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ProLinX[®]

5209-DFNT-CCLINK

ProLinX Gateway

EtherNet/IP Client/Server and CC-Link
Local & Intelligent Station version 1.10

3/12/2009

Important Installation Instructions

Power, Input and Output (I/O) wiring must be in accordance with Class I, Division 2 wiring methods, Article 501-4 (b) of the National Electrical Code, NFPA 70 for installation in the U.S., or as specified in Section 18-1J2 of the Canadian Electrical Code for installations in Canada, and in accordance with the authority having jurisdiction. The following warnings must be heeded:

- A** WARNING - EXPLOSION HAZARD - SUBSTITUTION OF COMPONENTS MAY IMPAIR SUITABILITY FOR CLASS I, DIV. 2;
- B** WARNING - EXPLOSION HAZARD - WHEN IN HAZARDOUS LOCATIONS, TURN OFF POWER BEFORE REPLACING OR WIRING MODULES, and
- C** WARNING - EXPLOSION HAZARD - DO NOT DISCONNECT EQUIPMENT UNLESS POWER HAS BEEN SWITCHED OFF OR THE AREA IS KNOWN TO BE NONHAZARDOUS.
- D** "THIS DEVICE SHALL BE POWERED BY CLASS 2 OUTPUTS ONLY.

All ProLinx® Products

WARNING – EXPLOSION HAZARD – DO NOT DISCONNECT EQUIPMENT UNLESS POWER HAS BEEN SWITCHED OFF OR THE AREA IS KNOWN TO BE NON-HAZARDOUS.

AVERTISSEMENT – RISQUE D'EXPLOSION – AVANT DE DÉCONNECTER L'EQUIPMENT, COUPER LE COURANT OU S'ASSURER QUE L'EMPLACEMENT EST DÉSIGNÉ NON DANGEREUX.

Markings

ISA	ISA 12.12.01 Class 1 Div 2
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CSA/cUL	C22.2 No. 213-1987
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243333

CL I Div 2 GP A, B, C, D

Temp Code T5

II 3 G

Ex nA nL IIC T4 X

0° C <= Ta <= 60° C

II – Equipment intended for above ground use (not for use in mines).

3 – Category 3 equipment, investigated for normal operation only.

G – Equipment protected against explosive gasses.

Your Feedback Please

We always want you to feel that you made the right decision to use our products. If you have suggestions, comments, compliments or complaints about the product, documentation or support, please write or call us.

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5209-DFNT-CCLINK Setup Guide

3/12/2009

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ProSoft® Product Documentation

In an effort to conserve paper, ProSoft Technology no longer includes printed manuals with our product shipments. User Manuals, Datasheets, Sample Ladder Files, and Configuration Files are provided on the enclosed CD and are available at no charge from our web site: <http://www.prosoft-technology.com>

Printed documentation is available for purchase. Contact ProSoft Technology for pricing and availability.

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1 Start Here

In This Chapter

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1.1 Carton Contents

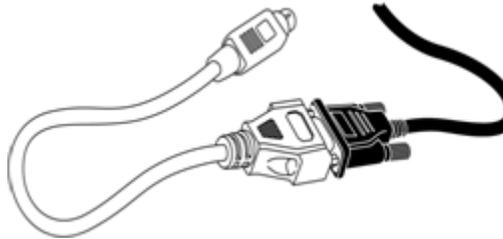
Each 5209-DFNT-CCLINK carton contains the following items.



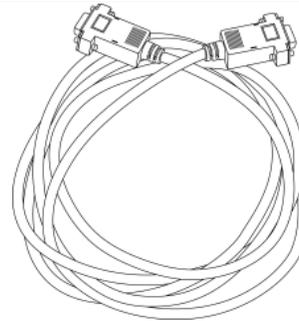
5209-DFNT-CCLINK gateway



ProSoft Solutions CD-ROM



8-Pin mini-DIN to DB9M Cable



Null Modem Serial Cable



Screwdriver

2 Scope

In This Chapter

❖ Learning Objectives.....	9
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This Setup Guide describes an example CC-Link to EtherNet/IP communication application. In this example, the 5209-DFNT-CCLINK gateway will be configured to move data between the EtherNet/IP and CC-Link networks. Follow the step-by-step instructions to see how the gateway will be configured to communicate asynchronously with each network.

2.1 Learning Objectives

When you have completed the steps in this Setup Guide, you will have learned how to:

- Understand how the example application works to transfer data between the EtherNet/IP and CC-Link networks (page 15).
- Install ProSoft Configuration Builder (PCB) software to configure the DFNT-CCLINK gateway.
- Use ProSoft Configuration Builder to verify gateway data communication. (page 31)
- Observe that the DFNT-CCLINK gateway is sending and receiving data on the Ethernet port and CC-Link serial port (page 32).

2.2 ProSoft Product Documentation

ProSoft Technology provides the following documentation (manuals) with your 5209-DFNT-CCLINK.

Electronic documentation (on the ProSoft Solutions CD-ROM)

- **ProLinx Reference Guide:** This Reference Guide contains general information about ProLinx gateways, including hardware and software installation, jumper settings and software configuration
- **Setup Guide (this manual):** This Setup Guide takes you through an example application that shows you how to communicate and move data between multiple network devices
- **DFNT Driver Manual:** This driver manual contains information about how the EtherNet/IP protocol is implemented in the 5209-DFNT-CCLINK gateway
- **CC-Link Driver Manual:** This driver manual contains information about how the CC-Link protocol is implemented in the 5209-DFNT-CCLINK gateway

Driver manuals contain information about configuration options, functional overviews, diagnostic and troubleshooting procedures, and detailed product specifications

- **Datasheet:** The datasheet contains a brief description of the 5209-DFNT-CCLINK gateway, including functional and hardware specifications

Additional documentation, tools and product support

- **Email Technical Support:** Send your support questions to Support@prosoft-technology.com
- **Web Site Support:** Visit the ProSoft Technology web site at <http://www.prosoft-technology.com> to download additional documentation, tools and application information
- **Telephone Support:** Please call ProSoft Technology Technical Support at: (Country Code 1+) 661-716-5100. Support is available 24 hours a day, 7 days a week. ProSoft Technology telephone support is free and unlimited

2.3 Prerequisites

To get the most benefit from this Setup Guide, you should have the following skills:

- **Microsoft Windows:** Install and launch programs, execute menu commands, navigate dialog boxes, and enter data
- **Serial data communication:** Correctly configure data communication parameters such as baud rate, parity, data bits, and so on, using the documentation for the EtherNet/IP and CC-Link devices connected to the network
- **Ethernet networking:** Connect the 5209-DFNT-CCLINK gateway to an Ethernet network using a valid IP address and subnet mask
- **Hardware installation and wiring:** Install the module and safely connect EtherNet/IP and CC-Link devices to a power source and to the 5209-DFNT-CCLINK gateway's application ports
- **Mitsubishi Controller:** Install, configure and program a Mitsubishi controller

Important: The Setup Guide describes an *example* application that transfers data to and from a Mitsubishi controller. Detailed configuration information is outside the scope of this Setup Guide. Please refer to your Mitsubishi documentation for specific information about your controller.

- **EtherNet/IP and CC-Link protocols:** Understand each protocol sufficiently to configure and use the 5209-DFNT-CCLINK gateway correctly

For more information about the EtherNet/IP and CC-Link protocols, please refer to the Driver Manuals, on your ProSoft Solutions CD-ROM.

2.4 System Requirements

The steps in this Setup Guide require the following minimum hardware and software components:

- Pentium III 733 MHz minimum, Pentium IV 1.0GHz or faster recommended
- Supported operating systems:
 - Microsoft Windows Vista
 - Microsoft Windows XP Professional with Service Pack 1 or 2
 - Microsoft Windows 2000 Professional with Service Pack 1, 2, or 3
 - Microsoft Windows Server 2003
- 128 Mbytes of RAM minimum, 256 Mbytes or more recommended
- 150 Mbytes of free hard disk space (or more based on application requirements)
- 256-color VGA graphics adapter, 800 x 600 minimum resolution, True Color 1024 x 768 or better recommended
- CD-ROM drive
- 24 VDC power supply with at least 500 mA available current capacity (required to power the ProLinx gateway)

3 Application Overview

In This Chapter

- ❖ General Overview..... 13
- ❖ Example Architecture 13

3.1 General Overview

This Setup Guide acquaints you with the 5209-DFNT-CCLINK Gateway, and shows you an example application that demonstrates

- Module configuration with ProSoft Configuration Builder (PCB)
- Protocol command configuration
- Data transfer between the EtherNet/IP and CC-Link protocols

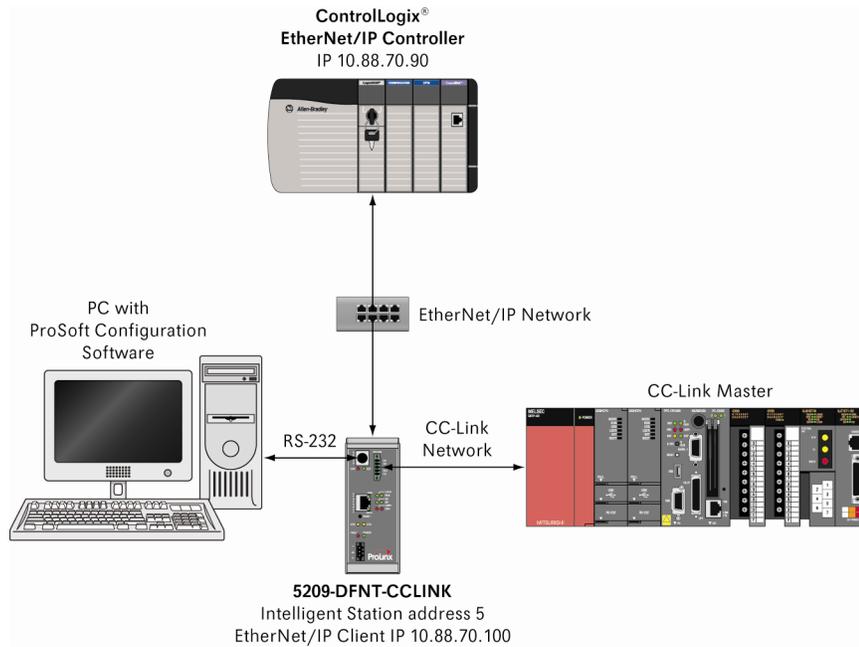
When you have completed the steps in this Setup Guide, you will be able to configure the 5209-DFNT-CCLINK gateway to use in your own application.

3.2 Example Architecture

The following illustration shows the network layout for the sample application. The network consists of:

- A PC running ProSoft Configuration Builder software connected to the 5209-DFNT-CCLINK's Configuration serial port. You will use this computer to configure the 5209-DFNT-CCLINK gateway, and to view the diagnostics area of the gateway's internal memory
- A Rockwell Automation ControlLogix controller at IP address 10.88.70.90, connected through an EtherNet switch or hub to the 5209-DFNT-CCLINK's Ethernet port
- A 5209-DFNT-CCLINK gateway at IP address 10.88.70.100 and CC-Link Intelligent Station Address 5
- A Mitsubishi MELSEC Q CC-Link Master connected to the 5209-DFNT-CCLINK's CC-Link application serial port

The example application includes all CC-Link and EtherNet/IP addressing.



The example application uses the following settings.

- The application requires two binary 16-bit registers and four 16-bit word registers to be transmitted from the CC-Link Master to the EtherNet/IP controller
- The application also requires two binary 16-bit registers and four 16-bit word registers to be received by the CC-Link Master from the EtherNet/IP controller

The following sections describe how the ProLinx Gateway interacts with both networks to accomplish the bi-direction communication.

3.2.1 Data Flow in the Example Application***EtherNet/IP – ProLinx – CC-Link Master Data Flow***

EtherNet/IP Data Table Addresses	ProLinx Memory Addresses	ProLinx CCLINK Data Type Memory Areas	Data Direction	CC-Link Master Data Type Memory Areas
B3:0/0	0000	RX bit area 32 bits (2 words) (Station 5)	←	RY bit area 32 bits
B3:1/15	0001			
N20:0	0010	RWr word area 4 words	←	RWw word area 4 words
N20:3	0013			
B10:0/0	0030	RY bit area 32 bits (2 words)	→	RX bit area 32 bits
B10:1/15	0031			
N21:0	0040	RWw word area 4 words	→	RWr word area 4 words
N21:3	0043			

Note: For additional information about the Local or Intelligent Station Memory Map, please refer to the CC-Link Driver manual.

4 ProLinx Memory Map

In This Chapter

- ❖ ProLinx CC-Link Memory Map 17
- ❖ Mapping CC-Link Master Link Point Data to ProLinx Data 18
- ❖ Ethernet/IP Read/Write Data Type Files to ProLinx Database Mapping 20

4.1 ProLinx CC-Link Memory Map

The following table describes the ProLinx memory map for an Intelligent Station

Note: Refer to the CC-Link Driver Manual for a description of the Local Station Memory Map

Intelligent Station		
Word Address	Layout Description	Word Length
0000	RX Input Link Point Bit area	8
0007	32 bits per station (x4)	
0010	RWr Input Link Point Word Area	16
0025	4 words per station (x4)	
0030	RY Output Link Point Bit area	8
0037	32 bits per station (x4)	
0040	RWw Output Link Point Word Area	16
0055	4 words per station (x4)	
0060	SB Link Special Relay status data area	12
0071		
0100	SW Special Register status data area	378
0477		
0500	Reserved for Local Station Setting	
1285		
1300	CC-Link Transient Message Data area and DFNT data area	8700
9999		

Note: Unlike other ProLinx modules, the 5209-DFNT-CCLINK gateway uses fixed addresses for all CC-Link and EtherNet/IP protocol data. This simplifies configuration of the CC-Link Intelligent Station because the CC-Link driver places the I/O Link Point data in the appropriate ProLinx Memory Map offset location. Each Link Point reserves memory for up to four occupied stations (x4).

Important: The example application does not include steps for reviewing the SB status area or Transient Messaging. Please refer to the CC-Link Driver Manual for detailed protocol information.

4.2 Mapping CC-Link Master Link Point Data to ProLinx Data

CC-Link I/O data are referred to as Link Points. Link Points can be of binary or word origin. Each CC-Link station can occupy up to four stations. This allows each device to multiply its cyclic memory by four. This example, however, uses only one occupied station. Each occupied station is allowed two binary 16 bit registers (32 bits) and four 16-bit words (CC-Link Version1).

The CC-Link Local Station requires little configuration other than setting the node address to 5. The Master will perform most of the work to transmit and receive data from the station. The ProLinx driver transmits and receives read/write data in the pre-allocated ProLinx database area.

The following tables describe the pre-allocated memory blocks for CC-Link I/O data in the sample application.

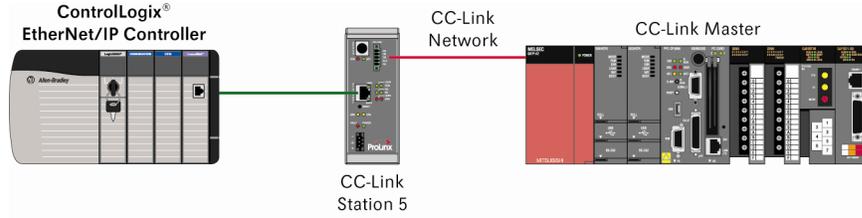
RX: ProLinx Binary Input data received from the Master's RY data area. The RX data received will be 0000000011111111 binary.

ProLinx Database Bit offset	ProLinx Link Point (Station 5)	Data Direction	CC-Link Master Link Point
0000	RX bit area 1 word used [0000000011111111]	←	RY bit area 16 bits used [0000000011111111]

RY: ProLinx Binary Output data transmitted to the Master's RX data area. The RY data transmitted will be 1111111100000000 binary.

ProLinx Database Bit offset	ProLinx Link Point (Station 5)	Data Direction	CC-Link Master Link Point
00480	RY bit area 1 word used [1111111100000000]	→	RX bit area 16 bits used [1111111100000000]

The following illustration shows RX & RY cyclic data movement between the CC-Link Master, the 5209-DFNT-CCLINK gateway and the EtherNet/IP controller.



[B3:0-15] 000000011111111 ← [RX] ← [RY] 000000011111111
 [B10:0-15] 1111111100000000 → [RY] → [RX] 1111111100000000

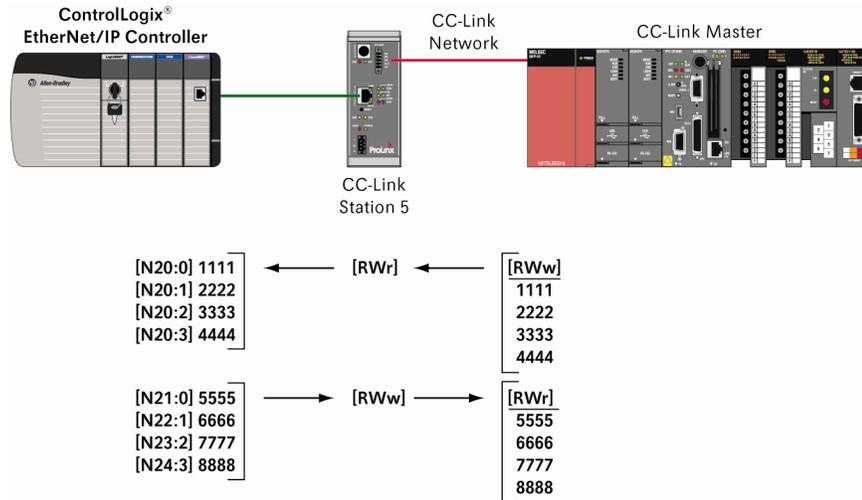
RWr: ProLinx Word Input data received from the Master's RWr data area. The RWr data received will be 1111, 2222, 3333 and 4444, a total of four words.

ProLinx Database Word offset	ProLinx Link Point (Station 5)	Data Direction	CC-Link Master Link Point
0010 [1111]	RWr word area 4 words used 1111, 2222, 3333,4444	←	RWr word area 4 words used 1111, 2222, 3333,4444
0011 [2222]			
0012 [3333]			
0013 [4444]			

RWw: ProLinx Word Output data transmitted to the Master RWw data area. The RWw data transmitted will be 5555, 6666, 7777 and 8888, for a total of four words.

ProLinx Database Word offset	ProLinx Link Point (Station 5)	Data Direction	CC-Link Master Link Point
0040 [5555]	RWw word area 4 words used 5555, 6666, 7777, 8888	→	RWw word area 4 words used 5555, 6666, 7777, 8888
0041 [6666]			
0042 [7777]			
0043 [8888]			

The following illustration shows RWr & RWw cyclic data movement between the CC-Link Master, the 5209-DFNT-CCLINK gateway and the EtherNet/IP controller.



4.3 Ethernet/IP Read/Write Data Type Files to ProLinx Database Mapping

The ProLinx gateway will be using client commands for the example application. Devices that communicate using Rockwell Automation EtherNet/IP protocol use either controller tags or data file types to store data.

The following tables describe the data file types. The below data type files will be assigned to the CC-Link RY, RX, RWr and RWw Link Point data.

The example application uses the following data table files:

B3: CC-Link RX binary Input data

EtherNet/IP Data Table Addresses	Data Direction	ProLinx Database Word offset	ProLinx Link Point (Station 5)
B3:0-15	←	0000	RX bit area 1 word used [0000000011111111]

B10: CC-Link RY binary Output data

EtherNet/IP Data Table Addresses	Data Direction	ProLinx Database Word offset	ProLinx Link Point (Station 5)
B10:0-15 [1111111100000000]	→	0030	RY bit area 1 word used

N20: CC-Link RWr word Input data

EtherNet/IP Data Table Addresses	Data Direction	ProLinx Database Word offset	ProLinx Link Point (Station 5)
N20:0 [1111]	←	0010	RWr word area 4 words used
N20:1 [2222]		0011	
N20:2 [3333]		0012	
N20:3 [4444]		0013	

N21: CC-Link RWw word Output data

EtherNet/IP Data Table Addresses	Data Direction	ProLinx Database Word offset	ProLinx Link Point (Station 5)
N21:0 [5555]	→	0040	RWw word area 4 words used
N21:1 [6666]		0041	
N21:2 [7777]		0042	
N21:3 [8888]		0043	

5 Working with the ProLinx Gateway

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- ❖ Copy the Installation Tools from the CD-ROM 23
- ❖ About the Sample PCB Configuration 24
- ❖ Explanation of the Sample PCB File 25
- ❖ How to Verify Data Exchange..... 31

5.1 Copy the Installation Tools from the CD-ROM

There is one (ProSoft Configuration Builder) sample configuration file (PPF) that you must download from the ProLinx Solutions CD to your PC, whether you are using the sample configuration, or you plan to modify the configuration to suit the needs of your application. This section describes how to get everything you need loaded to your PC. **You must perform these steps regardless of whether you are configuring your gateways now or just reading about the sample applications.**

5.1.1 Install ProSoft Configuration Builder (PCB)

ProSoft Configuration Builder helps you configure the gateway for your application.

- 1 Insert the ProLinx Solutions CD into the CD-ROM drive on your PC. On most computers, the ProLinx Solutions menu will open automatically.



- 2 Select  **INSTALL CONFIGURATION TOOL.**
- 3 Follow the prompts to install ProSoft Configuration Builder to your hard disk.

5.1.2 Copy the Sample PCB Application File

- 1 From the ProLinx Solutions menu, click  **PRODUCT DOCUMENTATION.**
- 2 Choose **SAMPLES / DFNT-CCLINK.**



- 3 Copy the **DFNT-CCLINK.PPF** file to the Desktop on your PC.

5.2 About the Sample PCB Configuration

Note: The example configuration provides an introduction to the 5209-DFNT-CCLINK gateway, or the EtherNet/IP and CC-Link protocols, and does not discuss every possible application. Refer to the CCLINK and DFNT Driver Manuals for more information on other configuration options and applications for the 5209-DFNT-CCLINK gateway.

5.2.1 DFNT (EtherNet/IP) Driver

The example application uses the DFNT Client functions. Client to server communication does not require ladder logic programming. PCB provides a DFNT Client command area, where you can create up to 100 commands to issue EtherNet/IP data table read and writes. The DFNT Client uses connected Explicit PCCC type messages.

The sample configuration file (DFNT_CCLINK.ppf) file contains four DFNT Client SLC500 type commands.

- A command to write RY Binary data to the EtherNet/IP controller
- A command to read RX Binary data from the EtherNet/IP controller
- A command to write RWr Word data to the EtherNet/IP controller
- A command to read RWw Word data from the EtherNet/IP controller

5.2.2 CCLINK (CC-Link) Driver

The CCLINK driver is designed for ease-of-use, therefore very little CC-Link setup is required. The driver works as a Local or Intelligent Station and is cyclically polled by the Master for all data Link Points. The CCLINK driver works directly with the ProLinx internal database pre-allocated memory map for all cyclic data types.

Note: The example application does not describe moving non-cyclic data types such as the SB Status Link data or Transient Messages. Please refer to the ProLinx CCLINK driver Manual for more information.

5.3 Explanation of the Sample PCB File

5.3.1 Loading the Sample PCB File

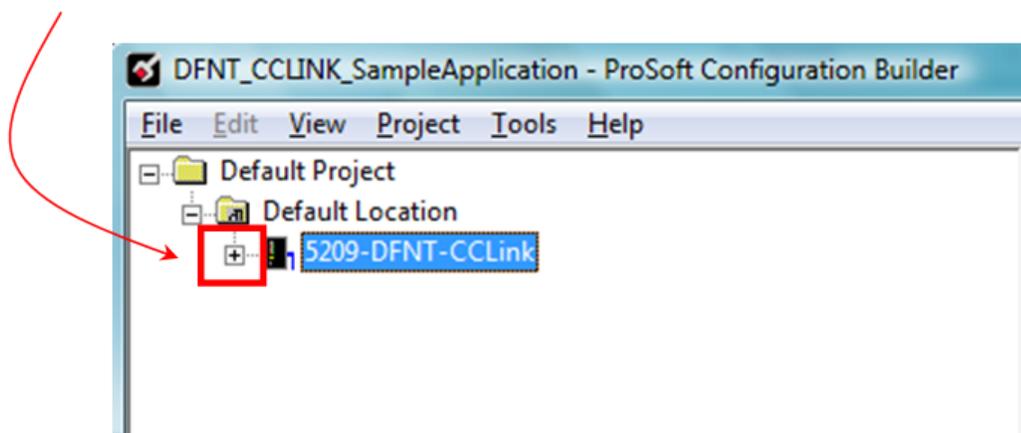
If you have not already installed ProSoft Configuration Builder, please do so now.

Note: For more information about PCB, please refer to the ProLinx Reference Guide.

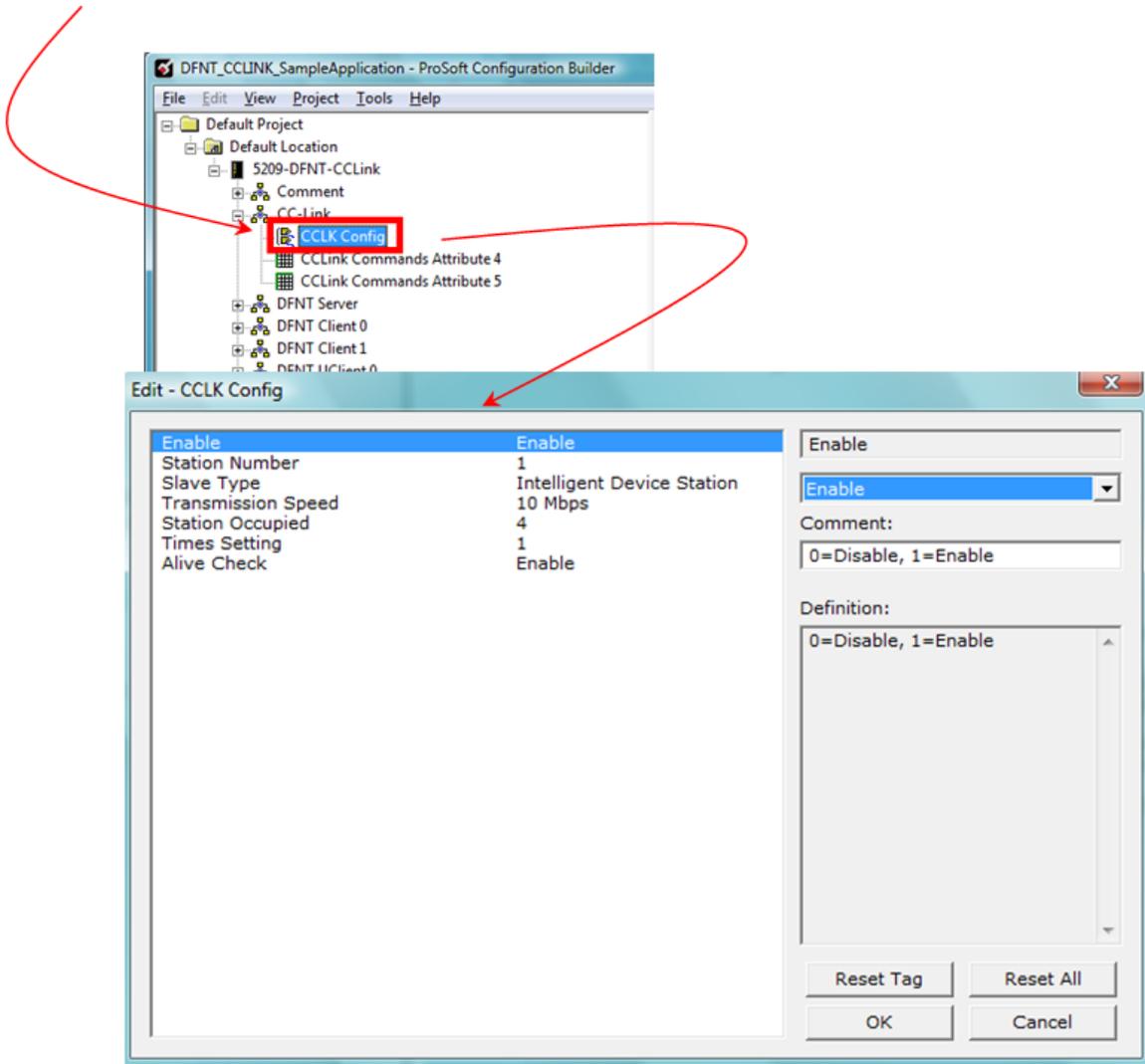
- 1 Start ProSoft Configuration Builder.
- 2 Open the **FILE** menu, and then choose **OPEN**.
- 3 Navigate to the location where you saved the **DFNT_CCLINK.PPF** file (the Desktop on your PC), and select this file. This action opens the configuration file, and populates the Project Tree with the 5209-DFNT-CCLINK gateway.

5.3.2 5209-DFNT-CCLINK Overview

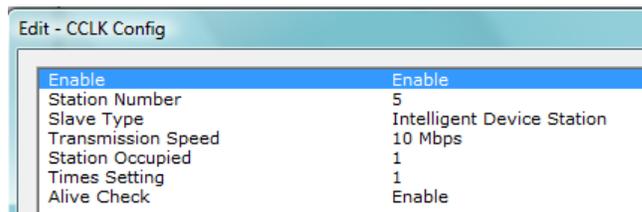
- 1 First, observe the CC-Link settings. Expand the **5209-DFNT-CCLINK** icon in the **PROJECT TREE** pane.



- 2 Select the **CCLK CONFIG** tag, and then double-click to open the **EDIT - CCLK CONFIG** dialog box.



- 3 The example application uses the following **CCLK CONFIG** parameters.



Refer to the CCLINK Driver Manual for more information on each of these settings.

- 4 Next, observe the DFNT settings. Expand the **DFNT CLIENT 0** tag, and then double-click the **DFNT CLIENT COMMANDS SLC500 2 ADDRESS FIELDS** tag. This action opens the **EDIT-DFNT CLIENT 0 COMMANDS** dialog box.

	Enable	Internal Address	Poll Interval	Reg Count	Swap Code	IP Address	Slot	Func Code	File Type	File Number	Element Number	Comment
✓ 1	Enabled	0	0	2	No Change	10.88.70.90	0	Prot Typed Write	Binary	3	0	RX Binary Write Data
✓ 2	Enabled	10	0	4	No Change	10.88.70.90	0	Prot Typed Write	Integer	20	0	RX Binary Write Data
✓ 3	Enabled	30	0	2	No Change	10.88.70.90	0	Prot Typed Read	Binary	10	0	RW Word Read Data
✓ 4	Enabled	40	0	4	No Change	10.88.70.90	0	Prot Typed Read	Integer	21	0	RW Word Read Data

The following tables describe each of the four DFNT commands.

DFNT Command-1 (RX Binary Write Data)

Parameter	Setting	Description
<i>Enable</i>	Enabled	Selectively turn the command ON or OFF
<i>Internal Address</i>	0	Database location of first occupied station RX Link Point data
<i>Poll Interval</i>	0	Set to poll fast as possible
<i>Reg Count</i>	2	The number of words (or bits = words x 16) to write
<i>Swap Code</i>	No change	Word / byte data will not be swapped
<i>IP Address</i>	10.88.70.90	IP address of the EtherNet/IP controller
<i>Slot</i>	0	Processor slot location
<i>Func Code</i>	Prot Typed Write	Write command to controller
<i>File Type</i>	Binary	Binary "B" data type file
<i>File Number</i>	3	Data type file number B3 assigned
<i>Element Number</i>	0	Data type file element B3:0 assigned
<i>Comment</i>	ProLinx RX Binary Write Data	

DFNT Command-2 (RWr Word Write Data)

Parameter	Setting	Description
<i>Enable</i>	Enabled	Selectively turn the command ON or OFF
<i>Internal Address</i>	10	Database location of first occupied station RWr Link Point data
<i>Poll Interval</i>	0	Set to poll fast as possible
<i>Reg Count</i>	4	The number of words to write
<i>Swap Code</i>	No change	Word / byte data will not be swapped
<i>IP Address</i>	10.88.70.90	IP address of the EtherNet/IP controller
<i>Slot</i>	0	Processor slot location
<i>Func Code</i>	Prot Typed Write	Write command to controller
<i>File Type</i>	Integer	Integer "N" data type file
<i>File Number</i>	20	Data type file number N20: assigned
<i>Element Number</i>	0	Data type file element N20:0 assigned
<i>Comment</i>	ProLinx RWr Word Write Data	

DFNT Command-3 (RY Binary Read Data)

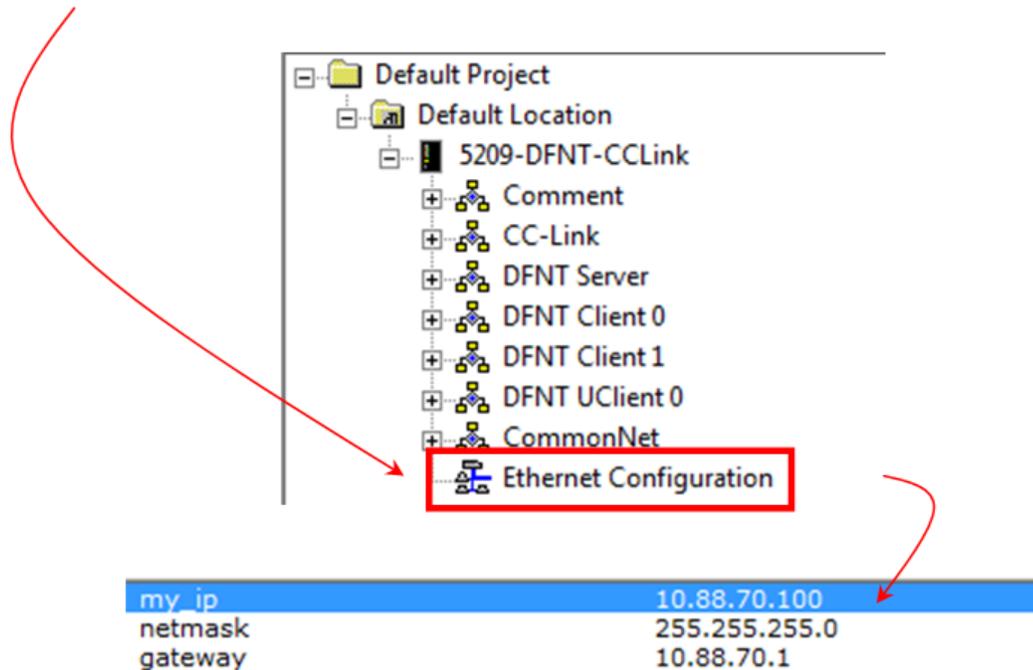
Parameter	Setting	Description
<i>Enable</i>	Enabled	Selectively turn the command ON or OFF
<i>Internal Address</i>	30	Database location of first occupied station RY Link Point data
<i>Poll Interval</i>	0	Set to poll fast as possible
<i>Reg Count</i>	2	The number of words (or bits = words x 16) to read
<i>Swap Code</i>	No change	Word / byte data will not be swapped
<i>IP Address</i>	10.88.70.90	IP address of the EtherNet/IP controller
<i>Slot</i>	0	Processor slot location
<i>Func Code</i>	Prot Typed Read	Write command to controller
<i>File Type</i>	Binary	Binary "B" data type file
<i>File Number</i>	10	Data type file number B10 assigned
<i>Element Number</i>	0	Data type file element B10:0 assigned
<i>Comment</i>	ProLinx RY Binary Read Data	

DFNT Command-2 (RWw Word Read Data)

Parameter	Setting	Description
<i>Enable</i>	Enabled	Selectively turn the command ON or OFF
<i>Internal Address</i>	40	Database location of first occupied station RWw Link Point data
<i>Poll Interval</i>	0	Set to poll fast as possible
<i>Reg Count</i>	4	The number of words to read
<i>Swap Code</i>	No change	Word / byte data will not be swapped
<i>IP Address</i>	10.88.70.90	IP address of the EtherNet/IP controller
<i>Slot</i>	0	Processor slot location
<i>Func Code</i>	Prot Typed Read	Read command to controller
<i>File Type</i>	Integer	Integer "N" data type file

Parameter	Setting	Description
File Number	21	Data type file number N21: assigned
Element Number	0	Data type file element N20:0 assigned
Comment	ProLinx RWw Word Read Data	

Now, from the Main Window Project Tree Pane, double click **ETHERNET CONFIGURATION**. This action opens the **EDIT – WATTCP** window where you can view or change the gateway's Ethernet network parameters.

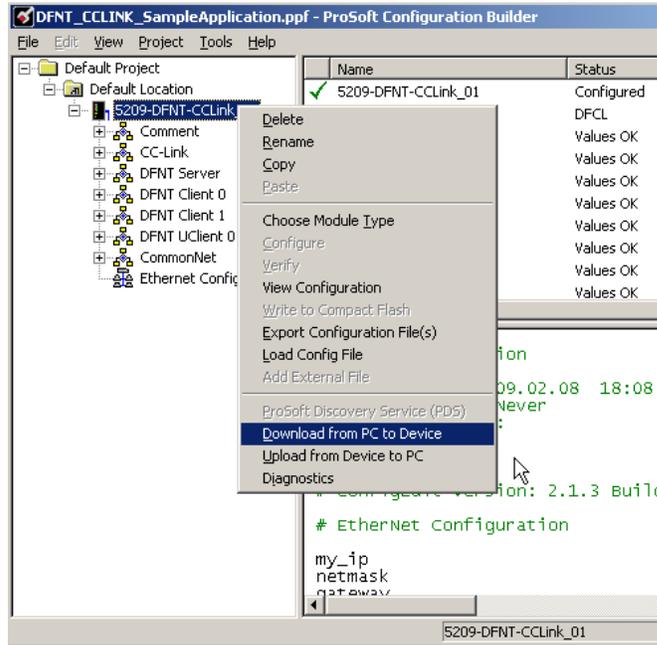


5.3.3 Downloading the PCB Sample Application File

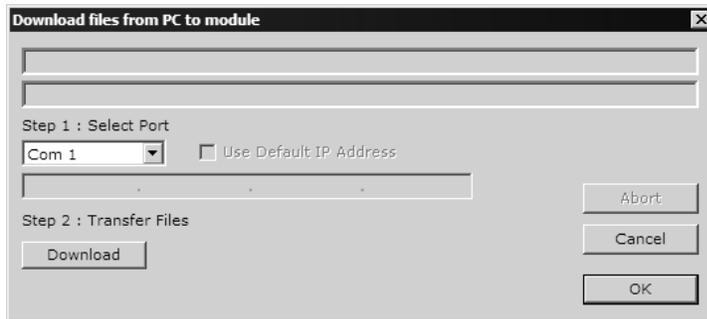
Note: The example application does not require you to download the sample configuration file for the Example Application. The following steps on how to download the PCB configuration are provided for your information only.

- 1 Connect your PC to the DEBUG port of the 5209-DFNT-CCLINK module. Apply power to the module if you have not already done so.

- 2 Select the **5209-DFNT-CCLINK** icon, and click the right mouse button to open a shortcut menu. On the shortcut menu, choose **DOWNLOAD FROM PC TO DEVICE**.



- 3 PCB will scan your PC for a valid COM port (this may take a few seconds). When PCB has found a valid COM port, the **DOWNLOAD** dialog box will open. Choose the COM port to use from the dropdown list, and then click the **DOWNLOAD** button.



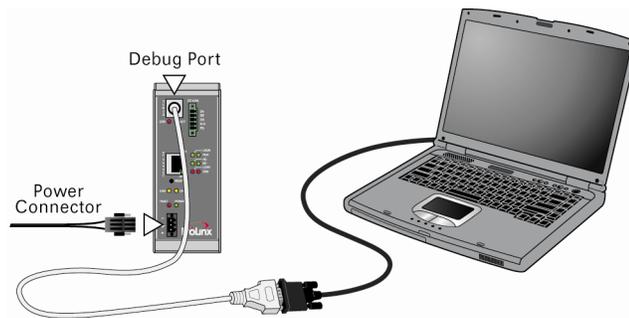
- 4 PCB will perform a platform check to verify that the configuration is valid, and the model number for the configuration project matches the gateway hardware. When the platform check is complete, the download status box will display download progress. When the download has completed successfully, the gateway will automatically reboot, and the download progress box will be updated with the message "Module Running".

Note: If the hardware types do not match, PCB will display an error message, and the download will be halted. This protects you from accidentally downloading an incompatible configuration to the module.

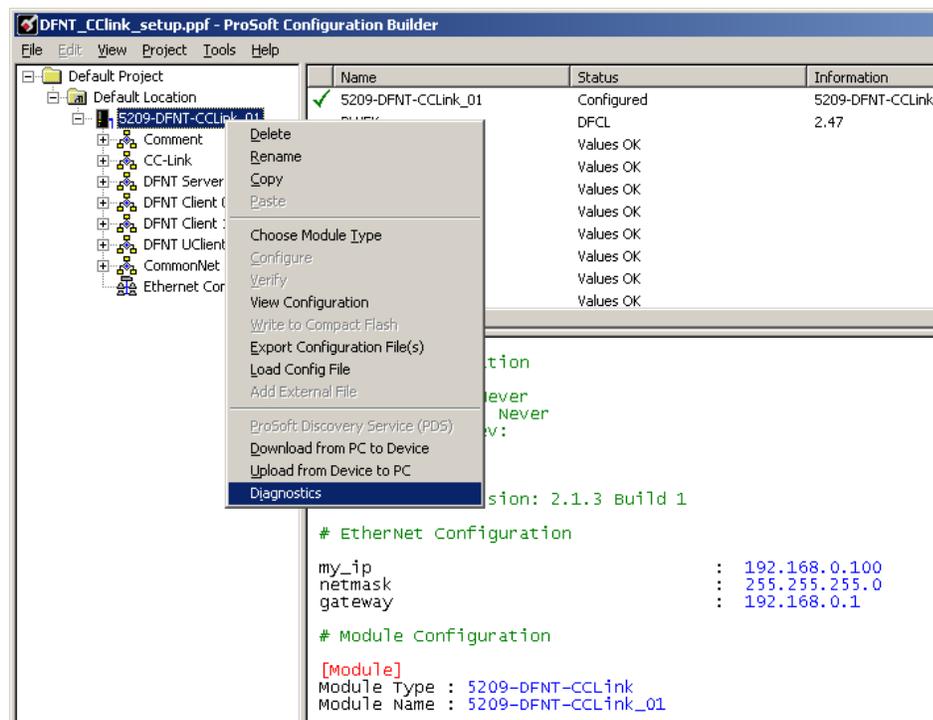
You are now ready to verify communications are working correctly.

5.4 How to Verify Data Exchange

- 1 Connect to the Debug Port on the 5209-DFNT-CCLINK gateway. Verify that the module is powered up.



- 2 In PCB, select the **5209-DFNT-CCLINK** module, and then click the right mouse button to open a shortcut menu. On the shortcut menu, choose **DIAGNOSTICS**. This action opens the **DIAGNOSTICS** dialog box.



- 3 In the **DIAGNOSTICS** dialog box, select a valid COM port from the **CONNECTION** dropdown list.



- 4 Press **[?]** to open the Diagnostic menu.

5.4.1 Verify Communication with PCB Diagnostics

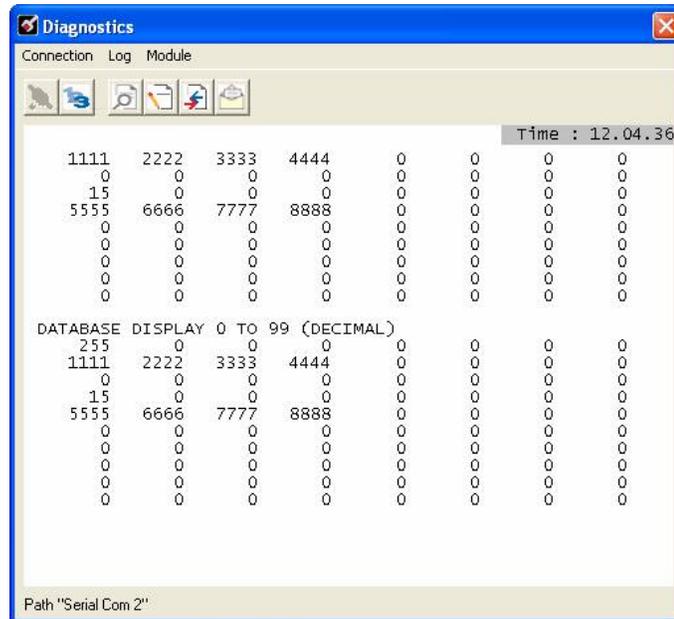
You can use the on-board Diagnostics Menu built into the DFNT-CCLINK gateway to verify that it is communicating with an EtherNet/IP system and a CC-Link Master system.

All data passed between the EtherNet/IP system and the CC-Link Master system is stored in the ProLinX gateway's memory database. It is very easy to see the data in transit using the built-in Diagnostics of the ProLinX module and PCB.

- 1 To view data at the absolute database address, press **[D]** to open the Database View menu. The commands on this menu allow you to see all the data present in the module, both CC-Link data and EtherNet/IP data.
- 2 Press **[D]** to open the Database View, and then press **[?]** key to open the Database View Menu.

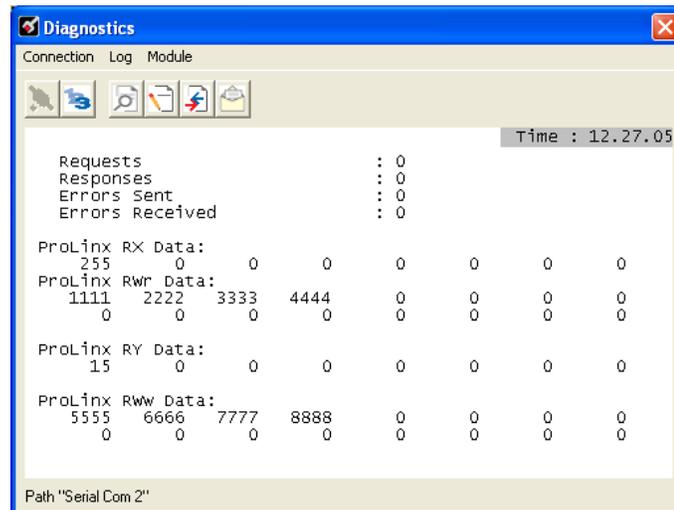
Press **[S]** to open the Database Viewer. The values of the memory database will be shown in 100-register blocks. To scan forward or backward through the memory database, press **[N]** (for Next 100 registers) or **[P]** (Previous 100 registers).

The following illustration shows the **DIAGNOSTICS** window in PCB, with the Database view of registers 0 to 99.



Press **[M]** to return to the Diagnostics Main Menu.

- 3 ProLinx Diagnostics can also show you the CC-Link RX, RWr, RY, and RWw data areas. Press **[O]** from the Main Menu to view CC-Link data organized by data areas.



6 Conclusion

In This Chapter

- ❖ How to Get Help 35

6.1 How to Get Help

ProSoft Technology offers several ways to get help quickly and easily.

- **Downloads:** Get manuals, datasheets, configuration utilities, and more from the Support Downloads area of ProSoft's web site at <http://www.prosoft-technology.com/support>
- **Live Chat:** (6am to 5pm PST): Communicate with a Technical Support Engineer on-line. This is just one more way to get one-on-one support from ProSoft's knowledgeable support staff.
- **Knowledgebase:** Type a question into ProSoft's knowledgebase search engine. Answers come from a technical support knowledge database built from helping inquisitive customers like you.
- **Bulletin Board:** Here's a public forum just for you. Make comments, ask questions, and get to know ProSoft's automation community. Register and login at <http://forum.prosoft-technology.com/user/login>, and join the discussion.
- **Frequently Asked Questions:** Look though ProSoft's list of Frequently Asked Questions to get you the answers you need. Check back for updates whenever you have new questions.
- **Contact Us:** You can always call or email with your technical support questions. Also, if you have any comments or suggestions, please let us know. For web-based support, go to ProSoft's web site at **<http://www.prosoft-technology.com/support>**

For 24-hour telephone support, call **+1.661.716.5100**

Glossary of Terms

A

ASCII

American Standard Code for Information Interchange. A communication mode in which each eight-bit byte in a message is sent as two ASCII characters. You can use a set of ASCII characters (or hexadecimal characters) as a key to encrypt data and ensure its secure transmission.

B

Baud Rate

The speed of communication between devices on the network. All devices must communicate at the same rate.

C

Client

A client is software program, or the device on which that program runs, that makes requests for information from a software program, or the device on which that program runs, in a client-server (page 39) relationship.

A Client on an Ethernet network is equivalent to a Master (page 38) on a serial network.

D

DCE

Data communications equipment. A modem, for example.

Default Gateway

The IP address of a network router where data is sent if the destination IP address is outside the local subnet. The gateway is the computer that routes the traffic from the local area network to other networks such as the Internet.

DTE

Data terminal equipment. A computer or terminal, for example.

E

ESD

Electrostatic Discharge. Can cause internal circuit damage to the coprocessor.

Ethernet

A set of network cabling and network access (CSMA/CD) protocol standards for bus topology computer networks invented by Xerox but now controlled by the 802.3 subcommittee of the IEEE.

F

Firmware

Software for embedded computers.

Full-Duplex

Simultaneous two-way independent transmission in both directions

H

Half-Duplex

A circuit designed to transmit in either direction, but not in both simultaneously.

I

IP Address

An identifier for a computer or device in a TCP/IP network. Networks using the TCP/IP Protocol route messages based on the IP address of the destination. The format of an IP address is a 32-bit numeric address written as four numbers separated by periods. Each number can be zero to 255. For example, 1.160.10.240 could be an IP address.

L

LED

Light-emitting diode.

M

MAC ID

A unique hexadecimal number that identifies any Ethernet device.

Master

A Master is a device that makes requests for information from a software program, or the device on which that program runs, in a client-server (page 39) relationship.

A Client on an Ethernet (page 38) network is equivalent to a Master (page 38) on a Serial (page 40) network.

N**Network**

A series of stations or nodes connected by some type of communication medium. A network may consist of a single link or multiple links.

Node

An address or software location on the network.

P**Peer**

A network relationship between devices where each device can send commands as a master or client, and respond to commands as a slave or server.

Power Supply

Device that supplies power to the I/O chassis containing the processor and coprocessor, or to other modules.

Protocol

The language or packaging of information that is transmitted between nodes on a network.

R**RS-232**

Recommended Standard 232; the standard for serial binary signals between a DTE and a DCE.

S**Serial**

Data that is transferred one bit at a time.

Server

A Server is a software program, or the device on which that program runs, that provides a specific kind of service to a Client (page 37) software program, or the device on which that program runs, on an Ethernet network.

A Server on an Ethernet network is equivalent to a Slave (page 40) on a Serial (page 39) network.

Simplex

A circuit capable of operating in only one direction.

Slave

A Slave is a software program, or the device on which that program runs, that provides a specific kind of service to a Master (page 38) software program, or the device on which that program runs, on a serial network.

A Slave on a Serial network is equivalent to a Server (page 39) on an Ethernet (page 38) network.

Subnet Mask

A mask used to determine what subnet an IP address belongs to. An IP address has two components, the network address and the host address. For example, consider the IP address 150.215.017.009. Assuming this is part of a Class B network (with a subnet mask of 255.255.0.0), the first two numbers (150.215) represent the Class B network address, and the second two numbers (017.009) identify a particular host on this network.

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