DL05/06 Data Communications Module

Data Communications Module

D0-DCM $302.00

Specifications		
Module Type		***Intelligent***
Modules per CPU		DL05: one; DL06: up to four
Field Wiring Connectors		Port 1: 6-pin RJ12 RS-232 Port 2: 15-pin HD-sub connector RS-232, RS-422/485
Communications	***Port 1***	RS-232 signal levels, DirectNET Server, K-sequence Server, Modbus RTU Server, protocols, baud rate selectable from 9.6K to 115.2K baud, odd or no parity, selectable address, 8 data bits, one start/stop bit, DirectNET HEX or ASCII mode. (Defaults: Server, 9600 bps, odd parity, address 1, auto-detect protocols)
	Port 2	RS-232/422/485 signal levels, DirectNET Client/Server, K-sequence Server, Modbus RTU Client/Server, non-sequence ASCII protocols, baud rate selectable from 300 to 115.2K baud, odd/even/no parity, selectable address, 7 or 8 data bits, one start bit, 1 or 2 stop bits, selectable timeout/response-delay times, DirectNET HEX or ASCII mode. (Defaults: Server, 19200 bps, odd parity, address 1, eight data bits, one stop bit, auto-detect protocols)
Recommended Cable		RS-422: Belden 9729 or equivalent; RS-485: Belden 9841 or equivalent
Internal Power Consumption		250 mA maximum at 5 VDC (supplied by base)
Operating Environment		0 to 60 °C (32 to 140 °F), 5% to 95% humidity (non-condensing)
Manufacturer		Koyo Electronics

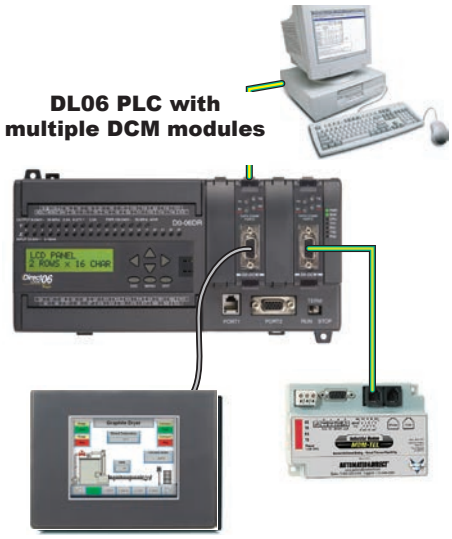
Overview

The D0-DCM Data Communications Module offers two communication ports for a variety of simultaneous communications possibilities:

- Extra communications port to connect a PC, operator interface, etc.
- Network interface to DirectNET
- Network interface to a Modbus network using the RTU protocol

The top RJ12 RS-232 port (Port 1) can be used for PLC programming, connection to an OI panel or as a single K-sequence, DirectNet or Modbus RTU Server. The 15-pin front port (Port 2) can be used for RS-232/422/485 communications and supports the following protocols: K-sequence Server, DirectNET Client/Server and Modbus RTU Client/Server.

CPU	Firmware Required	DirectSOFT Required
DL05	***Version 5.00 or later***	***Version 3.0c or later***
DL06	Version 1.90 or later	Version 4.0, Build 16 or later. ASCII functions require version 5.1 or higher.



Module Configuration

Since the D0-DCM does not have DIP switches to set baud rate, station address, parity, etc., ladder logic programming is required to configure its communication parameters, unless the default settings are acceptable for your application. If the D0-DCM is to be used as a network Client, you must use ladder logic code to configure these parameters.

Extra communications ports for DL05/06

If additional communication ports are needed in the PLC, they can easily be added by installing DCM modules. Connect additional devices such as operator interfaces, PCs, etc. Set the DCM communication parameters using DirectSOFT programming software, connect the cables, and start transferring data. Make sure the connected device has a DL05/06 compatible driver.

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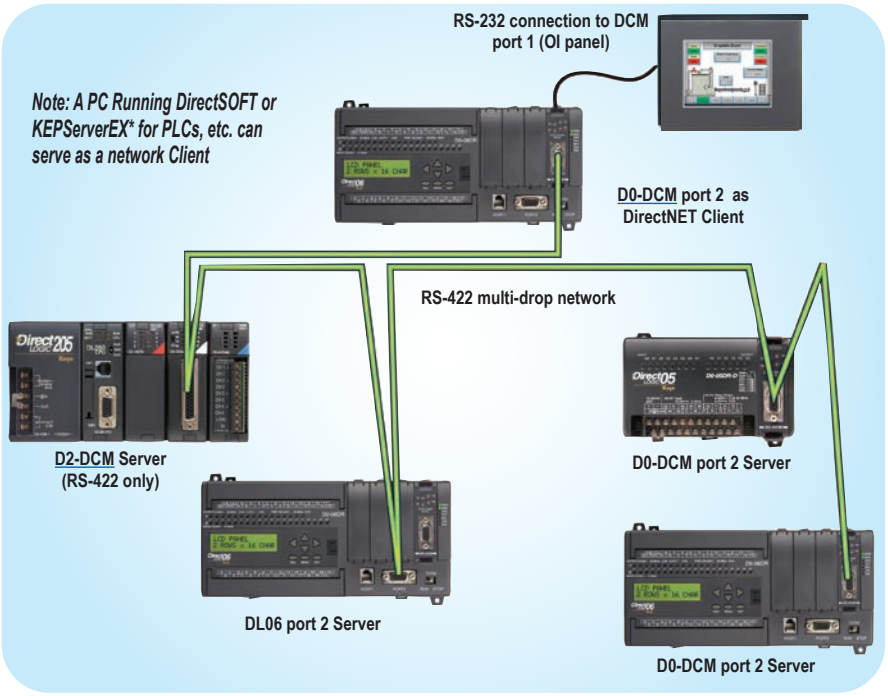
DirectNET network interface

The DCM can be used as a network interface for applications requiring data to be shared between PLCs, or between PLCs and an intelligent device such as a host PC. DirectNET allows you to upload or download virtually any type of system data including Timer/Counter data, I/O information, and V-memory information from any DirectLOGIC or compatible PLC. Port 2 on the DCM allows the DL05/06 to function as a DirectNET network Client or Server using RS-422 communications (RS-232 can be used for single Server networks). Use RX and WX instructions in your RLL program to initiate communications.

** KEPSeverEX may be purchased from Kepware and will support any existing applications. (https://www.kepware.com/en-us/products/kepserverex)*

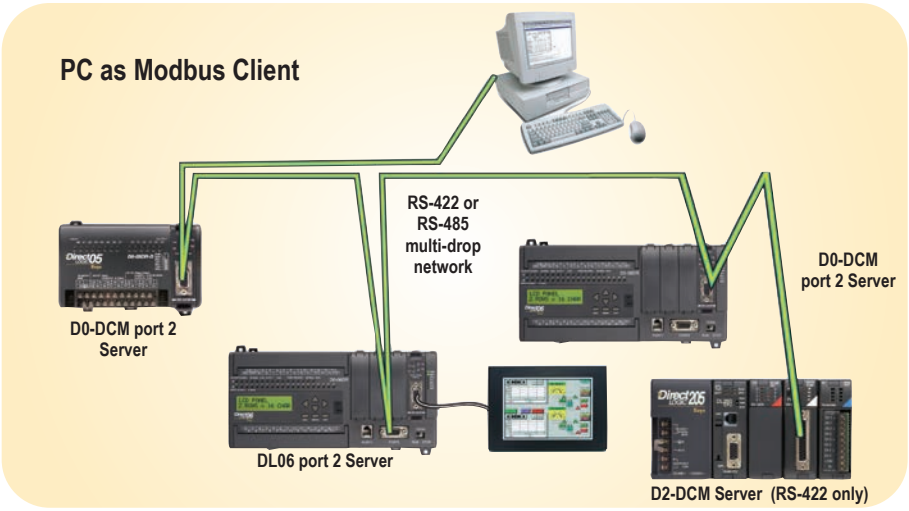
DirectNET network

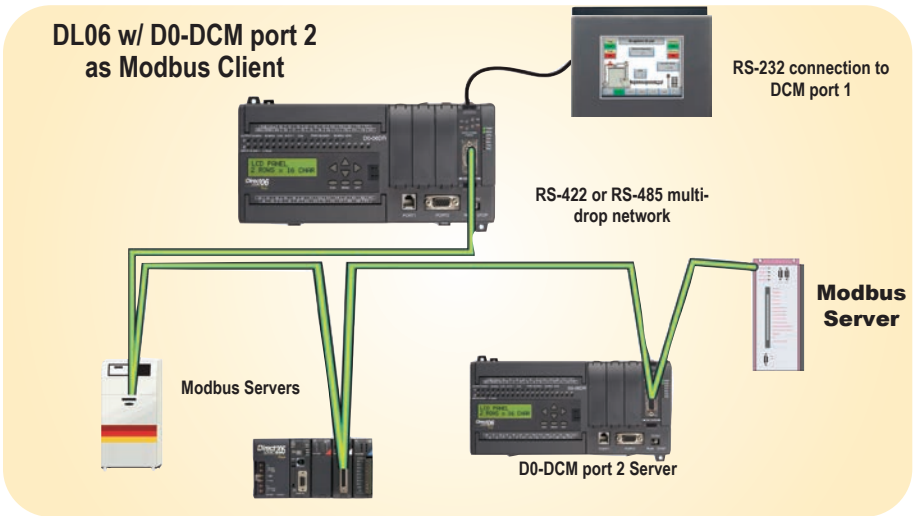


Modbus RTU interface

The DCM can be used as a Client or Server station interface to connect your DL05/06 system to a Modbus® network using the Modbus RTU protocol. Port 2 on the DCM allows the DL05/06 to function as a Modbus RTU network Client or Server using RS-422 or RS-485 communications (RS-232 can be used for single Server networks). Use RX and WX instructions in your RLL program to initiate communications.

Modbus RTU networks





Power Budgeting for the DL06

The DL06 has four option module slots. To determine whether the combination of modules you select will have sufficient power, you will need to perform a power budget calculation.

Power supplied

Power is supplied from two sources: the internal base unit power supply and, if required, an external supply (customer furnished). The D0-06xx (AC powered) PLCs supply a limited amount of 24 VDC power. The 24 VDC output can be used to power external devices.

For power budgeting, start by considering the power supplied by the base unit. All DL06 PLCs supply the same amount of 5 VDC power. Only the AC units offer 24 VDC auxiliary power.

Be aware of the trade-off between 5 VDC power and 24 VDC power. The amount of 5 VDC power available depends on the amount of 24 VDC power being used, and the amount of 24 VDC power available depends on the amount of 5 VDC power consumed. Determine the amount of internally supplied power from the table to the right.

Power required by base unit

Because of the different I/O configurations available in the DL06 family, the power consumed by the base unit itself varies from model to model. Subtract the amount of power required by the base unit from the amount of power supplied by the base unit. Be sure to subtract 5 VDC and 24 VDC amounts.

Power required by option modules

Next, subtract the amount of power required by the option modules you are planning to use. Again, remember to subtract both 5 VDC and 24 VDC.

If your power budget analysis shows surplus power available, you should have a workable configuration.

DL06 Power Supplied by Base Units

Part Number	5 VDC (mA)	24 VDC (mA)
D0-06xx	1500 mA	300 mA
	2000 mA	200 mA
D0-06xx-D	1500 mA	none

DL06 Base Unit Power Required

Part Number	5 VDC (mA)	24 VDC (mA)
D0-06AA	800 mA	none
D0-06AR	900 mA	none
D0-06DA	800 mA	none
D0-06DD1	600 mA	280 mA*
D0-06DD2	600 mA	none
D0-06DR	950 mA	none
D0-06DD1-D	600 mA	none
D0-06DD2-D	600 mA	none
D0-06DR-D	950 mA	none

* Only if auxiliary 24 VDC power is connected to V+ terminal.

DL06 Power Consumed by Other Devices

Part Number	5 VDC (mA)	24 VDC (mA)
D0-06LCD	50 mA	none
D2-HPP	200 mA	none
DV-1000	150 mA	none
C-more Micro-Graphic	210 mA	none

Power Budgeting Example

Power Source		5 VDC power (mA)	24 VDC power (mA)
D0-06DD1 (select row A or B)	A	1500 mA	300 mA
	B	2000 mA	200 mA
Current Required		5 VDC power (mA)	24 VDC power (mA)
D0-06DD1		600 mA	280 mA*
D0-16ND3		35 mA	0
D0-10TD1		150 mA	0
D0-08TR		280 mA	0
F0-4AD2DA-1		100 mA	0
D0-06LCD		50 mA	0
Total Used		1215 mA	280 mA
Remaining	A	285 mA	20 mA
	B	785 mA	note 1

* Auxiliary 24 VDC used to power V+ terminal of D0-06DD1 sinking outputs.

Note 1: If the PLC's auxiliary 24 VDC power source is used to power the sinking outputs, use power choice A, above.

DL05/06 Power Consumed by Option Modules

Part Number	5 VDC (mA)	24 VDC (mA)
D0-07CDR	130 mA	none
D0-08CDD1	100 mA	none
D0-08TR	280 mA	none
D0-10ND3	35 mA	none
D0-10ND3F	35 mA	none
D0-10TD1	150 mA	none
D0-10TD2	150 mA	none
D0-16ND3	35 mA	none
D0-16TD1	200 mA	none
D0-16TD2	200 mA	none
F0-04TRS	250 mA	none
F0-08NA-1	5 mA	none
F0-04AD-1	50 mA	none
F0-04AD-2	75 mA	none
F0-08ADH-1	25 mA	25 mA
F0-08ADH-2	25 mA	25 mA
F0-04DAH-1	25 mA	150 mA
F0-08DAH-1	25 mA	220 mA
F0-04DAH-2	25 mA	30 mA
F0-08DAH-2	25 mA	30 mA
F0-2AD2DA-2	50 mA	30 mA
F0-4AD2DA-1	100 mA	40 mA
F0-4AD2DA-2	100 mA	none
F0-04RTD	70 mA	none
F0-04THM	30 mA	none
D0-DEVNETS	45 mA	none
H0-CTRIO2	250 mA	none
H0-ECOM100	300 mA	none
F0-08SIM	1 mA	none
D0-DCM	250 mA	none
F0-CP128	150 mA	none
F0-08SIM	1 mA	none