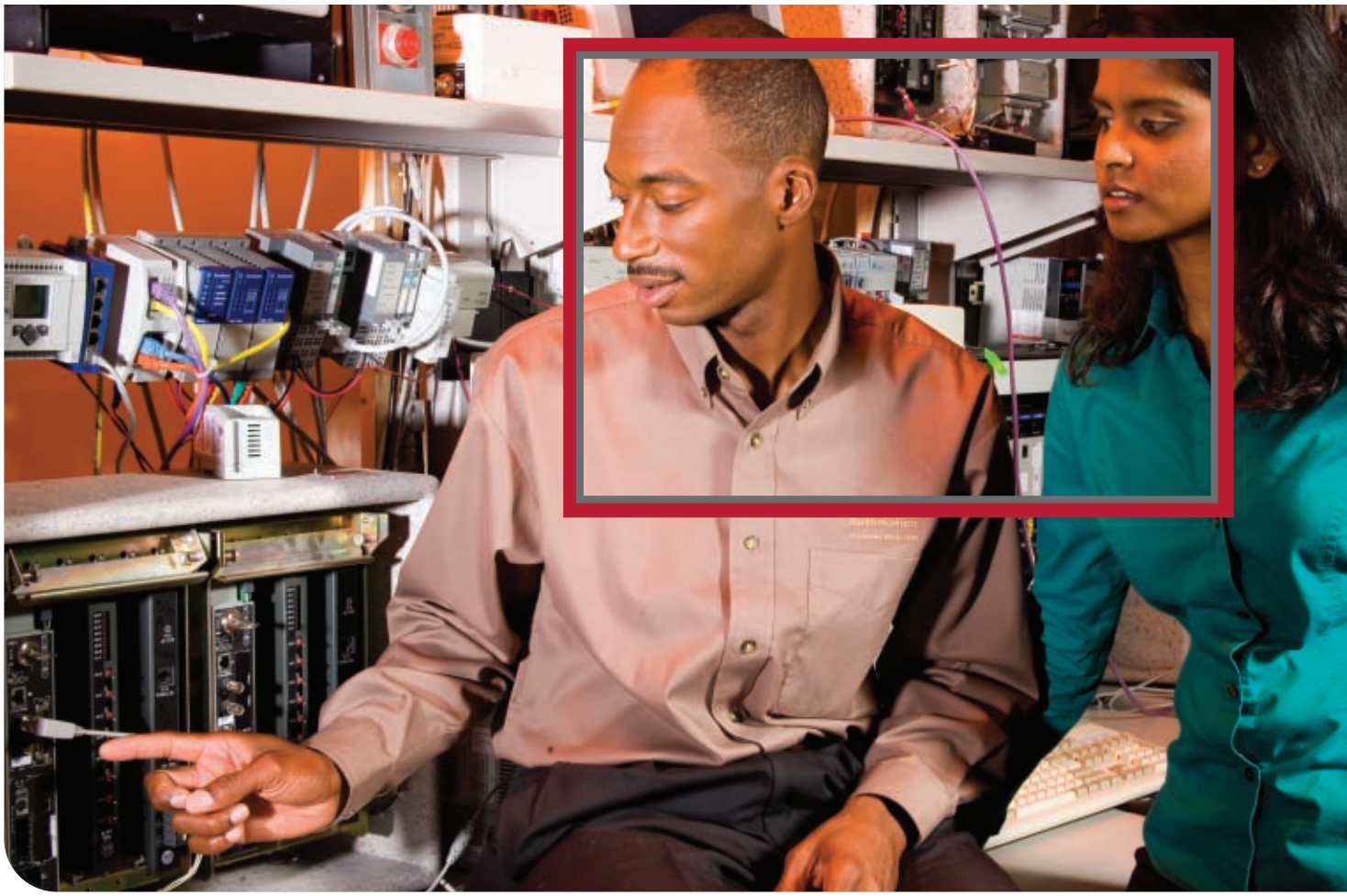
LISTEN.
THINK.
SOLVE.℠



PLC-5 PROGRAMMABLE CONTROLLERS

SELECTION GUIDE 1785 and 1771

ALLEN-BRADLEY • ROCKWELL SOFTWARE • DODGE • RELIANCE ELECTRIC

Rockwell Automation

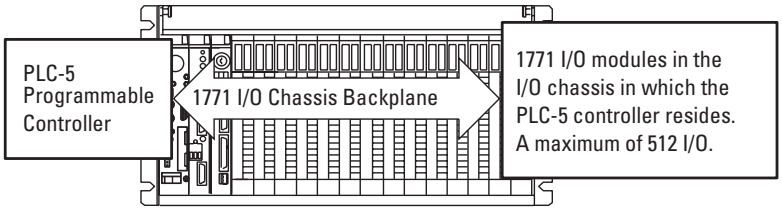
PLC-5 Programmable Controllers Comparison

Category	Controller	Catalog Number	User Memory Words, Max	Total I/O, Max	Number of Communication Ports (mode)
Standard	PLC-5/11	1785-L11B	8000	512	1 DH+ or Remote I/O (Adapter or Scan)
	PLC-5/20	1785-L20B	16,000	512	1 DH+ and 1 DH+ or Remote I/O (Adapter or Scan)
	PLC-5/30	1785-L30B	32,000	1024	2 DH+ or Remote I/O (Adapter or Scan)
	PLC-5/40	1785-L40B	48,000	2048	4 DH+ or Remote I/O (Adapter or Scan)
	PLC-5/40L	1785-L40L	48,000	2048	2 DH+ or Remote I/O (Adapter or Scan) and 1 Extended Local I/O
	PLC-5/60	1785-L60B	64,000	3072	4 DH+ or Remote I/O (Adapter or Scan)
	PLC-5/60L	1785-L60L	64,000	3072	2 DH+ or Remote I/O (Adapter or Scan) and 1 Extended Local I/O
	PLC-5/80	1785-L80B	100,000	3072	4 DH+ or Remote I/O (Adapter or Scan)
Standard with Protected Memory	PLC-5/26	1785-L26B	16,000	512	1 DH+ and 1 DH+ or Remote I/O (Adapter or Scan)
	PLC-5/46	1785-L46B	48,000	2048	4 DH+ or Remote I/O (Adapter or Scan)
	PLC-5/86	1785-L86B	100,000	3072	4 DH+ or Remote I/O (Adapter or Scan)
ControlNet	PLC-5/20C	1785-L20C15	16,000	512	1 ControlNet (Dual Media) and 1 DH+
	PLC-5/40C	1785-L40C15	48,000	2048	1 ControlNet (Dual Media) and 2 DH+ or Remote I/O (Adapter or Scan)
	PLC-5/80C	1785-L80C15	100,000	3072	1 ControlNet (Dual Media) and 2 DH+ or Remote I/O (Adapter or Scan)
ControlNet with Protected Memory	PLC-5/46C	1785-L46C15	48,000	2048	1 ControlNet (Dual Media) and 2 DH+ or Remote I/O (Adapter or Scan)
Ethernet	PLC-5/20E	1785-L20E	16,000	512	1 Ethernet, 1 DH+ and 1 DH+ or Remote I/O (Adapter or Scan)
	PLC-5/40E	1785-L40E	48,000	2048	1 Ethernet, 2 DH+ or Remote I/O (Adapter or Scan)
	PLC-5/80E	1785-L80E	100,000	3072	1 Ethernet, 2 DH+ or Remote I/O (Adapter or Scan)

PLC-5 System Overview

A PLC-5/1771 control system, at minimum, consists of a programmable controller and I/O modules in a single 1771 chassis with a power supply. You choose the controller with the on-board communication ports you need.

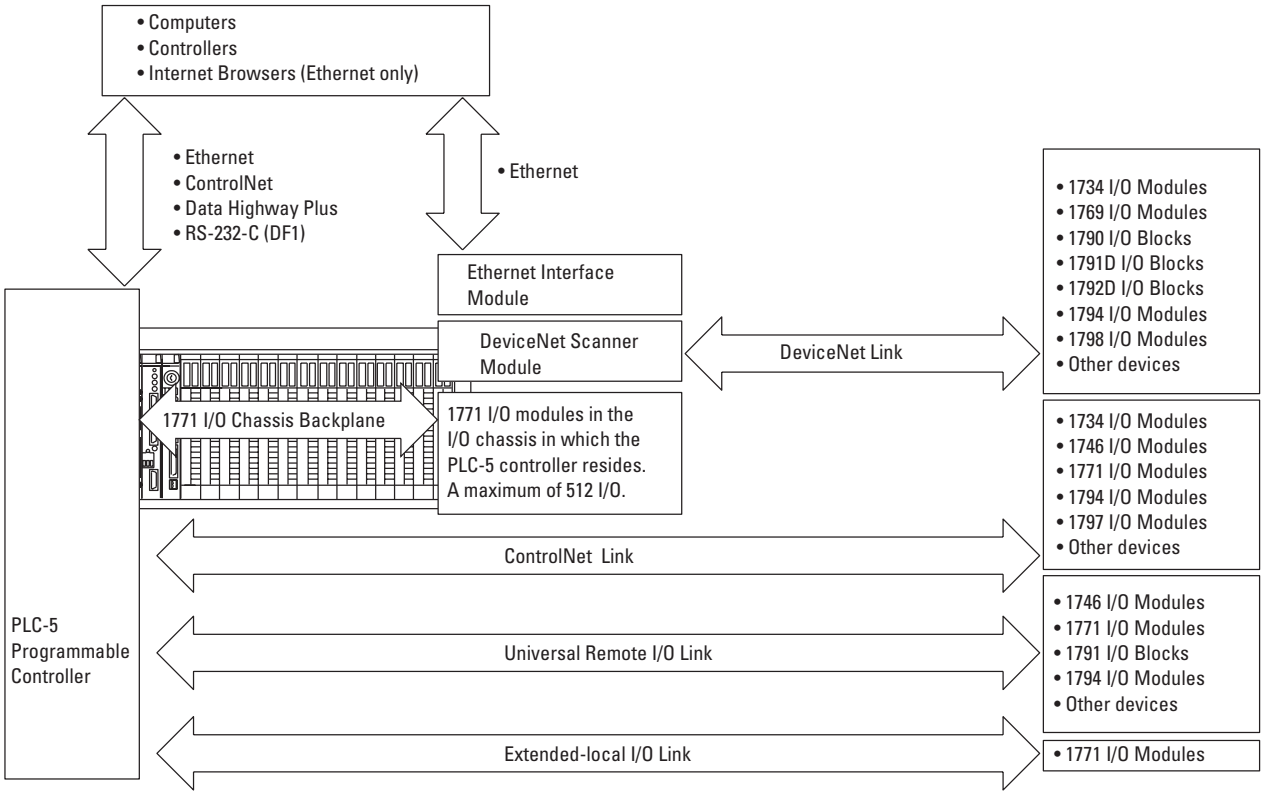
A simple system can consist of only a standalone controller and I/O modules all in a single chassis



On-board remote I/O scanner ports are available on all PLC-5 controllers. On-board extended-local I/O scanner ports are available on some PLC-5 controllers. On-board ControlNet ports are available on some PLC-5 controllers. To provide a DeviceNet I/O scanner port to the system, you must add a 1771-SDN DeviceNet Scanner Module.

In the typical configuration illustration, a ControlNet port on the controller interfaces the processor to the ControlNet link. In each of the two chassis remote from the controller, a 1771-ACN15 I/O Adapter Module provides I/O modules in those chassis with an interface to the ControlNet link. In this configuration, the PLC-5 controller monitors/controls the I/O in its local I/O chassis as well as the I/O in the remote locations.

Multiple controllers can communicate across networks; and I/O in multiple platforms can be distributed in many locations connected over multiple I/O links



Plug a 1771 power supply module into an I/O module slot, or connect a standalone 1771 power supply into the left end of each chassis.

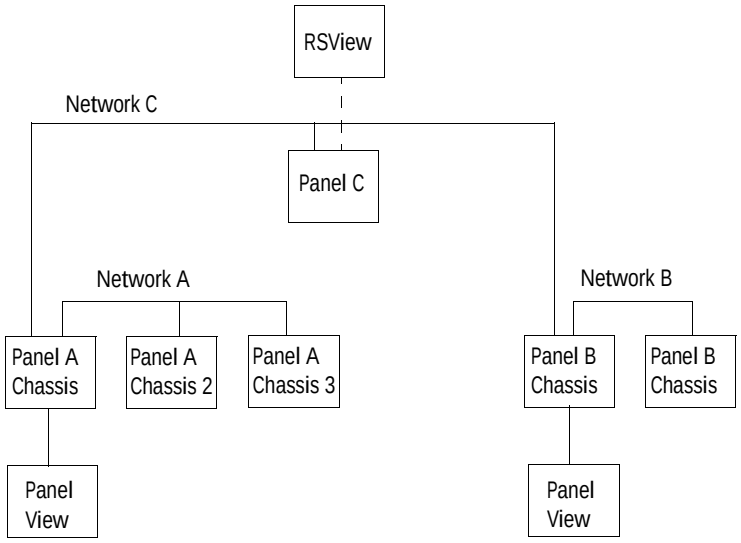
Depending on the communication ports available on your particular PLC control system, you can select operator interfaces that are compatible with those particular ports.

Lay Out the System

Lay out the system by determining the network configuration and the placement of components in each location. Decide at this time whether each location will have its own controller.

Place each controller's I/O on an isolated network to maximize the performance and to more easily accommodate future network or system configuration changes. If you plan to share I/O, make sure the I/O is on a network that each controller can access.

Assume that Network A and Network B both require a controller and its I/O. Both controllers interact with time-critical information.



For a PLC-5 controller to control I/O modules, both the controller and the I/O modules must be directly attached to the same network.

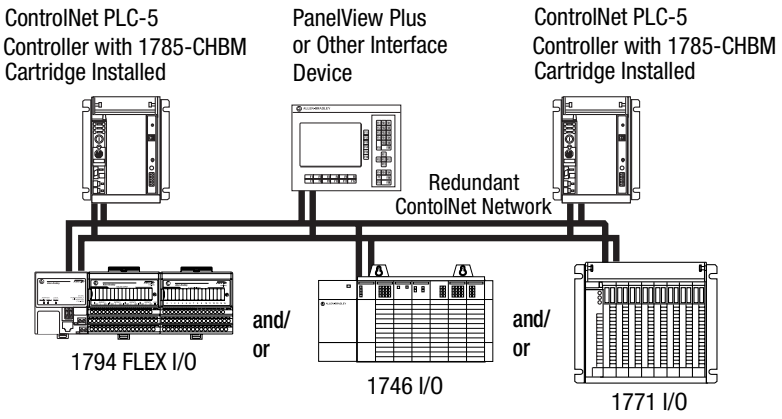
I/O Location	Controller in Panel A, Chassis 1	Controller in Panel B, Chassis 1
Panel A, chassis 1	Yes	Yes
Panel A, chassis 2	Yes	No
Panel A, chassis 3	Yes	No
Panel B, chassis 1	Yes	Yes
Panel B, chassis 2	No	Yes
Panel C, chassis 1	Yes	Yes

Evaluate what communications need to occur between controllers. If there is sporadic information that is not time-critical, use a message-based network such as an EtherNet/IP (the information portion), Data Highway Plus, or the unscheduled portion of the ControlNet network. If the information is time-critical, such as producer/consumer tags between controllers, use the ControlNet or EtherNet/IP network.

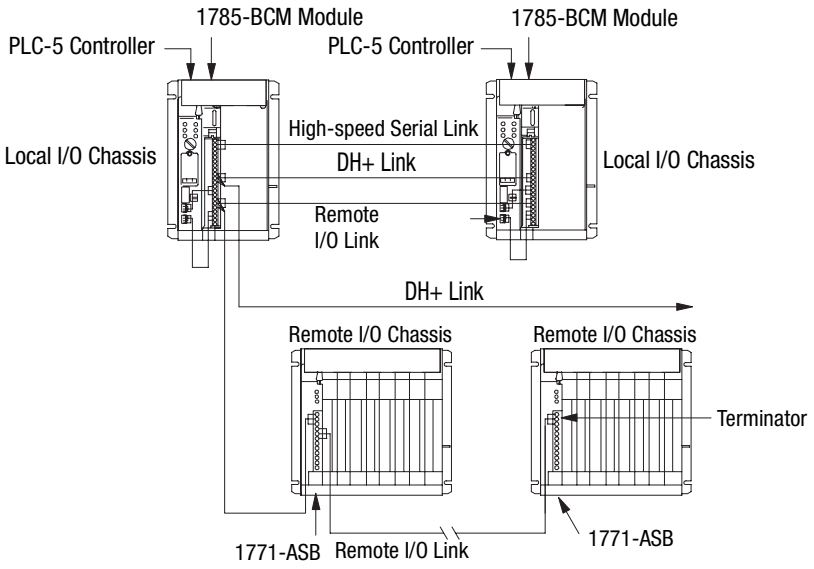
Apply Backup Solutions

The ControlNet Hot Backup Module, 1785-CHBM, provides backup of ControlNet I/O. A secondary controller qualifies critical-control information with the primary controller. Both controllers consume information from inputs and connect to outputs, but only the primary controller controls the outputs. The secondary controller establishes control of outputs if the primary controller shuts down.

For more information, see page 23.



The PLC-5 Backup Communication Module, 1785-BCM, helps increase the fault tolerance of PLC-5 programmable controller systems controlling I/O on a remote I/O link by providing backup of the PLC-5 programmable controller.



Cat. No.	Connections	Customer Relay	Design Considerations	Power Dissipation	Backplane Current Load
1785-BCM	1771-WG wiring arm (included)	0.25 A @ 24V dc (resistive)	Place in local I/O chassis	10 W max	1 A

Use the following checklist as a guide to completing your own system specification. The inside of the back cover of this selection guide is a worksheet you can use to record your selections.

✓	Step	For more information, see
☐	**1 Select I/O Modules** Select I/O based on: • type of information to send/receive. • application requirements. • electrical requirements.	1771 I/O Modules ... page 8 1746 I/O Modules ... page 13 1794 I/O Modules ... page 14 1797 I/O Modules ... page 15 1791D I/O Modules ... page 16 1734 I/O Modules ... page 17
☐	**2 Select Network Communications** Select Networks based on: • type of information to send/receive. • system performance. • distance/size of application. • available networks. • future expansion.	NetLinx Architecture ... page 19 Select a Network ... page 20 EtherNet/IP Protocol ... page 21 ControlNet ... page 23 DeviceNet ... page 25 Serial Network ... page 26 Data Highway Plus ... page 29 Remote I/O ... page 30
☐	**3 Select Controllers** Select a controller based on: • I/O requirements. • memory requirements. • communication requirements.	Enhanced Controllers ... page 32 Ethernet Controllers ... page 33 ControlNet Controllers ... page 34 Protected Controllers ... page 35 Backing Up Memory ... page 36 Battery Replacement ... page 36
☐	**4 Select Chassis** Select a chassis based on: • the number of slots you need.	1771 Chassis ... page 37 Mounting Dimensions ... page 38
☐	**5 Select Power Supplies** Select a power supply based on: • input voltage. • output current. • number of slots required.	1771 Power Supplies ... page 39 Power Requirements and Transformer Sizing ... page 40
☐	**7 Select Software** Select software based on: • computer platform. • operating environment. • programming language.	Select Software ... page 43 Programming Software ... page 44 RSLinx Software ... page 45 Network Configuration Software ... page 46 RSLogix Emulate 5 Software ... page 47 PLC-5 and Training Software ... page 48 ViewAnyWare Products ... page 50