INTRODUCTION

CHAPTER
1

In This Chapter...

Manual Overview

The Purpose of this Manual

This manual is designed to help you install, connect to and setup your DL05/06 Data Communications Module (D0–DCM). This manual explains how to configure the module's communications parameters and defines the important memory locations reserved for the module. Application examples, wiring diagrams, module configuration and programming examples are provided.

Supplemental Manuals

Depending on which products you have purchased, there may be other manuals that are necessary or helpful for your application. These are some suggested manuals:

User Manuals

- PLC User Manuals (D0-USER-M, D0-06USER-M)

- ***Direct*SOFT Programming Software**

If you plan to use your D0-DCM module as an interface to HMI or PC Control software or to an Operator Interface panel, you may need to refer to the documentation for that product's specifications.

Technical Support

We strive to make our manuals the best in the industry and rely on your feedback in reaching our goal. If you cannot find the solution to your particular application, or, if for any reason you need additional technical assistance, please call us at

770–844–4200

Our technical support group will work with you to answer your questions. They are available Monday through Friday from 9:00 A.M. to 6:00 P.M. Eastern Time. We also encourage you to visit our web site where you can find technical and non-technical information about our products and our company.

http://www.automationdirect.com

Conventions Used

When the "notepad" icon is in the left–hand margin, the paragraph to its immediate right will be a special note.

The word **NOTE** in boldface will mark the beginning of the text.

When the "exclamation mark" icon is in the left–hand margin, the paragraph to its immediate right will be a warning. This information could prevent injury, loss of property, or even death (in extreme cases).

The word **WARNING** in boldface will mark the beginning of the text which will also be in boldface..

Key Topics for Each Chapter

The beginning of each chapter will list the key to that can be found in that chapter.

Getting Started

CHAPTER
1

In This Chapter...
General Information..1-2
Specifications...1-4
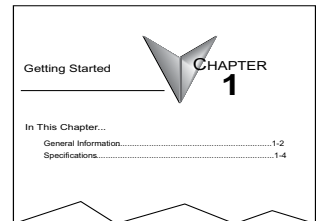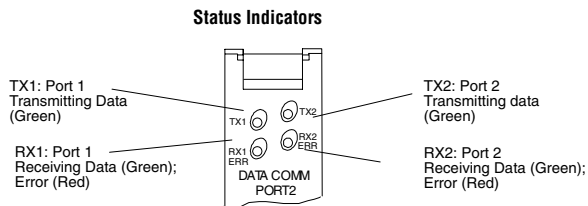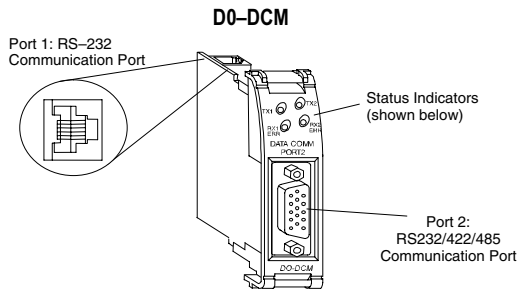
D0-DCM Overview

Important Configuration Information & PLC Firmware Requirements

The D0-DCM's communications port parameters are configured using either the **Direct**SOFT   PLC>Setup>D0-DCM setup dialog box or ladder logic programming for DirectSOFT32 users (no DIP switch settings). If port 1 and/or port 2 default parameters are acceptable for your application, no setup is required.

TIP: If you intend to use port 2 as a network master, you must configure the port. Chapter 3 discusses port 1 and port 2 default parameters, V-memory configuration registers and provides port configuration examples. See Chapter 2 for PLC firmware and **Direct**SOFT requirements.

Hardware Features

The following diagrams show the D0-DCM hardware features.

D0–DCM

Port 1: RS–232
Communication Port

Status Indicators
(shown below)

Port 2:
RS232/422/485
Communication Port

Status Indicators

TX1: Port 1
Transmitting Data
(Green)

TX2: Port 2
Transmitting data
(Green)

RX1: Port 1
Receiving Data (Green);
Error (Red)

RX2: Port 2
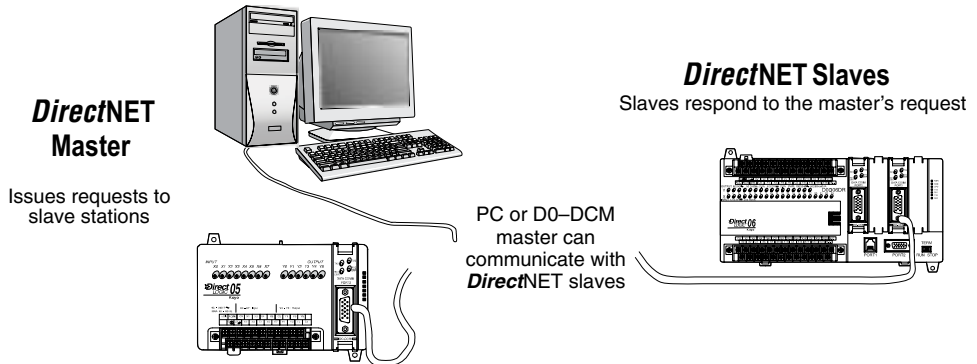Receiving Data (Green);
Error (Red)

Module Uses

The D0–DCM Data Communications Module is a general purpose communications interface that can be used in a DL05/06 PLC system. The module can occupy any option slot in the PLC. This module is primarily used as:

• an extra general purpose communications port to connect to a personal computer or operator interface

• a network master or slave station in a DirectNET network (port 2); port 1 functions as a DirectNET slave only

• a network master or slave station in a Modbus® RTU network (port 2); port 1 functions as a Modbus® RTU slave only

• a K–sequence slave (both ports)

DCM Application Examples

DirectNET Master or Slave

The D0-DCM can be used as a network interface for applications that require data to be shared between PLCs, or between PLCs and other devices such as PCs or operator interfaces. The D0-DCM can be configured as either a DirectNET master or slave station to share any type of system data including timer/counter values, V-memory data, control relay and I/O status, etc.

DirectNET Master

Issues requests to slave stations

PC or D0–DCM master can communicate with **Direct**NET slaves

DirectNET Slaves

Slaves respond to the master's request

Using a D0-DCM as a network Master

The D0–DCM can be used with a DL05 or DL06 PLC to serve as a network master. A master is the network station that initiates requests for data from other stations (slaves) on the network. This is accomplished by using RLL network instructions in the master's PLC program. These instructions utilize the DCM's port 2 to read or write blocks of data to slave stations on the same network. RX/WX and NETCFG/NETRX/NETWX are examples of network instructions used in the master PLC's program.

Possible Slaves

- DL05/DL06 CPU (either port)
- DL05/DL06 CPU w/D0-DCM
- D2-240, D2-250-1, D2-260, or D2-262 CPU (either port)
- D2-240, D2-250-1, D2-260, or D2-262 CPU w/ D2-DCM
- D3-330/330P w/ DCU
- D3-340/350 (either port)
- D4-430/440 (bottom port)
- D4-450 or D4-454 (phone jack or bottom port)
- Any DL405 CPU w/ D4-DCM
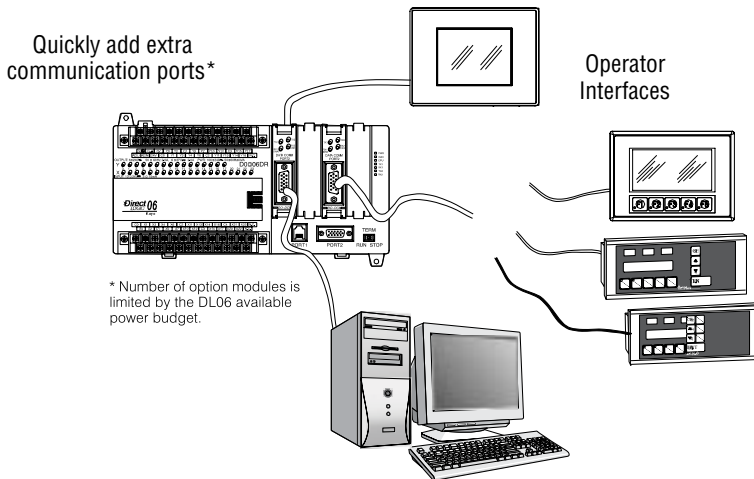
Using a D0-DCM as a network Slave

The D0-DCM can also be used with a DL05 or DL06 CPU to serve as a network slave station. In this case, the D0-DCM "listens" to the network for any messages that contain the D0-DCM's address. The D0-DCM carries out the master's request to read or write data, and sends confirmation and/or information to the master station. RLL network instructions are not necessary in the slave's program for the DCM to operate as a slave on the network. Port 1 and port 2 support slave mode operation.

Possible Masters

- DL05/06 CPU (port 2)
- DL05/06 CPU w/ D0-DCM
- D2-250-1, D2-260 or D2-262 CPU (bottom port)
- D2-240, D2-250–1, D2-260 or D2-262 CPU w/ D2-DCM
- D3-340 or D3-350 CPU (bottom port)
- Any DL405 CPU w/ D4-DCM
- D4-450 and D4-454 CPU (bottom port)
- Host computer w/ KEPDirect for PLCs

Additional Communications Port

The D0-DCM ports are similar to the ports on the DL05 and DL06 CPUs. In general, if you can connect a device to the CPU ports, then you can also connect the same device to the D0-DCM. These devices can be a variety of things, such as operator interfaces or personal computers. In this application, the DCM is acting as a slave

Quickly add extra communication ports*

Operator Interfaces

* Number of option modules is limited by the DL06 available power budget.

port to the master O/I(s) or PC(s). Port 1 and port 2 support slave mode operation.

Modbus RTU Master or Slave

The D0–DCM can be used as network interface to connect your DL05/06 system to a Modbus RTU network. Port 1 can serve as a Modbus RTU slave only. Port 2 can serve as a Modbus RTU master or slave. This manual does not describe the Modbus protocol. We recommend that you reference the Gould MODBUS Protocol Reference Guide (P1-MBUS-300 Rev. B) for details on the protocol if necessary. There may be more recent editions of this manual, so check with your Modbus supplier before ordering the documentation.

NOTE: *For information about the Modbus protocol see the Group Schneider Web site at:* ***www.schneiderautomation.com****. At the main menu, select Support/Services, Modbus, Modbus Technical Manuals, PI-MBUS-300 Modbus Protocol Reference Guide or search for PIMBUS300.*

Modbus Masters

PC as a
Modbus
master

PC or D0–DCM
master can
communicate with
Modbus RTUslaves

D0–DCM as a
Modbus master

Modbus Network using RTU Protocol

Network
Slave

D0–DCM as a
Modbus slave

Network
Slave

Modbus Slaves