

Setting the DCM Switches

The device(s) connected to the DCM will help you determine the appropriate switch settings.

Host Computer or Operator Interface Connection

If you're using a host computer or operator interface as the master station you must set the DCM to match the master station parameters. Check the documentation that came with your computer or operator interface to determine the available communication parameters.

You'll need to know the following things.

- Baud rate
- Parity settings
- Protocol

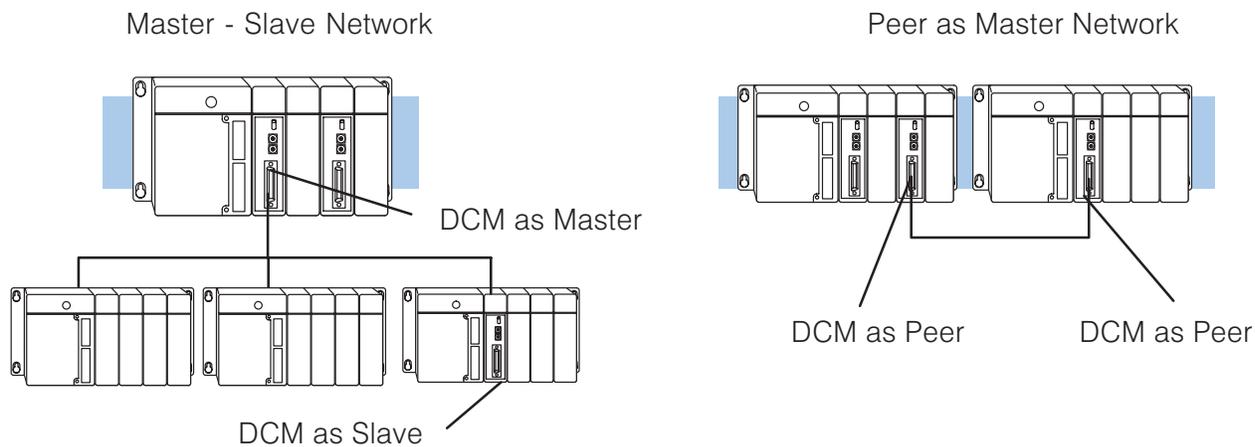
NOTE: Some operator interfaces should be connected to the DL405 programming port (top port) and cannot be used with the DCM. Make sure your operator interface uses one of the following protocols.

- **DirectNET** (DL430, DL440, D4–DCM)
- Hostlink (TI™ or Simatic® TI425, -430, -435, U-01DM)
- Modbus® RTU

You may still be able to use an operator interface designed for the programming port with the DCM if:

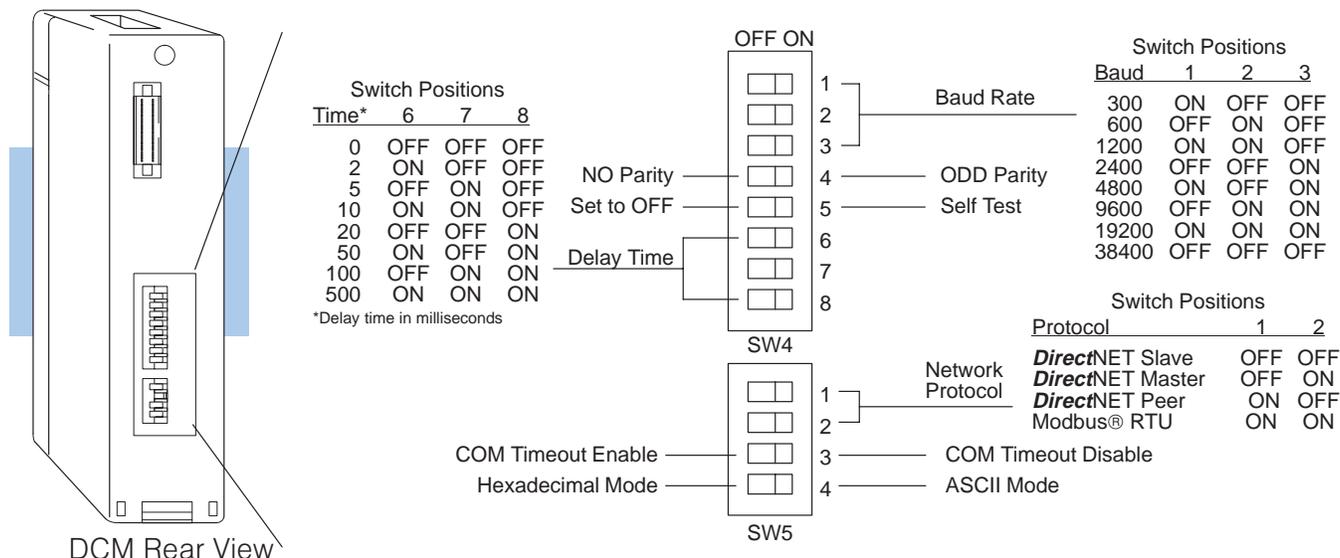
- Your DCM has firmware release 1.4 or higher *and* your CPU has firmware releases 2.1 or higher.
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DirectNET Interface Connection If you're using the DCM as a **DirectNET** interface, you'll need to know whether the DCM is being used in a master station, slave station, or peer station. Once you've determined how the DCM will be used, proceed with the dipswitch settings.



DCM Switch Settings

There are two banks of switches located on the rear of the DCM that are used to set the communications and protocol parameters. The following diagram shows the locations and setting options.



Baud Rate: Positions 1 – 3 on SW4 are used to set the baud rate for the DCM. There are eight baud rate selections available ranging from 300bps to 38.4Kbps. All stations must have the same baud rate before the communications will operate correctly. Usually, you will use the highest baud rate possible unless noise problems appear. If noise problems appear, try reducing the baud rates.

Parity: Position 4 on SW4 selects between the two parity options, odd or none. If you're using all DL405 equipment, you can use odd parity. Odd parity uses eleven bits total (1 start bit, 8 data bits, 1 stop bit, and 1 parity bit).

Some devices require no parity, which uses only 10 bits (1 start bit, 8 data bits, and 1 stop bit).

Self-Test: Position 5 on SW4 selects the factory self-test and must always be switched off. If the self-test is on, the module will not operate correctly.

Response Delay Time: Positions 6–8 on SW4 set the response delay time. This sets how long the DCM will wait before it responds to each component of a **DirectNET** or Modbus® communication request. If you're using all DL405 equipment, a response delay is not required and you will set the time to 0.

The DCM may respond too quickly for some devices, such as telephone or radio modems. If you encounter this problem just choose a delay from 0 to 500 mS. Your device manual should suggest the proper settings.

Protocol Selection: Positions 1 and 2 on SW5 select the DCM protocol and the master or slave settings. The DCM can use two protocols, **DirectNET** and Modbus® RTU protocol.

Computer or Operator Interface: If you're using the DCM to connect a computer or operator interface, check your documentation to see which protocol is being used. Since the DCM is always a slave station when it's connected to a computer or operator interface, you should select **DirectNET** slave or Modbus® RTU slave.

DirectNET Master / Slave: In a **DirectNET** master / slave network, one DCM should be set as a master and the rest should be set as slaves.

DirectNET Peer as Master: This is a variation of the master / slave protocol and should be selected when you only have two stations that can each initiate requests. Each station should have a DCM as the network interface.

Modbus® Slave: The DCM can also be a Modbus® slave (in the RTU or HEX mode). The DCM cannot be a Modbus® master station. If you're going to use Modbus®, make sure your software package supports the DL405 products. The following drivers should work correctly.

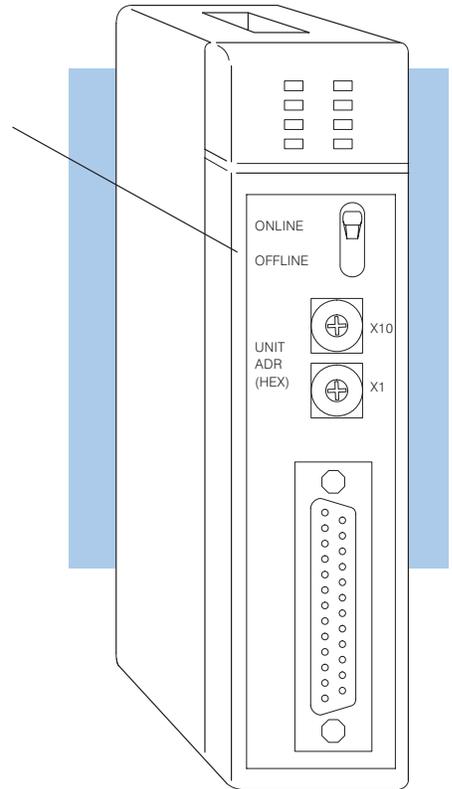
- DL405 (DL430, DL440, D4–DCM)
- Series 405™ (TI or Simatic TI425, -430, -435, U-01DM)

Communication Timeout: Position 3 on SW5 selects the communication timeout. Don't disable the timeout for normal use. Communication Timeout Disable is normally used *only* if you're developing your own **DirectNET** programs. By disabling the timeout, you can send one **DirectNET** component without any communication timeout problems. If you have this timeout disabled and a communication error does occur, you must restart communications by sending a retry or an End of Transmission (EOT) command. If you want to know more, see the **DirectNET** manual for details.

ASCII / HEX Mode: Position 4 on SW5 selects between ASCII and HEX modes of data representation. If you want the fastest communication possible, use HEX mode. The difference is in the way the data is represented. The same data is twice as long in ASCII format, so if there's more data, it takes longer to transfer. If you have a device on the network that requires ASCII mode, then set the switch for ASCII mode, otherwise, use HEX mode.

**Online / Offline
Switch**

In the Offline position, this switch logically disconnects the DCM from the network (just as if you pulled the cable from the connector). Once this switch is moved to the Offline position, the DCM will not communicate with the network. If you move the switch to the Online position, the DCM will communicate with the network, but not until the master sends another request for communication. This does not operate like the reset switch on many personal computers.



Address Selection Switch

The DCM station address is set by the two rotary switches located on the front of the unit. Addresses are in hexadecimal format with valid addresses from 0 (only used for the master station) to hexadecimal 5A. The addresses do not have to be sequential, but each station must have a unique address.

The top rotary switch is used to set the most significant digit of the HEX address. The bottom switch is used to set the least significant digit of the HEX address. For example, to set a DCM address of HEX 10 (decimal 16), set the top rotary switch to 1 and the bottom rotary switch to 0. If you're using the DCM as a master, make sure you select address 0.

NOTE: The DCM address switch settings are only read at power up. If you've want to change the address and the DCM is already up and running, you'll have to cycle the system power to make the change.

Even though the DCM address is set in hexadecimal, it's a good idea to remember the decimal equivalent. This is because the communications program and the *DirectSOFT* package use the decimal equivalent of the HEX address. It's easy to convert from hex to decimal.

HEX Format

0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
										10	11	12	13	14	15

$$\begin{array}{r}
 \text{HEX } 3\text{C} \\
 \swarrow \quad \searrow \\
 3 \times 16 = 48 \quad + \quad \text{C} = 12 \quad = 60 \text{ decimal}
 \end{array}$$

