

Serial Data Communications Module

Data Communications Module

D4-DCM \$384.00



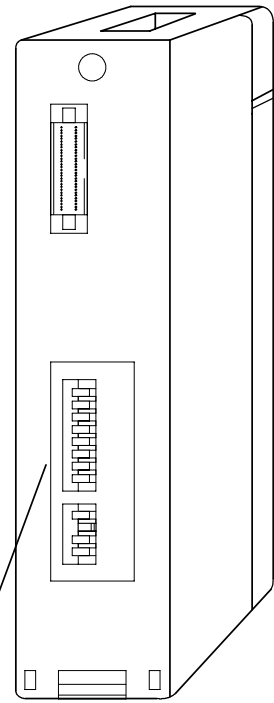
Overview

The DL405 Data Communication Module (DCM) is a general purpose communications interface for the DL405 family of PLCs. This module is primarily used for three reasons:

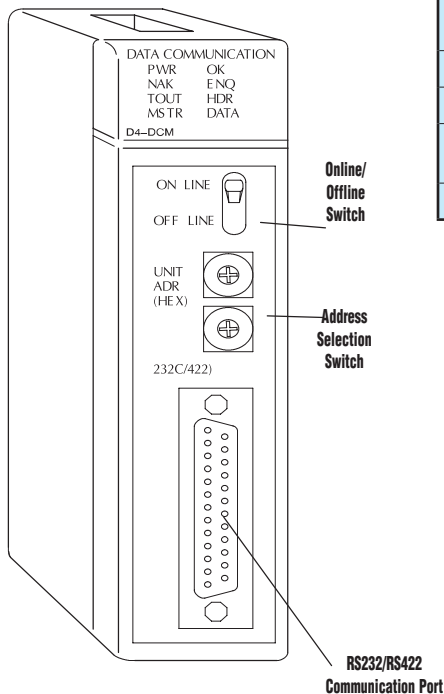
- Extra general purpose communications port to connect a personal computer, operator interface, etc.
- Network interface to a **DirectNET** network
- Network interface to a Modbus network using the RTU protocol as slave.

Extra communications port

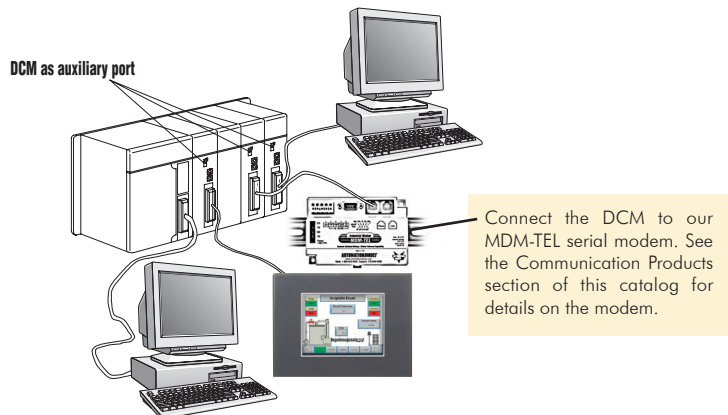
All DL405 CPUs offer four built-in communication ports. However, if even more communication ports are needed, additional Data Communication Modules can be added. As an extra communication port, the DCM has specifications identical to port 1 on the DL405 CPUs. Whatever can be connected to port 1 of the DL405 CPU can be connected to the DCM, just make sure the device has a DL405 compatible driver. This allows additional connections of devices, such as operator interfaces, personal computers, etc. Since the DCM does not require any programming, you can set the DCM communication parameters, connect the cables, and start transferring data.



DIP Switches for communications and Protocol Setup



Specifications	
Module Type	Intelligent
Modules per CPU	7 Maximum, any slot in CPU Base
Communications	RS232/422, DirectNET, SIMATIC®TI405™, or Modbus (slave only) RTU protocol. Baud rate selectable from 300 to 38.4K baud. Odd or no parity. HEX or ASCII mode
Recommended Cable	Belden 9729 or equivalent (for RS422)
Field Wiring Connector	25-Pin D-shell connector
Internal Power Consumption	500mA maximum at 5VDC, (supplied by base power supply)
Operating Environment	0°C to 60°C (32°F to 140°F), 5% to 95% humidity (non-condensing)



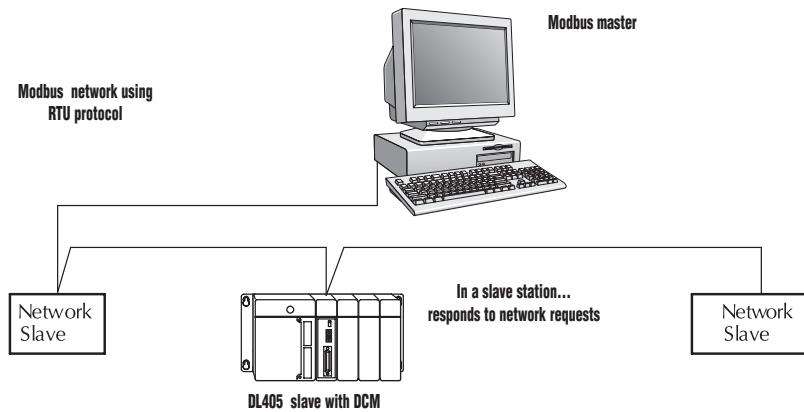
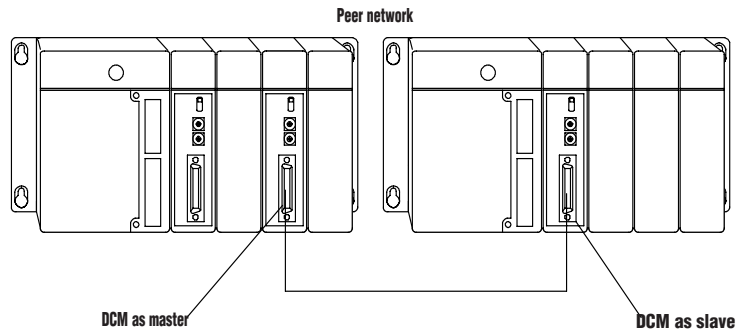
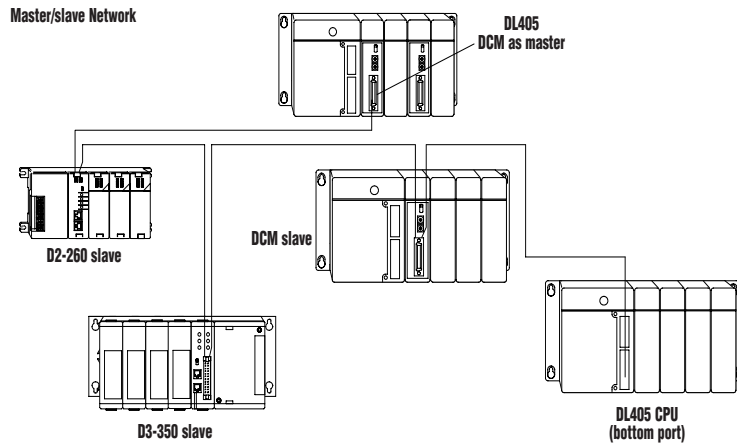
Serial Data Communications Module

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 computer. The DCM connects easily to *DirectNET*. This network 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 of our PLCs or compatible PLC. The DCM allows the DL405 PLC to function as a master or a slave of *DirectNET*.

Network Master - The DCM allows the DL405 to serve as a master of a *DirectNET* Network. The DCM takes communication requests issued from the PLC program (the network part of the program can be very simple, as few as seven words) and automatically converts these requests into network commands to read data from or write data to another PLC on the network. This capability also allows a peer to peer configuration of two DL405 systems with DCMs. For other options, consider the H4-ECOM100 module.

Network Slave - The DL405 CPUs have a built-in network slave port. If this port is occupied, a DCM can be added to provide an additional network slave port. In this case, the DCM "listens" to the network for any messages containing the DCM's address. The DCM deciphers the network commands, carries out the request to read or write data, and sends confirmation and/or information to the master station. Since the DCM does not require any programming, you can set the DCM communication parameters, connect the cables and start transferring data.



Modbus interface

The DCM can be used as a slave station interface to connect your DL405 system to the Modbus network using the Modbus RTU protocol. The host system must be capable of issuing the Modbus commands to read or write the appropriate data.

Check the Power Budget

Verify your power budget requirements

Your I/O configuration choice can be affected by the power requirements of the I/O modules you choose. When determining the types and quantity of I/O modules you will be using, it is important to remember there is a limited amount of power available from the power supply.

The chart on the opposite page indicates the power supplied and used by each DL405 device. The adjacent chart shows an example of how to calculate the power used by your particular system. These two charts should make it easy for you to determine if the devices you have chosen fit within the power budget of your system configuration.

If the I/O you have chosen exceeds the maximum power available from the power supply, you can resolve the problem by shifting some of the modules to an expansion base or remote I/O base (if you are using remote I/O).

Warning: It is extremely important to calculate the power budget correctly. If you exceed the power budget, the system may operate in an unpredictable manner which may result in a risk of personal injury or equipment damage.

Use ZIPLinks to reduce power requirements

If your application requires a lot of relay outputs, consider using the ZIPLink AC or DC relay output modules. These modules can switch high current (10A) loads without putting a load on your base power budget. Refer to Wiring System for DL405 PLCs later in this section for more information.

This logo is placed next to I/O modules that are supported by the ZIPLink connection systems.

See the I/O module specifications at the end of this section.



Calculating your power usage

The following example shows how to calculate the power budget for the DL405 system. The example is constructed around a single 8-slot base using the devices shown. It is recommended you construct a similar table for each base in your system.

A				
	Base Number 0	Device Type	5 VDC (mA)	External 24 VDC Power (mA)
B	CURRENT SUPPLIED			
	CPU/Expansion Unit /Remote Slave	D4-454 CPU	3700	400
C	CURRENT REQUIRED			
	SLOT 0	D4-16ND2	+150	+0
	SLOT 1	D4-16ND2	+150	+0
	SLOT 2	F4-04DA	+120	+100
	SLOT 3	D4-08NA	+100	+0
	SLOT 4	D4-08NA	+100	+0
	SLOT 5	D4-16TD2	+100	+0
	SLOT 6	D4-16TD2	+100	+0
	SLOT 7	D4-16TR	+1000	+0
D	OTHER			
	BASE	D4-08B-1	+80	+0
	Handheld Programmer	D4-HPP-1	+320	+0
E	Maximum Current Required		2820	100
F	Remaining Current Available		3700-2820=880	400-100=300
	1. Using a chart similar to the one above, fill in column 2. 2. Using the tables on the opposite page, enter the current supplied and used by each device (columns 3 and 4). Pay special attention to the current supplied by the CPU, Expansion Unit, and Remote Slave since they differ. Devices which fall into the "Other" category (Row D) are devices such as the Base and the Handheld programmer, which also have power requirements, but do not plug directly into the base. 3. Add the current used by the system devices (columns 3 and 4) starting with Slot 0 and put the total in the row labeled "maximum current required" (Row E). 4. Subtract the row labeled "Maximum current required" (Row E), from the row labeled "Current Supplied" (Row B). Place the difference in the row labeled "Remaining Current Available" (Row F). 5. If "Maximum Current Required" is greater than "Current Supplied" in either column 3 or 4, the power budget will be exceeded. It will be unsafe to use this configuration and you will need to restructure your I/O configuration. Note the auxiliary 24VDC power supply does not need to supply all the external power. If you need more than the 400mA supplied, you can add an external 24VDC power supply. This will help keep you within your power budget for external power.			

DL405 CPU power supply specifications and power requirements

Specification	AC Powered Units	24 VDC Powered Units
Part Numbers	D4-454, D4-EX (expansion base unit), D4-RS (remote slave unit)	D4-454DC-1, D4-EXDC (expansion base unit)
Voltage Withstand (dielectric)	1 minute @ 1,500 VAC between primary, secondary, field ground, and run relay	
Insulation Resistance	> 10MΩ at 500VDC	
Input Voltage Range	85-132 VAC (110V range) 170-264 VAC (220V range)	20-28 VDC (24VDC) with less than 10% ripple
Maximum Inrush Current	20A	20A
Maximum Power	50VA	38W

Power Requirements

Power Supplied					
<i>CPUs/Remote Units/ Expansion Units</i>	<i>5 VDC Current Supplied in mA</i>	<i>24V Aux Power Supplied in mA</i>	<i>CPUs/Remote Units/ Expansion Units</i>	<i>5V Current Supplied in mA</i>	<i>24V Aux Power Supplied in mA</i>
D4-454 CPU D4-454DC-1	3100 3100	400 NONE	D4-EX D4-EXDC D4-RS H4-EBC	4000 4000 3700 3470	400 NONE 400 400
Power Consumed					
<i>Power-consuming Device</i>	<i>5V Current Consumed</i>	<i>External 24VDC Current Required</i>	<i>Power-consuming Device</i>	<i>5V Current Consumed</i>	<i>External 24VDC Current Required</i>
<i>I/O Bases</i>			<i>Analog Modules (continued)</i>		
D4-04B-1 D4-06B-1 D4-08B-1	80 80 80	NONE NONE NONE	F4-16AD-1 F4-16AD-2 F4-04DA-1 F4-04DA-2 F4-04DAS-1 F4-08DA-1 F4-08DA-2 F4-16DA-1 F4-16DA-2 F4-08RTD F4-08THM-n F4-08THM	75 75 70 90 60 90 80 90 80 80 120 110	100 100 75+20 per circuit 90 60 per circuit 100+20 per circuit 150 100+20 per circuit 25 max. NONE 50 60
<i>DC Input Modules</i>			<i>Remote I/O</i>		
D4-16ND2 D4-16ND2F D4-32ND3-1 D4-64ND2	150 150 150 300 max.	NONE NONE NONE NONE	H4-ERM100 H4-ERM-F D4-RM	320(300) 450 300	NONE NONE NONE
<i>AC Input Modules</i>			<i>Communications and Networking</i>		
D4-08NA D4-16NA	100 150	NONE NONE	H4-ECOM100 D4-DCM F4-MAS-MB	300 500 235	NONE NONE NONE
<i>AC/DC Input Modules</i>			<i>CoProcessors</i>		
D4-16NE3	150	NONE	F4-CP128-1	305	NONE
<i>DC Output Modules</i>			<i>Specialty Modules</i>		
D4-16TD1 D4-16TD2 D4-32TD1 D4-32TD2 D4-64TD1	200 400 250 350 800	125 NONE 140 120 (4A max including loads) NONE	H4-CTRIO D4-16SIM F4-4LTC	400 150 280	NONE NONE 75
<i>AC Output Modules</i>			<i>Programming</i>		
D4-08TA D4-16TA	250 450	NONE NONE	D4-HPP-1 (Handheld Prog.)	320	NONE
<i>Relay Output Modules</i>			<i>Operator Interface</i>		
D4-08TR F4-08TRS-1 F4-08TRS-2 D4-16TR	550 575 575 1000	NONE NONE NONE NONE	DV-1000	150	NONE
<i>Analog Modules</i>			C-more Micro-Graphic	210	NONE
F4-04AD F4-04ADS F4-08AD	150 370 75	100 120 90			