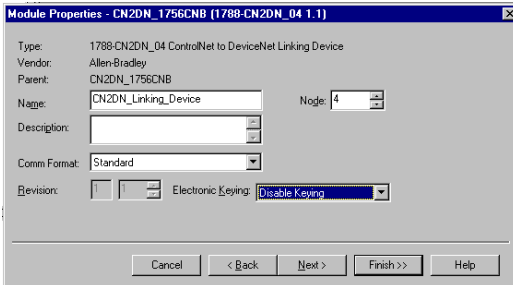
4. Enter a **Name** of you choice for the 1788-CN2DN module.

5. Select the ControlNet **Node** address that you have set with the faceplate switches.

6. **Disable** Electronic Keying.

7. Click on the ⬚ Finish >> ⬚ button.

The I/O configuration should now appear as shown below:

```
...
I/O Configuration
   [3] 1756-CNB CN2DN_1756CNB
      4 1788-CN2DN_04 CN2DN_Linking_Device
```
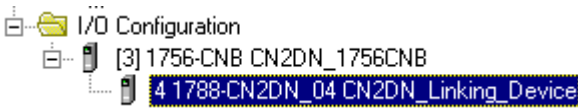
ControlNet Setup Using RSNetWorx for ControlNet

If you are using a ControlLogix 5550 processor, the following can be used as part of your setup.

1. Open the **RSNetWorx for ControlNet** software.
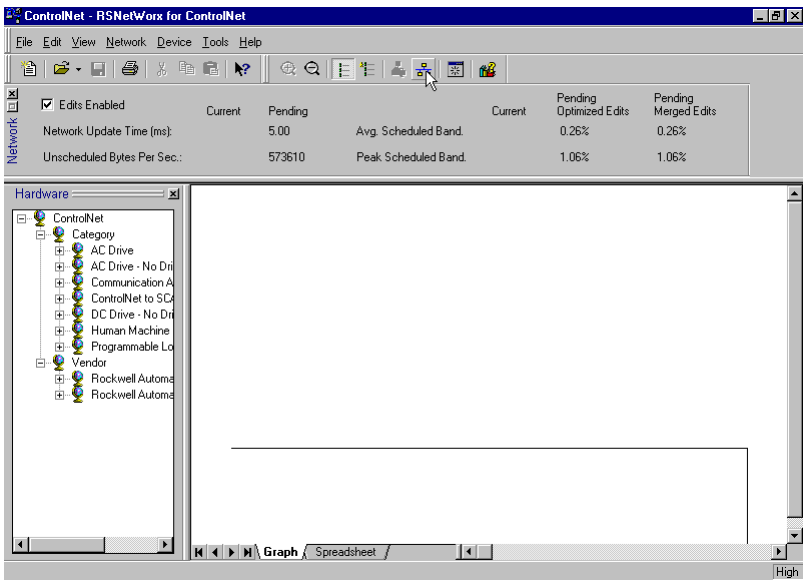
2. Check the **Edits Enabled** box and click on the **Online** button

The **Browse for Network** window will appear. Your window may appear different from that shown below depending upon the drivers you have installed in your system, but you should have a ControlNet driver (e.g., a 1784-KTCX15 card) configured.
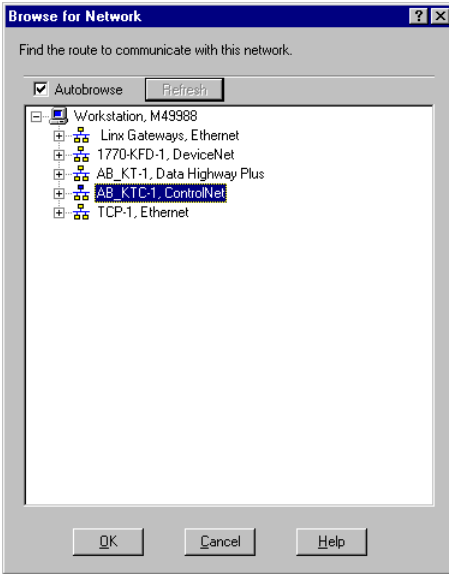
3. Select the ControlNet driver.

The software will browse the ControlNet network for connected devices. When it is finished browsing, your network should appear similar to that shown below.
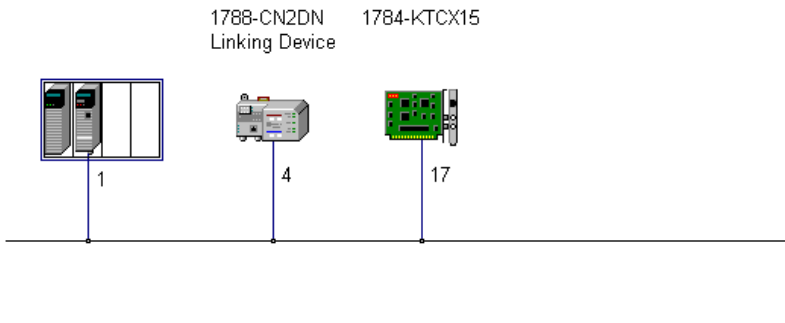
4. Verify that the 1756-CNB module is node 1 on the network (required for Active Keeper).

5. Select **Network** from the RSNetWorx for ControlNet main menu bar.
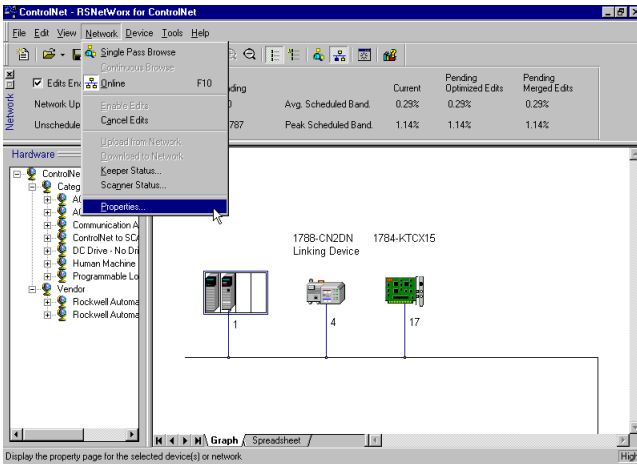
6. Select **Properties** from the pull-down menu.

The following window will appear:

7. Set the following parameters to appropriate values for your system:

• Network Update Time - 10 ms is a typical value

• Max Scheduled Address - set to the highest node address of scheduled devices on your ControlNet

- Max Unscheduled Address - set to the highest node address used on your ControlNet (i.e., do not set to 99 unless you have 99 nodes on your network).

8. Click on **OK**.
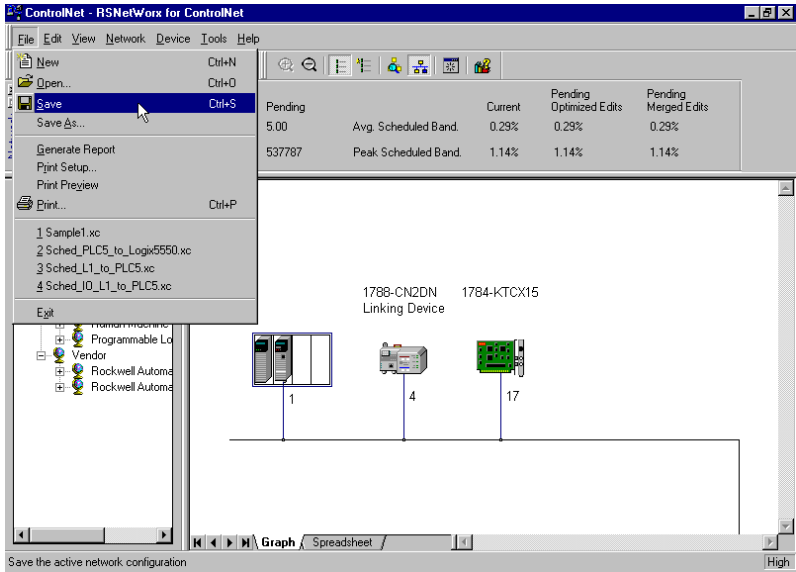
9. From the **File** menu, select **Save**.

The following prompt will appear:
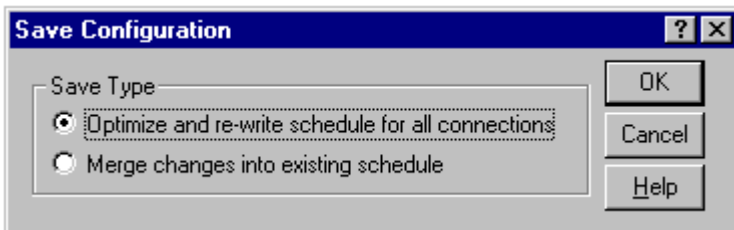
10. Select "Optimize and re-write schedule for all connections" and click on **OK**.

The ControlNet network is now configured and scheduled, and the controller is able to communicate with the ControlNet devices.

DeviceNet Setup Using RSNetWorx for DeviceNet

1. Open the **RSNetWorx for DeviceNet** software.
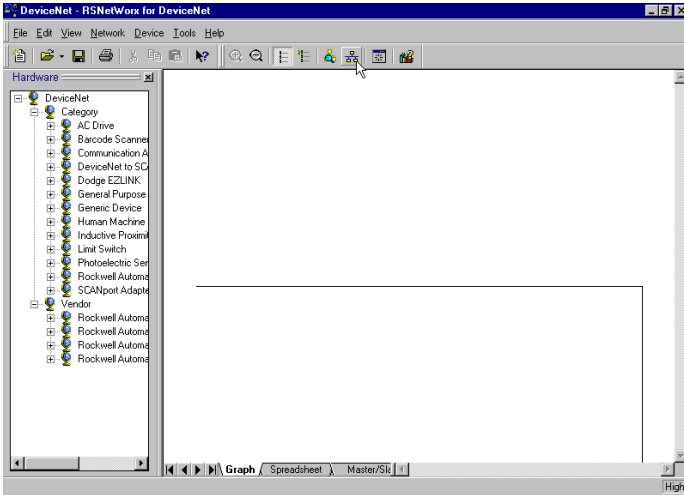

2. Click on the **Online** button

The **Browse for network** \window will appear. (Your window may appear different from that shown below, depending upon the drivers installed on your system).
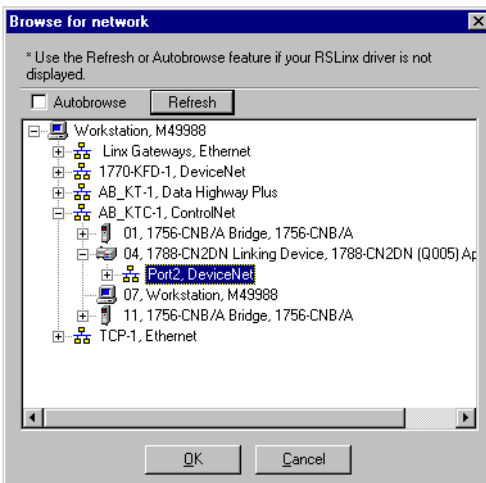
3. Select the ControlNet driver (AB_KTC-1 in the window above) and drill down through the 1788-CN2DN Linking Device to the DeviceNet driver.

4. Click on **OK**. The following prompt will appear:

5. Click on **OK** to browse the network.

When browsing is complete you should see all of the devices on your DeviceNet network. Your DeviceNet network should appear similar to the one shown below.
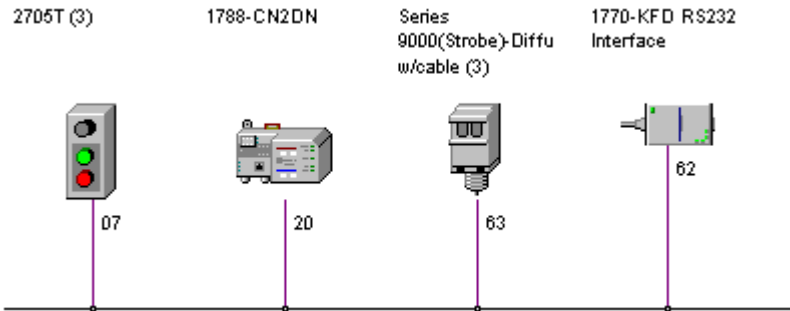
6. Right-click on the **1788-CN2DN** icon.

The following window will appear:
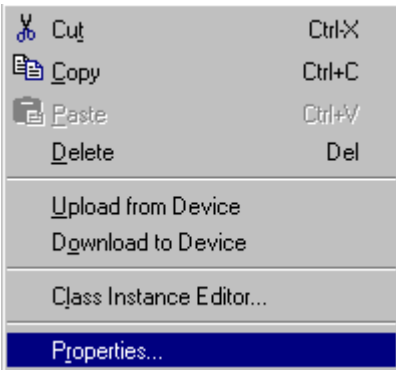
7. Select **Properties**.

The following window will appear.
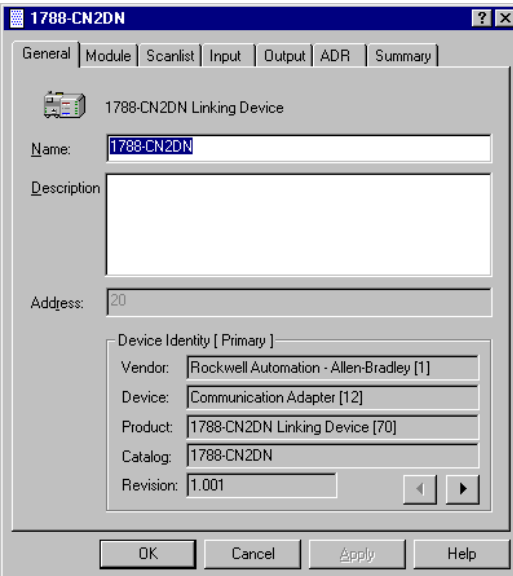
8. Select the **Scanlist** tab.

The **Available** devices on your network will be displayed.
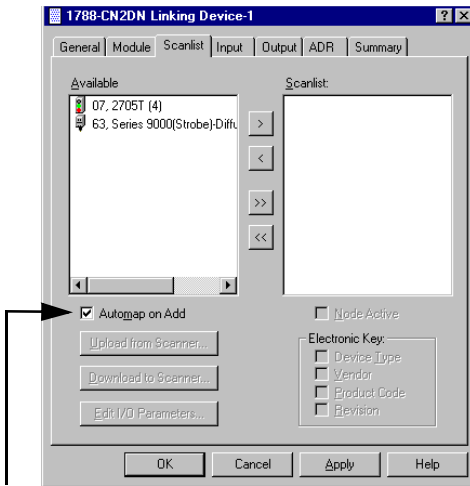
9. Ensure that the **Automap on Add** box is checked.

10. Highlight the desired devices in the **Available** window, and move them to the
    Scanlist window with the $\boxed{>}$ or $\boxed{>>}$ (all devices) button.
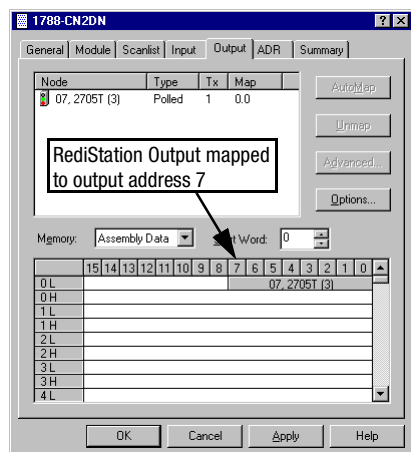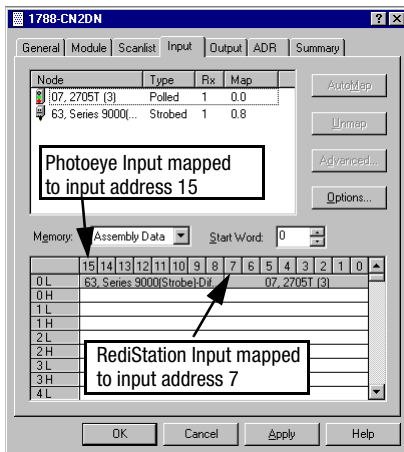
11. After adding the devices to the Scanlist, click on the **Input** and **Output** tabs
    to view and record the mapping of the devices.

12. **Save** your DeviceNet configuration.

Controller Interface

The initial release of the 1788-CN2DN firmware supports a single default input, output, and status assembly over the ControlNet backplane. These default I/O structures were created to reduce the complexity of connecting DeviceNet I/O and status data with ladder programs. The module creates all 3 structures whether or not DeviceNet nodes are configured or online.

The RSNetWorx for DeviceNet software application configures scanlist map segments that are used to copy specific portions of I/O data between the I/O structures and DeviceNet network packets.

Output Structure

The controller controls output I/O by writing output data to an output structure in the 1788-CN2DN module. The scanner module then delivers a copy of these output values to modules on DeviceNet. The output structure consists of two 32-bit control registers and an array of 1 to 123 32-bit words for output data.

The output structure consists of these data regions:

Output Structure Element	Description	Data Type
CMD	This 32-bit word is reserved for use by the controller. It is **not** user-configurable.	1 x 32-bit register
module command register	This 32-bit register consists of several bits that affect the module's behavior on the network.	1 x 32-bit register
output_data		1 to 123 32-bit data array

Module Command Register Bit Definitions

Bit	Name	Description
0	RUN	1 = run mode 0 = idle mode
1	FAULT	1 = fault network
2	Disable_Network	1 = disable network
3	Halt_Scanner	1 = halt module
4	Reset	1 = reset module
5 - 31	Reserved	unused

Input Structure

The controller receives input I/O by reading input data from an input structure in the 1788-CN2DN module. The scanner module receives input data from DeviceNet modules and delivers a copy of these values to the controller. The input structure consists of one 32-bit status register and an array of 1 to 124 32-bit words for input data. The 32-bit status register reflects the current state of several key module-level operational parameters.

The input structure consists of these data regions.

Input Structure Element	Data Type
module status register	1 x 32-bit register
input_data	1 to 124 32-bit data array

Module Status Register Bit Definitions

Bit	Name	Description
0	RUN	1 = in run mode 0 = in idle mode
1	FAULT	1 = network is faulted
2	Disable Network	1 = network is disabled
3	Device Failure	1 = device failure exists
4	Autoverify Failure	1 = failure is verified automatically
5	Comm Failure	1 = communication failure exists
6	Dup Node Fail	1 = failure due to duplicate node address
7	Dnet Power Detect	1 = DeviceNet power failure
8 - 31	Reserved	unused

Input Data [124]

Status Structure

The controller receives status information concerning the 1788-CN2DN module's ability to exchange DeviceNet messages with other nodes by reading from a status structure in the 1788-CN2DN module. The scanner module periodically updates the contents of the status structure and copies its contents to the controller. The status structure consists of several 64-bit tables. The bit position of each of the 64 bits that make up a given status table directly corresponds to the node address of a device.

The status structure consists of these data regions:

Status Structure Element	Description	Data Type
scan_counter	counter incremented each I/O scan	32-bit
device_failure_register	device failed bit table	64-bit
autoverify_failure_register	device I/O size does not match	64-bit
device_idle_register	device is idle bit table configuration	64-bit
active_node_register	node online	64-bit
status_display	unused	4-byte
scanner_device_status	BCD display (see below)	4-byte BCD
scanner_address	DeviceNet address of CN2DN module	8-bit BCD
scanner_status	status of CN2DN module	8-bit BCD
device_address	scrolls through faulted DeviceNet	8-bit BCD
device_status	nodes once per second	8-bit BCD
reserved_array	20 bytes for future expansion	20 8-bit
device_status_array	64 byte array	64 8-bit

Interpreting the Status Indicators

The Status Indicators are located on the front of the CN2DN module, as shown in Figure 1.

Module STATUS LED

The Module Status LED indicates whether the CN2DN is powered, configured, and operating properly. Table A shows how to interpret the Module Status LED states.

Table A Interpretation of the Module Status LED

LED State	Meaning
Off	No power to device
Flashing green	Standby state
Steady green	Operational state
Flashing red	Major recoverable fault
Steady red	Major unrecoverable fault

Standby state (flashing green) indicates the CN2DN module has passed all self tests and is ready to operate, but is not configured.

Operational state (steady green) indicates the CN2DN module has left standby state because the necessary network configuration has occurred.

Linking Activity LED

The Linking Activity LED indicates the rate of traffic through the bridge. Table B shows how to interpret the Linking Activity Status LED states.

Table B Interpretation of the Linking Activity LED

LED State	Meaning
Off	No traffic
Flashing green	Traffic present (flash rate reflects amount of traffic)
Flashing red and green	Module is running boot code only (reduced functionality code only for FLASH upgrading)

ControlNet Network Status LEDs (CNet A, CNet B)

The ControlNet Network Status LEDs indicate the state of the ControlNet network connected to the BNC connectors. If more than one state is present, the LEDs always reflect the highest priority status present on the network. Note that these LEDs do not reflect the status of the network access port (NAP). Table C describes the LED states and the priority of each status LED.

Table C Description of ControlNet Network Status LED States

LED State	Priority	How to View	Cause
Both steady off	1 (highest)	View together	Reset or no power
Both steady red	2		Failed to link interface to ControlNet
Alternating red & green	3		Self testing
Alternating red	4		Bad node configuration (such as duplicate ControlNet network address)
Steady off	5	View independently	Channel disabled or not supported
Flashing red & green	6		Invalid link configuration
Flashing red	7		Link fault or no frames received
Flashing green	8		Temporary channel error or listen only
Steady green	9 (lowest)		Normal operation

DeviceNet Network Status LED

The DeviceNet Network Status LED indicates the functional states of the DNet port. Table D describes each state.

Table D Description of DeviceNet Network Status LED States

LED State	Meaning
Off	DeviceNet port not receiving packets
Steady green	DeviceNet port is alive
Flashing red and green	DeviceNet port is seeing traffic, but is at a default or visitor address
Flashing red	DeviceNet port encountered transient, non-fatal network error
Steady red	DeviceNet port encountered fatal network error

DeviceNet I/O Status LED

The DeviceNet I/O Status LED indicates the functional state of the I/O on the DeviceNet. Table E describes each state.

Table E Description of DeviceNet I/O Status LED States

LED State	Meaning
Off	All inputs and outputs are inactive.
Steady green	One or more outputs are active and under control, and no outputs are faulted.
	One or more inputs are active and producing data, and no inputs are faulted.
Flashing green	One or more outputs are idle, and no inputs are active or faulted.
Flashing red	One or more outputs are faulted.
	One or more inputs are faulted.
Steady red	One or more outputs are forced off (may be an unrecoverable fault).
	One or more inputs has an unrecoverable fault.

Compliance to European Union Directives

This product has the $C\epsilon$ marking, and 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 50081-2 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 the following Allen-Bradley publications:

- Industrial Automation Wiring and Grounding Guidelines for Noise Immunity, publication 1770-4.1

- Automation Systems Catalog, publication B111

This equipment is classified as open equipment and must be installed (mounted) in an enclosure as a means of providing safety protection.

CSA Hazardous Location Approval

Hazardous Location Approval

This product is certified for general use as well as for use in hazardous locations. **Actual agency certification is indicated by the product label** as shown below, and not by statements in any user documentation.

The certification label:

CL I, DIV 2
GP A,B,C,D
TEMP

To comply with certification for use in hazardous locations, the following information becomes a part of the product literature for this certified industrial control product.

- 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 markings (that is, Class I, Division 2, Groups A, B, C, D) are certified for use in other equipment where the suitability of combination (that is, application or use) is determined by the local authority having jurisdiction.

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

Temperature code rating:

CL I, DIV 2
GP A,B,C,D
TEMP

Look for temperature code rating here.

The following warnings apply to products having 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 this equipment by 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 en environnements dangereux

Ce produit est certifié pour une utilisation générale aussi bien que pour une utilisation en environnements dangereux. **La certification en vigueur est indiquée par l'étiquette produit** et non par des indications dans la documentation utilisateur.

CL I, DIV 2
GP A,B,C,D
TEMP

Exemple d'étiquette de certification d'un produit :

Pour satisfaire à la certification en environnements dangereux, les informations suivantes font partie intégrante de la documentation des produits de commande industrielle certifiés.

• Cet équipement ne convient qu'à une utilisation en environnements de Classe 1, Division 2, Groupes A, B, C, D, ou non dangereux.

• Les produits portant le marquage approprié (c'est-à-dire, Classe 1, Division 2, Groupes A, B, C, D) sont certifiés pour une utilisation avec d'autres équipements, les combinaisons d'applications et d'utilisation étant déterminées par le bureau local d'inspection qualifié.

Important : De par la nature modulaire des systèmes de commande programmables, le produit ayant le code de température le plus élevé détermine le code de température global du système dans un environnement de Classe 1, Division 2. Le code de température est indiqué sur l'étiquette produit.

CL I, DIV 2
GP A,B,C,D
TEMP

Le code de température est indiqué ici

Code de température :

Les avertissements suivants s'appliquent aux produits certifiés pour une utilisation en environnements dangereux.
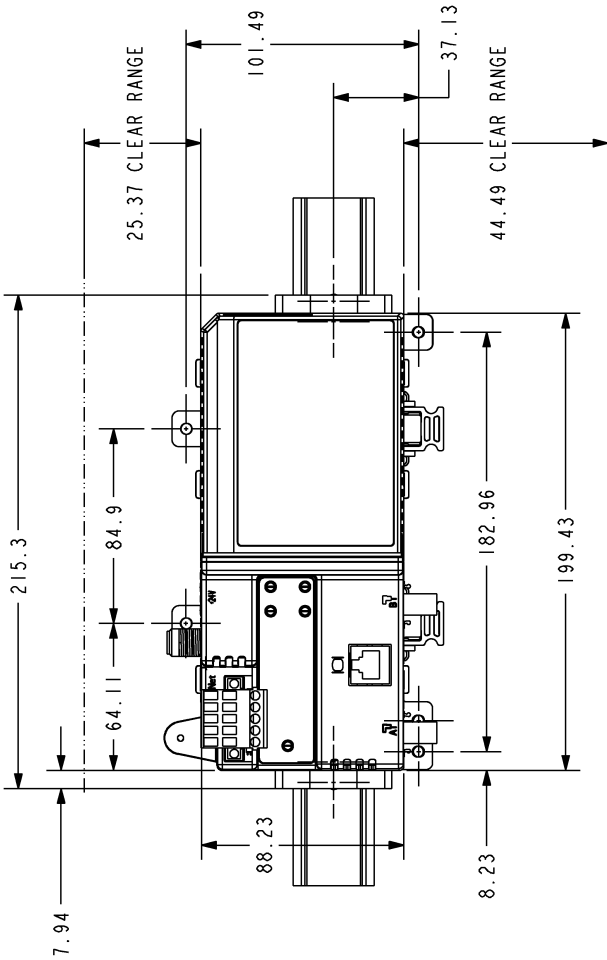
DANGER : Risque d'explosion
•La substitution de composants peut rendre cet équipement inadapté à une utilisation en environnement de Classe 1, Division 2.

•Couper le courant ou s'assurer que l'environnement est classé non dangereux avant de remplacer des composants.

• 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 fournis par l'utilisateur pour se brancher aux circuits externes de cet équipement à l'aide de vis, loquets coulissants, connecteurs filetés ou autres, de sorte que les connexions résistent à une force de séparation de 15 newtons (1,5 kg - 3,4 lb) appliquée pendant au moins une minute.

Specifications

Type	Specifications
Dimensions	Height:: 120mm (4 11/16 in) Depth: 87mm (3 7/16 in) Width: 200mm (7 7/8 in)
Environmental	Operating Temperature: 0 to 60° C (32 to 140° F) Storage Temperature: -40 to 85° C (-40 to 185° F) Relative Humidity: 5 to 90% (non-condensing)
Vibration	Operating - 2Gs each axis Tested 2Gs @ 10 - 500 Hz per IEC 68-2-6
Communication	ControlNet - redundant media and network access port DEVICENET, 1 channel
Power Requirements	Main Power - 18-30V dc (24V dc nominal), 500 mA DeviceNet Power - 11-25V dc (24V dc nominal), 90 mA, Class2
Indicators	Module Status Linking Activity DNet Network Status DNet I/O Status CNet Status, 1 each channel
Connectors	ControlNet - BNC connectors Network Access Port - RJ45 DeviceNet - 5-pin open connector Power - 4-pin redundant screw terminal connector
Conductors/Wire Size/ Category	Category 2[1]
ControlNet Taps	Cat Nos. 1786-TPR, -TPYR, -TPS, -TPYS
NAP cable assembly	Cat No.1786-CP
Mounting	35 mm steel DIN rail (A-B P/N 199-DR1 or equivalent)
CNet Channel Selection	two 10-position rotary switches
DNet Channel Selection	two 10-position rotary switches
Agency Certification (when product is marked)	(UL)® • Industrial Control Equipment (CSA) • Process Control Equipment • Class I, Div. 2, Groups A, B. C, D • Hazardous Location CE • EN 50082-1, 2 • EN 55011 Radiated Emission Class A • EN 61131-2

[1]   Refer to the Industrial Automation Wiring and Grounding Guidelines for Noise Immunity, publication 1770-4.1.

Mounting Dimensions

All dimensions in millimeters (mm)

101.49

37.13

25.37 CLEAR RANGE

44.49 CLEAR RANGE

215.3

84.9

182.96

199.43

64.11

88.23

8.23

7.94

PLC is a trademark of Rockwell Automation.

ControlNet is a trademark of ControlNet International.

DeviceNet is a trademark of Open Device Vendors Association (ODVA).

RSLinx, RSLogix5000, RSNetWorx are trademarks of Rockwell Software Inc.

Windows NT is a trademark of Microsoft Corporation.