Procedures

1.	Check the contents of the shipping box.	Reference

Unpack the module making sure that the contents include:

- Direct Communication Module (Catalog Number 1747-DCM)
- removable connector (factory-installed on module)
- cable tie
- user manual (Catalog Number 1747-NM007)

If the contents are incomplete, call your local Allen-Bradley representative for assistance.

2.	Select a scanner.	Reference

To begin configuration of your RIO system, you should know three things:

- which scanner is compatible with your PLC/SLC controller. Use the table below to select a scanner that is compatible with your processor. The DCM is compatible with all RIO scanners.

The manual for the scanner you select

Catalog Number	Description
1747-SN①	SLC Remote I/O Scanner
1771-SN②	Sub I/O scanner for Mini–PLC-2® and PLC-5 families
1772-SD, -SD2③④	Remote scanner/distribution panel for PLC-2 family
1775-S4A, -S4B, -S5①	I/O scanner-programmer interface module for PLC-3® family
1775-SR, -SR5①	Remote scanner/distribution panel for PLC-3/10 family
1785-L11B①	PLC 5/11™ (in scanner mode)
1785-LT/x①⑤	PLC 5/15 (in scanner mode)
1785-L20B①	PLC 5/20™ (in scanner mode)
1785-LT2①⑤	PLC 5/25 (in scanner mode)
1785-L30x①	PLC 5/30™ (in scanner mode)
1785-L40x①	PLC 5/40™ (in scanner mode)
1785-L60x①	PLC 5/60™ (in scanner mode)
5250-RS①	Remote scanner for PLC 5/250
6008-SI①	IBM® PC I/O Scanner Module
6008-SV①	VMEbus I/O Scanner Module
6008-SQH1, -SQH2	Q-bus I/O Scanner Module

① *Extended node capability.*

② *Revision D or later.*

③ *Rev. 3 or later.*

④ *Extended node capability not available with Series A.*

⑤ *Rev. 3 or later.PLC 5/15 Series B Revision H or later have partial rack addressing. Earlier versions are limited to 3 devices. PLC 5/25 Series A Revision D or later have partial rack addressing. Earlier versions are limited to 7 devices.*

- the maximum number of physical devices and logical racks your scanner supports.
- the logical rack size of each DCM. This depends on how many I/O data words you need to transfer. The first word is always the status word. The table below shows the number of data words transferred relative to the rack size.

If you configure the DCM as:	Then:	Including the Status Word
1/4 Rack	1 data word (16 bits of I/O data) are transferred.	Total transfer = 2 words
1/2 Rack	3 data words (48 bits of I/O data) are transferred.	Total transfer = 4 words
3/4 Rack	5 data words (80 bits of I/O data) are transferred.	Total transfer = 6 words
Full Rack	7 data words (112 bits of I/O data) are transferred.	Total transfer = 8 words

3. Choose the type of slot addressing you will use.

Reference

Select DCM addressing. (A configuration worksheet is included in appendix B to assist you in DCM image table addressing.)

Chapter 3 *(Addressing)*
Appendix B *(DCM Worksheet)*

4. Configure the module using the DIP switches.

Reference

Configure your system by setting the DIP switches.

Chapter 4 *(Module Configuration)*

5. Insert the 1747-DCM module into the chassis.

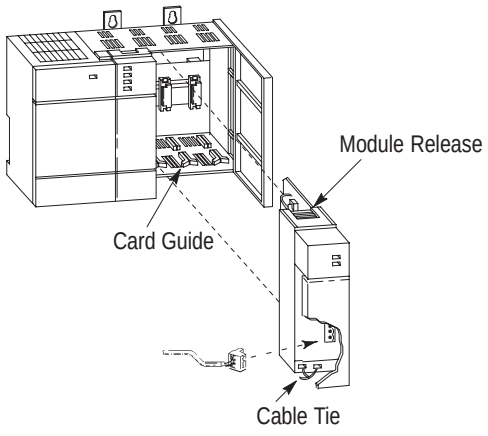
Reference

> **ATTENTION:** Never install, remove, or wire modules with power applied to the chassis or devices wired to the module.

Chapter 5 *(Installation and Wiring)*

Review SLC/DCM power requirements to ensure your SLC power supply has adequate reserve power.

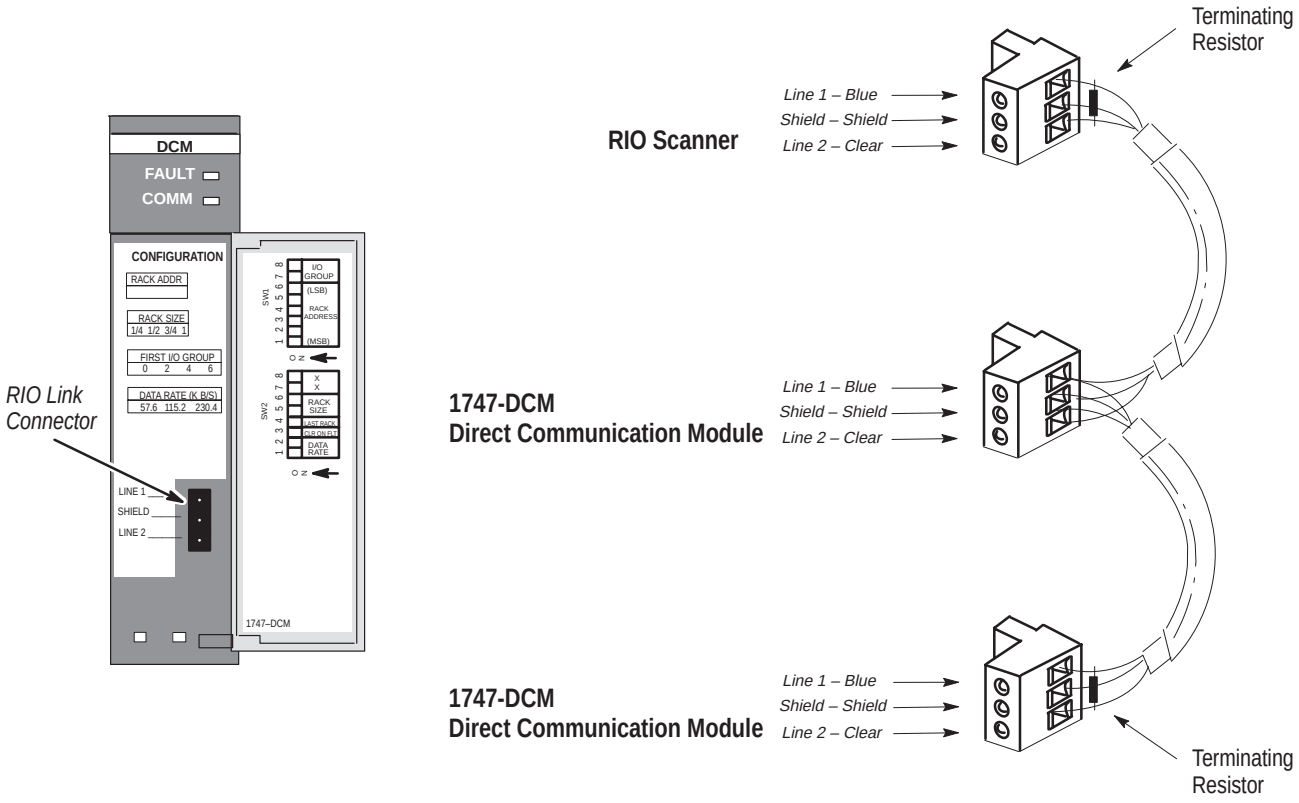
Make sure system power is off; then insert the DCM into your 1746 chassis. In this example procedure, local slot 1 is selected.



Network Wiring

A 1/2 watt terminating resistor must be attached across line 1 and line 2 of the connectors at each end (scanner and last physical device) of the network. The size of the resistor depends upon the baud rate and extended node capability, as shown below:

Baud Rate		Terminating Resistor Size	Maximum Cable Distance (Belden 9463)
Using Extended Node Capability	All Baud Rates	82Ω 1/2 Watt	10,000 feet at 57.6K baud
			5,000 feet at 115.2K baud
			2,500 feet at 230.4K baud
Not Using Extended Node Capability	57.6K baud	150Ω 1/2 Watt	3048 meters (10,000 feet)
	115.2K baud	150Ω 1/2 Watt	1524 meters (5,000 feet)
	230.4K baud	82Ω 1/2 Watt	762 meters (2,500 feet)



Chapter 8

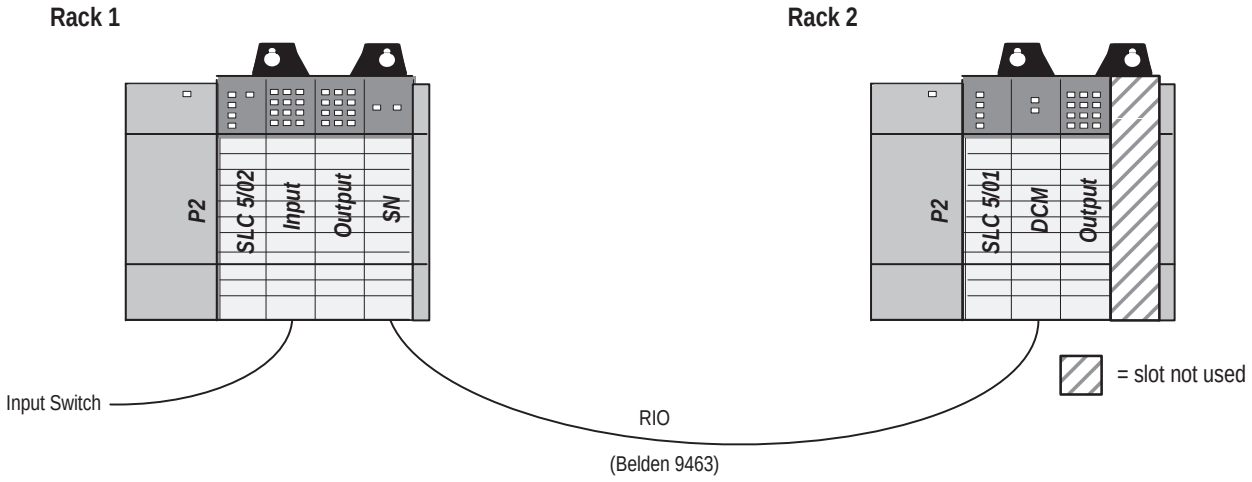
Application Examples

This chapter provides and examines two applications of the DCM.

- basic example
- supplementary example

Basic Example

In the following application, the 1747-DCM in the remote rack 2 will monitor the 1747-SN data from the local rack 1. The program examples in both local and remote rack CPUs consist of 1 rung each. When input I:1/0 is enabled in the local rack, the output O:3.1/0 condition is transferred to the 1747-DCM input image via the 1747-SN output image. This condition enables O:2/0 in the remote rack output card.



1747-SN Module Configuration[1]

Baud Rate = 57.6K baud

G-file Size = 3 words

G-File

	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0	
Word 0	Reserved																
Word 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	**= Starting Address 0**
Word 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	**= 1/4 Rack Size**

[1] *See SN manual for further details on configuration.*

DCM configuration:

Rack Address = 1
I/O Group = 0
Baud Rate = 57.6K baud
Clear On Fault = no
Last Rack = no
Rack Size = 1/4

DIP Switch Settings

	Switch 1								Switch 2							
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
ON	X	X	X	X	X		X	X	X	X	X	X	X	X		
OFF						X										

= Not used

System Configuration for Rack 1

Amount	Device	Catalog Number
1	Power Supply	1746-P2
1	SLC 5/02 Processor	1747-L524
1	4-Slot Rack	1746-A4
1	AC Input, 16 Inputs	1746-IA16
1	Relay Output, 16 Outputs	1746-OW16
1	Scanner	1747-SN

System Configuration for Rack 2

Amount	Device	Catalog Number
1	Power Supply	1746-P2
1	SLC 5/01 Processor	1747-L511
1	4-Slot Rack	1746-A4
1	Relay Output, 16 Outputs	1746-OW16
1	DCM	1747-DCM

DIP Switch Settings

	Switch 1								Switch 2							
	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8
ON	X	X	X	X	X		X	X	X	X	X	X				
OFF						X							X	X		

= Not used

System Configuration

Amount	Device	Catalog Number
1	Power Supply	1746-P2
1	SLC 5/01 Processor	1747-L511
1	7-Slot Rack	1746-A7
2	Analog Input, 4 point	1746-NI4
2	Analog Output, 4 point	1746-NO4I
1	DCM	1747-DCM

Image Table Configuration

		Output Image															
		15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
DCM	O:1.0	Status Word to PLC-5 from SLC															
	O:1.1	Counter ACC word denotes module being read															
	O:1.2	Word 0 of analog module being read															
	O:1.3	Word 1 of analog module being read															
	O:1.4	Word 2 of analog module being read															
	O:1.5	Word 3 of analog module being read															
	O:1.6	Counter ACC word denotes module being read															
	O:1.7	Not used															
NO4I	O:4.0	NO4I word 0															
	O:4.1	NO4I word 1															
	O:4.2	NO4I word 2															
	O:4.3	NO4I word 3															
NO4I	O:5.0	NO4I word 0															
	O:5.1	NO4I word 1															
	O:5.2	NO4I word 2															
	O:5.3	NO4I word 3															