

inRAx



MVI56-BDW

ControlLogix Platform
BARDAC Drive Web Interface

User Manual

December 17, 2007



Please Read This Notice

Successful application of this module requires a reasonable working knowledge of the Rockwell Automation ControlLogix hardware, the MVI56-BDW Module and the application in which the combination is to be used. For this reason, it is important that those responsible for implementation satisfy themselves that the combination will meet the needs of the application without exposing personnel or equipment to unsafe or inappropriate working conditions.

This manual is provided to assist the user. Every attempt has been made to ensure that the information provided is accurate and a true reflection of the product's installation requirements. In order to ensure a complete understanding of the operation of the product, the user should read all applicable Rockwell Automation documentation on the operation of the Rockwell Automation hardware.

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Warnings

UL Warnings

- A** Warning - Explosion Hazard - Substitution of components may impair suitability for Class I, Division 2.
- B** Warning - Explosion Hazard - When in Hazardous Locations, turn off power before replacing or rewiring modules.
Warning - Explosion Hazard - Do not disconnect equipment unless power has been switched off or the area is known to be nonhazardous.
- C** Suitable for use in Class I, division 2 Groups A, B, C and D Hazardous Locations or Non-Hazardous Locations.

ATEX Warnings and Conditions of Safe Usage:

Power, Input, and Output (I/O) wiring must be in accordance with the authority having jurisdiction

- A** Warning - Explosion Hazard - When in hazardous locations, turn off power before replacing or wiring modules.
- B** Warning - Explosion Hazard - Do not disconnect equipment unless power has been switched off or the area is known to be non-hazardous.
- C** These products are intended to be mounted in an IP54 enclosure. The devices shall provide external means to prevent the rated voltage being exceeded by transient disturbances of more than 40%. This device must be used only with ATEX certified backplanes.
- D** DO NOT OPEN WHEN ENERGIZED.

Electrical Ratings

- Backplane Current Load: 800 mA @ 5 V DC; 3mA @ 24V DC
- Operating Temperature: 0 to 60°C (32 to 140°F)
- Storage Temperature: -40 to 85°C (-40 to 185°F)
- Shock: 30g Operational; 50g non-operational; Vibration: 5 g from 10 to 150 Hz
- Relative Humidity 5% to 95% (non-condensing)
- All phase conductor sizes must be at least 1.3 mm(squared) and all earth ground conductors must be at least 4mm(squared).

Markings:



II 3 G 0C <=Ta<= 60C EEx nA IIC T4 DEMKO 07ATEX0710717X

Your Feedback Please

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ProSoft Technology

1675 Chester Avenue, Fourth Floor

Bakersfield, CA 93301

+1 (661) 716-5100

+1 (661) 716-5101 (Fax)

<http://www.prosoft-technology.com>

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MVI56-BDW User Manual

December 17, 2007

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Guide to the MVI56-BDW User Manual

Function		Section to Read	Details
Introduction (Must Do)	→	Start Here (page 9)	This Section introduces the customer to the module. Included are: package contents, system requirements, hardware installation, and basic configuration.
Verify Communication, Diagnostic and Troubleshooting	→	Verifying Communication (page 42) Diagnostics and Troubleshooting (page 42)	This section describes how to verify communications with the network. Diagnostic and Troubleshooting procedures.
Reference Product Specifications Functional Overview Glossary	→	Reference (page 56) Functional Overview (page 58) Product Specifications (page 56)	These sections contain general references associated with this product, Specifications, and the Functional Overview.
Support, Service, and Warranty Index	→	Support, Service and Warranty (page 76)	This section contains Support, Service and Warranty information. Index of chapters.

1 Start Here

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- Package Contents 10
- Install the Module in the Rack 11
- Connect your PC to the Processor 12
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Installing the MVI56-BDW module requires a reasonable working knowledge of the Rockwell Automation ControlLogix hardware, the MVI56-BDW Module and the application in which they will be used.



Caution: It is important that those responsible for implementation can complete the application without exposing personnel, or equipment, to unsafe or inappropriate working conditions. Safety, quality and experience are key factors in a successful installation.

1.1 System Requirements

The MVI56-BDW module requires the following minimum hardware and software components:

- Rockwell Automation ControlLogix™ processor, with compatible power supply and one free slot in the rack, for the MVI56-BDW module. The module requires 800mA of available power.
- Rockwell Automation RSLogix 5000 programming software version 2.51 or higher.
- Rockwell Automation RSLinx communication software
- Pentium® II 450 MHz minimum. Pentium III 733 MHz (or better) recommended
- Supported operating systems:
 - 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 of RAM recommended
- 100 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 recommended)
- CD-ROM drive
- HyperTerminal or other terminal emulator program.

Note: You can install the module in a local or remote rack. For remote rack installation, the module requires EtherNet/IP or ControlNet communication with the processor.

1.2 Package Contents

The following components are included with your MVI56-BDW module, and are all required for installation and configuration.

Important: Before beginning the installation, please verify that all of the following items are present.

Qty.	Part Name	Part Number	Part Description
1	MVI56-BDW Module	MVI56-BDW	BARDAC Drive Web Interface
1	Cable	Cable #15, RS232 Null Modem	For RS232 Connection to the CFG Port
1	Cable	RJ45 to DB9 Male Adapter	For DB9 Connection to Module's Port
1	inRAX Solutions CD		Contains sample programs, utilities and documentation for the MVI56-BDW module.

If any of these components are missing, please contact ProSoft Technology Support for replacement parts.

1.3 Install the Module in the Rack

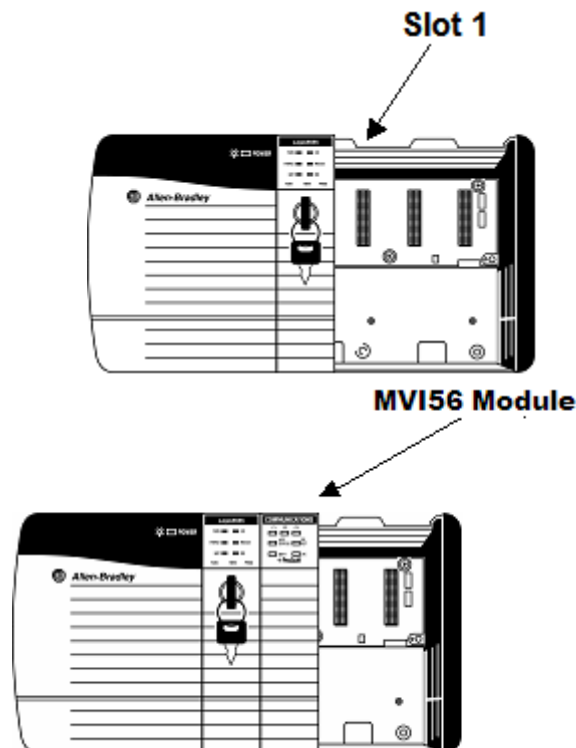
If you have not already installed and configured your ControlLogix processor and power supply, please do so before installing the MVI56-BDW module. Refer to your Rockwell Automation product documentation for installation instructions.

Warning: You must follow all safety instructions when installing this or any other electronic devices. Failure to follow safety procedures could result in damage to hardware or data, or even serious injury or death to personnel. Refer to the documentation for each device you plan to connect to verify that suitable safety procedures are in place before installing or servicing the device.

After you have checked the placement of the jumpers, insert MVI56-BDW into the ControlLogix chassis. Use the same technique recommended by Rockwell Automation to remove and install ControlLogix modules.

Warning: When you insert or remove the module while backplane power is on, an electrical arc can occur. This could cause an explosion in hazardous location installations. Verify that power is removed or the area is non-hazardous before proceeding. Repeated electrical arcing causes excessive wear to contacts on both the module and its mating connector. Worn contacts may create electrical resistance that can affect module operation.

- 1 Turn power OFF.
- 2 Align the module with the top and bottom guides, and slide it into the rack until the module is firmly against the backplane connector.



- 3 With a firm but steady push, snap the module into place.

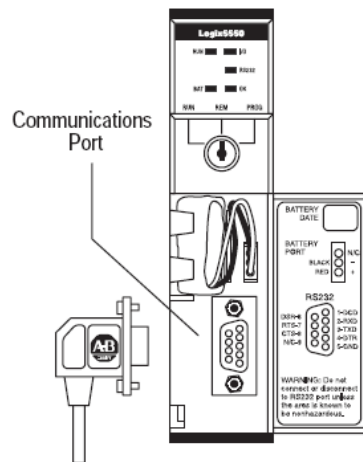
- 4 Check that the holding clips on the top and bottom of the module are securely in the locking holes of the rack.
- 5 Make a note of the slot location. You will need to identify the slot in which the module is installed in order for the sample program to work correctly. Slot numbers are identified on the green circuit board (backplane) of the ControlLogix rack.
- 6 Turn power ON.

Note: If you insert the module improperly, the system may stop working, or may behave unpredictably.

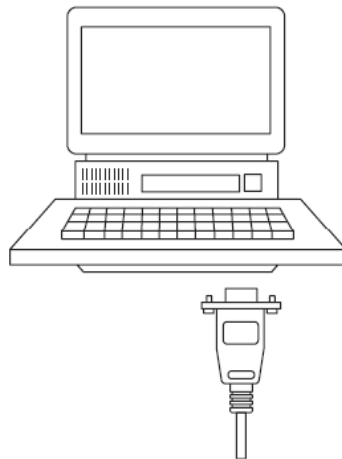
Note: If you are installing MVI56-BDW with other modules connected to the PCI bus, the peripheral modules will not have holding clips. Make sure all of the modules are aligned with their respective slots before you snap them into place.

1.4 Connect your PC to the Processor

- 1 Connect the right-angle connector end of the cable to your controller at the communications port.



- 2 Connect the straight connector end of the cable to the serial port on your computer.

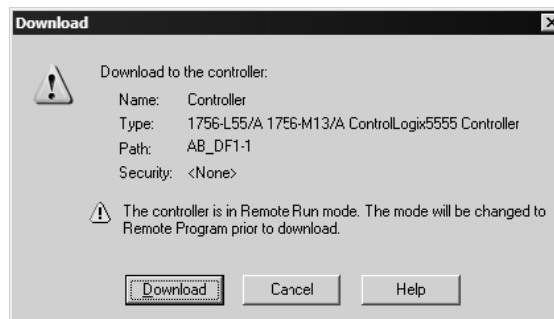


1.5 Download the Sample Program to the Processor

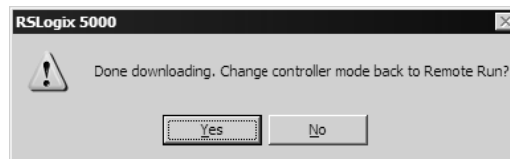
- *To download the sample program from RSLogix 5000 to the ControlLogix processor:*

Note: The key switch on the front of the ControlLogix module must be in the REM position.

- 1 If you are not already online to the processor, open the Communications menu, and then choose Download. RSLogix will establish communication with the processor.
- 2 When communication is established, RSLogix will open a confirmation dialog box. Click the Download button to transfer the sample program to the processor.



- 3 RSLogix will compile the program and transfer it to the processor. This process may take a few minutes.
- 4 When the download is complete, RSLogix will open another confirmation dialog box. Click OK to switch the processor from Program mode to Run mode.

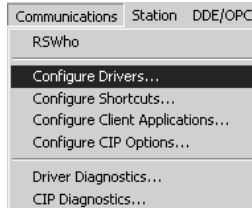


Note: If you receive an error message during these steps, refer to your RSLogix documentation to interpret and correct the error.

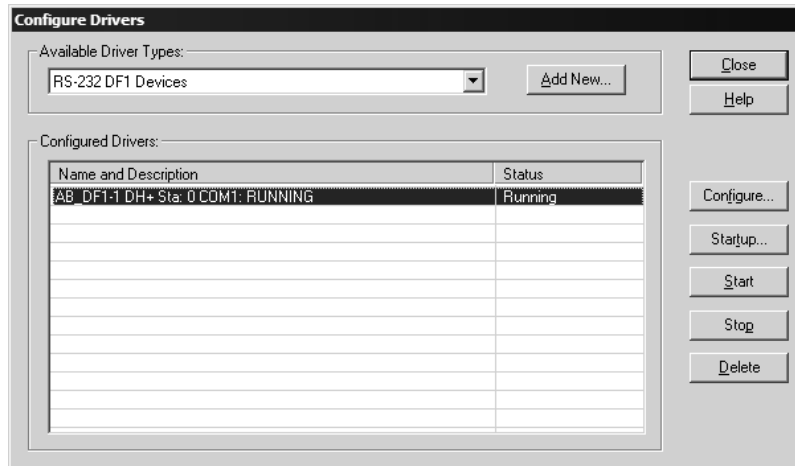
1.5.1 Configuring RSLinx

➤ **If RSLogix is unable to establish communication with the processor, follow these steps:**

- 1 Open RSLinx.
- 2 Open the Communications menu, and choose Configure Drivers.



This action opens the Configure Drivers dialog box.



Note: If the list of configured drivers is blank, you must first choose and configure a driver from the Available Driver Types list. The recommended driver type to choose for serial communication with the processor is "RS-232 DF1 Devices".

- 3 Click to select the driver, and then click Configure. This action opens the Configure Allen-Bradley DF1 Communications Device dialog box.

Configure Allen-Bradley DF1 Communications Device

Device Name: AB_DF1-1

Comm Port: COM1 Device: Logix 5550 - Serial Port

Baud Rate: 19200 Station Number (Octal): 00

Parity: None Error Checking: CRC

Stop Bits: 1 Protocol: Full Duplex

Auto-Configure

Use Modem Dialer Configure Dialer

Ok Cancel Delete Help

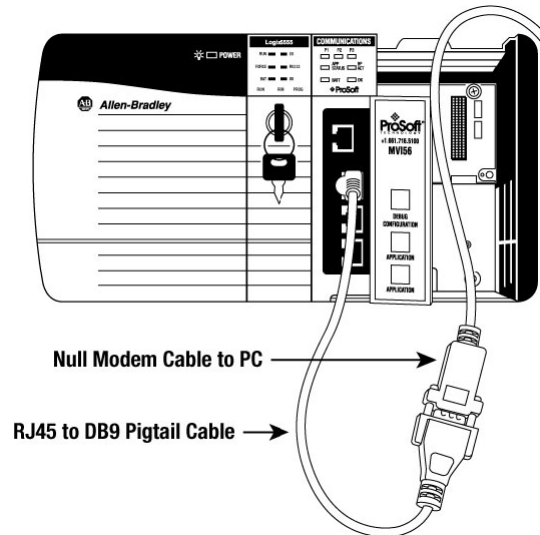
- 4 Click the Auto-Configure button. RSLinx will attempt to configure your serial port to work with the selected driver.
- 5 When you see the message "Auto Configuration Successful", click the OK button to dismiss the dialog box.

Note: If the auto-configuration procedure fails, verify that the cables are connected correctly between the processor and the serial port on your computer, and then try again. If you are still unable to auto-configure the port, refer to your RSLinx documentation for further troubleshooting steps.

1.6 Connect your PC to the Module

With the module securely mounted, connect your PC to the **Configuration/Debug** port using an RJ45-DB-9 Serial Adapter Cable and a Null Modem Cable.

- 1 Attach both cables as shown.
- 2 Insert the RJ45 cable connector into the Configuration/Debug port of the module.
- 3 Attach the other end to the serial port on your PC or laptop.



2 Module Configuration

In This Chapter

- Installing and Configuring the Module 17
- Modifying the Configuration File..... 26
- IP Address 32
- Uploading and Downloading the Configuration File 33

This document contains the setup procedure, data and ladder logic requirements for successful application of the MVI56-BDW module. Each step in the setup procedure is defined in order to simplify the use of the module. Go to the **Installing and Configuring the Module** section to begin installing and configuring the module. Additionally, this document contains a discussion on configuring the module using the BARDACDW.CFG file. All configuration information used by the module is stored in this file. Go to the **Configuration File** section to begin setting up this file.

The document also contains a discussion of the data object defined for the module. This single object completely encapsulates all the data required for module operation. It is important to understand each element of the object for proper application of the module. Go to the **Module Data Object** section for the presentation of the object.

The ladder logic requirement section defines the minimum ladder logic required to apply the module in a user application. The logic is simple to understand and implement. Go to the **Ladder Logic** section for a complete discussion of the ladder logic requirements.

2.1 Installing and Configuring the Module

This chapter describes how to install and configure the module to work with your application. The configuration process consists of the following steps.

- 1 Use RSLogix to identify the module to the processor and add the module to a project.

Note: The RSLogix software must be in "offline" mode to add the module to a project.

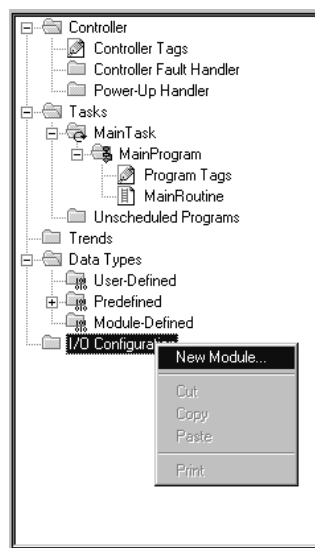
- 2 Modify the module's configuration files to meet the needs of your application, and copy the updated configuration to the module. Example configuration files are provided on the CD-ROM. Refer to the Modifying the Example Configuration File section, later in this chapter, for more information on the configuration files.

- 3 Modify the example ladder logic to meet the needs of your application, and copy the ladder logic to the processor. Example ladder logic files are provided on the CD-ROM.

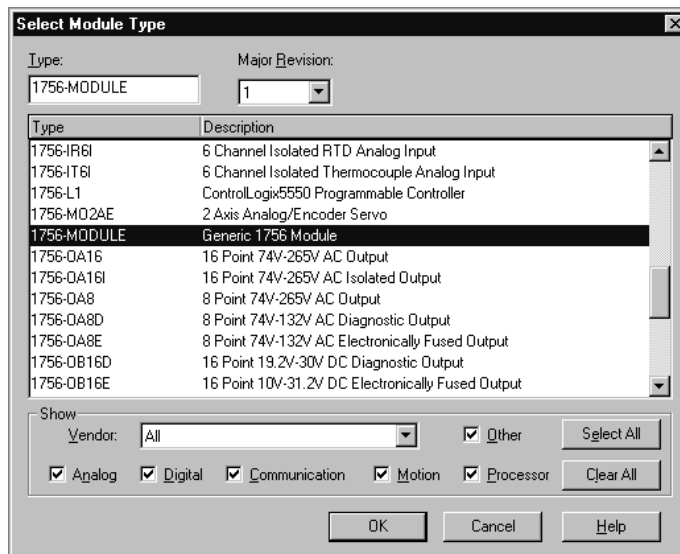
Note: If you are installing this module in an existing application, you can copy the necessary elements from the example ladder logic into your application.

The rest of this chapter describes these steps in more detail.

The first step in installing and configuring the module is to define the module to the system. Right-click the mouse button on the I/O Configuration option in the Controller Organization window to display a pop-up menu. Select the New Module... option from the I/O Configuration menu.



This action opens the following dialog box:



Select the 1756- Module (Generic 1756 Module) from the list and click the OK button. The following dialog box appears:

The screenshot shows a dialog box titled "Module Properties - Local (1756-MODULE 1.1)". It contains the following fields and options:

- Type: 1756-MODULE Generic 1756 Module
- Parent: Local
- Name: MVI56
- Description: MVI56 Module
- Comm Format: Data - INT
- Slot: 1
- Connection Parameters:
 - Input: 1 (16-bit)
 - Output: 2 (16-bit)
 - Configuration: 4 (8-bit)
 - Assembly Instance: 1
 - Size: 250 (16-bit)
 - 248 (16-bit)
 - 0 (8-bit)
 - Status Input: []
 - Status Output: []

Buttons at the bottom: Cancel, < Back, Next >, Finish >>, Help.

Fill in the dialog boxes as shown adjusting the Name, Description and Slot options for your application. You must select the **Comm Format** as **Data - INT** in the dialog box. Failure to set the **Assembly Instance** and **Size** values correctly will result in a module that will not communicate over the backplane of the ControlLogix rack. Click Next to display the next dialog box.

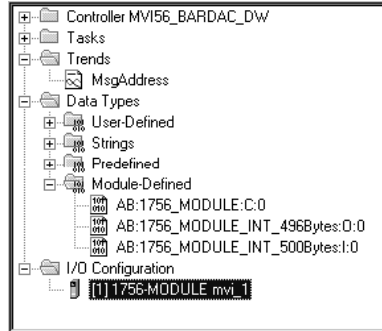
The screenshot shows a dialog box titled "Module Properties - Local:1 (1756-MODULE 1.1)". It contains the following fields and options:

- Requested Packet Interval (RPI): 5.0 ms (0.2 - 750.0 ms)
- Inhibit Module
- Major Fault On Controller If Connection Fails While in Run Mode
- Module Fault: []

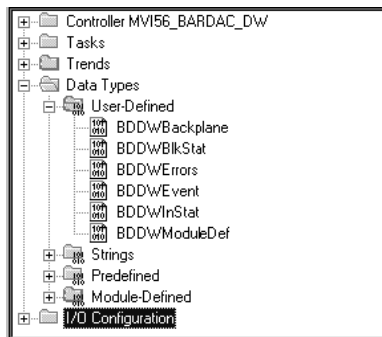
Buttons at the bottom: Cancel, < Back, Next >, Finish >>, Help.

Select the Request Packet Interval value for scanning the I/O on the module. This value represents the minimum frequency the module will handle scheduled events. This value should not be set to less than 1 millisecond. Values between 1 and 10 milliseconds should work with most applications.

After completing the module setup, the Controller Organization window will display the module's presence. The data required for the module will be defined to the application, and objects will be allocated in the Controller Tags data area. An example of the Controller Organization window is shown below:

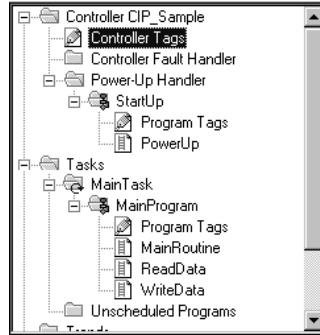


The next step in the module's setup is to define the User Defined Data Types to be used with the module. Copy these data types from the example ladder logic if you are not using the example. They will be defined if you are starting from the example ladder logic. The Controller Organization window should display the User Defined Data Types shown below:



The next step in module setup is to define the data to be used to interface with the module and the ladder logic. Open the Controller Tags Edit Tags dialog box and enter the values required for the application. The MVI56-BDW module is defined in the example as BARDAC-DW1. You can set the tag name to any valid tag name you desire. If you are using the example ladder logic, this step has already been performed.

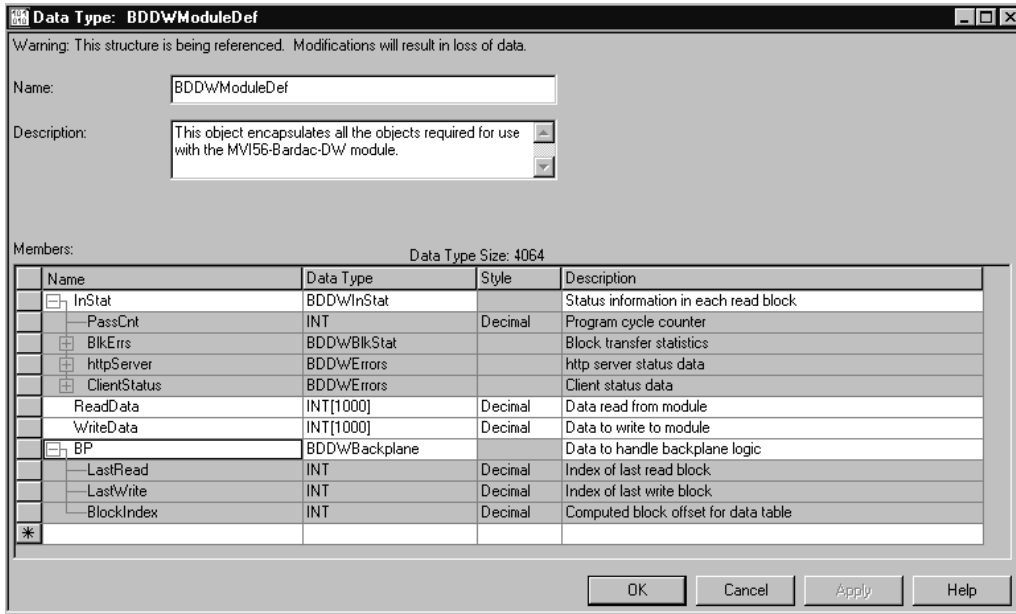
The last step in the module setup is to add the ladder logic. If you are using the example ladder logic, adjust the ladder to fit your application. If you are not using the ladder example, copy the ladder logic shown in the Controller Organization window below to your application.



It is now time to edit the BARDACDW.CFG file to set up the module for the specific application. Refer to the **Configuration File** section of this document. The module is now set up and ready to be used with your application. Insert the module in the rack and attach the serial communication cable and the network cable. Download the new application to the controller and place the processor in run mode. Download the new BARDACDW.CFG file to the module using the HyperTerminal program or any other terminal emulation program. If all the configuration parameters are set correctly and the module is attached to a network, the module's Application LED (APP LED) should remain off and the backplane activity LED (BP ACT) should blink very rapidly. Refer to the **Trouble Shooting** section of this manual if you encounter errors. Attach a computer or terminal to Port 1 on the module and look at the status of the module using the Configuration/Debug Menu in the module. Refer to the **Configuration/Debug** section for a complete discussion of the use of this feature.

2.1.1 Module Data Object (BDDWModuleDef)

All data related to the MVI56-BDW is stored in a user defined data type. An instance of the data type is required before the module can be used. This is done by declaring a variable of the data type in the Controller Tags Edit Tags dialog box. The structure of the object is displayed in the following illustration:



This object contains objects that define the configuration, user data, status and command control data related to the module. Each of these object types is discussed in the following topics of the document.

2.1.2 Backplane Control Object

This data object stores the variables required for the data transfer between the processor and the MVI56-BDW module. The structure of the object is shown below:

Data Type: BDDWBackplane

Name: BDDWBackplane

Description: Values used by program for data transfer operation between the module and the processor.

Members: Data Type Size: 8 byte(s)

Name	Data Type	Style	Description
LastRead	INT	Decimal	Index of last read block
LastWrite	INT	Decimal	Index of last write block
BlockIndex	INT	Decimal	Computed block offset for data table
*			

Buttons: OK, Cancel, Apply, Help

2.1.3 User Data Objects

These objects hold data to be transferred between the processor and the MVI56-BDW module. The user data is the read and write data transferred between the processor and the module as "pages" of data up to 200 words long.

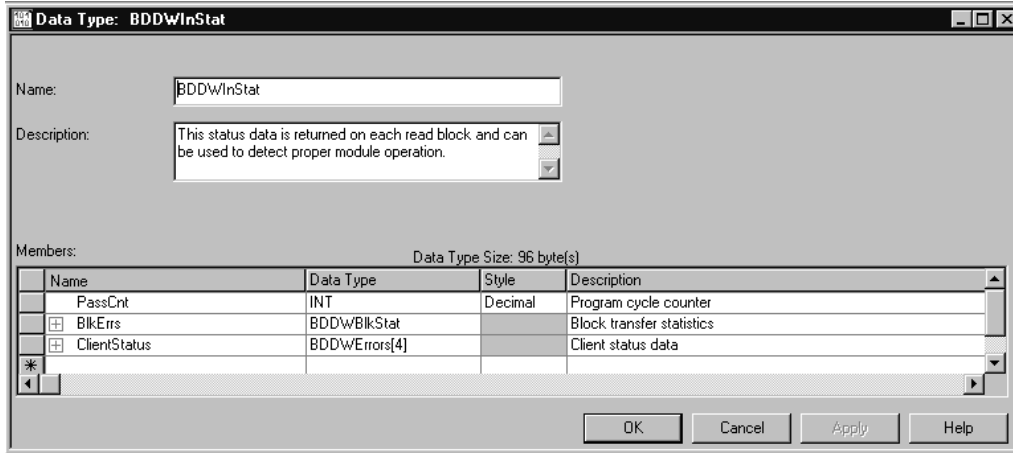
ReadData	INT[1000]	Decimal	Data read from module
WriteData	INT[1000]	Decimal	Data to write to module

The read data (**ReadData**) is an array set to match the value entered in the **Read Register Count** parameter of the BARDACDW.CFG file. For ease of use, this array should be dimensioned as an even increment of 200 words. This data is paged up to 200 words at a time from the module to the processor. The ReadData task is responsible for placing the data received into the proper position in the read data array. Use this data for status and control in the ladder logic of the processor.

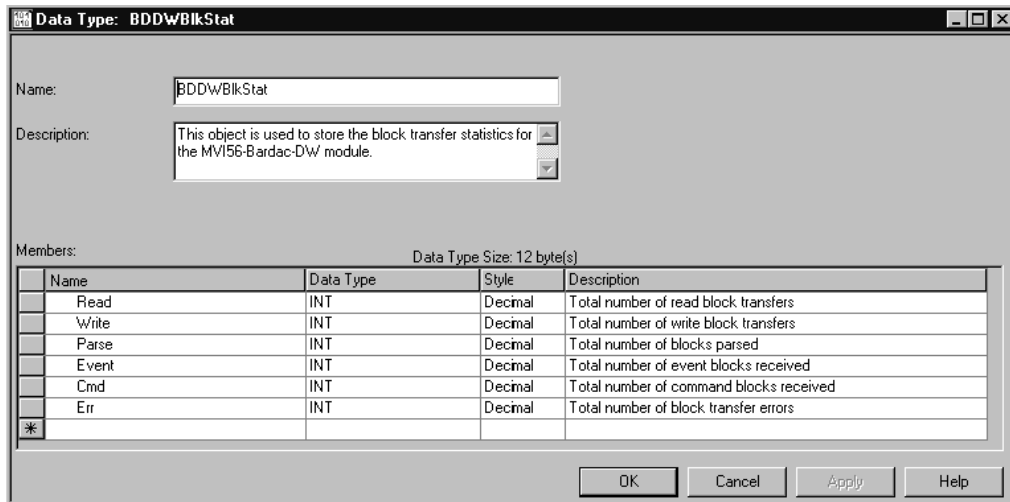
The write data (**WriteData**) is an array set to match the value entered in the **Write Register Count** parameter of the BARDACDW.CFG file. For ease of use, this array should be dimensioned as even increments of 200 words. This data is paged up to 200 words at a time from the processor to the module. The WriteData task is responsible for placing the write data into the output image for transfer to the module. This data is passed from the processor to the module for status and control information for use in other nodes on the network.

2.1.4 Status Data

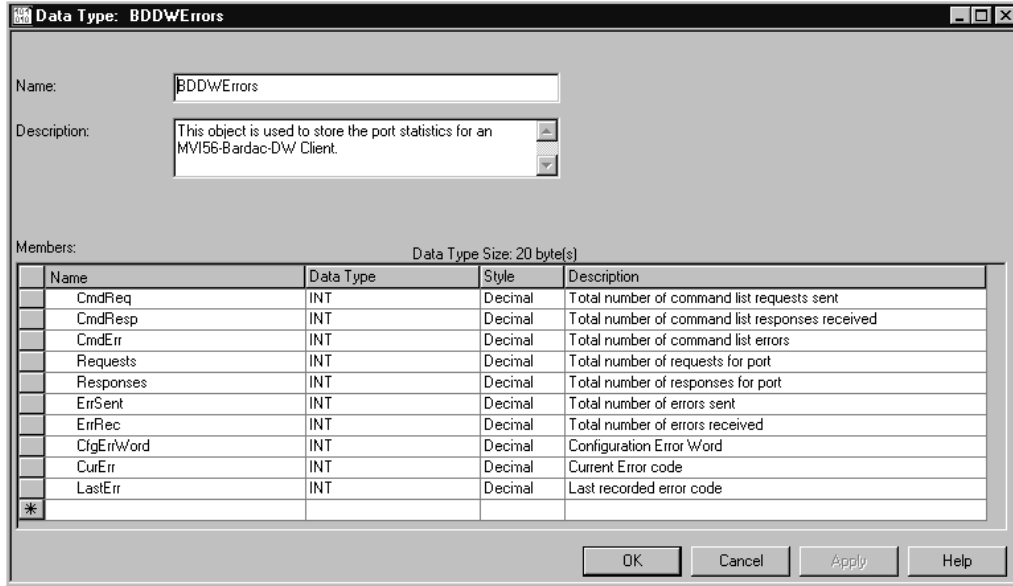
This object views the status of the module. The **BDDWInStat** object shown below is updated each time a read block is received by the processor. Use this data to monitor the state of the module at a "real-time rate".



This object contains a structure that includes the status information for the data transfer operations between the processor and the module. The structure of this object is displayed below:



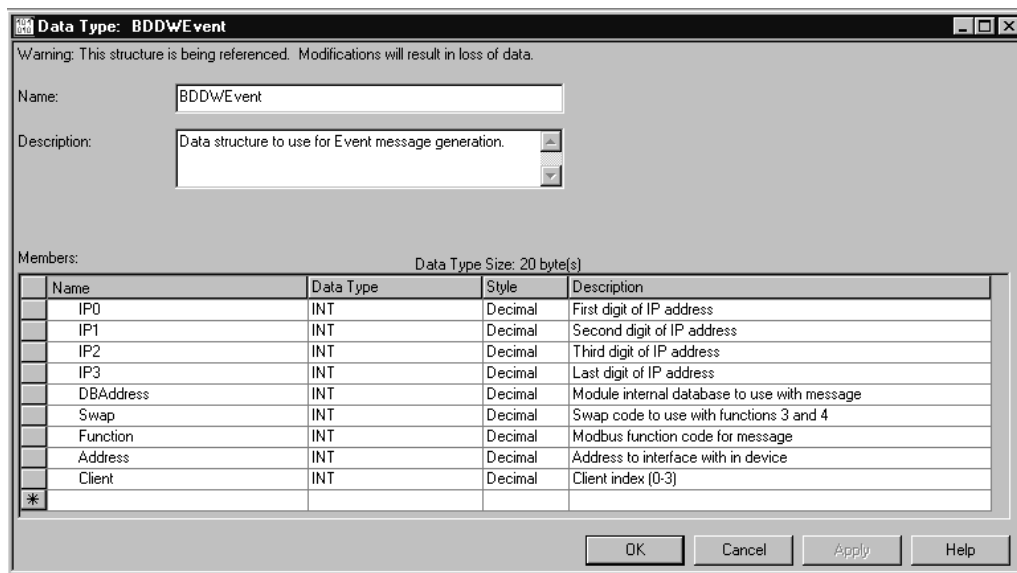
Additionally, the status object contains a structure for the BARDAC-DW clients. The structure used for each is shown below:



Refer to the Reference chapter for a complete listing of the data stored in status object.

2.1.5 Event Command Data

The BDDWEvent object is not placed in the module definition object and is only required when event commands are utilized in the application. This structure holds the information required for an event command. An array of these objects should be defined and hold the event command set to be employed in the application. The structure of the object is shown below:



2.2 Modifying the Configuration File

In order for the module to operate, a configuration file (BARDACDW.CFG) is required. This configuration file contains information to set the data transfer characteristics between the module and the processor, to configure the module's client and command list. Each parameter in the file must be set carefully in order for the application to be implemented successfully.

The configuration file is separated into sections with topic header names enclosed in the [] characters. The configuration file consists of the following topics:

[Section]	Description
[MODULE]	General module configuration information
[BARDAC DW CLIENT 0]	Configuration data for the Bardac DW Client 0
[BARDAC DW CLIENT 0 COMMANDS]	Command list for the Bardac DW Client 0
[BARDAC DW CLIENT 1]	Configuration data for the Bardac DW Client 1
[BARDAC DW CLIENT 1 COMMANDS]	Command list for the Bardac DW Client 1
[BARDAC DW CLIENT 2]	Configuration data for the Bardac DW Client 2
[BARDAC DW CLIENT 2 COMMANDS]	Command list for the Bardac DW Client 2
[BARDAC DW CLIENT 3]	Configuration data for the Bardac DW Client 3
[BARDAC DW CLIENT 3 COMMANDS]	Command list for the Bardac DW Client 3

After each section header, the file contains a set of parameters. Unique labels are used under each section to specify a parameter. Each label in the file must be entered exactly as shown in the file for the parameter to be identified by the program. If the module is not considering a parameter, look at the label for the data item. Each parameter's value is separated from the label with the ':' character. This character is used by the program to delimit the position in the data record where to start reading data. All data for a parameter must be placed after the ':' character. For numeric parameter values any text located after the value will not be used. There must be at least one space character between the end of the parameter value and the following text. An example of a parameter entry is given below:

```
Error/Status Offset: 3000 #Database location for Error/Status Data
```

The parameter label is "Error/Status Offset" and the parameter value is 3000. The characters after the parameter value are ignored and are used for internal documentation of the configuration file.

Any record that begins with the '#' character is considered to be a comment record. These records can be placed anywhere in the file as long as the '#' character is found in the first column of the line. These lines are ignored in the file and can be used to provide documentation within the configuration file. Liberal use of comments within the file can ease the use and interpretation of the data in the file.

The client command list section is formatted differently than the other sections. This section contains lists of parameters to be used. Each list begins with the label **START** and when the **END** label is reached. When entering the records into the list, make certain that the first character in each line is left blank.

The [BARDAC DW CLIENT x COMMANDS] sections define the BARDAC DW UDP/IP commands to be issued from the module to server devices on the network for each of the four clients. These commands can be used for data collection and/or control of devices on the UDP/IP network.

2.2.1 MVI56-BDW Communication Module Configuration

[Section]/Item	Value	Range	Description
[MODULE]			Configuration header for general module information
Module Name:		Up to 80 chars	Name of the module for use on reports. Use this parameter to identify your module in your system.
Password:		Up to 20 chars	This parameter sets the password for the module. If the parameter is not set, the module will not be password protected. The module interprets the password as a case-sensitive string. Do not include spaces or special characters in the password. Only alpha and numeric characters should be used.
Error/Status Pointer:		-1 to 4955	Starting register location in virtual database for the error/status table. If a value of -1 is entered, the error/status data will not be placed in the database. All other valid values determine the starting location of the data. This data area includes the module version information and all server error/status data.
Write Register Start:		0 to 4999	This parameter specifies the starting register in the module where the data transferred from the processor will be placed. Valid range for this parameter is 0 to 4999.
Write Register Count:		0 to 5000	This parameter specifies the number of registers to transfer from the processor to the module. Valid entry for this parameter is 0 to 5000.
Read Register Start:		0 to 4999	This parameter specifies the starting register in the module where data will be transferred from the module to the processor. Valid range for this parameter is 0 to 4999.
Read Register Count:		0 to 5000	This parameter specifies the number of registers to be transferred from the module to the processor. Valid entry for this parameter is 0 to 5000.
Failure Flag Count:		0 to 65535	This parameter specifies the number of successive transfer errors that must occur before the communication ports are shut down. If the parameter is set to 0, the communication ports will continue to operate under all conditions. If the value is set larger than 0 (1 to 65535), communications will cease if the specified number of failures occur.

[Section]/Item	Value	Range	Description
Initialize Output Data:		0 or 1	This parameter determines if the output data for the module should be initialized with values from the processor. If the value is set to 0, the output data will be initialized to 0. If the value is set to 1, the data will be initialized with data from the processor. Use of this option requires associated ladder logic to pass the data from the processor to the module.

[Section]/Item	Value	Range	Description
[BARDAC DW CLIENT x]			Start header for Client x (x=0 to 3)
Error/Status Pointer:		-1 to 4990	Starting register location in virtual database for the error/status table for this client. If a value of -1 is entered, the error/status data will not be placed in the database. All other valid values determine the starting location of the data.
Minimum Command Delay:		0 to 65535	This parameter specifies the number of milliseconds to wait between the initial issuance of a command. This parameter can be used to delay all commands sent to slaves to avoid "flooding" commands on the network. This parameter does not affect retries of a command as they will be issued when failure is recognized.
Command Error Pointer:		-1 to 4999	This parameter sets the address in the internal database where the command error data will be placed. If the value is set to -1, the data will not be transferred to the database.
Response Timeout:		0 to 65535	This parameter represents the message response timeout period in 1 ms increments. This is the time that a client will wait before re-transmitting a command if no response is received from the addressed slave. The value is set depending upon the communication network used and the expected response time of the slowest device on the network.
Retry Count:		0 to 25	This parameter specifies the number of times a command will be retried if it fails.

The command list for the client in the module is located in the [] section of the file. The following table describes the functions supported by the module and the format of each command:

Module Information ← | → Device Information

BARDAC DW COMMAND STRUCTURE

Column #	1	2	3	4	5	6	7
Function	Enable	Internal	Poll Interval	Swap	IP	Function	Device
Code	Code	Address	Time	Code	Address	Code	Modbus
GET 0	Code	Register	1/10 Seconds	0	IP Address	0	Register
SET 1	Code	Register	1/10 Seconds	0	IP Address	1	Register

The form below can be used to design the application's command list:



BARDAC DW COMMAND ENTRY FORM

Column #	1	2	3	4	5	6	7
	Enable Code	Internal Address	Poll Interval Time	Swap Code	IP Address	Function Code	Device Modbus Address

2.2.2 *Command List Overview*

In order to interface the MVI56-BDW module with BARDAC-DW capable drives, you must construct a command list for each of the four clients. The commands in the list specify the Server device to be addressed, the function to be performed (get or set), the data area in the device to interface with and the registers in the internal database to be associated with the device data. The Client Command List supports up to 100 commands for each client. The command list is processed from top (command #0) to bottom independently by each client. A poll interval parameter is associated with each command to specify a minimum delay time in tenths of a second between the issuance of a command. If the user specifies a value of 10 for the parameter, the command will be executed no more frequently than every 1 second.

Write commands have a special feature, as they can be set to execute only if the data in the write command changes. If the register data values in the command have not changed since the command was last issued, the command will not be executed. If the data in the command has changed since the command was last issued, the command will be executed. Use of this feature can lighten the load on the network. In order to implement this feature; set the enable code for the command to a value of 2.

2.2.3 *Commands Supported by the Module*

The format of each command in the list is dependent on the BARDAC DW Function Code being executed. The tables below list the functions supported by the module:

Function Code	Definition	Supported in Client
0	Get (read data)	X
1	Set (write data)	X

Each command list record has the same general format. The first part of the record contains the information relating to the communication module and the second part contains information required to interface to the BARDAC-DW UDP/IP Server device.

2.2.4 Command Entry Formats

The following table shows the structure of the configuration data necessary for each of the supported commands:

Module Information ← | → Device Information

BARDAC DW COMMAND STRUCTURE

Column #	1	2	3	4	5	6	7
Function Code	Enable Code	Internal Address	Poll Interval Time	Swap Code	IP Address	Function Code	Device Modbus Address
GET 0	Code	Register	1/10 Seconds	0	IP Address	0	Register
SET 1	Code	Register	1/10 Seconds	0	IP Address	1	Register

The first part of the record is the Module Information, which relates to the MVI module and the second part contains information required to interface to the Server device.

An example of a command list section of the CFG file is displayed below:

```
[BARDAC DW Client 0 Commands]
#
# 1 2 3 4 5 6 7
# DB Poll Swap Cmd Parameter
#Enab Addr Delay Code Node IP Address Code ID
START
 1 110 0 0 192.168.0.67 0 296
 1 111 0 0 192.168.0.67 0 181
 1 112 0 0 192.168.0.67 0 180
END
```

Each parameter is discussed below:

Command Parameter	Range	Description								
Enable	0,1,2	This field defines whether or not the command is to be executed and under what conditions. <table border="1" style="width: 100%; margin-top: 5px;"> <thead> <tr> <th style="width: 15%;">Value</th> <th style="width: 85%;">Description</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>The command is disabled and will not be executed in the normal polling sequence.</td> </tr> <tr> <td>1</td> <td>The command is executed each scan of the command list if the Poll Interval Time is set to zero. If the Poll Interval time is set, the command will be executed, when the interval timer expires.</td> </tr> <tr> <td>2</td> <td>The command will execute only if the internal data associated with the command changes. This value is valid only for write commands.</td> </tr> </tbody> </table>	Value	Description	0	The command is disabled and will not be executed in the normal polling sequence.	1	The command is executed each scan of the command list if the Poll Interval Time is set to zero. If the Poll Interval time is set, the command will be executed, when the interval timer expires.	2	The command will execute only if the internal data associated with the command changes. This value is valid only for write commands.
Value	Description									
0	The command is disabled and will not be executed in the normal polling sequence.									
1	The command is executed each scan of the command list if the Poll Interval Time is set to zero. If the Poll Interval time is set, the command will be executed, when the interval timer expires.									
2	The command will execute only if the internal data associated with the command changes. This value is valid only for write commands.									
Internal Address	0 to 4999	This field specifies the internal database register to be associated with the command. <ul style="list-style-type: none"> - If the command is a read function, the data read from the Server device will be placed starting at the register value entered in this field. - If the command is a write function, the data written to the Server device will be sourced from the address specified. 								

Command Parameter	Range	Description						
Poll Interval	0 to 65535	This parameter specifies the minimum interval to execute continuous commands (Enable code of 1). The parameter is entered in units of 1/10 th seconds. Therefore, if a value of 10 is entered for a command, the command will execute no more frequently than every 1 second.						
Swap Code	0 or,1	This parameter defines if the data received from the Server is to be ordered differently than received from the Server device. This parameter can be set to order the register data received in an order useful by other applications. The following table defines the values and their associated operations: <table border="1" style="margin-left: 20px;"> <thead> <tr> <th>Swap Code</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>None - No Change is made in the byte ordering (1234 = 1234)</td> </tr> <tr> <td>1</td> <td>Bytes - The bytes in each word are swapped (1234=2143)</td> </tr> </tbody> </table>	Swap Code	Description	0	None - No Change is made in the byte ordering (1234 = 1234)	1	Bytes - The bytes in each word are swapped (1234=2143)
Swap Code	Description							
0	None - No Change is made in the byte ordering (1234 = 1234)							
1	Bytes - The bytes in each word are swapped (1234=2143)							
Node IP Address	xxx.xxx.xxx.xxx	The IP address of the device being addressed by the command.						
Function Code	0 or 1	This parameter specifies the BARDAC DW function to be executed by the command. The following table defines the purpose of each function supported by the module. <table border="1" style="margin-left: 20px;"> <thead> <tr> <th>Function Code</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>Get (read data)</td> </tr> <tr> <td>1</td> <td>Set (write data)</td> </tr> </tbody> </table>	Function Code	Description	0	Get (read data)	1	Set (write data)
Function Code	Description							
0	Get (read data)							
1	Set (write data)							
Device Address		This parameter specifies the PIN value for the data value or parameter to be considered by the command. Refer to the drive manual for a complete listing of valid PIN's for your specific application.						

2.3 IP Address

In addition to the BARDACDW.CFG, the MVI56-BDW module requires a second configuration file that identifies its Ethernet configuration. Without this configuration file, the module will not communicate properly on the network.

This file contains the Ethernet address information to be used by the module and may be transferred to and from the module from the **Network** command available on the debug port of the module. Please consult your network administrator for the correct settings for your network before placing this or any other Ethernet TCP/IP device upon your network.

Important: If the field "my_ip" does not exist, or if the wattcp.cfg file is corrupted or does not exist, the module will not function.

➤ **To set the Module's IP Address**

- 1 Locate the sample configuration files for your module on the ProSoft Solutions CD.
- 2 Copy the configuration files and ladder to a location on your PC's hard drive. We recommend C:\temp.
- 3 After you move the files, right-click on each of the files, choose Properties, and clear the READ ONLY check box.

- 4 Start Notepad.exe, or any other editor that can save plain text files.
- 5 Open the file WATTCP.CFG. The following example shows the contents of a typical WATTCP.CFG file.

```
# ProSoft Technology
# Default private class 3 address
my_ip=192.168.0.100

# Default class 3 network mask
netmask=255.255.255.0

# The gateway I wish to use
gateway=192.168.0.1,192.168.0.0,255.255.255.0
```

- 6 Edit the file, using the IP addresses supplied by your network administrator.

Important: The module does not support DHCP (Dynamic Host Configuration Protocol) for obtaining an IP address from a server. This module must have its own static IP address that does not duplicate the IP address of any other device on the Ethernet network.

- 7 Save the file as WATTCP.CFG. You must now transfer the file to the module. Refer to [Transferring WATTCP.CFG to the module](#) (page 37, page 52) for the correct procedure.

2.4 Uploading and Downloading the Configuration File

ProSoft modules are shipped with a pre-loaded configuration file. In order to edit this file, you must transfer the file from the module to your PC. After editing, you must transfer the file back to the module.

This section describes these procedures.

Important: The illustrations of configuration/debug menus in this section are intended as a general guide, and may not exactly match the configuration/debug menus in your own module. For specific information about the configuration/debug menus in your module, refer to [The Configuration/Debug Menu](#) (page 42).

2.4.1 Required Hardware

You can connect directly from your computer's serial port to the serial port on the module to view configuration information, perform maintenance, and send (upload) or receive (download) configuration files.

ProSoft Technology recommends the following minimum hardware to connect your computer to the module:

- 80486 based processor (Pentium preferred)
- 1 megabyte of memory
- At least one UART hardware-based serial communications port available. USB-based virtual UART systems (USB to serial port adapters) often do not function reliably, especially during binary file transfers, such as when uploading/downloading configuration files or module firmware upgrades.
- A null modem serial cable.

2.4.2 Required Software

In order to send and receive data over the serial port (COM port) on your computer to the module, you must use a communication program (terminal emulator).

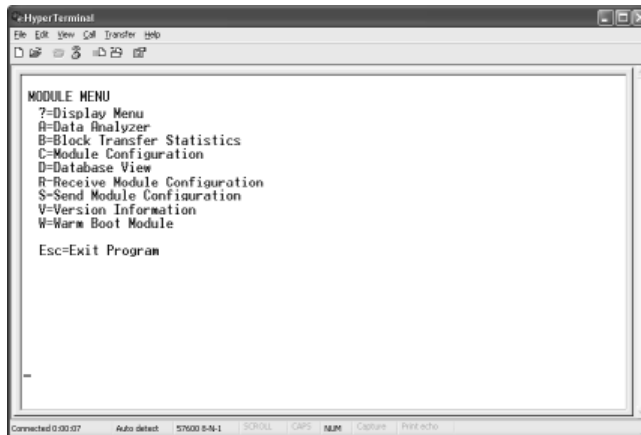
A simple communication program called HyperTerminal is pre-installed with recent versions of Microsoft Windows operating systems. If you are connecting from a machine running DOS, you must obtain and install a compatible communication program. The following table lists communication programs that have been tested by ProSoft Technology.

DOS	ProComm, as well as several other terminal emulation programs
Windows 3.1	Terminal
Windows 95/98	HyperTerminal
Windows NT/2000/XP	HyperTerminal

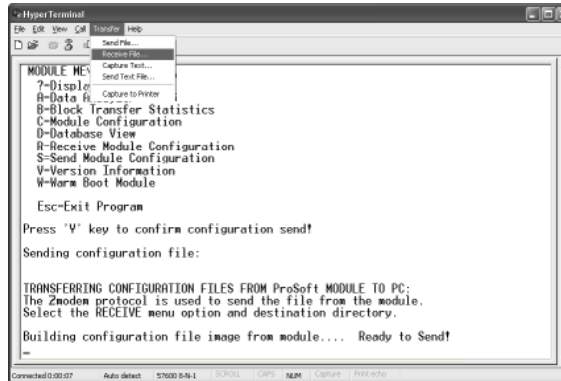
The module uses the Zmodem file transfer protocol to send (upload) and receive (download) configuration files from your module. If you use a communication program that is not on the list above, please be sure that it supports Zmodem file transfers.

2.4.3 Transferring the Configuration File to Your PC

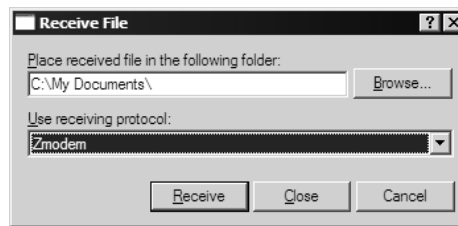
- 1 Connect your PC to the Configuration/Debug port of the module using a terminal program such as HyperTerminal. Press [?] to display the main menu.



- From the **Transfer** menu in HyperTerminal, select **Receive File**.

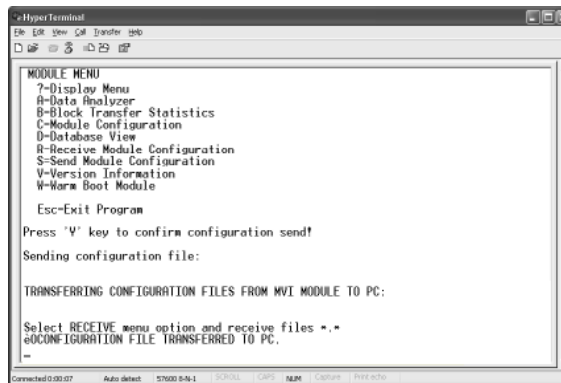


- In the Receive File dialog box, browse to the location on your PC where the configuration file should be stored, and select Zmodem (or Zmodem with Crash Recovery) as the receiving protocol.



When you have completed your selections, click Close.

- Press **[S]** (Send Module Configuration), and then press **[Y]** to confirm the transfer.



The file transfer will then begin automatically, using the protocol and location you specified in Step 3.

When the configuration file has been transferred to your PC, the dialog box will indicate that the transfer is complete.

```
Confirm Send Configuration File to Remote PC by pressing 'Y' key....  
Sending configuration file:  
  
TRANSFERRING CONFIGURATION FILES FROM MVI MODULE TO PC:  
  
Select RECEIVE menu option and receive files *.*  
@CONFIGURATION FILE TRANSFERRED TO PC.
```

The configuration file is now on your PC at the location you specified.

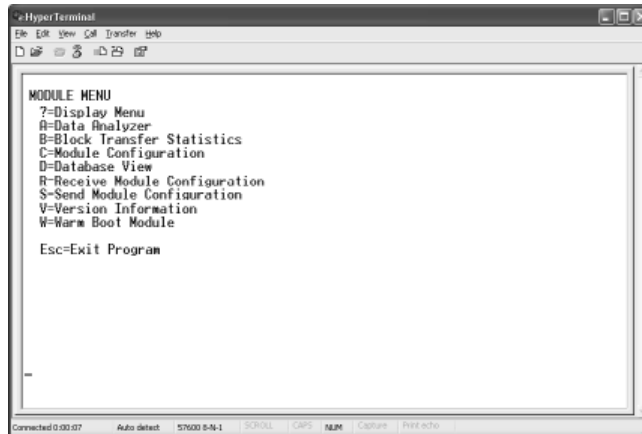


- 5 You can now open and edit the file in a text editor such as Notepad. When you have finished editing the file, save it and close Notepad.

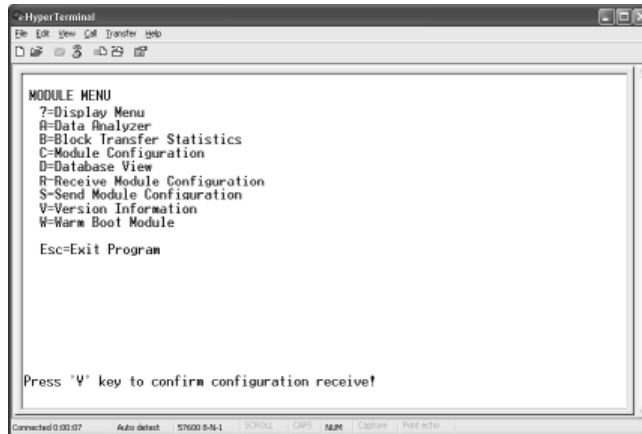
2.4.4 Transferring the Configuration File to the Module

Perform the following steps to transfer a configuration file from your PC to the module.

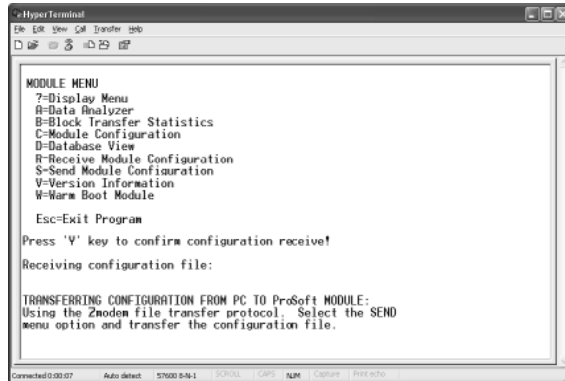
- 1 Connect your PC to the Configuration/Debug port of the module using a terminal program such as HyperTerminal. Press **[?]** to display the main menu.



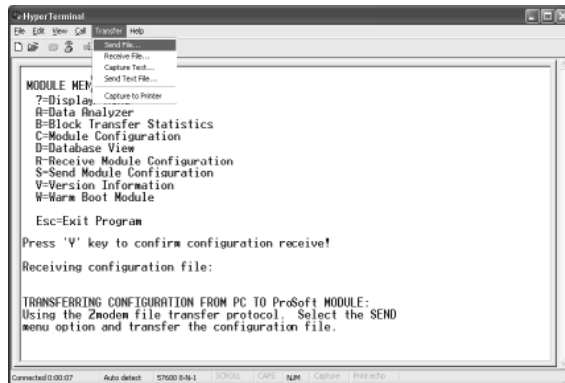
- 2 Press **[R]** (Receive Module Configuration). The message "Press Y key to confirm configuration receive!" is displayed at the bottom of the screen.



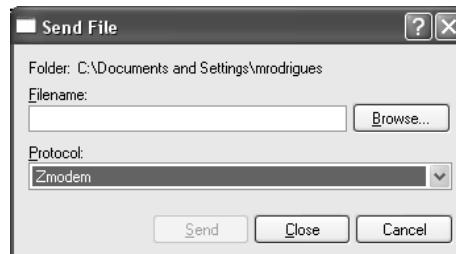
- 3 Press [Y]. The screen now indicates that the PC is ready to send.



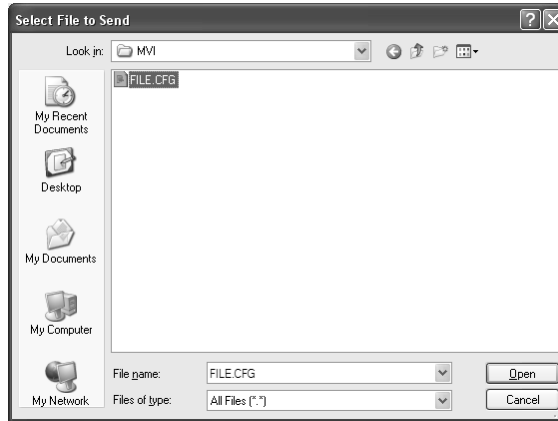
- 4 From the **Transfer** menu in HyperTerminal, select **Send File**.



The Send File dialog appears.

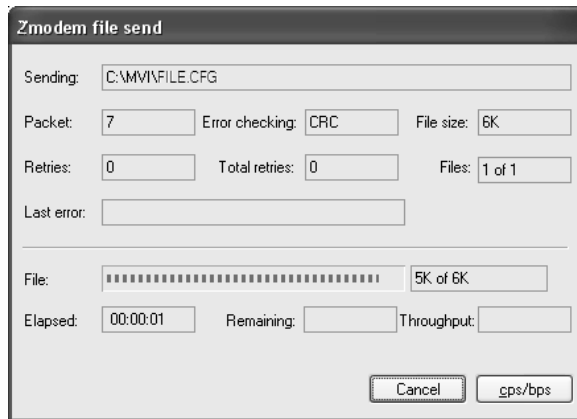


- 5 Use the Browse button to locate the configuration file your computer.

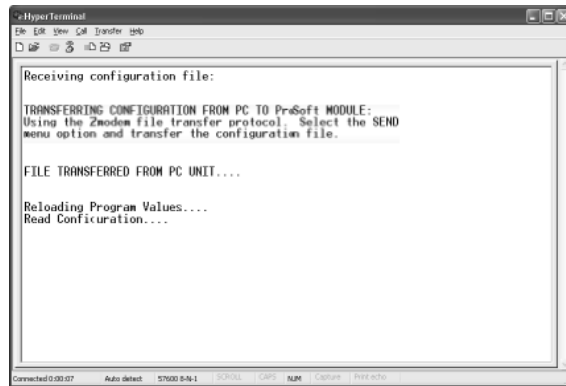


Note: This procedure assumes that you are uploading a newly edited configuration file from your PC to the module. However, configuration files are also available on the ProSoft CD as well as the ProSoft Technology web site.

- 6 Select Zmodem as the protocol.
- 7 Click the Send button. This action opens the Zmodem File Send dialog box.



When the upload is complete, the screen indicates that the module has reloaded program values and displays information about the module.



8 Your module now contains the new configuration.

3 Ladder Logic

Ladder logic is required for application of the MVI56-BDW module. Tasks that must be handled by the ladder logic are module data transfer, special block handling and status data receipt. Additionally, a power-up handler may be needed to handle the initialization of the module's data and to clear any processor fault conditions.

The sample ladder logic, on the ProSoft Solutions CD-ROM, is extensively commented, to provide information on the purpose and function of each rung. For most applications, the sample ladder will work without modification.

4 Diagnostics and Troubleshooting

In This Chapter

- Reading Status Data From the Module 42
- LED Status Indicators..... 53

The module provides information on diagnostics and troubleshooting in the following forms:

- Status data values are transferred from the module to the processor.
- Data contained in the module can be viewed through the Configuration/Debug port attached to a terminal emulator.
- LED status indicators on the front of the module provide information on the module's status.

4.1 Reading Status Data From the Module

The MVI56-BDW module returns a 47-word Status Data block that can be used to determine the module's operating status. This data is located in the module's database at a user set location. This data is transferred to the ControlLogix processor continuously with each normal data read block. For a complete listing of the status data object, refer to the **Module Set Up** section.

4.1.1 The Configuration/Debug Menu

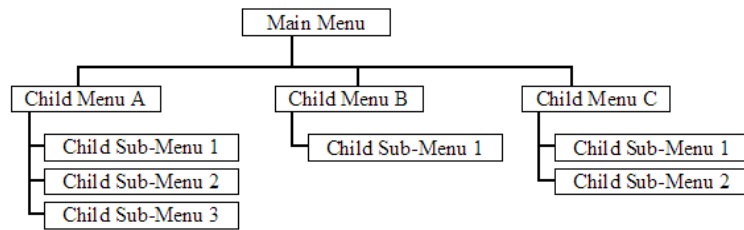
The Configuration and Debug menu for this module is arranged as a tree structure, with the Main Menu at the top of the tree, and one or more sub-menus for each menu command. The first menu you see when you connect to the module is the Main menu.

Because this is a text-based menu system, you enter commands by typing the command letter from your computer keyboard in the terminal application (for example, HyperTerminal). The module does not respond to mouse movements or clicks. The command executes as soon as you press the command letter — you do not need to press **[Enter]**. When you type a command letter, a new screen will be displayed in your terminal application.

Navigation

All of the sub-menus for this module contain commands to redisplay the menu or return to the previous menu. You can always return from a sub-menu to the next higher menu by pressing **[M]** on your keyboard.

The organization of the menu structure is represented in simplified form in the following illustration:



The remainder of this section shows you the menus available for this module, and briefly discusses the commands available to you.

Keystrokes

The keyboard commands on these menus are almost always non-case sensitive. You can enter most commands in lower case or capital letters.

The menus use a few special characters ([**?**], [**-**], [**+**], [**@**]) that must be entered exactly as shown. Some of these characters will require you to use the [**Shift**], [**Ctrl**] or [**Alt**] keys to enter them correctly. For example, on US English keyboards, enter the [**?**] command as [**Shift**]/.

Also, take care to distinguish capital letter [**I**] from lower case letter [**i**] (L) and number [**1**]; likewise for capital letter [**O**] and number [**0**]. Although these characters look nearly the same on the screen, they perform different actions on the module.

4.1.2 Required Hardware

You can connect directly from your computer's serial port to the serial port on the module to view configuration information, perform maintenance, and send (upload) or receive (download) configuration files.

ProSoft Technology recommends the following minimum hardware to connect your computer to the module:

- 80486 based processor (Pentium preferred)
- 1 megabyte of memory
- At least one UART hardware-based serial communications port available. USB-based virtual UART systems (USB to serial port adapters) often do not function reliably, especially during binary file transfers, such as when uploading/downloading configuration files or module firmware upgrades.
- A null modem serial cable.

4.1.3 Required Software

In order to send and receive data over the serial port (COM port) on your computer to the module, you must use a communication program (terminal emulator).

A simple communication program called HyperTerminal is pre-installed with recent versions of Microsoft Windows operating systems. If you are connecting from a machine running DOS, you must obtain and install a compatible communication program. The following table lists communication programs that have been tested by ProSoft Technology.

DOS	ProComm, as well as several other terminal emulation programs
Windows 3.1	Terminal
Windows 95/98	HyperTerminal
Windows NT/2000/XP	HyperTerminal

The module uses the Zmodem file transfer protocol to send (upload) and receive (download) configuration files from your module. If you use a communication program that is not on the list above, please be sure that it supports Zmodem file transfers.

4.1.4 Using the Configuration/Debug Port

To connect to the module's Configuration/Debug port:

- 1 Connect your computer to the module's port using a null modem cable.
- 2 Start the communication program on your computer and configure the communication parameters with the following settings:

Baud Rate	57,600
Parity	None
Data Bits	8
Stop Bits	1
Software Handshaking	None

- 3 Open the connection. When you are connected, press the **[?]** key on your keyboard. If the system is set up properly, you will see a menu with the module name followed by a list of letters and the commands associated with them.

If there is no response from the module, follow these steps:

- 1 Verify that the null modem cable is connected properly between your computer's serial port and the module. A regular serial cable will not work.
- 2 Verify that RSLinx is not controlling the COM port. Refer to [Disabling the RSLinx Driver for the Com Port on the PC](#) (page 70).
- 3 Verify that your communication software is using the correct settings for baud rate, parity and handshaking.
- 4 On computers with more than one serial port, verify that your communication program is connected to the same port that is connected to the module.

If you are still not able to establish a connection, you can contact ProSoft Technology Technical Support for further assistance.

4.1.5 Main Menu

When you first connect to the module from your computer, your terminal screen will be blank. To activate the main menu, press the [?] key on your computer's keyboard. If the module is connected properly, the following menu will appear on your terminal screen:

```
MVI56-BARDAC DW COMMUNICATION MODULE MENU
? = Display Menu
B = Block Transfer Statistics
C = Module Configuration
D = Modbus Database View
Client Command List Errors:  E=0  F=1  G=2  H=3
Client Command List:       I=0  J=1  K=2  L=3
R = Transfer Configuration from PC to MUI Unit
S = Transfer Configuration from MUI Unit to PC
T = Display e-mail setup
U = Reset diagnostic data
V = Version Information
W = Warm Boot Module
Communication Status:      1=Client 0  2=Client 1  3=Client 2  4=Client 3
5 = Client Configurations
E = Network Menu          Esc=Exit Program
```

Caution: Some of the commands available to you from this menu are designed for advanced debugging and system testing only, and can cause the module to stop communicating with the processor or with other devices, resulting in potential data loss or other failures. Only use these commands if you are specifically directed to do so by ProSoft Technology Technical Support staff. Some of these command keys are not listed on the menu, but are active nevertheless. Please be careful when pressing keys so that you do not accidentally execute an unwanted command.

Viewing Block Transfer Statistics

Press **[B]** from the Main Menu to view the Block Transfer Statistics screen.

Use this command to display the configuration and statistics of the backplane data transfer operations between the module and the processor. The information on this screen can help determine if there are communication problems between the processor and the module.

Tip: To determine the number of blocks transferred each second, mark the numbers displayed at a specific time. Then some seconds later activate the command again. Subtract the previous numbers from the current numbers and divide by the quantity of seconds passed between the two readings.

Viewing Module Configuration

Press **[C]** to view the Module Configuration screen.

Use this command to display the current configuration and statistics for the module.

Opening the Database Menu

Press **[D]** to open the Database View menu. Use this menu command to view the current contents of the module's database.

Opening the Command Error List Menu

Press **[E]**, **[F]**, **[G]** or **[H]** to open the Command Error List for clients 1 through 4 respectively. This list consists of multiple pages of command list error/status data. Press **[?]** to view a list of commands available on this menu.

Opening the Command List Menu

Press **[I]**, **[J]**, **[K]** or **[L]** to open the Command List menu for clients 1 through 4 respectively. Use this command to view the configured command list for the module.

Transferring the Configuration File from PC to MVI56 module

Press **[R]** to send (upload) the configuration file from your PC to the module and store the file on the module's Compact Flash Disk.

Press **[Y]** to confirm the file transfer, and then follow the instructions on the terminal screen to complete the file transfer process.

After the file has been successfully downloaded, the module will restart the program and load the new configuration information. Review the new configuration using menu commands **[6]** and **[0]** to be certain the module is configured correctly.

Transferring the Configuration File from MVI56 module to PC

Press **[S]** to receive (download) the configuration file from the module to your PC.

Press **[Y]** to confirm the file transfer, and then follow the instructions on the terminal screen to complete the file transfer process.

After the file has been successfully downloaded, you can open and edit the file to change the module's configuration.

Resetting diagnostic data

Press **[U]** to reset the status counters for the client and/or servers in the module.

Viewing Version Information

Press **[V]** to view Version information for the module.

Use this command to view the current version of the software for the module, as well as other important values. You may be asked to provide this information when calling for technical support on the product.

Values at the bottom of the display are important in determining module operation. The Program Scan Counter value is incremented each time a module's program cycle is complete.

Tip: Repeat this command at one-second intervals to determine the frequency of program execution.

Warm Booting the Module

Caution: Some of the commands available to you from this menu are designed for advanced debugging and system testing only, and can cause the module to stop communicating with the processor or with other devices, resulting in potential data loss or other failures. Only use these commands if you are specifically directed to do so by ProSoft Technology Technical Support staff. Some of these command keys are not listed on the menu, but are active nevertheless. Please be careful when pressing keys so that you do not accidentally execute an unwanted command.

Press **[W]** from the Main Menu to warm boot (restart) the module. This command will cause the program to exit and reload, refreshing configuration parameters that must be set on program initialization. Only use this command if you must force the module to re-boot.

Viewing Client Status

Press **[1]**, **[2]**, **[3]** or **[4]** to display the statistics of clients 1 through 4, respectively.

Viewing Client Configuration

Press **[5]** to display the configuration information for the client.

Opening the Network Menu

Press **[@]** to open the network menu. The network menu allows you to send, receive and view the WATTCP.CFG file that contains the IP, gateway and other network specification information. You can find more information about the commands on this menu in the [Network Menu](#) (page 52) section.

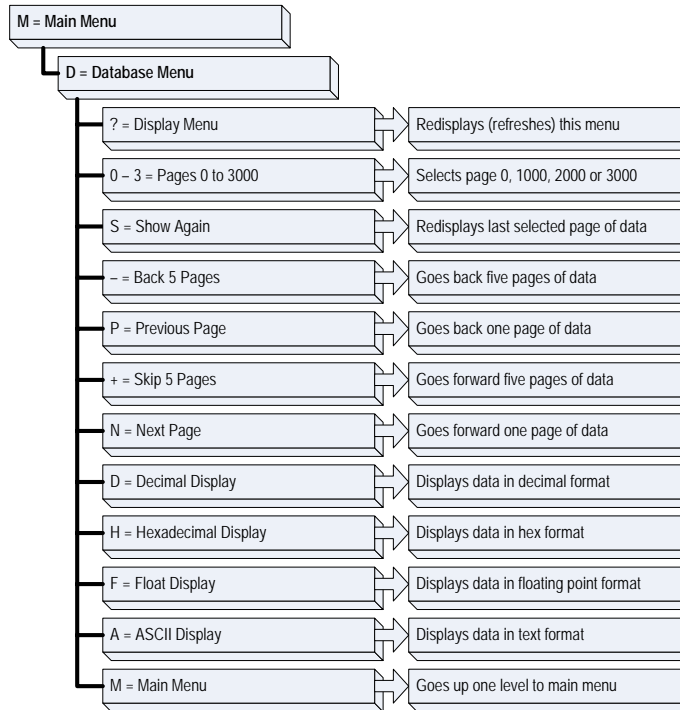
Exiting the Program

Caution: Some of the commands available to you from this menu are designed for advanced debugging and system testing only, and can cause the module to stop communicating with the processor or with other devices, resulting in potential data loss or other failures. Only use these commands if you are specifically directed to do so by ProSoft Technology Technical Support staff. Some of these command keys are not listed on the menu, but are active nevertheless. Please be careful when pressing keys so that you do not accidentally execute an unwanted command.

Press **[Esc]** to restart the module and force all drivers to be loaded. The module will use the configuration stored in the module's Flash ROM to configure the module.

4.1.6 Database View Menu

Press **[D]** from the Main Menu to open the Database View menu. Use this menu command to view the current contents of the module's database. Press **[?]** to view a list of commands available on this menu.



Viewing Register Pages

To view sets of register pages, use the keys described below:

Command	Description
[0]	Display registers 0 to 99
[1]	Display registers 1000 to 1099
[2]	Display registers 2000 to 2099

And so on. The total number of register pages available to view depends on your module's configuration.

Displaying the Current Page of Registers Again

```

DATABASE DISPLAY 0 TO 99 <DECIMAL>
100 101 102 4 5 6 7 8 9 10
11 12 13 14 15 16 0 0 0 0
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
    
```

This screen displays the current page of 100 registers in the database.

Moving Back Through 5 Pages of Registers

Press **[-]** from the Database View menu to skip back to the previous 500 registers of data.

Viewing the Previous 100 Registers of Data

Press **[P]** from the Database View menu to display the previous 100 registers of data.

Skipping 500 Registers of Data

Hold down **[Shift]** and press **[=]** to skip forward to the next 500 registers of data.

Viewing the Next 100 Registers of Data

Press **[N]** from the Database View menu to select and display the next 100 registers of data.

Viewing Data in Decimal Format

Press **[D]** to display the data on the current page in decimal format.

Viewing Data in Hexadecimal Format

Press **[H]** to display the data on the current page in hexadecimal format.

Viewing Data in Floating Point Format

Press **[F]** from the Database View menu. Use this command to display the data on the current page in floating point format. The program assumes that the values are aligned on even register boundaries. If floating-point values are not aligned as such, they are not displayed properly.

Viewing Data in ASCII (Text) Format

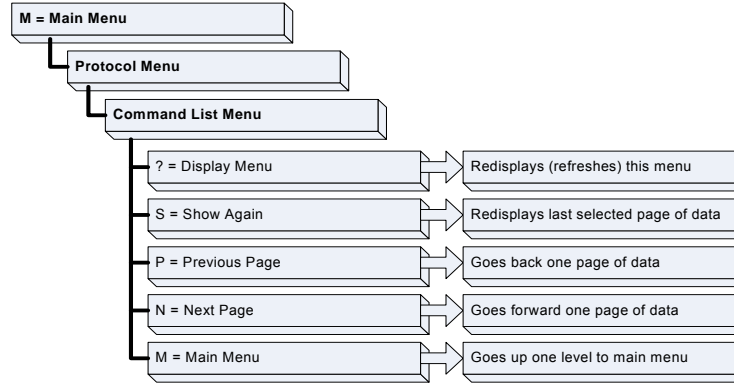
Press **[A]** to display the data on the current page in ASCII format. This is useful for regions of the database that contain ASCII data.

Returning to the Main Menu

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

4.1.7 Master Command Error List Menu

Use this menu to view the command error list for the module. Press **[?]** to view a list of commands available on this menu.



Redisplaying the Current Page

Press **[S]** to display the current page of data.

Viewing the Previous 20 Commands

Press **[-]** to display data for the previous 20 commands.

Viewing the Previous Page of Commands

Press **[P]** to display the previous page of commands.

Viewing the Next 20 Commands

Press **[+]** to display data for the next 20 commands.

Viewing the Next Page of Commands

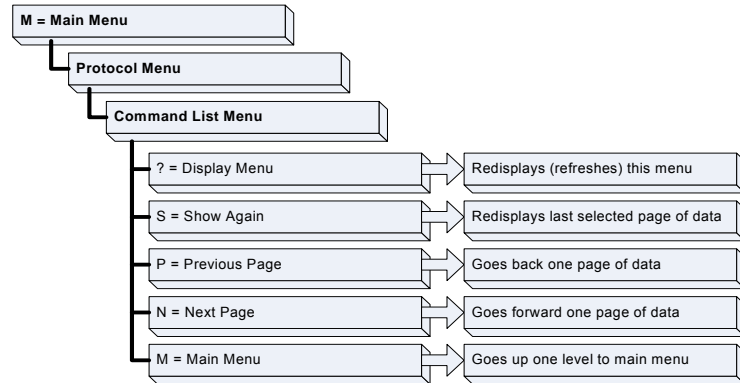
Press **[N]** to display the next page of commands.

Returning to the Main Menu

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

4.1.8 Master Command List Menu

Use this menu to view the command list for the module. Press **[?]** to view a list of commands available on this menu.



Redisplaying the Current Page

Press **[S]** to display the current page of data.

Viewing the Previous 50 Commands

Press **[-]** to view the previous 50 commands.

Viewing the Previous Page of Commands

Press **[P]** to display the previous page of commands.

Viewing the Next 50 Commands

Press **[+]** to view the next 50 commands from the master command list.

Viewing the Next Page of Commands

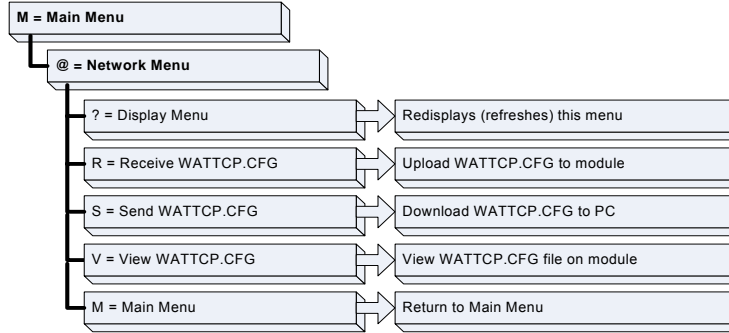
Press **[N]** to display the next page of commands.

Returning to the Main Menu

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

4.1.9 Network Menu

The network menu allows you to send, receive and view the WATTCP.CFG file that contains the IP and gateway addresses, and other network specification information.



Transferring WATTCP.CFG to the module

Press **[R]** to transfer a new WATTCP.CFG file from the PC to the module. Use this command to change the network configuration for the module (for example, the module's IP address).

Press **[Y]** to confirm the file transfer, and then follow the instructions on the terminal screen to complete the file transfer process.

Transferring WATTCP.CFG to the PC

Press **[S]** to transfer the WATTCP.CFG file from the module to your PC.

Press **[Y]** to confirm the file transfer, and then follow the instructions on the terminal screen to complete the file transfer process.

After the file has been successfully transferred, you can open and edit the file to change the module's network configuration.

Viewing the WATTCP.CFG file on the module

Press **[V]** to view the module's WATTCP.CFG file. Use this command to confirm the module's current network settings.

```
Network Menu Selected
WATTCP.CFG FILE:
# ProLinx Communication Gateways, Inc.
# Default private class 3 address
my_ip=192.168.0.135
# Default class 3 network mask
netmask=255.255.255.0
# The gateway I wish to use
gateway=192.168.0.1
#Parameters used by the ProLinx Communication Gateways, Inc. module
#Local_Domain_Name=mycompany.com
#Password=PASSWORD
```

Returning to the Main Menu

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

4.2 LED Status Indicators

The LEDs indicate the module's operating status as follows:

ProSoft Module	Color	Status	Indication
CFG	Green	On	Data is being transferred between the module and a remote terminal using the Configuration/Debug port.
		Off	No data is being transferred on the Configuration/Debug port.
P1	Green	On	Port not used
		Off	Port not used
P2	Green	On	Port not used
		Off	Port not used
APP	Amber	Off	The MVI56-BDW is working normally.
		On	The MVI56-BDW module program has recognized a communication error.
BP ACT	Amber	On	The LED is on when the module is performing a write operation on the backplane.
		Off	The LED is off when the module is performing a read operation on the backplane. Under normal operation, the LED should blink rapidly on and off.
OK	Red/ Green	Off	The card is not receiving any power and is not securely plugged into the rack.
		Green	The module is operating normally.
		Red	The program has detected an error or is being configured. If the LED remains red for over 10 seconds, the program has probably halted. Remove the card from the rack and re-insert the card to restart the module's program.
BAT	Red	Off	The battery voltage is OK and functioning.
		On	The battery voltage is low or battery is not present. Allow battery to charge by keeping module plugged into rack for 24 hours. If BAT LED still does not go off, contact ProSoft Technology, as this is not a user serviceable item.

If a configuration error is found for the client, the client configuration error word will have a value other than zero. The configuration error word bits have the following definitions:

Bit	Description	Value
0		0x0001
1		0x0002
2		0x0004
3		0x0008
4	Invalid retry count parameter	0x0010
5		0x0020
6		0x0040
7		0x0080
8		0x0100
9		0x0200

Bit	Description	Value
10		0x0400
11		0x0800
12		0x1000
13		0x2000
14		0x4000
15		0x8000

Correct any invalid data in the configuration for proper module operation. When the configuration contains a valid parameter set, all the bits in the configuration word will be clear. This does not indicate that the configuration is valid for the user application. Make sure each parameter is set correctly for the specific application.

If the APP, BP ACT and OK LEDs blink at a rate of every one-second, this indicates a serious problem with the module. Call Prosoft Technology support to arrange for repairs.

4.2.1 Ethernet LED Indicators

LED	State	Description
Data	Off	No activity on the port.
	Green Flash	The port is either actively transmitting or receiving data.
Link	Off	No connection to hub or network is detected.
	Green Solid	Connected to hub or network correctly. This is the normal operating state.

4.2.2 Clearing a Fault Condition

Typically, if the OK LED on the front of the module turns red for more than ten seconds, a hardware problem has been detected in the module, or the program has exited.

To clear the condition, follow these steps:

- 1 Turn off power to the rack
- 2 Remove the card from the rack
- 3 Verify that all jumpers are set correctly
- 4 If the module requires a Compact Flash card, verify that the card is installed correctly
- 5 Re-insert the card in the rack and turn the power back on
- 6 Verify the configuration data being transferred to the module from the ControlLogix processor.

If the module's OK LED does not turn green, verify that the module is inserted completely into the rack. If this does not cure the problem, contact ProSoft Technology Support.

4.2.3 Troubleshooting

Use the following troubleshooting steps if you encounter problems when the module is powered up. If these steps do not resolve your problem, please contact ProSoft Technology Technical Support.

Processor Errors

Problem Description	Steps to take
Processor Fault	Verify that the module is plugged into the slot that has been configured for the module. Verify that the slot in the rack configuration has been set up correctly in the ladder logic.
Processor I/O LED flashes	This indicates a problem with backplane communications. Verify that all modules in the rack are configured in the ladder logic.

Module Errors

Problem Description	Steps to take
BP ACT LED remains off or blinks slowly	This indicates that backplane transfer operations are failing. Connect to the module's Configuration/Debug port to check this. To establish backplane communications, verify the following items: <ul style="list-style-type: none">▪ The processor is in Run mode.▪ The backplane driver is loaded in the module.▪ The module is configured for read and write block data transfer.▪ The ladder logic handles all read and write block situations.▪ The module is configured in the processor.
OK LED remains red	The program has halted or a critical error has occurred. Connect to the Configuration/Debug port to see if the module is running. If the program has halted, turn off power to the rack, remove the card from the rack and re-insert the card in the rack, and then restore power to the rack.

5 Reference

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5.1 Product Specifications

The MVI56 Bardac Drive Interface Module allows ControlLogix I/O compatible processors to interface easily with Bardac drive.web devices.

5.1.1 Features and Benefits

The MVI56-BDW module acts as a client collecting and controlling data in a Bardac drive.web compatible device. Four independent clients are contained in the module to interface with Bardac drives simultaneously. The data is passed from the network to the ControlLogix backplane. The data transfer from the processor is asynchronous from the actions on the UDP/IP network. A 5000-word register space in the module exchanges data between the processor and the network.

5.1.2 General Specifications

- Single Slot - 1756 backplane compatible
- The module is recognized as an Input/Output module and has access to processor memory for data transfer between processor and module
- Ladder Logic is used for data transfer between module and processor. Sample ladder file included.
- Configuration data obtained from configuration text file downloaded to module. Sample configuration file included
- Local or remote rack

5.1.3 Hardware Specifications

Specification	Description
Form Factor	Single Slot 1756 Chassis Compatible Local or Remote Rack
Backplane Current Load	800 mA @ 5 V DC; 3mA @ 24V DC
Operating Temperature	0 to 60°C (32 to 140°F)
Storage Temperature	-40 to 85°C (-40 to 185°F)
Shock	30g Operational 50g non-operational Vibration: 5 g from 10 to 150 Hz
Relative Humidity	5% to 95% (non-condensing)
LED Indicators	Module Status Backplane Transfer Status Application Status Serial Activity
Application port (Ethernet)	
Ethernet Port (Ethernet modules)	10/100 Base-T RJ45 Connector Link and activity LED indicators Electrical Isolation 1500 V rms at 50 Hz to 60 Hz for 60 s, applied as specified in section 5.3.2 of IEC 60950: 1991 Ethernet Broadcast Storm Resiliency = less than or equal to 5000 [ARP] frames-per-second and less than or equal to 5 minutes duration
Shipped with Unit	RJ45 to DB-9M cables for each port 6-foot RS-232 configuration cable
Debug/Configuration port (CFG)	
CFG Port (CFG)	RJ45 (DB-9M with supplied cable) RS-232 only No hardware handshaking

5.1.4 Functional Specifications

A client configured as a Bardac master device on the MVI56-BDW module will actively issue Bardac-DW commands to other nodes on the Bardac-DW network. One hundred commands are supported for each client. The ControlLogix processor can be programmed to control the activity on the client by actively selecting commands from the command list to execute, or issuing commands directly from the ladder logic.

Some of the general specifications include:

- Support for the storage and transfer of up to 5000 registers to/from the ControlLogix processor's controller tags
- User-definable module memory usage

- Ability for the user to define commands to set or get parameters from the Bardac device
- 10/100 Base-T Ethernet compatible interface
- Supports up to 100 user-defined read or write commands that can be sent to a Bardac device
- Configurable parameters for the client include:
 - Error/Status Pointer
 - Command Error Pointer
 - Response Timeout
 - Retry Count

5.2 Functional Overview

This section provides an overview of how the MVI56-BDW module transfers data using the BDW protocol. You should understand the important concepts in this chapter before you begin installing and configuring the module.

5.2.1 General Concepts

The following discussion explains several concepts that are important for understanding the operation of the MVI56-BDW module.

Module Power Up

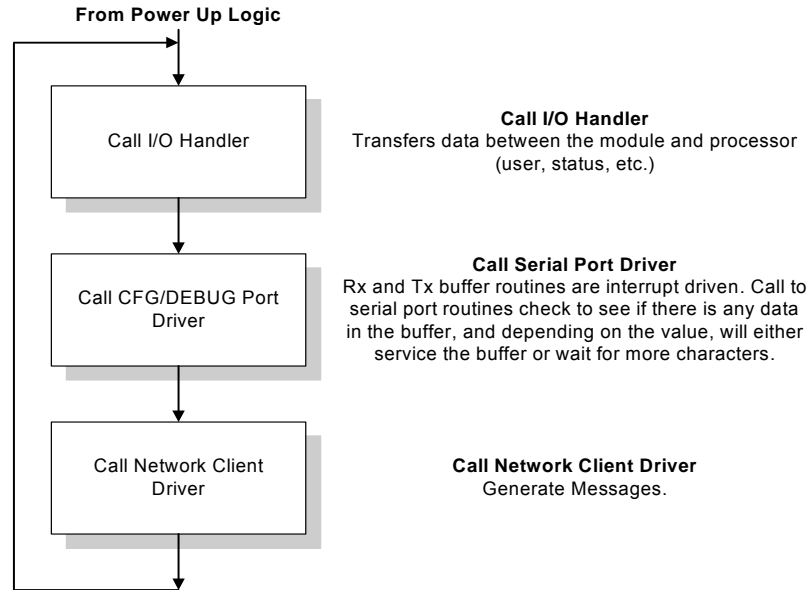
On power up the module begins performing the following logical functions:

- 1 Initialize hardware components
 - Initialize ControlLogix backplane driver
 - Test and Clear all RAM
 - Initialize the serial communication ports
- 2 Read configuration for module from BARDACDW.CFG file on Compact Flash Disk
- 3 Initialize Module Register space
- 4 Enable Client Driver

After the module has received the configuration, the module will begin communicating with other nodes on the network, depending on the configuration.

Main Logic Loop

Upon completing the power up configuration process, the module enters an infinite loop that performs the functions shown in the following diagram.



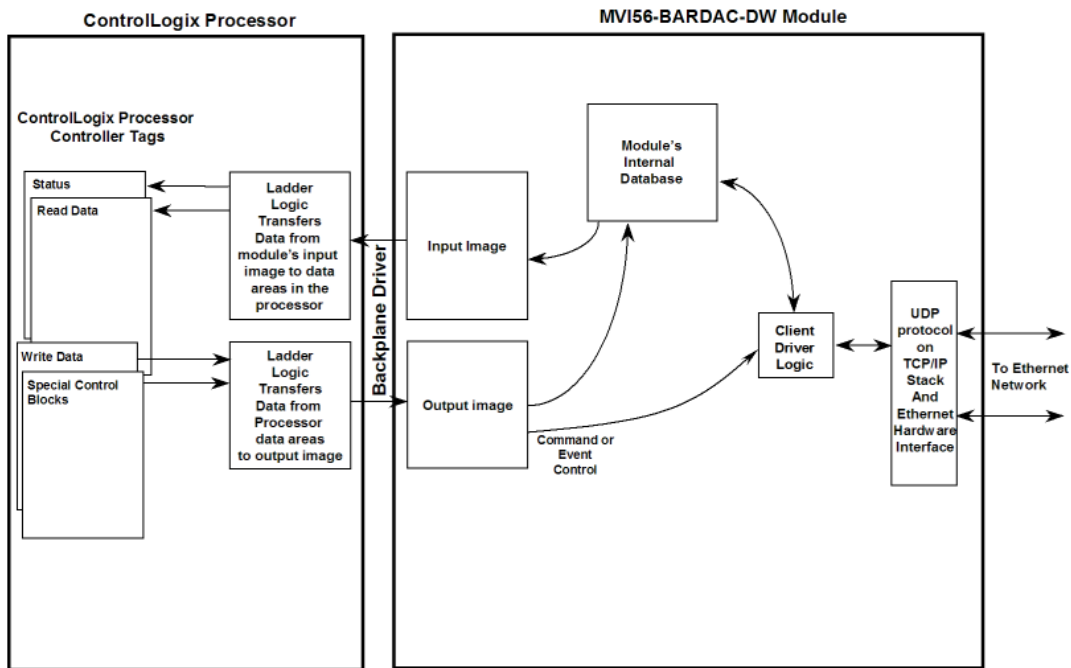
5.2.2 Backplane Data Transfer

The MVI56-BDW module communicates directly over the ControlLogix backplane. Data is paged between the module and the ControlLogix processor across the backplane using the module's input and output images. The update frequency of the images is determined by the scheduled scan rate defined by the user for the module and the communication load on the module. Typical updates are in the range of 1 to 10 milliseconds.

This bi-directional transference of data is accomplished by the module filling in data in the module's input image to send to the processor. Data in the input image is placed in the Controller Tags in the processor by the ladder logic. The input image for the module is set to 250 words. This large data area permits fast throughput of data between the module and the processor.

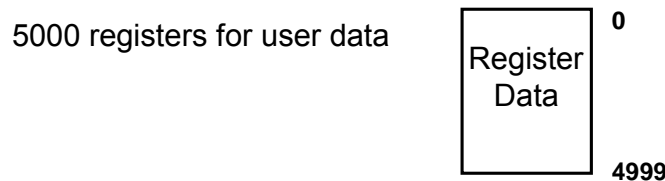
The processor inserts data to the module's output image to transfer to the module. The module's program extracts the data and places it in the module's internal database. The output image for the module is set to 248 words. This large data area permits fast throughput of data from the processor to the module.

The following illustration shows the data transfer method used to move data between the ControlLogix processor, the MVI56-BDW module and the network.



As shown in the diagram above, all data transferred between the module and the processor over the backplane is through the input and output images. Ladder logic must be written in the ControlLogix processor to interface the input and output image data with data defined in the Controller Tags. All data used by the module is stored in its internal database. The following illustration shows the layout of the module's internal database:

Module's Internal Database Structure



Data contained in this database is paged through the input and output images by coordination of the ControlLogix ladder logic and the MVI56-BDW module's program. Up to 248 words of data can be transferred from the module to the processor at a time. Up to 247 words of data can be transferred from the processor to the module. Each image has a defined structure depending on the data content and the function of the data transfer. The block numbers utilized by the module are presented in the following list:

Block Range	Descriptions
-1	Null block
0	Null block
1 to 25	Read or write data
1000 to 1024	Output Initialization Blocks
2000	Event Command Block
5001 to 5006	Command Control
9998	Warm-boot control block
9999	Cold-boot control block

These block identification codes can be broken down into a few groups: Normal data transfer blocks (-1 to 25), Initialization blocks (1000 to 1024) and Command control blocks (2000, 5000 to 5006, 9998 and 9999). Each of these groups of blocks are discussed below:

Normal Data Transfer

Normal data transfer includes the paging of the user data found in the module's internal database in registers 0 to 4999 and the status data. These data are transferred through read (input image) and write (output image) blocks. Refer to the **Module Set Up** section for a description of the data objects used with the blocks and the ladder logic required. The structure and function of each block is discussed below:

Read Block

These blocks of data transfer information from the module to the ControlLogix processor. The structure of the input image used to transfer this data is shown below:

Offset	Description	Length
0	Reserved	1
1	Write Block ID	1
2 to 201	Read Data	200
202	Program Scan Counter	1
203 to 208	Block Transfer Status	6
209 to 218	Bardac DW Client 0 Status	10
219 to 228	Bardac DW Client 1 Status	10
229 to 238	Bardac DW Client 2 Status	10
239 to 248	Bardac DW Client 3 Status	10
249	Read Block ID	1

The Read Block ID is an index value used to determine the location of where the data will be placed in the ControlLogix processor controller tag array of module read data. Each transfer can move up to 200 words (block offsets 2 to 201) of data. In addition to moving user data, the block also contains status data for the module.

The Write Block ID associated with the block requests data from the ControlLogix processor. Under normal, program operation, the module sequentially sends read blocks and requests write blocks. For example, if three read and two write blocks are used with the application, the sequence will be as follows:

R1W1→R2W2→R3W1→R1W2→R2W1→R3W2→R1W1→

This sequence will continue until interrupted by other write block numbers sent by the controller or by a command request from a node on the network or operator control through the module's Configuration/Debug port.

Write Block

These blocks of data transfer information from the ControlLogix processor to the module. The structure of the output image used to transfer this data is shown below:

Offset	Description	Length
0	Write Block ID	1
1 to 200	Write Data	200
201 to 247	Spare	47

The Write Block ID is an index value used to determine the location in the module's database where the data will be placed. Each transfer can move up to 200 words (block offsets 1 to 200) of data.

Initialize Output Data

When the module performs a restart operation, it will request blocks of output data from the processor to initialize the module's output data. This mode is selected using the **Initialize Output Data** parameter in the configuration file. Use the **Initialize Output Data** parameter in the configuration file to bring the module to a known state after a restart operation. The structure of the block used to request the data is displayed below:

Offset	Description	Length
0	Reserved	1
1	1000 to 1024	1
2 to 248	Spare	246
249	1000 to 1024	1

The block number in word 249 of the block determines the data set of up to 200 output words to transfer from the processor. Ladder logic in the processor must recognize these blocks and place the correct information in the output image to be returned to the module. The format of the returned write block is shown below:

Offset	Description	Length
0	1000 to 1024	1
1 to 200	Output Data to preset in module.	200
201 to 247	Spare	47

Command Control Blocks

Command control blocks are special blocks used to control the module. The current version of the software supports four command control blocks: event command control, command control, warm boot and cold boot.

Event Command

Event command control blocks send commands directly from the ladder logic to the client on the module. The format for these blocks is displayed below:

Offset	Description	Length
0	2000	1
1 to 4	IP Address	4
5	Internal DB Address	1
6	Swap Code	1
7	Bardac DW Function Code	1
8	Device Database Address	1
9	Client number (0 to 3)	1
10 to 247	Spare	238

The parameters passed with the block construct the command. The **IP Address** for the node to reach on the network is entered in four registers (1 to 4). Each digit of the IP address is entered in the appropriate register. For example, to interface with node 192.168.0.100, enter the values 192, 168, 0 and 100 in registers 1 to 4. The **Internal DB Address** parameter specifies the module's database location to associate with the command. The **Swap Code** changes the byte order in the command data area. The **Bardac DW Function Code** has one of the following values 0 or 1. The **Device Database Address** is the PIN value specific to the drive that is to be interfaced. Refer to the drive manual for a complete listing of all valid PIN values. The **Client Number** specifies which of the 4 clients in the module is to handle the message. Values from 0 to 3 are acceptable for this parameter. When the module receives the block, it will process it and place it in the command queue. A detailed description of the block is presented below:

Word	Description
0	This word contains the block 2000 identification code to indicate that this block contains a command to execute by the Client Driver.
1 to 4	These words contain the IP address for the server the message is intended. Each digit (0 to 255) of the IP address is placed in one of the four registers. For example, to reach IP address 192.168.0.100, enter the following values in words 1 to 4 → 192, 168, 0 and 100. The module will construct the normal dotted IP address from the values entered. The values entered will be ANDed with the mask 0x00ff to insure the values are in the range of 0 to 255.
5	This word contains the internal database address in the module to be used with the command. This word can contain a value from 0 to 4999.
6	The parameter specifies the swap type for the data. 0=Leave in CLX format (little-endian), 1=Swap bytes (big-endian).
7	This word contains the Bardac DW function code to be used with the command. 0=Get function to retrieve data from unit and 1=Set function to alter data in the unit.

Word	Description
8	This word contains the PIN value for the data value or parameter to consider with the command. Refer to the drive manual for a complete list of all PIN values and their meaning.
9	Client index used with the block. This parameter has a value from 0 to 3.
10 to 247	Spare

The module will respond to each event command block with a read block with the following format:

Offset	Description	Length
0	Reserved	1
1	Write Block ID	1
2	0=Fail, 1=Success	1
3	Client number (0 to 3)	1
4 to 248	Spare	245
249	2000	1

Word two of the block can be used by the ladder logic to determine if the command was added to the command queue of the module. The command will only fail if the command queue for the client is full (the queue can handle up to 100 commands for each client).

Command Control

Command control blocks place commands in the command list into the command queue. Each client has a command queue of up to 100 commands. The module services commands in the queue before the user defined command list. This gives high priority to commands in the queue. Commands placed in the queue through this mechanism must be defined in the module's command list. Under normal command list execution, the module will only execute commands with the Enable parameter set to one or two. If the value is set to zero, the command is skipped. Commands may be placed in the command queue with an Enable parameter set to zero using this feature. These commands can then be executed using the command control blocks.

One to six commands can be placed in the command queue with a single request. The format of the block is displayed below:

Word	Description
0	Command queue block identification code of 5001 to 5006.
1	This word contains the index in the command list for the first command to be entered into the command queue.
2	This word contains the index in the command list for the second command to be entered into the command queue.
3	This word contains the index in the command list for the third command to be entered into the command queue.
4	This word contains the index in the command list for the fourth command to be entered into the command queue.
5	This word contains the index in the command list for the fifth command to be entered into the command queue.

Word	Description
6	This word contains the index in the command list for the sixth command to be entered into the command queue.
7	Client index used with the block. This parameter has a value from 0 to 3.
8 to 247	Spare

The last digit in the block code defines the number of commands to process in the block. For example, a block code of 5003 contains 3 command indexes that are to be placed in the command queue. The Command index parameters in the block have a range of 0 to 99 and correspond to the module's command list entries.

The module responds to a command control block with a block containing the number of commands added to the command queue for the port. The format of the block is displayed below:

Word	Description
0	Reserved
1	This word contains the next write block identification code.
2	This word contains the number of commands in the block placed in the command queue.
3	Client index used with the block. This parameter has a value from 0 to 3.
4 to 248	Spare
249	This word contains the block 5001 to 5006 requested by the processor.

Warm Boot

This block is sent from the ControlLogix processor to the module (output image) when the module is required to perform a warm-boot (software reset) operation. This block is commonly sent to the module any time configuration data modifications are made in the controller tags data area. This will force the module to read the new configuration information and to restart. The structure of the control block is shown below:

Offset	Description	Length
0	9998	1
1 to 247	Spare	247

Cold Boot

This block is sent from the ControlLogix processor to the module (output image) when the module is required to perform the cold boot (hardware reset) operation. This block is sent to the module when a hardware problem is detected by the ladder logic that requires a hardware reset. The structure of the control block is shown below:

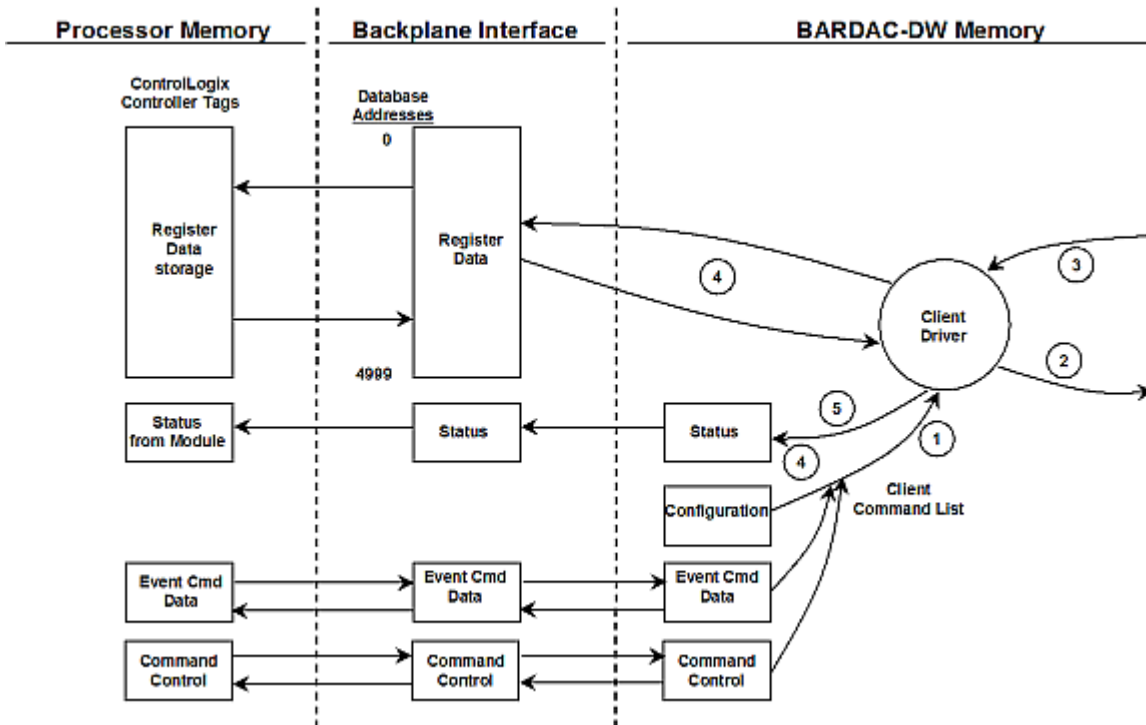
Offset	Description	Length
0	9999	1
1 to 247	Spare	247

5.2.3 Data Flow Between the MVI56-BDW Module and the ControlLogix Processor

The following topics describe the flow of data between the two pieces of hardware (ControlLogix processor and MVI56-BDW module) and other nodes on the network under the module's only mode. The module contains four independent clients. Each client generates messages that are passed to BARDAC-DW compatible drives for monitoring or control.

Client Driver

In the client driver, the MVI56-BDW module is responsible for issuing read (get) or write (set) commands to servers on the network. These commands are user configured in the module via the Client Command List received from the module's configuration file (BARDACDW.CFG) or issued directly from the ControlLogix processor (event command control). Command status is returned to the processor for each individual command in the command list status block. The location of this status block in the module's internal database is user defined. The following flow chart and associated table describe the flow of data into and out of the module.



Step	Description
1	The client driver obtains configuration data from the BARDACDW.CFG file when the module restarts. The configuration data obtained includes the timeout parameters and the Command List. These values are used by the driver to determine the type of commands to be issued to the other nodes on the network.

Step	Description
2	After configuration, the client driver begins transmitting read and/or write commands to the other nodes on the network. If writing data to another node, the data for the write command is obtained from the module's internal database to build the command.
3	Presuming successful processing by the node specified in the command, a response message is received into the client driver for processing.
4	Data received from the node on the network is passed into the module's internal database, assuming a read command.
5	Status data is returned to the ControlLogix processor for the client and a Command List error table can be established in the module's internal database.

Client Command List

In order for the client to function, the module's Client Command Lists must be defined. Up to 100 individual entries can be defined for each of the four clients, with each entry containing the information required to construct a valid command. This includes the following:

- Command enable mode ((0) disabled, (1) continuous or (2) conditional)
- IP address and service port to connect to on the remote server
- Command Type - Read or Write
- Database Source and Destination Register Address - Determines where data will be placed and/or obtained

As the list is read in from the configuration file and as the commands are processed, an error value is maintained in the module for each command. This error list can be transferred to the processor. The errors generated by the module are displayed below:

Standard BARDAC DW PL/X Series Errors

Code	Description
0xA501	GET to invalid PIN
0xA702	SET to invalid PIN
0xA703	SET to read-only PIN
0xA704	SET to "restricted in run" PIN
0xA705	SET with out-of-range data
0xyy06	Setup source with invalid PIN
0xyy07	Setup source with invalid index
0xyy08	Setup destination with invalid PIN
0xyy09	Setup destination with invalid index
0xFFFFD	Device not ready (initializing)
0xFFFFE	Device lock timeout (serious problem with device)
0xFFFFF	Unable to obtain device lock (device servicing other transaction)
Others	Refer to drive manual or contact Bardac.

Standard BARDAC DW E-Series Errors

Code	Description
1	Illegal function
2	Illegal data address
3	Illegal data value
6	Busy, reject
7	Negative acknowledge
10	Read-only variable
11	Index out of range
12	Invalid data type
13	Invalid variable address
14	Invalid modbus address
15	Connection not setup
16	Write-only variable
17	EEPROM write fail
0xFFFD	Device not ready (initializing)
0xFFFE	Device lock timeout (serious problem with device)
0xFFFF	Unable to obtain device lock (device servicing other transaction)
Others	Refer to drive manual or contact Bardac.

UDP Error Codes

Code	Description
0xFFDF	Could not find IP on network
0xFFDE	Buffer for UDP socket could not be allocated
0xFFDC	Command response timeout

Command List Entry Errors

Code	Description
40	Too few parameters for command
41	Invalid type code
42	Invalid internal database address
45	Invalid function code
46	Invalid swap code

5.3 Cable Connections

The MVI56-BDW module has the following communication connections on the module:

- One Ethernet port (RJ45 connector)
- One RS-232 Configuration/Debug port (RJ45 connector)

5.3.1 Ethernet Connection

The MVI56-BDW module has an RJ45 port located on the front of the module labeled "Ethernet", for use with the TCP/IP network. The module is connected to the Ethernet network using an Ethernet cable between the module's Ethernet port and an Ethernet switch or hub.

Note: Depending on hardware configuration, you may see more than one RJ45 port on the module. The Ethernet port is labeled "Ethernet".

Warning: The MVI56-BDW module is NOT compatible with Power Over Ethernet (IEEE802.3af / IEEE802.3at) networks. Do NOT connect the module to Ethernet devices, hubs, switches or networks that supply AC or DC power over the Ethernet cable. Failure to observe this precaution may result in damage to hardware, or injury to personnel.

Important: The module requires a static (fixed) IP address that is not shared with any other device on the Ethernet network. Obtain a list of suitable IP addresses from your network administrator BEFORE configuring the Ethernet port on this module.

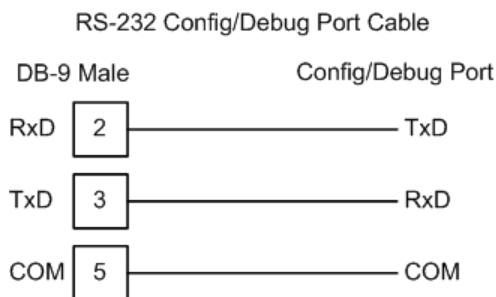
Ethernet Port Configuration: wattcp.cfg

The wattcp.cfg file must be set up properly in order to use a TCP/IP network connection. You can view the current network configuration using an ASCII terminal by selecting "@" (Network Menu) and "V" (View) options when connected to the Debug port.

```
# WATTCP.CFG FILE:
# Prosoft Technology.
my_ip=192.168.0.100
# Default class 3 network mask
netmask=255.255.255.0
# The gateway I wish to use
gateway=192.168.0.1
```

5.3.2 RS-232 Configuration/Debug Port

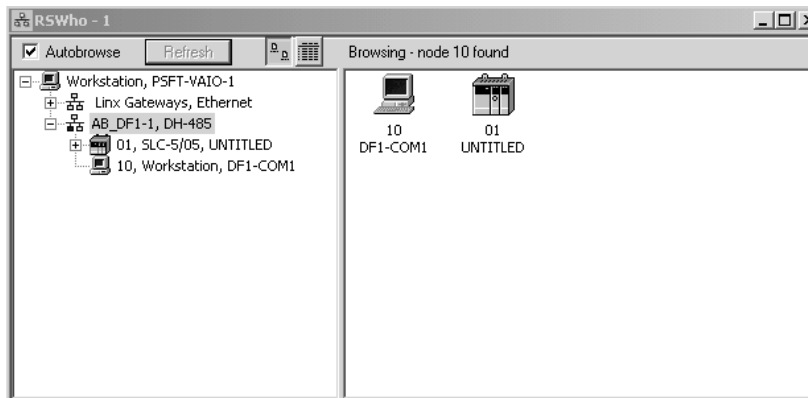
This port is physically an RJ45 connection. An RJ45 to DB-9 adapter cable is included with the module. This port permits a PC based terminal emulation program to view configuration and status data in the module and to control the module. The cable for communications on this port is shown in the following diagram:



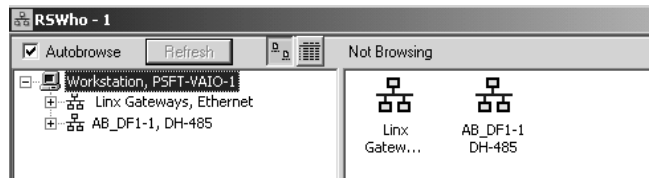
Disabling the RSLinx Driver for the Com Port on the PC

The communication port driver in RSLinx can occasionally prevent other applications from using the PC's COM port. If you are not able to connect to the module's configuration/debug port using ProSoft Configuration Builder (PCB), HyperTerminal or another terminal emulator, follow these steps to disable the RSLinx Driver.

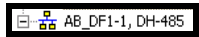
- 1 Open RSLinx and go to Communications>RSWho
- 2 Make sure that you are not actively browsing using the driver that you wish to stop. The following shows an actively browsed network:



- 3 Notice how the DF1 driver is opened, and the driver is looking for a processor on node 1. If the network is being browsed, then you will not be able to stop this driver. To stop the driver your RSWho screen should look like this:

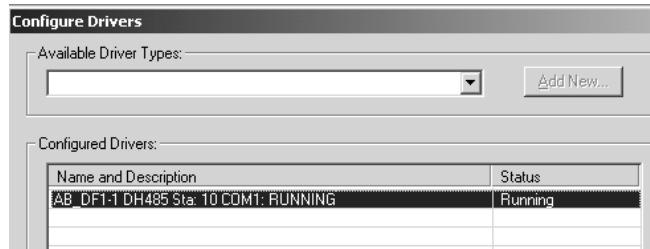


Branches are displayed or hidden by clicking on the  or the  icons.

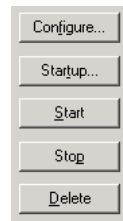


- 4 When you have verified that the driver is not being browsed, go to **Communications>Configure Drivers**

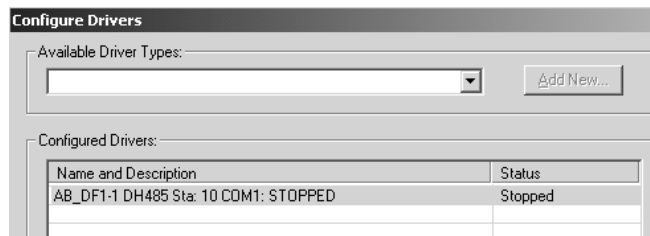
You may see something like this:



If you see the status as running, you will not be able to use this com port for anything other than communication to the processor. To stop the driver press the "Stop" on the side of the window:



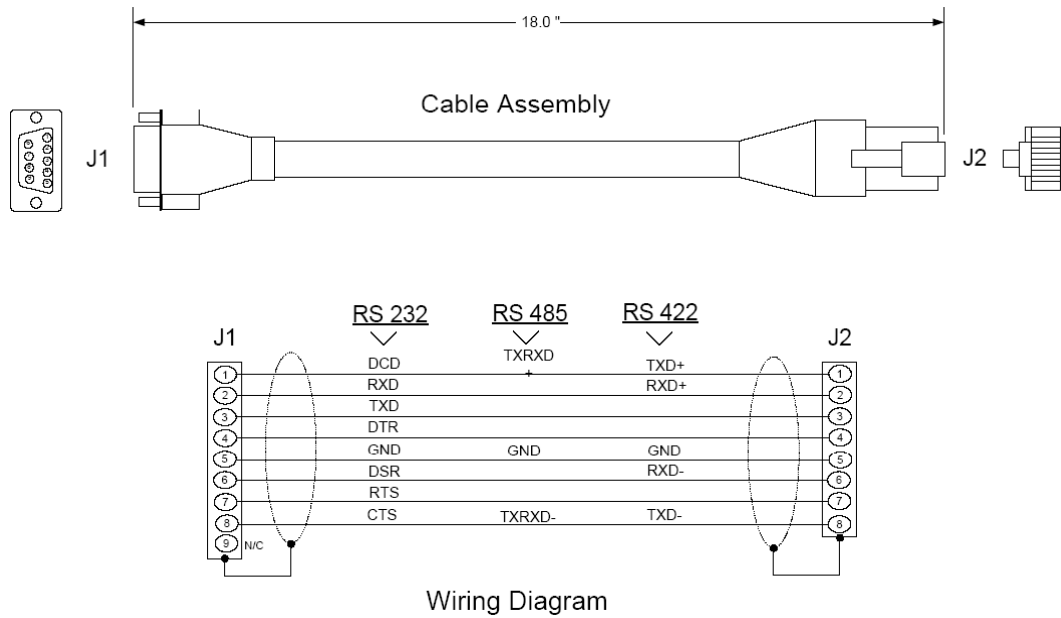
- 5 After you have stopped the driver you will see the following:



- 6 Upon seeing this, you may now use that com port to connect to the debug port of the module.

Note: You may need to shut down and restart your PC before it will allow you to stop the driver (usually only on Windows NT machines). If you have followed all of the above steps, and it will not stop the driver, then make sure you do not have RSLogix open. If RSLogix is not open, and you still cannot stop the driver, then reboot your PC.

5.3.3 DB9 to RJ45 Adaptor (Cable 14)



5.4 MVI56-BDW Status Data Definition

This section contains a description of the members present in the **BDDWInStat** object. This data is transferred from the module to the processor as part of each read block.

Offset	Content	Description
202	Program Scan Count	This value is incremented each time a complete program cycle occurs in the module.
203	Read Block Count	This field contains the total number of read blocks transferred from the module to the processor.
204	Write Block Count	This field contains the total number of write blocks transferred from the processor to the module.
205	Parse Block Count	This field contains the total number of blocks successfully parsed that were received from the processor.
206	Command Event Block Count	This field contains the total number of command event blocks received from the processor.
207	Command Block Count	This field contains the total number of command blocks received from the processor.
208	Error Block Count	This field contains the total number of block errors recognized by the module.
209	Client 0 Cmd Request	This value is incremented each time a command request is issued.
210	Client Cmd Response	This value is incremented each time a command response is received.

Offset	Content	Description
211	Client Cmd Error	This value is incremented each time an error message is received from a remote unit or a local error is generated for a command.
212	Client Request Count	This value is incremented each time a request message is issued.
213	Client Response Count	This value is incremented each time a response message is received.
214	Client Error Sent Count	This value is incremented each time an error is sent from the client.
215	Client Error Received Count	This value is incremented each time an error is received from a remote unit.
216	Client Cfg Error Word	This word contains a bit map that defines configuration errors in the configuration file for the client.
217	Client Current Error Code	This value corresponds to the current error code for the client.
218	Client Last Error Code	This value corresponds to the last error code recorded for the client.
219	Client 1 Cmd Request	This value is incremented each time a command request is issued.
220	Client Cmd Response	This value is incremented each time a command response is received.
221	Client Cmd Error	This value is incremented each time an error message is received from a remote unit or a local error is generated for a command.
222	Client Request Count	This value is incremented each time a request message is issued.
223	Client Response Count	This value is incremented each time a response message is received.
224	Client Error Sent Count	This value is incremented each time an error is sent from the client.
225	Client Error Received Count	This value is incremented each time an error is received from a remote unit.
226	Client Cfg Error Word	This word contains a bit map that defines configuration errors in the configuration file for the client.
227	Client Current Error Code	This value corresponds to the current error code for the client.
228	Client Last Error Code	This value corresponds to the last error code recorded for the client.
229	Client 2 Cmd Request	This value is incremented each time a command request is issued.
230	Client Cmd Response	This value is incremented each time a command response is received.
231	Client Cmd Error	This value is incremented each time an error message is received from a remote unit or a local error is generated for a command.
232	Client Request Count	This value is incremented each time a request message is issued.
233	Client Response Count	This value is incremented each time a response message is received.

Offset	Content	Description
234	Client Error Sent Count	This value is incremented each time an error is sent from the client.
235	Client Error Received Count	This value is incremented each time an error is received from a remote unit.
236	Client Cfg Error Word	This word contains a bit map that defines configuration errors in the configuration file for the client.
237	Client Current Error Code	This value corresponds to the current error code for the client.
238	Client Last Error Code	This value corresponds to the last error code recorded for the client.
239	Client 3 Cmd Request	This value is incremented each time a command request is issued.
240	Client Cmd Response	This value is incremented each time a command response is received.
241	Client Cmd Error	This value is incremented each time an error message is received from a remote unit or a local error is generated for a command.
242	Client Request Count	This value is incremented each time a request message is issued.
243	Client Response Count	This value is incremented each time a response message is received.
244	Client Error Sent Count	This value is incremented each time an error is sent from the client.
245	Client Error Received Count	This value is incremented each time an error is received from a remote unit.
246	Client Cfg Error Word	This word contains a bit map that defines configuration errors in the configuration file for the client.
247	Client Current Error Code	This value corresponds to the current error code for the client.
248	Client Last Error Code	This value corresponds to the last error code recorded for the client.

6 Support, Service & Warranty

In This Chapter

- How to Contact Us: Sales and Support 77
- Return Material Authorization (RMA) Policies and Conditions 78
- Procedures for Return of Units Under Warranty 78
- Procedures for Return of Units Out of Warranty 79
- LIMITED WARRANTY 80

Be sure and read the full Warranty that can be found on our web site at www.prosoft-technology.com for details and other terms and conditions. The content in this summary is subject to change without notice. The content is current at date of publication.

ProSoft Technology, Inc. strives to provide meaningful support to its customers. Should any questions or problems arise, please feel free to contact us at:

Internet	Web Site: http://www.prosoft-technology.com/support
	E-mail address: support@prosoft-technology.com

Those of us at ProSoft Technology, Inc. want to provide the best and quickest support possible, so before calling please have the following information available. You may wish to fax this information to us prior to calling.

- 1 Product Version Number
- 2 System architecture
- 3 Network details

In the case of hardware, we will also need the following information:

- 1 Module configuration and contents of file
- 2 Module Operation
- 3 Configuration/Debug status information
- 4 LED patterns
- 5 Information about the processor and user data files as viewed through the development software and LED patterns on the processor
- 6 Details about the networked devices interfaced, if any

For technical support calls within the United States, an after-hours answering system allows pager access to one of our qualified technical and/or application support engineers at any time to answer your questions.

6.1 How to Contact Us: Sales and Support

All ProSoft Technology Products are backed with full technical support. Contact our worldwide Technical Support team and Customer Service representatives directly by phone or email:

USA / Latin America (excluding Brasil) (Office in California)

+1(661) 716-5100
+1(661) 716-5101 (Fax)
1675 Chester Avenue, 4th Floor
Bakersfield, California 93301
U.S.A.
+1.661.716.5100, support@prosoft-technology.com
Languages spoken include: English, Spanish

Asia Pacific (office in Malaysia)

+603.7724.2080
+603.7724.2090 (Fax)
C210, Damansara Intan,
1 Jalan SS20/27, 47400 Petaling Jaya
Selangor, Malaysia
+603.7724.2080, asiapc@prosoft-technology.com
Languages spoken include: Chinese, Japanese, English

China Pacific (office in China)

+86.21.64518356 x 8011
+86.21.64756957 (Fax)
4/F, No. 16 Hongcao Road
Shanghai, China 200233
China
+86.21.64518356 x 8011, zhang@prosoft-technology.com
Languages spoken include: Chinese, English

Europe / Middle East / Africa (office in Toulouse, France)

+33 (0) 5.34.36.87.20
+33 (0) 5.61.78.40.52 (Fax)
Zone d'activité de Font Grasse
17, rue des Briquetiers
F-31700 Blagnac
France
+33 (0) 5.34.36.87.20. support. EMEA@prosoft-technology.com
Languages spoken include: French, English

Brasil (office in Sao Paulo)

+55-11-5084-5178
+55-11-5083-3776 (Fax)
Rua Vergueiro, 2949 - sala 182 - Edifício Vergueiro Work Center
Vila Mariana - São Paulo
Cep: 04101-300 - Brasil
+55-11-5084-5178, eduardo@prosoft-technology.com
Languages spoken include: Portuguese, English

6.2 Return Material Authorization (RMA) Policies and Conditions

The following RMA Policies and Conditions apply to any returned product. These RMA Policies are subject to change by ProSoft without notice. For warranty information, see Section C below entitled "Limited Warranty". In the event of any inconsistency between the RMA Policies and the Warranty, the Warranty shall govern.

6.2.1 All Product Returns

- 1 In order to return a Product for repair, exchange or otherwise, the Customer must obtain a Returned Material Authorization (RMA) number from ProSoft and comply with ProSoft shipping instructions.
- 2 In the event that the Customer experiences a problem with the Product for any reason, Customer should contact ProSoft Technical Support at one of the telephone numbers listed above in Section A. A Technical Support Engineer will request several tests in an attempt to isolate the problem. If after these tests are completed, the Product is found to be the source of the problem, ProSoft will issue an RMA.
- 3 All returned Products must be shipped freight prepaid, in the original shipping container or equivalent, to the location specified by ProSoft, and be accompanied by proof of purchase. The RMA number is to be prominently marked on the outside of the shipping box. Customer agrees to insure the Product or assume the risk of loss or damage in transit. Products shipped to ProSoft without an RMA number will be returned to the Customer, freight collect. Contact ProSoft Technical Support for further information.
- 4 Out of warranty returns are not allowed on RadioLinX accessories such as antennas, cables, and brackets.

The following policy applies for Non-Warranty Credit Returns:

- A 10% Restocking Fee if Factory Seal is *not* broken
- B 20% Restocking Fee if Factory Seal is broken

ProSoft retains the right, in its absolute and sole discretion, to reject any non-warranty returns for credit if the return is not requested within three (3) months after shipment of the Product to Customer, if the Customer fails to comply with ProSoft's shipping instructions, or if the Customer fails to return the Product to ProSoft within six (6) months after Product was originally shipped.

6.3 Procedures for Return of Units Under Warranty

- 1 A Technical Support Engineer must pre-approve all product returns.
- 2 Module is repaired or replaced after a Return Material Authorization Number is entered and a replacement order is generated.
- 3 Credit for the warranted item is issued within 10 business days after receipt of product and evaluation of the defect has been performed by ProSoft. The credit will only be issued provided the product is returned with a valid Return Material Authorization Number and in accordance with ProSoft's shipping instructions.

- a) If no defect is found, a credit is issued.
- b) If a defect is found and is determined to be customer generated or if the defect is otherwise not covered by ProSoft's Warranty, or if the module is not repairable, a credit is not issued and payment of the replacement module is due.

6.4 Procedures for Return of Units Out of Warranty

- 1 Customer sends unit in for evaluation.
- 2 If no defect is found, Customer will be charged the equivalent of US \$100 plus shipping, duties and taxes that may apply. A new Purchase Order will be required for this evaluation fee.
If the unit is repaired the charge to the Customer will be 30%* of the list price plus any shipping, duties and taxes that may apply. A new Purchase Order will be required for a product repair.
- 3 For an immediate exchange, a new module may be purchased and sent to Customer while repair work is being performed. Credit for purchase of the new module will be issued when the new module is returned in accordance with ProSoft's shipping instructions and subject to ProSoft's policy on non-warranty returns. This is in addition to charges for repair of the old module and any associated charges to Customer.
- 4 If, upon contacting ProSoft Customer Service, the Customer is informed that unit is believed to be unrepairable, the Customer may choose to send unit in for evaluation to determine if the repair can be made. Customer will pay shipping, duties and taxes that may apply. If unit cannot be repaired, the Customer may purchase a new unit.

6.4.1 Un-repairable Units

- 3150-All
- 3750
- 3600-All
- 3700
- 3170-All
- 3250
- 1560 can be repaired, if defect is the power supply
- 1550 can be repaired, if defect is the power supply
- 3350
- 3300
- 1500-All

*** 30% of list price is an estimated repair cost only. The actual cost of repairs will be determined when the module is received by ProSoft and evaluated for needed repairs.**

6.4.2 Purchasing Warranty Extension

As detailed below in ProSoft's Warranty, the standard Warranty Period is one year (or in the case of RadioLinx modules, three years) from the date of delivery. The Warranty Period may be extended for an additional charge, as follows:

- Additional 1 year = 10% of list price
- Additional 2 years = 20% of list price
- Additional 3 years = 30% of list price

6.5 LIMITED WARRANTY

This Limited Warranty ("Warranty") governs all sales of hardware, software and other products (collectively, "Product") manufactured and/or offered for sale by ProSoft, and all related services provided by ProSoft, including maintenance, repair, warranty exchange, and service programs (collectively, "Services"). By purchasing or using the Product or Services, the individual or entity purchasing or using the Product or Services ("Customer") agrees to all of the terms and provisions (collectively, the "Terms") of this Limited Warranty. All sales of software or other intellectual property are, in addition, subject to any license agreement accompanying such software or other intellectual property.

6.5.1 What Is Covered By This Warranty

- A** *Warranty On New Products:* ProSoft warrants, to the original purchaser only, that the Product that is the subject of the sale will (1) conform to and perform in accordance with published specifications prepared, approved, and issued by ProSoft, and (2) will be free from defects in material or workmanship; provided these warranties only cover Product that is sold as new. This Warranty expires one year (or in the case of RadioLinx modules, three years) from the date of shipment (the "Warranty Period"). If the Customer discovers within the Warranty Period a failure of the Product to conform to specifications, or a defect in material or workmanship of the Product, the Customer must promptly notify ProSoft by fax, email or telephone. In no event may that notification be received by ProSoft later than 15 months (or in the case of RadioLinx modules, 39 months) from the date of delivery. Within a reasonable time after notification, ProSoft will correct any failure of the Product to conform to specifications or any defect in material or workmanship of the Product, with either new or used replacement parts. Such repair, including both parts and labor, will be performed at ProSoft's expense. All warranty service will be performed at service centers designated by ProSoft. If ProSoft is unable to repair the Product to conform to this Warranty after a reasonable number of attempts, ProSoft will provide, at its option, one of the following: a replacement product, a full refund of the purchase price or a credit in the amount of the purchase price. All replaced product and parts become the property of ProSoft. These remedies are the Customer's only remedies for breach of warranty.
- B** *Warranty On Services:* Material and labor used by ProSoft to repair a verified malfunction or defect are warranted on the terms specified above

for new Product, provided said warranty will be for the period remaining on the original new equipment warranty or, if the original warranty is no longer in effect, for a period of 90 days from the date of repair.

- C** The Warranty Period for RadioLinx accessories (such as antennas, cables, brackets, etc.) are the same as for RadioLinx modules, that is, three years from the date of shipment.

6.5.2 What Is Not Covered By This Warranty

- A** ProSoft makes no representation or warranty, expressed or implied, that the operation of software purchased from ProSoft will be uninterrupted or error free or that the functions contained in the software will meet or satisfy the purchaser's intended use or requirements; the Customer assumes complete responsibility for decisions made or actions taken based on information obtained using ProSoft software.
- B** With the exception of RadioLinx accessories referenced in paragraph 1(c) this Warranty does not cover any product, components, or parts not manufactured by ProSoft.
- C** This Warranty also does not cover the failure of the Product to perform specified functions, or any other non-conformance, defects, losses or damages caused by or attributable to any of the following: (i) shipping; (ii) improper installation or other failure of Customer to adhere to ProSoft's specifications or instructions; (iii) unauthorized repair or maintenance; (iv) attachments, equipment, options, parts, software, or user-created programming (including, but not limited to, programs developed with any IEC 61131-3 programming languages, or "C") not furnished by ProSoft; (v) use of the Product for purposes other than those for which it was designed; (vi) any other abuse, misapplication, neglect or misuse by the Customer; (vii) accident, improper testing or causes external to the Product such as, but not limited to, exposure to extremes of temperature or humidity, power failure or power surges outside of the limits indicated on the product specifications; or (viii) disasters such as fire, flood, earthquake, wind or lightning.
- D** The information in this Agreement is subject to change without notice. ProSoft shall not be liable for technical or editorial errors or omissions made herein; nor for incidental or consequential damages resulting from the furnishing, performance or use of this material. The user guides included with your original product purchased by you from ProSoft, contains information protected by copyright. No part of the guide may be duplicated or reproduced in any form without prior written consent from ProSoft.

6.5.3 *DISCLAIMER REGARDING HIGH RISK ACTIVITIES*

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