



Installation Instructions

ControlNet-to-Foundation Fieldbus H1 Linking Device

Catalog 1788-CN2FF

Product Overview

ATTENTION



The 1788-CN2FF module ships from the factory with configuration switches set to “ON (RESET)”. With switches “ON”, any configuration data would be reset on Power interruption. Set the switches to “OFF (NORMAL)” after initial power-up (to clean any Factory test configurations) but before you configure the module with your application.

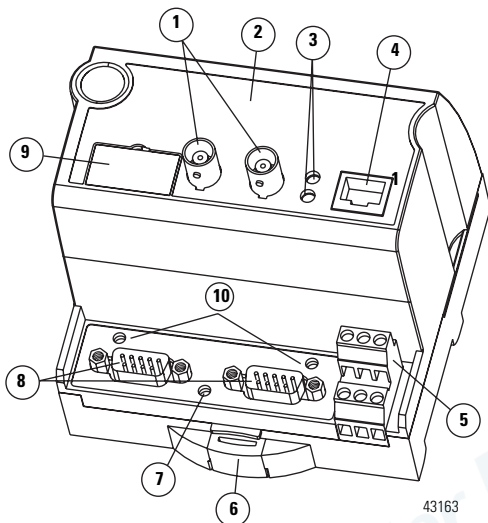
Remove power to the module before resetting configuration switches. For more information on configuration refer to Configuring the 1788-CN2FF Linking Device on page 9.

The ControlNet-to-Foundation Fieldbus H1 linking device (1788-CN2FF) connects a ControlNet™ network with one or two FOUNDATION Fieldbus H1 (Fieldbus) networks. Each H1 network consists of multiple Fieldbus devices. Each field device has one or more function blocks. Each function block performs an elementary control function such as analog input, analog output, discrete input, or discrete output. The ControlNet network consists of controllers, such as PLC® processors, HMIs, drives, I/O devices, and so on. The 1788-CN2FF has three broad functions, supporting the following:

- closed-loop control
- configuration
- a redundant ControlNet network design

1788-CN2FF Hardware Description

Figure 1 ControlNet-to-Foundation Fieldbus Linking Device



1. ControlNet A and B BNC Connectors, to support single or redundant network topologies.
2. Case/Enclosure
3. ControlNet Network Status LEDs
4. Non-isolated ControlNet Network Access Port (NAP)
5. Power Supply Connector
6. DIN Rail Clip
7. ControlNet Module STATUS LED
8. Fieldbus Connectors
9. Network Address Switches (under cover)
10. Not Used

Installation Considerations

The 1788-CN2FF is designed to be mounted on a 35 mm DIN rail. The device dimensions are 4.375 x 4.375 and is 4.5 inches high. ControlNet connectors are on top of the unit, allow 1.5 inches for the connectors.

IMPORTANT

Make sure that the power to the network is **off** when connecting the module.

The CN2FF supports redundant media and a ControlNet network access port (NAP). There are 2 (A, B) BNC ControlNet connectors. We recommend using the “A” BNC connector when setting up a single network and then using the “B” connector for the second (redundant) network. It does not matter, but when you are working with redundant networks, the industry tends to refer to the primary network as A and the secondary network as B.

The ControlNet status LEDs on the front of the module display the current status of each of the redundant media channels. The rotary switches are used to set the ControlNet network address. You can write the network address in the space provided on front of the device.

The module has two separate Fieldbus ports which supports 2 Fieldbus networks. The power connections are used to supply power to the CN2FF.

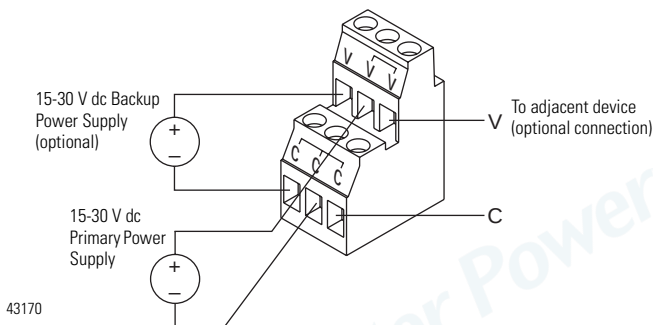
Connecting Power

The 1788-CN2FF requires 15-30V dc power and the cable is limited to a maximum of 3m in length. One power supply can support several CN2FFs. The power connector is a 6-pin screw terminal connector. The pinout for the power connector is shown in Figure 4.

IMPORTANT

Make sure that the power to the network is **off** when connecting the module.

Figure 4 Power Connector Pinout



Connect the primary power supply to the center V and C pair. An optional backup power supply may be connected to the left V and C pair. The right V and C pair may be used to chain the primary power supply to other devices. All three terminals labeled C are connected in the CN2FF. The right two V terminals are connected in the CN2FF. These connections are indicated on the power connector by the lines over the V and C terminals.

Connecting to the ControlNet Network

There are two types of ControlNet connectors on the CN2FF, the BNC and the RJ-45.

Using the BNC:

- BNC connectors are for direct connection to a ControlNet network through a tap.
- BNC connectors must be used to connect the CN2FF to the ControlNet network.

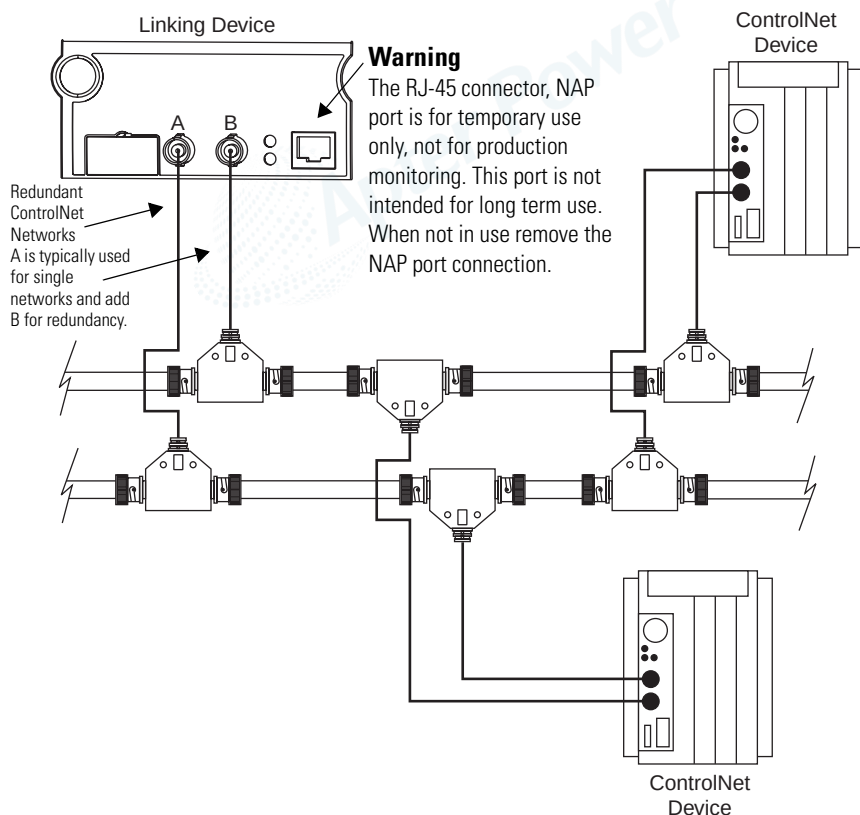
Using the RJ-45:

- The RJ-45 connector is a network access port (NAP).
- This port is provided for configuration and development use only and it is not intended for long term use.
- Maximum length of the cable connecting the NAP to the CN2FF is limited to 30m.
- When not in use remove the NAP port connection.

IMPORTANT

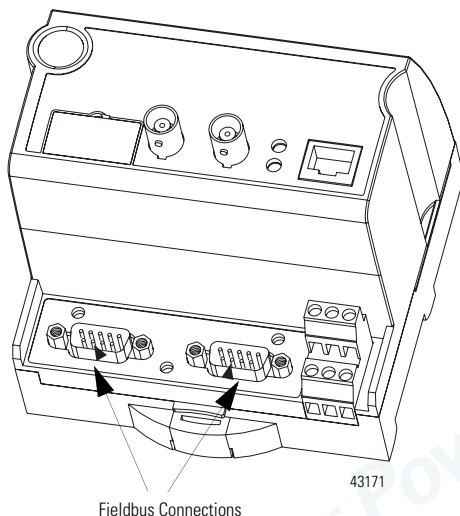
Do not connect the 1788-CN2FF to more than one ControlNet network at a time. Attempting to connect to a second network will cause the CN2FF to operate erratically.

Figure 5 Typical 1788-CN2FF Connections to a Redundant ControlNet Network



Connecting to the Fieldbus Network

Figure 9 Fieldbus Connector Locations on the 1788-CN2FF

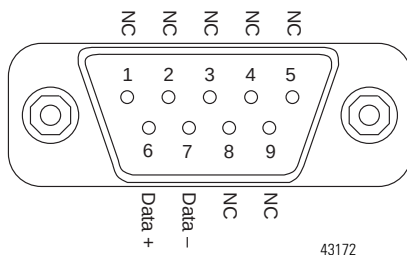


Use pins 6 and 7 for the Fieldbus signals, as specified in the *Fieldbus Standard for Use in Industrial Control Systems, Part 2, ISA-S50.02.1992*. Refer to Figure 10 for the connector pinout of the 1788-CN2FF.

IMPORTANT

Make sure that the power to the network is **off** when connecting the module.

Figure 10 Fieldbus Connector Pinout for the 1788-CN2FF



Specifications

Type	Specifications
Operating Temperature	0 to 60°C (32 to 140°F) IEC 60068-2-1 (Test Ad, Operating Cold), IEC 60068-2-2 (Test Bd, Operating Dry Heat), IEC 60068-2-14 (Test Nb, Operating Thermal Shock)
Storage Temperature	−40 to 85°C (−40 to 185°F) IEC 60068-2-1 (Test Ab, Un-packaged Non-operating Cold), IEC 60068-2-2 (Test Bb, Un-packaged Non-operating Dry Heat), IEC 60068-2-14 (Test Na, Un-packaged Non-operating Thermal Shock)
Relative Humidity	5 to 95% non-condensing IEC 60068-2-30 (Test Db, Un-packaged Non-operating Damp Heat)
Vibration	IEC60068-2-6 (Test Fc, Operating): 2g @ 10-500Hz
Physical Dimensions	4.375 in. x 4.375 in x 4.5 in - ControlNet connectors are on top of the unit - Allow 1.5 inches for the connectors.
Shock	IEC60068-2-27 (Test Ea, Unpackaged shock): Operating 30g Non-operating 50g
Emissions	CISPR 11: Group 1, Class A
ESD Immunity	IEC 61000-4-2: 4kV contact discharges 8kV air discharges
Radiated RF Immunity	IEC 61000-4-3: 10V/m with 1kHz sine-wave 80%AM from 30MHz to 1000MHz 10V/m with 200Hz 50% Pulse 100%AM at 900Mhz
EFT/B Immunity	IEC 61000-4-4: ±2kV at 5kHz on signal ports
Surge Transient Immunity	IEC 61000-4-5: ±1kV line-line(DM) and ±2kV line-earth(CM) on signal ports
Conducted RF Immunity	IEC 61000-4-6: 10Vrms with 1kHz sine-wave 80%AM from 150kHz to 80MHz
Magnetic Field Immunity	IEC 61000-4-8: 30A/m at 50Hz
Enclosure Type Rating	None (open-style)
Communication	- ControlNet - redundant media - NAP, network access port - FOUNDATION Fieldbus H1, 2 independent channels - LAS on both channels - Time Master on both channels
Mounting	35 mm DIN rail
Power Requirements	Class 2 power supply 24V dc 15-30V dc 270 mA @ 24V dc (typical)

Type		Specifications
Indicators		- Module Status - ControlNet Status, 1 each connection
Connectors		- ControlNet - BNC connectors, provides redundancy - two 10-position rotary switches - Network Access Port - RJ45 (non-isolated) - Fieldbus - 9-pin sub-D connectors - Power Input Terminals: -Torque 5-7 in-lb. -Not to be used with combination of solid and stranded 16 GA wire
Conductors	Wire Size	#22 AWG (0.355 SQmm) Copper Stranded wire to #14 AWG (2.08 SQmm) Copper Stranded wire 60° C minimum 2 ^{(1) (2)}
	Category	
Certifications (when product is marked)		c-UL-us UL Listed Industrial Control Equipment, certified for US and Canada FCC North American EMI Verification Part 15-Class A-ICES003 C-Tick ⁽³⁾ Australian EMC Compliance AS/NZS CISPR 11; Industrial Emissions CE ⁽³⁾ European Union 89/336/EEC EMC Directive, compliant with: EN 61000-6-4; Industrial Emissions EN 50082-2; Industrial Immunity EN 61326; Meas./Control/Lab., Industrial Requirements EN 61000-6-2; Industrial Immunity

⁽¹⁾ Use this Conductor Category information for planning conductor routing. Refer to Publication 1770-4.1, "Industrial Automation Wiring and Grounding Guidelines".

⁽²⁾ Appropriate shielded cable is *required* for Electromagnetic compatibility (EMC) standards.

⁽³⁾ See the Product Certification link at www.ab.com for Declarations of Conformity, Certificates, and other certification details.

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