

Product Compatibility

The 1771-ACN15 and 1771-ACNR15 adapter modules are two of many hardware components that make up a programmable controller system. The table below lists the hardware components and products with which you can use the adapter module.

Compatible Hardware Products

Product name	Description	Catalog number
Processors	PLC-5/20C15, PLC-5/40C15 and PLC-5/80C15 processors	1785-L20C15, 1785-L40C15, L80C15
Communication Devices	ControlNet KTCx Communication Card ControlNet Serial/Parallel Communication Interface Flex I/O ControlNet Adapter 1771 ControlNet Adapter Module	1784-KTC15x 1770-KFC 1794-ACN15, ACNR15 1771-ACN15, -ACNR15
Universal I/O Chassis	4-slot 8-slot 12-slot 16-slot	1771-A1, -A1B 1771-A2, -A2B 1771-A3B, A3B1 1771-A4, -A4B
I/O Modules	Block transfer modules 8-point I/O Standard density I/O modules 16-point I/O High density I/O modules 32-point I/O Quad-Density I/O modules	All modules that use the 1771 I/O structure
Power Supplies	System power supply Auxiliary power Supply Auxiliary Power Supply module (120V ac input, 3A) Auxiliary Power Supply module (120V ac input, 8A) Redundant Power Supply module Auxiliary Power Supply module (24V dc input, 8A) Auxiliary Power Supply module (220/240V ac input, 8A) Auxiliary Power Supply module (120/220V ac input, 16A) PLC-2 Power Supply (115V ac input) PLC-2 Power Supply (24V dc input) Local Power Supply Auxiliary Power Supply (24V dc input)	1771-P1 1771-P2 1771-P3 1771-P4, -P4S, -P4S1 1771-P4R 1771-P5 1771-P6S, -P6S1 1771-PS7 1772-P1 1772-P4 1774-P1 1777-P4

Introducing the ControlNet Adapter Module

Chapter Objectives

This chapter describes the ControlNet adapter modules' (cat. no. 1771-ACN15 and -ACNR15):

- features
- hardware components, including
 - diagnostic indicators
 - communication reset pushbutton
 - network access port (NAP)
 - ControlNet connectors
 - network address switch assemblies

Module Description and Features

The 1771-ACN15 and -ACNR15 adapters control 1771 remote I/O on the ControlNet network. The ControlNet network is a communication architecture that allows the exchange of messages between Allen-Bradley products and certified third-party products.

The 1771-ACN15 and -ACNR15 Adapters features include:

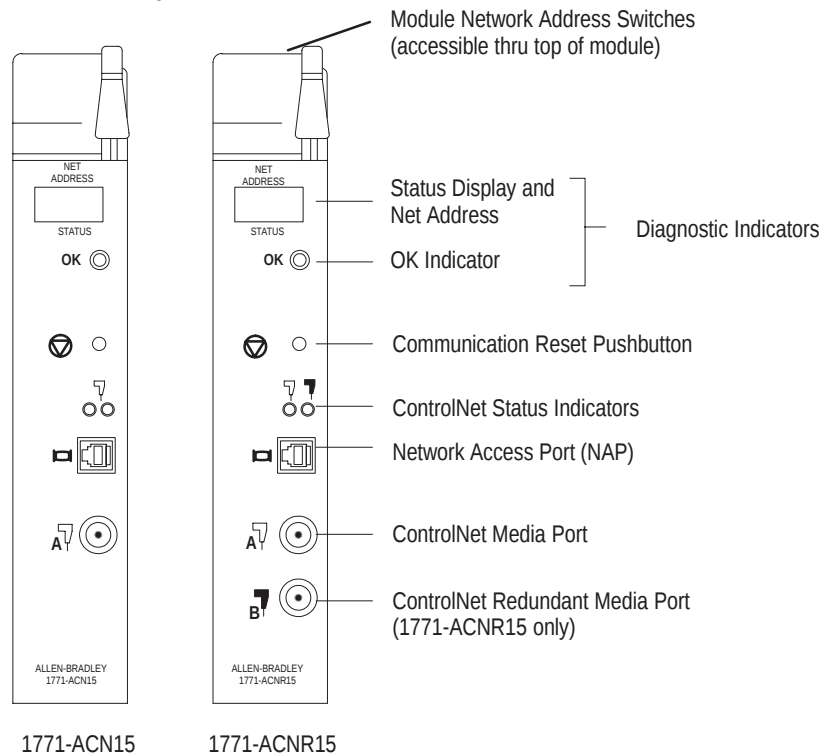
- high speed data transfer
- diagnostic messages
- local communication network access through the network access port (NAP)
- redundant media (1771-ACNR15 only)

Hardware Components

The adapter module consists of the following major components:

- ControlNet status indicators
- status display
- communication reset pushbutton
- network access port (NAP)
- ControlNet connectors (one on the 1771-ACN15; two on the 1771-ACNR15)
- module net address switch assemblies (on top of module)

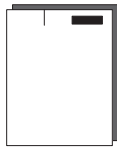
Figure 1.1
ControlNet Adapter Module



Diagnostic Indicators

The OK indicator is located on the front panel of the adapter module (Figure 1.1). It shows both normal operation and error conditions in your remote I/O system.

In addition, an alphanumeric display (net address/status) provides status code indications when an error occurs during initialization or operation.



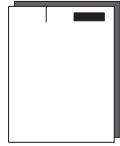
A complete description of the diagnostic indicators and status display and how to use them for troubleshooting is explained in chapter 5.

Communication Reset Pushbutton

This pushbutton is active whenever the status display shows RSET or PRL. PRL is active only when the I/O chassis backplane switch is in the PRL position. If the above conditions are met, you can use the reset pushbutton (Figure 1.1) to reset the adapter module and resume communication after a communication error occurs.

Network Access Port (NAP)

The network access port (Figure 1.1) provides a bidirectional electrical interface for programming, maintenance, and I/O

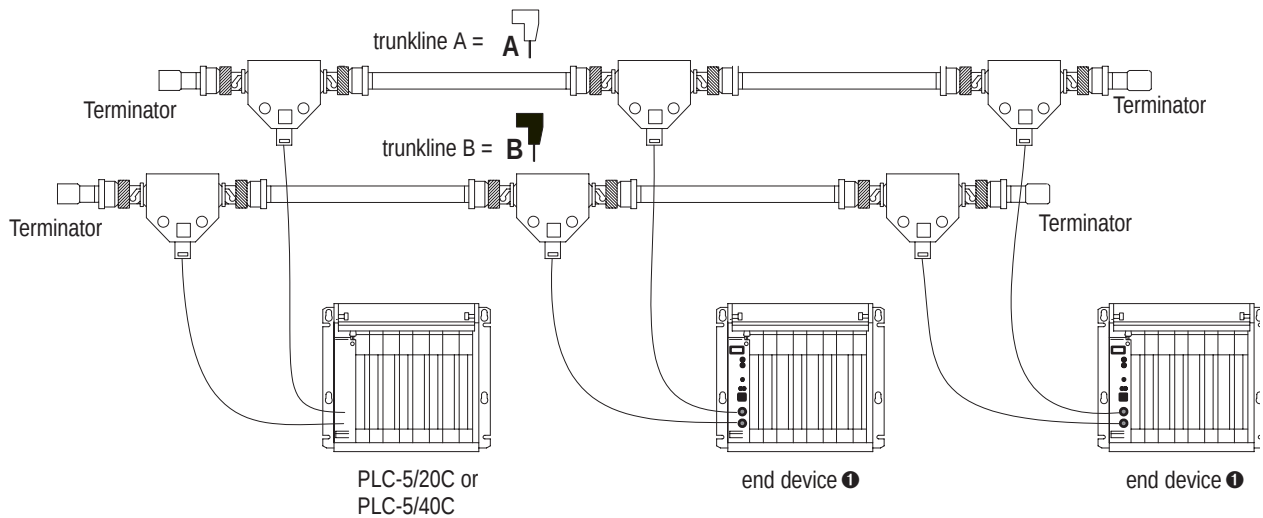


monitoring devices in both redundant and non-redundant connections. Connecting programming terminals to the network using the NAP is described in Chapter 2.

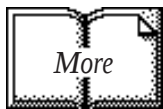
ControlNet Connectors

Cable connection to the module is through standard BNC connectors on the module frontplate.

Example of a Redundant System



① End device supporting redundant cabling is a 1771-ACNR15.



Refer to the ControlNet Cable System Planning and Installation user manual, pub. no. 1786-6.2.1 for more information.



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

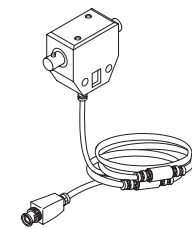
5. Snap the chassis locking bar (or locking latch on earlier chassis) over the top of the module to secure it. Make sure the locking pins on the locking bar are fully engaged.

Note: The chassis locking bar will not close if all modules are not properly seated.

Connecting Your Adapter to the ControlNet Network

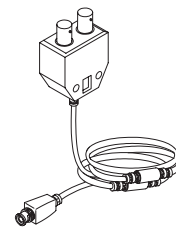
You connect your 1771-ACN15 or -ACNR15 adapter module to a ControlNet network via taps. These taps are available:

Straight T-tap



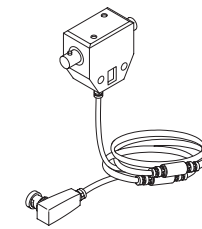
1786-TPS

Straight Y-tap



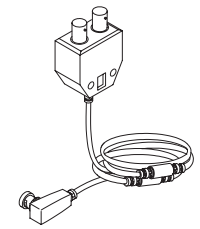
1786-TPYS

Right-angle T-tap



1786-TPR

Right-angle Y-tap



1786-TPYR

Important: Taps contain passive electronics and must be purchased from Allen-Bradley for the network to function properly.

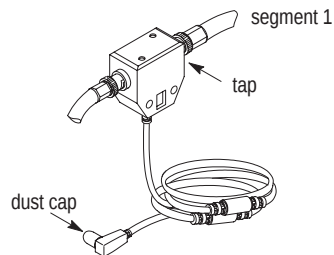
1. Remove the tap's dust cap (located on the straight or right angle connector).

If your node supports:	Connect the tap's straight or right angle connector:
Non-redundant media	to the channel A connector on the 1771-ACN15 or 1771-ACNR15 (channel B on the 1771-ACNR15 is not used)①
Redundant media	• from trunkline A to channel A on the 1771-ACNR15 • from trunkline B to channel B on the 1771-ACNR15

① While both channels are active, Allen-Bradley recommends using channel A for non-redundant media.



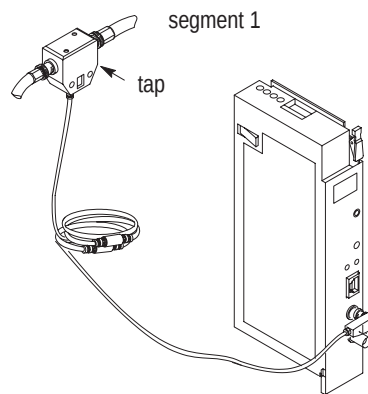
ATTENTION: Do not allow any metal portions of the tap to contact any conductive material. If you disconnect the tap from the adapter, place the dust cap back on the straight or right angle connector to prevent the connector from accidentally contacting a metallic grounded surface.



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2. Remove and discard the dust caps from the adapter BNC jacks.

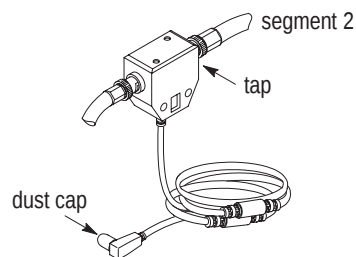
3. Connect this tap's straight or right angle connector to the **A** BNC connector on the adapter.



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

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4. For redundant adapters (1771-ACNR15), remove (and save) the dust cap located on the straight or right angle connector of the designated tap on the second segment (segment 2).



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Planning to Use Your ControlNet Adapter Module

Chapter Objectives

This chapter explains how the adapter operates on ControlNet and provides information to assist in configuring your system. This includes:

- overview of adapter operation
- discrete I/O data transfer
- configuring discrete I/O data transfers
- nondiscrete I/O data transfers
- using ControlNet I/O (CIO) instructions
- mapping directly into processor memory, including examples of nondiscrete input module and output module communication
- configuring nondiscrete I/O data transfers

Overview of Adapter Operation

The controlling processor (network address 01) on ControlNet contains an I/O map table. This map table stores the information necessary for communications to be established. Each map table entry corresponds to 1 transfer of data between the processor and an I/O rack, or between the processor and another ControlNet processor. The information in each map table is used to open a logical “connection” between 2 devices.

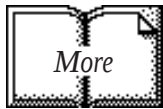
Connections are established between the processor and each adapter to exchange input and output data on the network. Status information is transferred along with the I/O data and is stored in a separate status file in the specified processor. Refer to the *ControlNet PLC-5 Programmable Controller (Phase 1.5) User Manual*, publication 1784-6.5.22, for more on status information available.

Important: The processor compares the specified module type (in the map table) with the device with which communication is being attempted. Therefore, when changing from a 1771-ACN15 to a 1771-ACNR15, or vice versa, you must specify the new module type in the map table.

Configuring Nondiscrete I/O Data Transfers

The following are important factors to consider when planning and configuring nondiscrete I/O modules:

- You can communicate with nondiscrete I/O modules anywhere in the rack, including slots that are not mapped into the discrete I/O image files. Note that nondiscrete I/O modules can be placed so no I/O image space is used.
For example, in an 8-slot chassis with 1-slot addressing, you can place discrete modules in the first 4 slots and only map 4 words of I/O image table. You could then place nondiscrete modules in the last 4 slots without using more I/O image space.
- Slots in the adapter are physically referenced starting at 0 and continuing by 1 up to a maximum of 15 (depending on the size of your chassis) regardless of the addressing mode (2, 1, or 1/2) used within the chassis.
- The explicit ControlNet I/O transfer instruction (CIO) can also be included in your ladder logic program to communicate with nondiscrete I/O modules.
- One or more connections are required per module, depending on the type of module. A separate connection is used for a read or write.
- Modules accommodated by the processor's nondiscrete I/O data transfer mechanism are typically those that require a one-time configuration and are continuously read from or written to.



Refer to the *ControlNet PLC-5 Programmable Controller (Phase 1.5) User Manual*, publication 1784-6.5.22, for more information on supported nondiscrete I/O modules.

Configuring Your ControlNet System

Use the following software packages to configure your ControlNet system.

Use	To
RSNetworkx	define network parameters, such as: • network update time • media redundancy • physical media configuration • maximum scheduled nodes • maximum unscheduled nodes
RSLogix5	enter channel 2 ControlNet configuration

Chapter Summary

In this chapter, you learned about adapter operation, discrete I/O data transfer, configuring discrete I/O data transfer, nondiscrete I/O data transfer, and configuring nondiscrete I/O data transfer. In addition, you learned some important factors about nondiscrete I/O data transfers.