



Where Automation Connects.



inRAX[®]
MVI71-BDW

PLC Platform
BARDAC Communication Module

October 12, 2010

USER MANUAL

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How to Contact Us

ProSoft Technology

5201 Truxtun Ave., 3rd Floor

Bakersfield, CA 93309

+1 (661) 716-5100

+1 (661) 716-5101 (Fax)

www.prosoft-technology.com

support@prosoft-technology.com

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MVI71-BDW User Manual

October 12, 2010

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North America: +1.661.716.5100

Asia Pacific: +603.7724.2080

Europe, Middle East, Africa: +33 (0) 5.3436.87.20

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Important Installation Instructions

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

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

MVI (Multi Vendor Interface) Modules

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

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

Warnings

North America 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.

Warning: This module is not hot-swappable! Always remove power from the rack before inserting or removing this module, or damage may result to the module, the processor, or other connected devices.

Battery Life Advisory

The MVI46, MVI56, MVI56E, MVI69, and MVI71 modules use a rechargeable Lithium Vanadium Pentoxide battery to backup the real-time clock and CMOS. The battery should last for the life of the module. The module must be powered for approximately twenty hours before the battery becomes fully charged. After it is fully charged, the battery provides backup power for the CMOS setup and the real-time clock for approximately 21 days. When the battery is fully discharged, the module will revert to the default BIOS and clock settings.

Note: The battery is not user replaceable.

Markings

Electrical Ratings

- Backplane Current Load: 800 mA @ 5 Vdc
- Operating Temperature: 0°C to 60°C (32°F to 140°F)
- Storage Temperature: -40°C to 85°C (-40°F to 185°F)
- Shock: 30g Operational; 50g non-operational; Vibration: 5 g from 10 Hz to 150 Hz
- Relative Humidity 5% to 95% (without condensation)
- All phase conductor sizes must be at least 1.3 mm(squared) and all earth ground conductors must be at least 4mm(squared).

Label Markings

Agency Approvals and Certifications	ANSI / ISA 12.12.01 Class I Division 2, GPs A, B, C, D
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CSA/cUL	C22.2 No. 213-1987
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CSA CB Certified	IEC61010
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ATEX	EN60079-0 Category 3, Zone 2 EN60079-15
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Guide to the MVI71-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.
Diagnostic and Troubleshooting	→	Diagnostics and Troubleshooting (page 39)	This section describes Diagnostic and Troubleshooting procedures.
Reference Product Specifications Functional Overview	→	Reference (page 57) Product Specifications (page 58) Functional Overview (page 60, page 51)	These sections contain general references associated with this product, Specifications, and the Functional Overview.
Support, Service, and Warranty Index	→	Support, Service and Warranty (page 87) Index	This section contains Support, Service and Warranty information. Index of chapters.

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To get the most benefit from this User Manual, you should have the following skills:

- **Rockwell Automation® RSLogix™ software:** launch the program, configure ladder logic, and transfer the ladder logic to the processor
- **Microsoft Windows:** install and launch programs, execute menu commands, navigate dialog boxes, and enter data
- **Hardware installation and wiring:** install the module, and safely connect BARDAC and PLC devices to a power source and to the MVI71-BDW module's application port(s)

1.1 System Requirements

The MVI71-BDW module requires the following minimum hardware and software components:

- Rockwell Automation PLC processor, with compatible power supply and one free slot in the rack, for the MVI71-BDW module. The module requires 800mA of available power.
- The PLC Processor must provide for at least 64 words of BTR/BTW area, otherwise the module may not function correctly.
- Rockwell Automation RSLogix 5 programming software.
- Rockwell Automation RSLinx communication software
- Pentium® 100 MHz minimum. Pentium III 700 MHz (or better) recommended
- Supported operating systems:
 - Microsoft Windows XP
 - Microsoft Windows 2000
 - Microsoft Windows NT v4.0 with Service Pack 3 or greater
 - Microsoft Windows ME
 - Microsoft Windows 98
- 64 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 × 768 recommended)
- CD-ROM drive
- HyperTerminal or other terminal emulator program capable of file transfers using Ymodem protocol.

1.2 Package Contents

The following components are included with your MVI71-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.

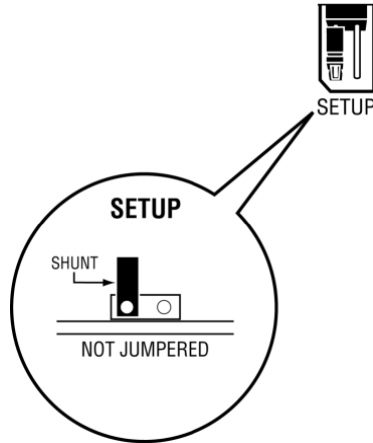
Qty.	Part Name	Part Number	Part Description
1	MVI71-BDW Module	MVI71-BDW	BARDAC Communication Module
1	Cable	Cable #15, RS232 Null Modem	For RS232 Connection to the CFG Port
3	Cable	Cable #14, RJ45 to DB9 Male Adapter cable	For DB9 Connection to Module's Port
2	Adapter	1454-9F	Two Adapters, DB9 Female to Screw Terminal. For RS422 or RS485 Connections to Port 1 and 2 of the Module
1	ProSoft Solutions CD		Contains sample programs, utilities and documentation for the MVI71-BDW module.

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

1.3 Setting Jumpers

The Setup Jumper acts as "write protection" for the module's flash memory. In "write protected" mode, the Setup pins are not connected, and the module's firmware cannot be overwritten. Do not jumper the Setup pins together unless you are directed to do so by ProSoft Technical Support.

The following illustration shows the MVI71-BDW jumper configuration.



Note: If you are installing the module in a remote rack, you may prefer to leave the Setup pins jumpered. That way, you can update the module's firmware without requiring physical access to the module.

1.4 Install the Module in the Rack

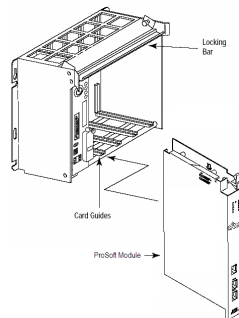
If you have not already installed and configured your PLC processor and power supply, please do so before installing the MVI71-BDW module. Refer to your Rockwell Automation product documentation for installation instructions.

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 MVI71-BDW into the PLC™ chassis. Use the same technique recommended by Rockwell Automation to remove and install PLC modules.

Warning: This module is not hot-swappable! Always remove power from the rack before inserting or removing this module, or damage may result to the module, the processor, or other connected devices.

- 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.

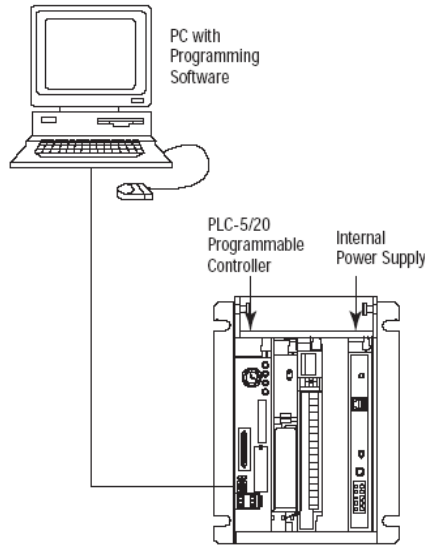


- 3 With a firm but steady push, snap the module into place.
- 4 Check that the holding clips on the top and bottom of the module are securely in the locking holes of the rack.
- 5 Make a note of the slot location. You will need to identify the slot in which the module is installed in order for the sample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

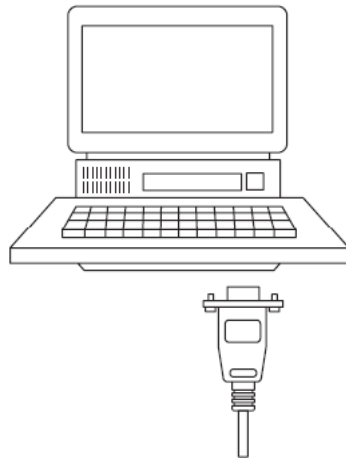
Note: If you insert the module improperly, the system may stop working, or may behave unpredictably.

1.5 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.

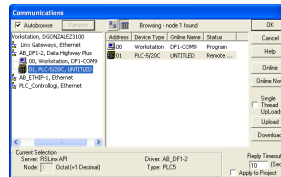


1.6 Download the Sample Program to the Processor

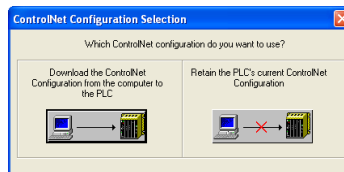
To download the sample program from RSLogix 5 to the PLC processor

Note: The key switch on the front of the PLC processor must be in the REM position.

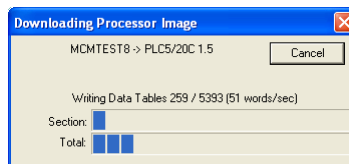
- 1 If you are not already online to the processor, open the Communications menu, and then choose Download. RSLogix will establish communication with the processor.



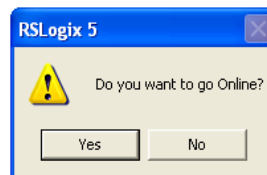
- 2 Click the Download button to transfer the sample program to the processor.
- 3 When prompted, choose Computer to PLC



- 4 RSLogix will compile the program and transfer it to the processor. This process may take a few minutes.



- 5 When the download is complete, RSLogix will open another confirmation dialog box. Click OK to switch the processor from Program mode to Run mode.

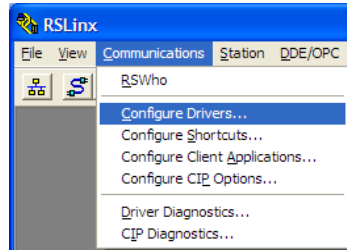


Note: If you receive an error message during these steps, refer to your RSLogix documentation to interpret and correct the error.

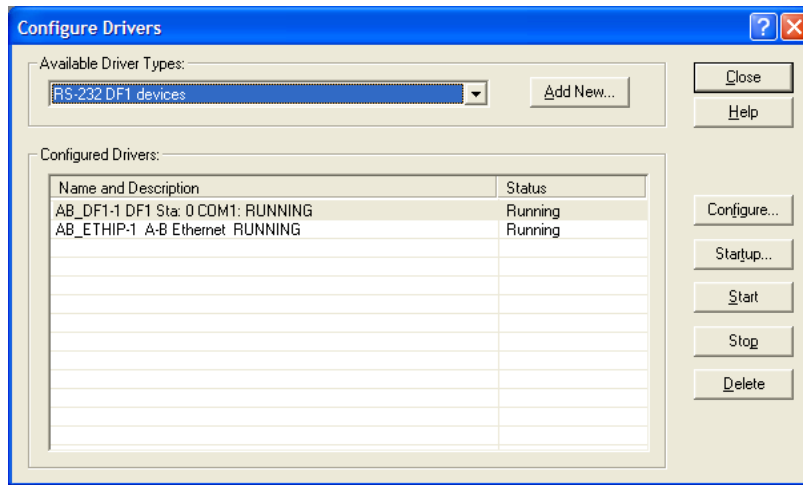
1.6.1 Configuring the RSLinx Driver for the PC COM Port

If RSLogix is unable to establish communication with the processor, follow these steps.

- 1 Open *RSLogix*.
- 2 Open the **COMMUNICATIONS** menu, and choose **CONFIGURE DRIVERS**.

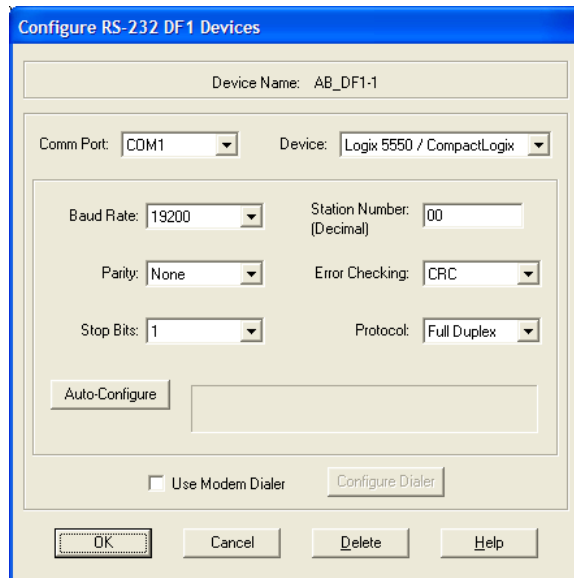


This action opens the *Configure Drivers* dialog box.



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*.

- 1 Click to select the driver, and then click **CONFIGURE**. This action opens the *Configure RS-232 DF1 Devices* dialog box.



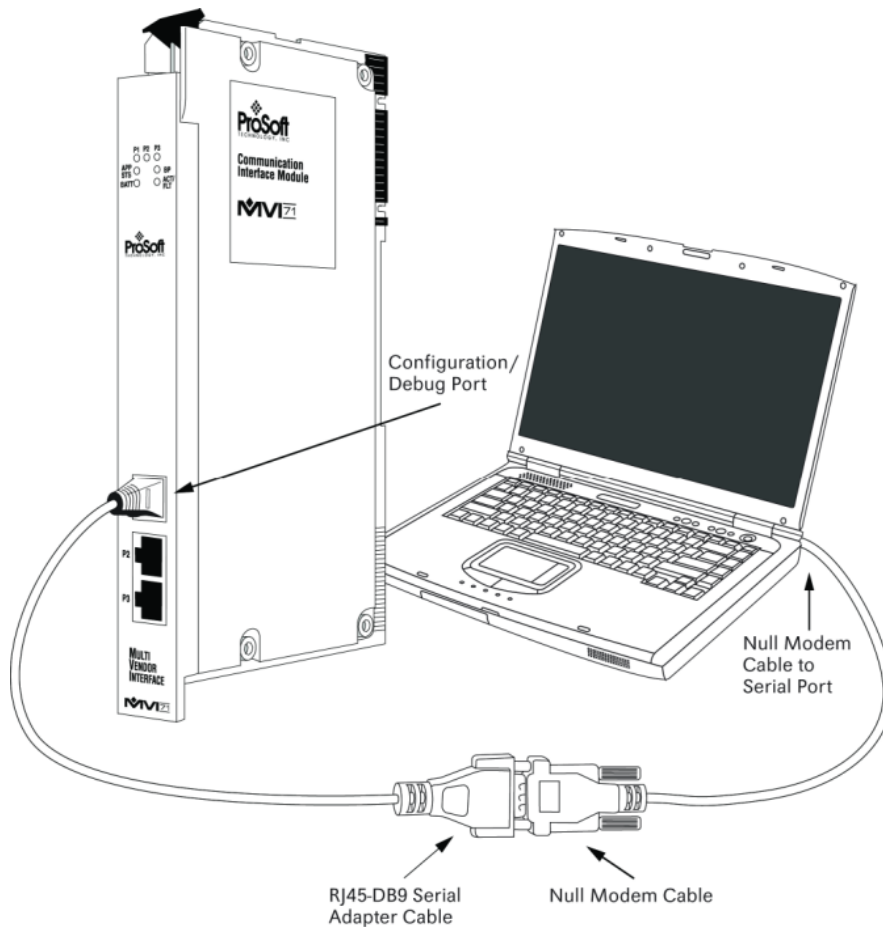
- 2 Click the **AUTO-CONFIGURE** button. *RSLinx* will attempt to configure your serial port to work with the selected driver.
- 3 When you see the message *Auto Configuration Successful*, click the **OK** button to dismiss the dialog box.

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.

1.7 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.



2 Installing and Configuring the Module

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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 5 to identify the module to the processor and add the module to a project.

Note: The RSLogix 5 software must be in "offline" mode to add the module to a project.

- 2 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 next step in installing and configuring the module is to define whether the block transfer or side-connect interface will be utilized.

If the side-connect interface is utilized (requires user-supplied side-connect adapter), make sure the file SC_DATA.TXT on the Compact Flash Disk contains the correct first file number. You can run the setdnpssc.exe program to set the file number for your application. Install the module in the rack and turn on the power. Connect the serial cable to the module's debug/configuration port and exit the program by pressing **[Esc][X]**. This will cause the program to exit and remain at the operating system prompt. Run the setdnpssc.exe program with a command line argument of the file number to use for the first file. For example, to select N10: as the first file, enter the following:

```
SETDNPSC 10
```

The program will build the SC_DATA.TXT on the Compact Flash Disk (C: drive in the root directory).

Next, define the data files for the application. If the block transfer interface is used, define the data files to hold the user data (read and write data). Enter the ladder logic to handle the blocks transferred between the module and the PLC. Download the program to the PLC and test the program with the module.

If the side-connect interface is used, no ladder logic is required for data transfer. The user data files to interface with the module must reside in contiguous order in the processor. The first file to be used by the interface is the status/control file. This is file number set in the SC_DATA.TXT file using the SETDNPSC.EXE program. The following table lists the files used by the side-connect interface:

File Number	Example	Size	Description
Cfg File	N10	200	Control/Status File
Cfg File+1	N11	to 1000	Data transferred from the module to the processor Other files for read data
Cfg File+1+n	N12	to 1000	Data transferred from the processor to the module
Cfg File+1+n+m			Other files for write data

n is the number of read data files minus one. Each file contains up to 1000 words.

m is the number of write data files minus one. Each file contains up to 1000 words.

More than one read and/or write file may exist in an application. This is required when more than 1000 words of data are required. Two examples are given below for the files used with different data set sizes:

2.1 Module Configuration

This section contains the setup procedure, data, and ladder logic for successful application of the MVI71-BDW module. Each step in the setup procedure is defined in order to simplify the use of the module. Set up for the module for both the BTR/BTW and side-connect interfaces is covered.

2.2 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 sections:

[Section]	Description
[Module]	General module configuration information.
[BARDAC DW Client 0]	Configuration data for BARDAC DW Client 0
[BARDAC DW Client 0 Commands]	Command list for BARDAC DW Client 0
[BARDAC DW Client 1]	Configuration data for BARDAC DW Client 1
[BARDAC DW Client 1 Commands]	Command list for BARDAC DW Client 1
[BARDAC DW Client 2]	Configuration data for BARDAC DW Client 2
[BARDAC DW Client 2 Commands]	Command list for BARDAC DW Client 2
[BARDAC DW Client 3]	Configuration data for BARDAC DW Client 3
[BARDAC DW Client 3 Commands]	Command list for 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 Pointer: 3000 #Database location for Error/Status Data
```

The parameter label is "Error/Status Pointer" 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 0 COMMANDS] section defines the BARDAC DW commands to be issued from the module to server devices on the network. These commands can be used for data collection and/or control of devices on the UDP/IP network.

2.2.1 [Module]

This section of the file describes the database setup and module level parameters.

Module Name

0 to **80** characters

This parameter assigns a name to the module that can be viewed using the configuration/debug port. Use this parameter to identify the module and the configuration file.

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.

Read Register Start

0 to **4999**

The *Read Register Start* parameter specifies the start of the Read Data area in module memory. Data in this area will be transferred from the module to the processor.

Note: Total user database memory space is limited to the first 5000 registers of module memory, addresses 0 through 4999. Therefore, the practical limit for this parameter is 4999 minus the value entered for *Read Register Count*, so that the Read Data Area does not try to extend above address 4999. Read Data and Write Data Areas must be configured to occupy separate address ranges in module memory and should not be allowed to overlap.

Read Register Count

0 to 5000

The *Read Register Count* parameter specifies the size of the Read Data area of module memory and the number of registers to transfer from this area to the processor, up to a maximum of 5000 words.

Note: Total *Read Register Count* and *Write Register Count* cannot exceed 5000 total registers. Read Data and Write Data Areas must be configured to occupy separate address ranges in module memory and should not be allowed to overlap.

Write Register Start

0 to 4999

The *Write Register Start* parameter specifies the start of the Write Data area in module memory. Data in this area will be transferred in from the processor.

Note: Total user database memory space is limited to the first 5000 registers of module memory, addresses 0 through 4999. Therefore, the practical limit for this parameter is 4999 minus the value entered for *Write Register Count*, so that the Write Data Area does not try to extend above address 4999. Read Data and Write Data Areas must be configured to occupy separate address ranges in module memory and should not be allowed to overlap.

Read Register Count

0 to 5000

The *Read Register Count* parameter specifies the size of the Read Data area of module memory and the number of registers to transfer from this area to the processor, up to a maximum of 5000 words.

Note: Total *Read Register Count* and *Write Register Count* cannot exceed 5000 total registers. Read Data and Write Data Areas must be configured to occupy separate address ranges in module memory and should not be allowed to overlap.

Failure Flag Count

0 through 65535

This parameter specifies the number of successive transfer errors that must occur before halting communication on the application port(s). If the parameter is set to **0**, the application port(s) 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.

Initialize Output Data

0 = No, **1** = Yes

This parameter is used to determine 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.

2.2.2 [Bardac DW Client 0]

This section defines the configuration for the master device simulated on Bardac DW UDP service port 48556 (0xBDAC).

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.

Command Error Pointer

-1 to 4999

This parameter sets the address in the internal database where the Command Error List data will be placed. If you want the Command Error List data to be moved to the processor and placed into the *ReadData* array, the value entered should be a module memory address in the Read Data area. Therefore, the value entered should be a module memory address in the Read Data area. If the value is set to **-1**, the Command Error List data will not be stored in the module's internal database and will not be transferred to the processor's *ReadData* array.

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.

Response Timeout

0 to 65535 milliseconds

This is the time in milliseconds that a Client will wait before re-transmitting a command if no response is received from the addressed server. The value to use depends on the type of communication network used, and the expected response time of the slowest device on the network.

Retry Count

0 to 10

This parameter specifies the number of times a command will be retried if it fails.

2.2.3 [Bardac DW Client 0 Commands]

This section contains examples for a Bardac DW UDP/IP client using service port 48556 (0xBDAC). Refer to the drive documentation for a full list of Parameter IDs. This section can contain up to 100 commands.

Command List Overview

In order to interface the MVI71-BDW module with UDP/IP server devices, you must construct a command list. The commands in the list specify the server device to be addressed, the function to be performed (read or write), 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.

The command list is processed from top (command #0) to bottom. 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.

Commands Supported by the Module

The format of each command in the list depends 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.

Command Entry Formats

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

BARDAC DW COMMAND STRUCTURE

Column #	1	2	3	4	5	6	10
Function Code	Enable Code	Internal Address	Poll Interval Time	Swap Code	IP Address	Function Code	Device Address
Get0	Code	Register	1/10 th Seconds	0	IP Address	0	Register
Set1	Code	Register	1/10 th Seconds	0	IP Address	1	Register

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

Command list example:

```
[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
```

Parameter	Range	Description
Enable	0, 1, 2	This field defines whether the command is to be executed and under what conditions.

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.

Because the BARDAC devices use the UDP protocol, the communication between the module and the device is not as reliable as with the TCP/IP protocol. For this reason, ProSoft suggests that the Enable Code of 2 not be used because a specific command may not be transferred. Therefore, it is strongly suggested to use the Enable Code of 1 to send SET commands.

Parameter	Range	Description										
DB Address	0 to 4999	<p>This field specifies the internal database register to be associated with the command.</p> <p>- 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.</p> <p>If the command is a write function, the data written to the Server device will be sourced from the address specified.</p> <p>The correct format depends on the parameter type. The following provides examples of the most common types:</p> <p>Time Secs (XX.X) PLC = 1 <=> BARDAC DRIVE = 0.1 sec PLC = 100 <=> BARDAC DRIVE = 10.0 sec PLC = 1019 <=> BARDAC DRIVE = 101.9 sec</p> <p>Percentage (X.XX) PLC = 1 <=> BARDAC DRIVE = 0.01% PLC = 10 <=> BARDAC DRIVE = 0.10% PLC = 10000 <=> BARDAC DRIVE = 100.00%</p> <p>ENABLED/DISABLED PLC = 0 <=> BARDAC = DISABLED PLC = 1 <=> BARDAC = ENABLED</p>										
Poll Delay	0 to 65535	<p>This parameter specifies the minimum interval to execute continuous commands (Enable code of 1). The parameter is entered in units of 1/10th seconds. Therefore, if a value of 10 is entered for a command, the command will execute no more frequently than every 1 second.</p>										
Swap Code	0, 1, 2, 3	<p>This parameter is used only for functions 3, 4, 6, and 16 to define if the data received (or sent) from the module is to be ordered differently than data received from the server device. This parameter is helpful when dealing with floating-point or other multi-register values, as there is no standard method of storage of these data types in Server devices. 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:</p> <table border="1"> <thead> <tr> <th>Code</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>None – No Change is made in the byte ordering</td> </tr> <tr> <td>1</td> <td>Words – The words are swapped</td> </tr> <tr> <td>2</td> <td>Words & Bytes – The words are swapped then the bytes in each word are swapped</td> </tr> <tr> <td>3</td> <td>Bytes – The bytes in each word are swapped</td> </tr> </tbody> </table> <p>When swapping words, make sure you are using an even value in the Count Field. Odd values may generate unexpected results.</p>	Code	Description	0	None – No Change is made in the byte ordering	1	Words – The words are swapped	2	Words & Bytes – The words are swapped then the bytes in each word are swapped	3	Bytes – The bytes in each word are swapped
Code	Description											
0	None – No Change is made in the byte ordering											
1	Words – The words are swapped											
2	Words & Bytes – The words are swapped then the bytes in each word are swapped											
3	Bytes – The bytes in each word are swapped											
Node IP Address	xxx.xxx.xxx.xxx	The IP address of the device being addressed by the command.										

Parameter	Range	Description						
Function Code	0 or 1	This parameter specifies the function to be executed by the command. These function codes are defined in the BARDAC DW protocol.						
		<table border="1"> <thead> <tr> <th>Function Code</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>Get0</td> <td>Get (read data)</td> </tr> <tr> <td>Set1</td> <td>Set (write data)</td> </tr> </tbody> </table>	Function Code	Description	Get0	Get (read data)	Set1	Set (write data)
Function Code	Description							
Get0	Get (read data)							
Set1	Set (write data)							
Parameter ID		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 PINs for your specific application.						

2.3 Module Data

All data related to the MVI71-BDW module is stored in a user defined data files. It is the responsibility of the ladder logic programmer to construct all the data files required by the program and to write the ladder logic required to interface to these files.

2.4 Status Data

When the side-connect interface is employed in the application, the status data is automatically transferred from the module to the first file used by the interface. The data is placed at an offset of 0 in the file and has the format shown in the Reference chapter.

When the block transfer interface is used, the status data is placed in the module's internal database at the location specified by the Error/Status Offset parameter in the configuration file. If this data area is transferred to the processor in the read data area, it will be passed from the module to the processor in a normal BTR block. This will be placed in the normal read data area. The format of the data is exactly the same as shown above, but the user determines its position. Refer to the Reference chapter for a complete listing of the data stored in this object.

2.5 User Data

When the side-connect interface is utilized, the read and write data is moved between the module and the processor without any ladder logic. The size of the data area and position of the data areas in the module's database is determined by the parameters set in the configuration file.

When the block transfer interface is used, ladder logic is required to page the data between the module and the processor. The size of the data area and position of the data areas in the module's database is determined by the parameters set in the configuration file.

The read data area should be 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 60 words. This data is paged up to 60 words at a time from the module to the processor. The Read Data 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 area should be 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 60 words. This data is paged up to 60 words at a time from the processor to the module. The Write Data 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.

2.6 Event Command Data

A user file containing Event Command Data is only required when event commands are utilized in the application. This file holds the information required for an event command.

2.7 Example of 240 words of read and write data (cfg file=10)

Data Files	Description
N11:0 to 239	Read data
N12:0 to 239	Write data

2.8 Example of 2300 read and 3500 write data registers (cfg file=10)

Data Files	Description
N11:0 to 999	Read data words 0 to 999
N12:0 to 999	Read data words 1000 to 1999
N13:0 to 299	Read data words 2000 to 2299
N14:0 to 999	Write data words 0 to 999
N15:0 to 999	Write data words 1000 to 1999
N16:0 to 999	Write data words 2000 to 2999
N17:0 to 499	Write data words 3000 to 3499

Even if the files are not required for an application, they still are reserved and should only be used for that purpose. The read and write data contained in the last set of files possess the data transferred between the module and the processor. The read data file (Cfg File + 1) will contain data transferred from the module to the processor and should be associated with control data types. The write data file (Cfg File + 1 + n) will contain data passed to the module from the processor and should be associated with monitor data types.

Special care must be taken when defining the files for the side-connect interface. Because the module directly interacts with the PLC processor and its memory, any errors in the configuration may cause the processor to fault and it may even lose its configuration and program. After defining the files and populating them with the correct data, download the program to the processor, and place the processor in run mode. If everything is configured correctly, the module should start its normal operation.

The module is now ready for your application. Insert the module in the rack (with the power turned off) and attach the serial communication cables. Download the new application to the controller and place the processor in run mode. Download the new BARDACDW.CFG file to the module using a 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.

2.9 IP Address

In addition to the BARDACDW.CFG, the MVI71-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 54) for the correct procedure.

2.10 Uploading and Downloading the Configuration File

ProSoft modules are shipped with a pre-loaded configuration file. In order to edit this file, you may transfer the file from the module to your PC or locate and load the file from the distribution CD-ROM supplied with the module. After editing, you must transfer the file back to the module for your changes to take effect.

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.

2.10.1 Transferring the Configuration File from The Module to the PC

On the Diagnostics Menu this is referred to as *Send Module Configuration*.

Press **[S]** to send (upload) 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 uploaded, you can open and edit the file to change the module's configuration.

2.10.2 Transferring the Configuration File from the PC to the Module

On the Diagnostics Menu this is referred to as *Receive Module Configuration*.

Press **[R]** to receive (download) the configuration file from your PC to the module and store the file on the module's Compact Flash Card (Personality Module) or Flash RAM.

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 verify that the module is configured correctly.

2.11 Ladder Logic

Ladder logic is required for application of the MVI71-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.

3 Diagnostics and Troubleshooting

In This Chapter

❖ LED Status Indicators.....	40
❖ Using ProSoft Configuration Builder (PCB) for Diagnostics.....	44
❖ Reading Status Data from the Module	56

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

- LED status indicators on the front of the module provide general information on the module's status.
- Status data contained in the module can be viewed through the Configuration/Debug port, using the troubleshooting and diagnostic capabilities of *ProSoft Configuration Builder (PCB)*.
- Status data values can be transferred from the module to processor memory and can be monitored there manually or by customer-created logic.

3.1 LED Status Indicators

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

LED	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 MVI71-BDW is working normally.
		On	The MVI71-BDW module program has recognized a communication error on one of its ports.
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	The float flag parameter is not valid.	0x0020
6	The float start parameter is not valid.	0x0040
7	The float offset parameter is not valid.	0x0080
8		0x0100
9		0x0200
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.

3.1.1 Ethernet LED Indicators

LED	State	Description
Data	OFF	No activity on the Ethernet port.
	GREEN Flash	The Ethernet port is actively transmitting or receiving data.
Link	OFF	No physical network connection is detected. No Ethernet communication is possible. Check wiring and cables.
	GREEN Solid	Physical network connection detected. This LED must be ON solid for Ethernet communication to be possible.

3.1.2 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 correct configuration data is being transferred to the module from the PLC controller.

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 Technical Support.

3.1.3 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 in the I/O Configuration of RSLogix. Verify that the slot location in the rack has been configured correctly in the ladder logic.
Processor I/O LED flashes	This indicates a problem with backplane communications. A problem could exist between the processor and any installed I/O module, not just the MVI71-BDW. Verify that all modules in the rack are correctly configured in the ladder logic.

Module Errors

Problem description	Steps to take
BP ACT LED (not present on MVI56E modules) remains OFF or blinks slowly MVI56E modules with scrolling LED display: <i><Backplane Status></i> condition reads ERR	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 or REM RUN mode. ▪ The backplane driver is loaded in the module. ▪ The module is configured for read and write data block transfer. ▪ The ladder logic handles all read and write block situations. ▪ The module is properly configured in the processor I/O configuration and ladder logic.
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 it, and then restore power to the rack.

3.2 Using ProSoft Configuration Builder (PCB) for Diagnostics

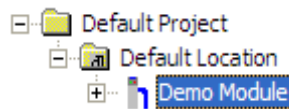
The *Configuration and Debug* menu for this module is arranged as a tree structure, with the *Main* menu at the top of the tree, and one or more submenus for each menu command. The first menu you see when you connect to the module is the *Main* menu.

Because this is a text-based menu system, you enter commands by typing the [command letter] from your computer keyboard in the *Diagnostic* window in *ProSoft Configuration Builder (PCB)*. 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.

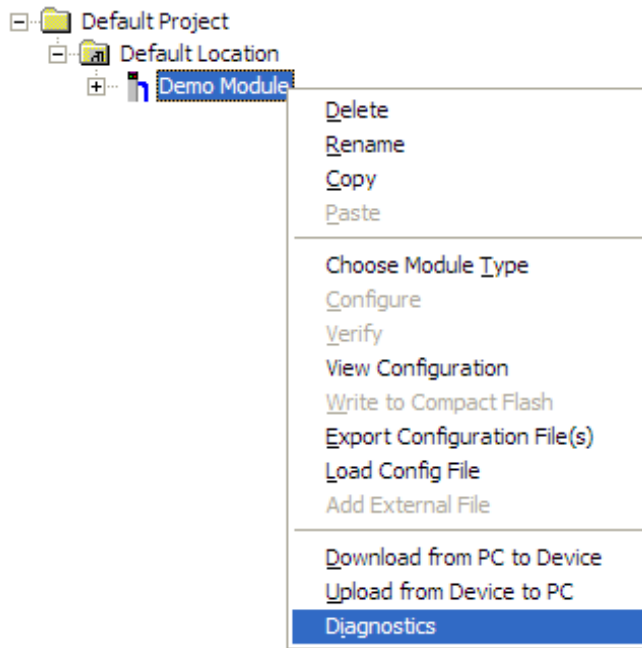
3.2.1 Using the Diagnostic Window in ProSoft Configuration Builder

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

- 1 Start *PCB*, and then select the module to test. Click the right mouse button to open a shortcut menu.

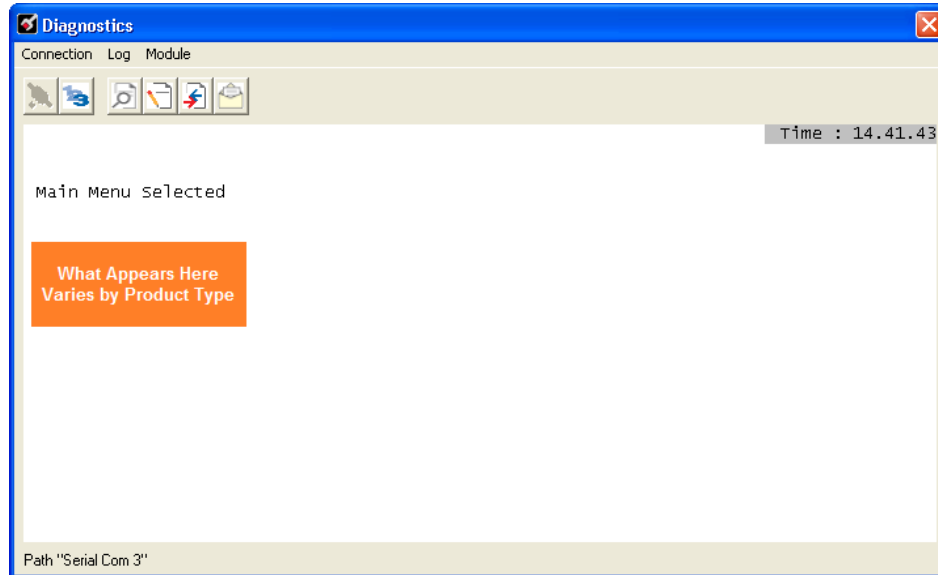


- 2 On the shortcut menu, choose **DIAGNOSTICS**.



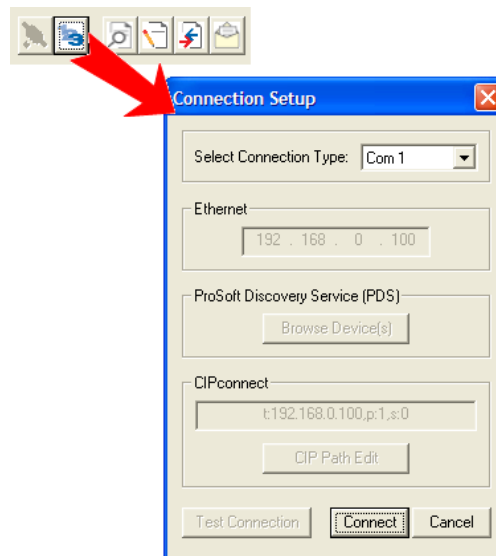
This action opens the *Diagnostics* dialog box.

- 3 Press [?] to open the *Main* menu.



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

- 1 Click to configure the connection. On the *Connection Setup* dialog box, select a valid com port or other connection type supported by the module.



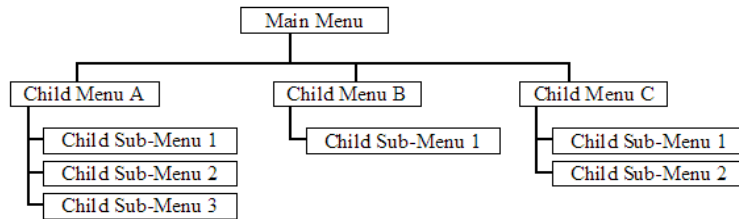
- 2 Verify that the null modem cable is connected properly between your computer's serial port and the module. A regular serial cable will not work.
- 3 On computers with more than one serial port, verify that your communication program is connected to the same port that is connected to the module.

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

3.2.2 Navigation

All of the submenus for this module contain commands to redisplay the menu or return to the previous menu. You can always return from a submenu 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 the menus available for this module, and briefly discusses the commands available to you.

Keystrokes

The keyboard commands on these menus are usually not case sensitive. You can enter most commands in lowercase or uppercase 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** and **/**.

Also, take care to distinguish the different uses for uppercase letter "eye" (**I**), lowercase letter "el" (**L**), and the number one (**1**). Likewise, uppercase letter "oh" (**O**) and the number zero (**0**) are not interchangeable. Although these characters look alike on the screen, they perform different actions on the module and may not be used interchangeably.

3.2.3 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.

```
MVI71-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 2Client 1 Client 2 4=Client 3
5=Client Configurations
@=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 View Menu

Press [**D**] to open the *Database View* menu.

Use this menu command to view the current contents of the module's database. For more information about this submenu, see Database View Menu (page 50).

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 the PC to the Module

On the Diagnostics Menu this is referred to as *Receive Module Configuration*.

Press **[R]** to receive (download) the configuration file from your PC to the module and store the file on the module's Compact Flash Card (Personality Module) or Flash RAM.

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 verify that the module is configured correctly.

Transferring the Configuration File from The Module to the PC

On the Diagnostics Menu this is referred to as *Send Module Configuration*.

Press **[S]** to send (upload) 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 uploaded, 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

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 reboot.

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. For more information about this submenu, see Network Menu (page 54).

Exiting the Program

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 memory to configure the module.

3.2.4 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 database. Press **[?]** to view a list of commands available on this menu.

```
DB Menu selected

DATABASE VIEW MENU
?=Display Menu
0-9=Display 0-9000
S=Show Again
-=Back 5 Pages
P=Previous Page
+=Skip 5 Pages
N=Next Page
D=Decimal Display
H=Hexadecimal Display
F=Float Display
A=ASCII Display
M=Main 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

Press **[S]** from the *Database View* menu to show 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	
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 five pages back in the database to see the 100 registers of data starting 500 registers before the currently displayed page.

Moving Forward (Skipping) Through 5 Pages of Registers

Press **[+]** from the *Database View* menu to skip five pages ahead in the database to see the 100 registers of data starting 500 registers after the currently displayed page.

Viewing the Previous Page of Registers

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

Viewing the Next Page of Registers

Press **[N]** from the *Database View* menu to display the next page of data.

Viewing Data in Decimal Format

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

Viewing Data in Hexadecimal Format

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

Viewing Data in Floating-Point Format

Press **[F]** from the *Database View* menu 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

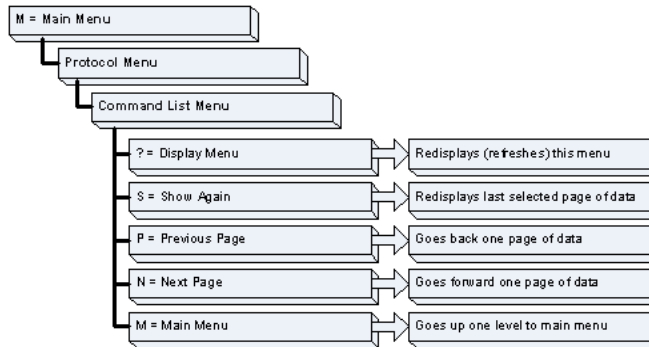
Press **[A]** from the *Database View* menu to display the data on the current page in ASCII format. This is useful for regions of the database that contain ASCII data.

Returning to the Main Menu

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

3.2.5 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.

Moving Back Through 5 Pages of Commands

Press [-] to display data for last 5 page commands.

Viewing the Previous Page of Commands

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

Moving Forward (Skipping) Through 5 Pages of Commands

Press [+] to display data for the next page of commands.

Viewing the Next Page of Commands

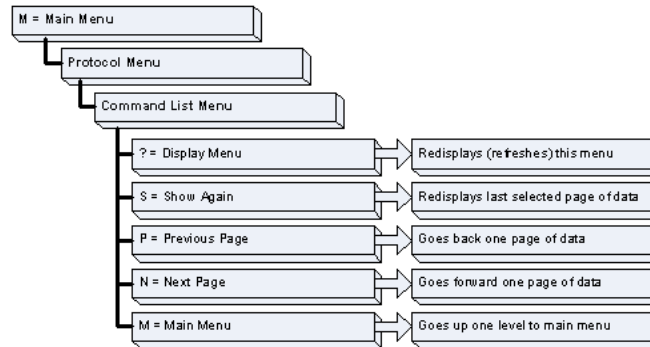
Press [N] to display the next page of commands.

Returning to the Main Menu

Press [M] to return to the Main menu.

3.2.6 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

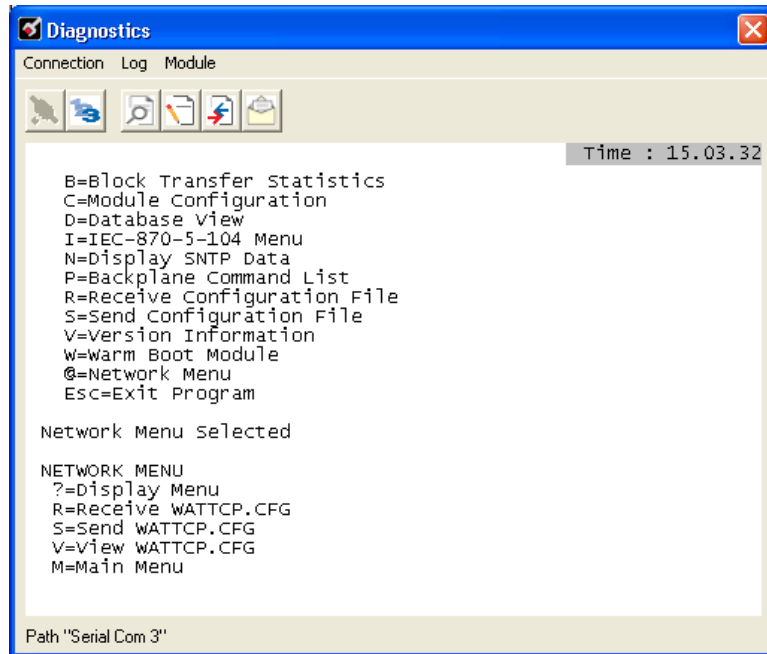
Press **[N]** to display the next page of commands.

Returning to the Main Menu

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

3.2.7 Network Menu

From the *IEC-870-5-104 Server* menu press [**@**] to display the *IEC-870-5-104 Network* menu screen. The *Network* menu allows you to send, receive, and view the WATTCP.CFG file that contains the IP and module addresses, and other network 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.

```
WATTCP.CFG FILE:
# ProLinx Communication Gateways, Inc.
# Default private class 3 address
my_ip=192.168.0.75
# Default class 3 network mask
netmask=255.255.255.0
# name server 1 up to 9 may be included
# nameserver=xxx.xxx.xxx.xxx
# name server 2
# nameserver=xxx.xxx.xxx.xxx
# The gateway I wish to use
gateway=192.168.0.1
# some networks (class 2) require all three parameters
# gateway, network, subnetmask
# gateway 192.168.0.1, 192.168.0.0, 255.255.255.0
# The name of my network
# domainlist="mynetwork.name"
```

Returning to the Main Menu

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

3.3 Reading Status Data from the Module

The MVI71-BDW module returns a 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 and is viewable using the Configuration/Debug port with a terminal emulation program. The Configuration/Debug port provides the following functionality:

- Full view of the module's configuration data
- View of the module's status data
- Complete display of the module's internal database (registers 0 to 3999)
- Version Information
- Control over the module (warm boot, cold boot, transfer configuration)
- Facility to upload and download the module's configuration file

4 Reference

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4.1 Product Specifications

The MVI71 Bardac Drive Interface Module allows Rockwell Automation PLC compatible processors to interface easily with Bardac drive.web devices.

The MVI71-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 PLC backplane. The data transfer from the PLC 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.

4.1.1 General Specifications

- Single Slot - 1771 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.
- Configuration data obtained through user-defined ladder. Sample ladder file included

4.1.2 Hardware Specifications

Specification	Description
Form Factor	Single Slot 1771 chassis compatible BTR/BTW data transfer Local or remote rack
Backplane current load	800 mA @ 5 V
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 10150 Hz
Relative humidity	5% to 95% (non-condensing)
LED Indicators	Module status Backplane transfer status Application status Serial activity and error LED status
Configuration Serial port (CFG)	DB-9M PC compatible RS-232 Hardware handshaking
Ethernet Port (Ethernet modules)	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

4.1.3 Functional Specifications

A client configured as a Bardac master device on the MVI71-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 PLC 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 PLC 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

4.2 Functional Overview

4.2.1 General Concepts

The following discussion explains several concepts that are important for understanding module operation.

Module Power Up

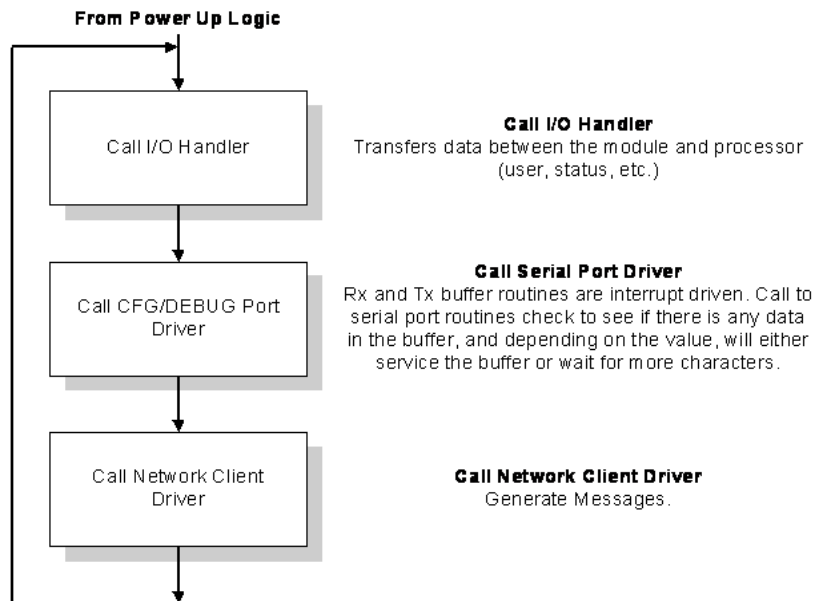
On power up the module begins performing the following logical functions:

- 1 Initialize hardware components
 - a Initialize PLC backplane driver
 - b Test and Clear all RAM
- 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

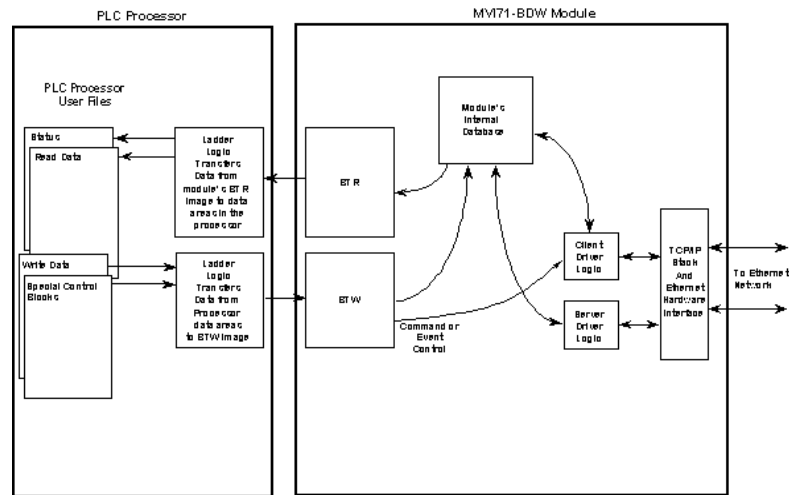
Upon completing the power up configuration process, the module enters an infinite loop that performs the functions shown in the following diagram.



4.2.2 Block Transfer Backplane Data Transfer

The MVI71-BDW module communicates directly over the PLC backplane for the block transfer interface. Data is paged between the module and the PLC processor across the backplane using BTR and BTW operations. Data is transferred from the module to the processor using the BTR blocks, and data is transferred from the processor to the module using the BTW blocks.

The following illustration shows the data transfer method used to move data between the PLC processor, the MVI71-BDW module and the network.

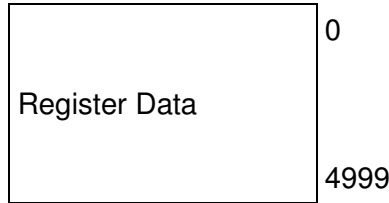


All data transferred between the module and the processor over the backplane is through the BTR and BTW blocks. Ladder logic must be written in the PLC processor to interface the block data with user data files. All data used by the module is stored in its internal database.

The following illustration shows the layout of the database:

Module's Internal Database Structure

5000 registers for user data



Data contained in this database is paged through the block transfer interface by coordination of the PLC ladder logic and the MVI71-BDW module's program. Up to 64 words of data can be transferred from the module to the processor at a time. Up to 64 words of data can be transferred from the processor to the module. The read and write block identification codes in each data block determine the function to be performed or the content of the data block. The module uses the following block numbers:

Block Range	Description
-1	Null Block
0	Null Block
1 to 68	Read or Write Data
1000 to 1067	Output Initialization Blocks
2000	Event Command Block
5001 to 5006	Command Control
9998	Warm-Boot Control Block
9999	Cold Boot Control Block

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 (BTR) and write (BTW) blocks. The following topics describe the function and structure of each block.

Block Request from the Processor to the Module

These blocks of data transfer information from the PLC processor to the module. The following table describes the structure of the output image.

Offset	Description	Length
0	Write Block ID	1
1 to 60	Write Data	60
61 to 63	Spare	3

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 60 words (block offsets 1 to 60) of data.

Block Response from the Module to the Processor

These blocks of data transfer information from the module to the PLC processor. The following table describes the structure of the input image.

Offset	Description	Length
0	Read Block ID	1
1	Write Block ID	1
2 to 61	Read Data	60
62 to 63	Spare	2

The Read Block ID is an index value used to determine the location of where the data will be placed in the PLC processor controller tag array of module read data. Each transfer can move up to 60 words (block offsets 2 to 61) of data.

The Write Block ID associated with the block requests data from the PLC processor. Under normal program operation, the module sequentially sends read blocks and requests write blocks. For example, if the application uses three read and two write blocks, 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 Modbus network or operator control through the module's Configuration/Debug port.

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. Use the **Initialize Output Data** parameter in the configuration file to bring the module to a known state after a restart operation. The following table describes the structure of the request block.

Offset	Description	Length
0	1000 to 1067	1
1	1000 to 1067	1
2 to 63	Spare	62

The block number in word 0 of the block determines the data set of up to 60 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 in the following table.

Offset	Description	Length
0	1000 to 1067	1
1 to 60	Output Data	60
61 to 63	Spare	3

Special Function Blocks

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

Event Command

Event command control blocks send UDP/IP commands directly from the ladder logic to one of the client on the module. The format for these write blocks is displayed in the following table.

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 63	Spare	54

Use the parameters passed with the block to 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 for the command. This word can contain a value from 0 to 4999.
6	The parameter specifies the swap type for the data. 0=Do not Swap Bytes, 1=Swap bytes.
7	This word contains the Bardac DW function code for the command. 0=Get function to retrieve data from unit and 1=Set function to alter data in the unit.
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 63	Spare

The module will respond to each command block with a read block. The following table describes the format of this block.

Word	Description
0	This word contains the block identification code 2000 requested by the processor.
1	This word contains the next read request block identification code.
2	This word contains the result of the event request. If a value of one is present, the command was issued. If a value of zero is present, no room was found in the command queue.
3	Client index used with the block. This parameter has a value from 0 to 3.
4 to 63	Spare

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 port is full (100 commands for each queue).

Command Control

Command control blocks place commands from the command list into the command queue. The 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 following table describes the format for this block.

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.
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 63	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 following table describes the format for this block.

Word	Description
0	This word contains the block 5001 to 5006 requested by the processor.
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 63	Spare

Warm Boot Block (9998)

This block is sent from the PLC 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 cause the module to read the new configuration information and to restart. The following table describes the format of the control block.

Offset	Description	Length
0	9998	1
1 to 63	Spare	63

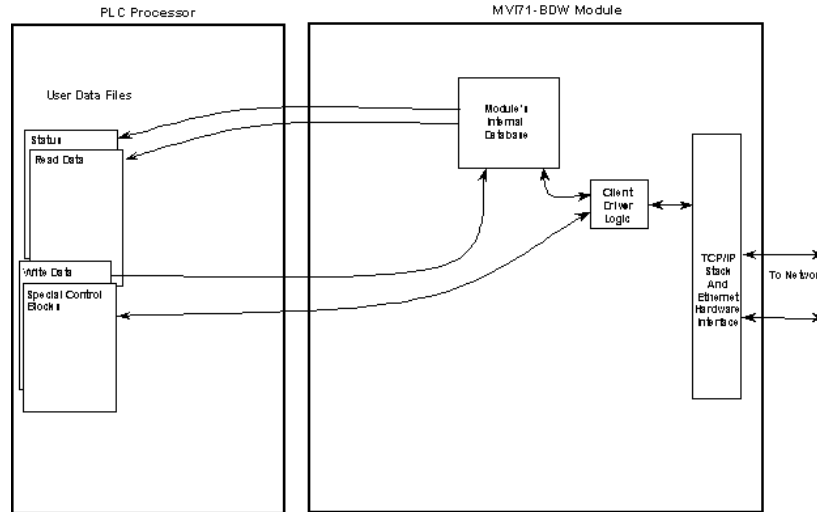
Cold Boot Block (9999)

This block is sent from the PLC 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 following table describes the format of the control block.

Offset	Description	Length
0	9999	1
1 to 63	Spare	63

4.2.3 Side-Connect Backplane Data Transfer (Requires special user-supplied side-connect adapter)

The side-connect interface is the simplest method to implement the module. No ladder logic is required for the interface because the driver handles data movement between the module and the processor automatically. The data flow diagram associated with this interface is shown in the following diagrams:



The configuration information for the module determines the size of the read and write data areas and the locations of these data sets in the module's internal database. Therefore, to use this interface, just set up the files required by the module. The following table lists the files required for the side-connect interface:

File Number	Example	Size	Description
Cfg File	N10	200	Control/Status File
Cfg File+1	N11	to 1000	Data transferred from the module to the processor Other files for read data
Cfg File+1+n	N12	to 1000	Data transferred from the processor to the module
Cfg File+1+n+m			Other files for write data

The number of read and write files are dependent on the modules configuration. Two examples follow:

Example of 240 words of read and write data (cfg file=10)

Data Files	Description
N11:0 to 239	Read data
N12:0 to 239	Write data

Example of 2300 read and 3500 write data registers (cfg file=10)

Data Files	Description
N11:0 to 999	Read data words 0 to 999
N12:0 to 999	Read data words 1000 to 1999
N13:0 to 299	Read data words 2000 to 2299
N14:0 to 999	Write data words 0 to 999
N15:0 to 999	Write data words 1000 to 1999
N16:0 to 999	Write data words 2000 to 2999
N17:0 to 499	Write data words 3000 to 3499

When the side-connect interface is utilized, registers in the first user data file for the module are used for command control (offset 50 to 113). The format of these control commands is similar to that described in the preceding section. The following section describes the use of command control when the side-connect interface is used

:

Special Function Blocks (With Side-Connect)

Special Function blocks are special blocks used to control the module. These blocks of data are located in the first file of the side-connect interface starting at register offset 50. The current version of the software supports four Special Function blocks: event command control, command control, warm boot and cold boot.

Event Command (With Side-Connect)

Event command control blocks send UDP/IP commands directly from the ladder logic to one of the client on the module. The following table describes the format of these blocks.

Offset	Description	Length
50	2000	1
51 to 54	IP Address	4
55	Internal DB Address	1
56	Swap Code	1
57	BARDAC DW Function Code	1
58	Device Database Address	1
59	Client Number (0 to 3)	1

Use the parameters passed with the block to 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** is used with requests to change the word or byte order. The **BARDAC DW Function Code** has one of the following values 1, 2, 3, 4, 5, 6, 15 or 16. The **Device Database Address** is the register or point in the remote slave device to be associated with the command. When the module receives the block, it will process it and place it in the command queue.

The module will respond to each command block with a read block. The following table describes the format of this block.

Offset	Description	Length
50	0	1
51	2000	1
52	Write Block ID	1
53	0=Fail, 1=Success	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 port is full (100 commands for each queue).

Command Control (With Side Connect)

Command control blocks place commands in the command list into the command queue. The 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 following table describes the format for this block.

Offset	Description	Length
50	5001 to 5006	1
51	Command Index	1
52	Command Index	1
53	Command Index	1
54	Command Index	1
55	Command Index	1
56	Command Index	1
57	Client Number (0 to 3)	1

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 following table describes the format for this block.

Offset	Description	Length
50	0	1
51	5001 to 5006	1
52	Write Block ID	1
53	Number of commands added to command queue	1

Warm Boot Block (9998)

This block is sent from the PLC 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 cause the module to read the new configuration information and to restart. The following table describes the format of the control block.

Offset	Description	Length
50	9998	1

Cold Boot Block (9999)

This block is sent from the PLC 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 following table describes the format of the control block.

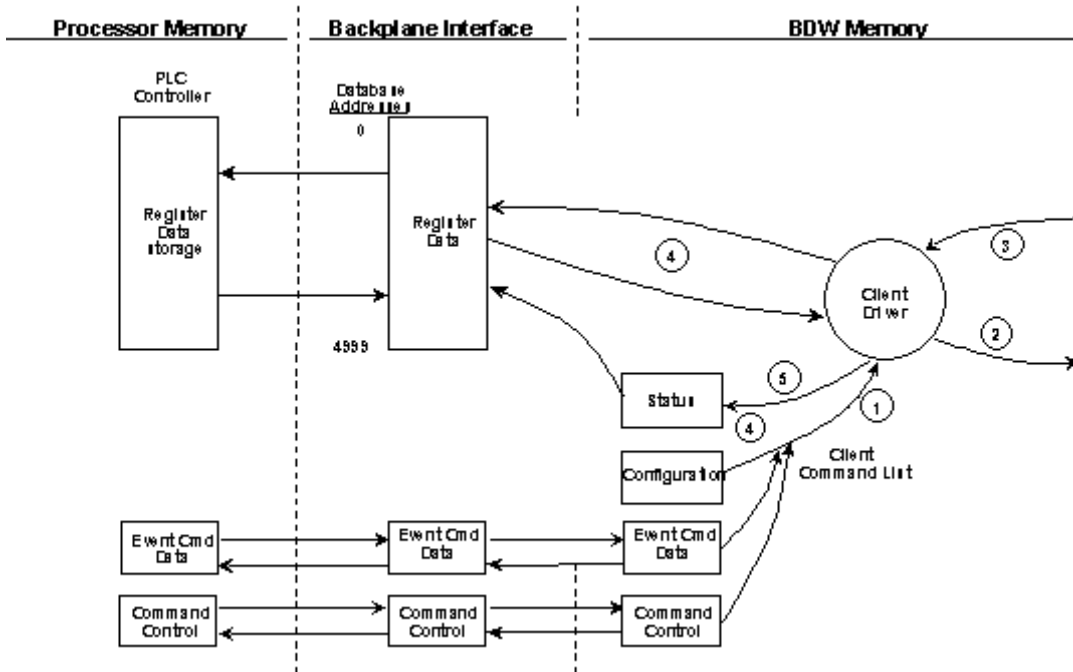
Offset	Description	Length
50	9999	1

4.2.4 Data Flow between MVI71-BDW Module and PLC Processor

The following topics describe the flow of data between the two pieces of hardware (PLC processor and MVI71-BDW module) and other nodes on the UDP/IP network under the module's different operating modes.

Client Driver

In the client driver, the MVI71-BDW module is responsible for issuing read or write commands to servers on the UDP/IP 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 PLC 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.
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 PLC 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 List must be defined. This list contains up to 100 individual entries, 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
- Slave Node Address
- Command Type - Read or Write up to 100 words per command
- Database Source and Destination Register Address - Determines where data will be placed and/or obtained
- Count - Select the number of words to be transferred - 1 to 100
- Poll Delay (1/10th second)

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
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.

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

4.3 Cable Connections

The MVI71-BDW module has the following functional communication connections installed:

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

4.3.1 Ethernet Connection

The MVI71-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.

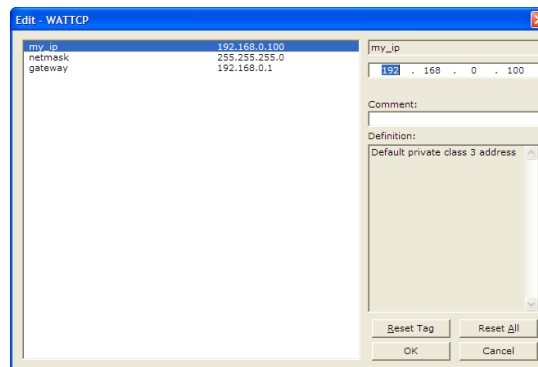
Note: Depending on hardware configuration, you may see more than one RJ45 port on the module. The Ethernet port is labeled *Ethernet*.

Warning: The MVI71-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

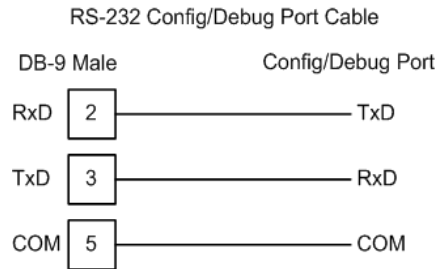
The wattcp.cfg file must be set up properly in order to use a TCP/IP network connection. You can view the current network configuration in *ProSoft Configuration Builder (PCB)*, as shown:



You may also view the network configuration using a PC serial port connection and an ASCII terminal program (like Windows HyperTerminal) by selecting **[@]** (Network Menu) and **[V]** (View) options when connected to the Debug port. For more information on serial port access, see the chapter on Diagnostics and Troubleshooting (page 39).

4.3.2 RS-232 Configuration/Debug Port

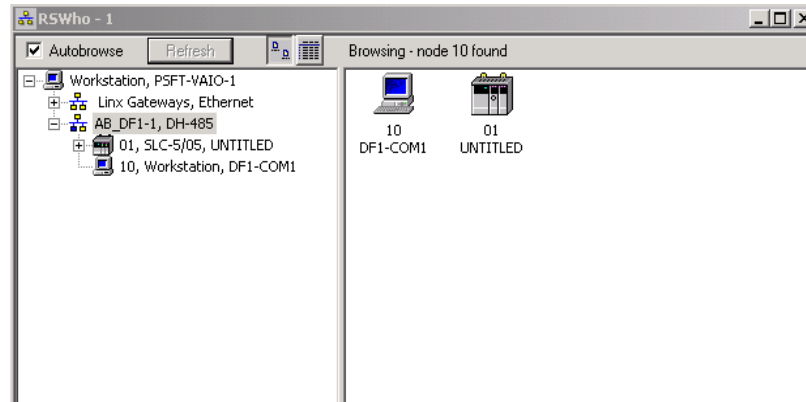
This port is physically an RJ45 connection. An RJ45 to DB-9 adapter cable is included with the module. This port permits a PC based terminal emulation program to view configuration and status data in the module and to control the module. The cable for communications on this port is shown in the following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



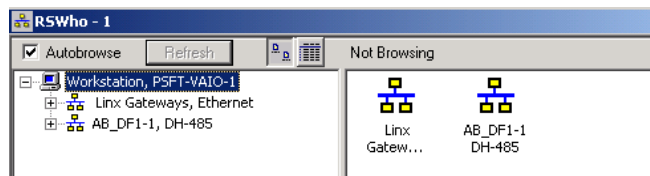
Disabling the RSLinx Driver for the Com Port on the PC

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.

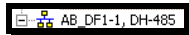
- 1 Open *RSLinx* and go to **COMMUNICATIONS>RSWHO**
- 2 Make sure that you are not actively browsing using the driver that you wish to stop. The following shows an actively browsed network:



- 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:

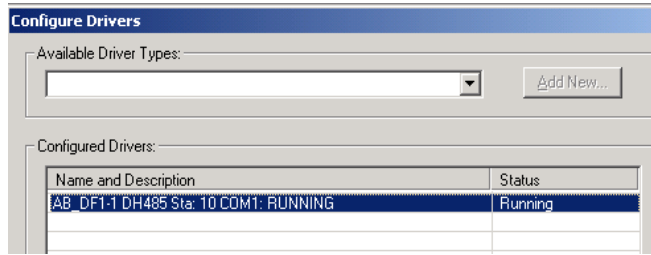


Branches are displayed or hidden by clicking on the  or the  icons.



- 4 When you have verified that the driver is not being browsed, go to **COMMUNICATIONS>CONFIGURE DRIVERS**

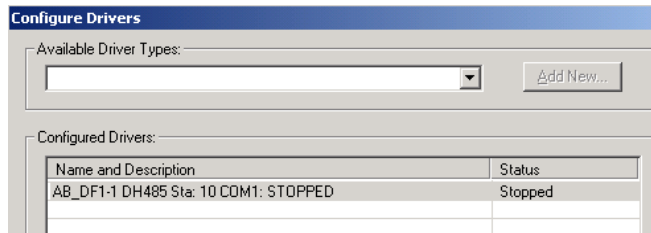
You may see something like this:



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** button on the side of the window:



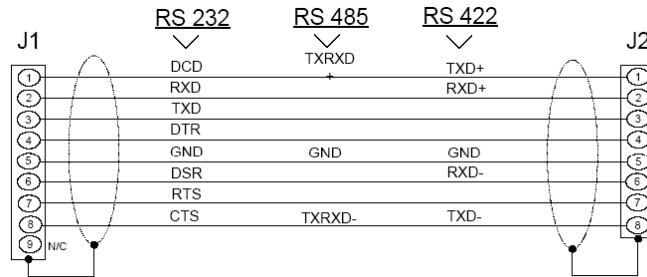
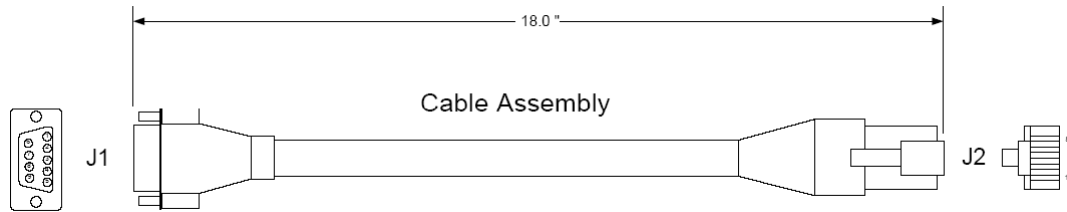
5 After you have stopped the driver you will see the following:



6 You may now use the 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.

4.3.3 DB9 to RJ45 Adaptor (Cable 14)



Wiring Diagram

4.4 MVI71-BDW Status Data Definition for Side Connect File

This section contains a description of the members present in the status data object. This data is transferred from the module to the processor as part of the read data area when the block transfer interface is used. When the side-connect interface is employed, this data set is automatically transferred to the user file by the module.

This section contains a description of the members present in the status data object. This data is transferred from the module to the processor as part of the read data area when the block transfer interface is used. When the side-connect interface is employed, this data set is automatically transferred to the user file by the module. This section also includes the [BARDAC DW Client 0] Error/Status Data table.

4.4.1 Error/Status Data Table

Module Data

Offset	Content	Description
0	Program Scan Count	This value is incremented each time a complete program cycle occurs in the module.
1	Read Block Count	This field contains the total number of read blocks transferred from the module to the processor.
2	Write Block Count	This field contains the total number of write blocks transferred from the processor to the module.
3	Parse Block Count	This field contains the total number of blocks successfully parsed that were received from the processor.
4	Command Event Block Count	This field contains the total number of command event blocks received from the processor.
5	Command Block Count	This field contains the total number of command blocks received from the processor.
6	Error Block Count	This field contains the total number of block errors recognized by the module.

Client 0

Offset	Content	Description
0	Client 0 Cmd Request	This value is incremented each time a command request is issued.
1	Client Cmd Response	This value is incremented each time a command response is received.
2	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.
3	Client Request Count	This value is incremented each time a request message is issued.
4	Client Response Count	This value is incremented each time a response message is received.
5	Client Error Sent Count	This value is incremented each time an error is sent from the client.
6	Client Error Received Count	This value is incremented each time an error is received from a remote unit.
7	Client Cfg Error Word	This word contains a bit map that defines configuration errors in the configuration file for the client.
8	Client Current Error Code	This value corresponds to the current error code for the client.
9	Client Last Error Code	This value corresponds to the last error code recorded for the client.

Client 1

Offset	Content	Description
0	Client 1 Cmd Request	This value is incremented each time a command request is issued.
1	Client Cmd Response	This value is incremented each time a command response is received.
2	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.
3	Client Request Count	This value is incremented each time a request message is issued.
4	Client Response Count	This value is incremented each time a response message is received.
5	Client Error Sent Count	This value is incremented each time an error is sent from the client.
6	Client Error Received Count	This value is incremented each time an error is received from a remote unit.
7	Client Cfg Error Word	This word contains a bitmap that defines configuration errors in the configuration file for the client.
8	Client Current Error Code	This value corresponds to the current error code for the client.
9	Client Last Error Code	This value corresponds to the last error code recorded for the client.

Client 2

Offset	Content	Description
0	Client 2 Cmd Request	This value is incremented each time a command request is issued.
1	Client Cmd Response	This value is incremented each time a command response is received.
2	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.
3	Client Request Count	This value is incremented each time a request message is issued.
4	Client Response Count	This value is incremented each time a response message is received.
5	Client Error Sent Count	This value is incremented each time an error is sent from the client.
6	Client Error Received Count	This value is incremented each time an error is received from a remote unit.
7	Client Cfg Error Word	This word contains a bitmap that defines configuration errors in the configuration file for the client.
8	Client Current Error Code	This value corresponds to the current error code for the client.
9	Client Last Error Code	This value corresponds to the last error code recorded for the client.

Client 3

Offset	Content	Description
0	Client 3 Cmd Request	This value is incremented each time a command request is issued.
1	Client Cmd Response	This value is incremented each time a command response is received.
2	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.
3	Client Request Count	This value is incremented each time a request message is issued.
4	Client Response Count	This value is incremented each time a response message is received.
5	Client Error Sent Count	This value is incremented each time an error is sent from the client.
6	Client Error Received Count	This value is incremented each time an error is received from a remote unit.
7	Client Cfg Error Word	This word contains a bitmap that defines configuration errors in the configuration file for the client.
8	Client Current Error Code	This value corresponds to the current error code for the client.
9	Client Last Error Code	This value corresponds to the last error code recorded for the client.

5 Support, Service & Warranty

In This Chapter

- ❖ Contacting Technical Support 87
- ❖ Return Material Authorization (RMA) Policies and Conditions..... 89
- ❖ LIMITED WARRANTY..... 91

Contacting Technical Support

ProSoft Technology, Inc. (ProSoft) is committed to providing the most efficient and effective support possible. Before calling, please gather the following information to assist in expediting this process:

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

If the issue is hardware related, we will also need information regarding:

- 1 Module configuration and associated ladder files, if any
- 2 Module operation and any unusual behavior
- 3 Configuration/Debug status information
- 4 LED patterns
- 5 Details about the serial, Ethernet or fieldbus devices interfaced to the module, if any.

Note: For technical support calls within the United States, an after-hours answering system allows 24-hour/7-days-a-week pager access to one of our qualified Technical and/or Application Support Engineers.

Internet	Web Site: www.prosoft-technology.com/support E-mail address: support@prosoft-technology.com
Asia Pacific (location in Malaysia)	Tel: +603.7724.2080, E-mail: asiapc@prosoft-technology.com Languages spoken include: Chinese, English
Asia Pacific (location in China)	Tel: +86.21.5187.7337 x888, E-mail: asiapc@prosoft-technology.com Languages spoken include: Chinese, English
Europe (location in Toulouse, France)	Tel: +33 (0) 5.34.36.87.20, E-mail: support.EMEA@prosoft-technology.com Languages spoken include: French, English
Europe (location in Dubai, UAE)	Tel: +971-4-214-6911, E-mail: mea@prosoft-technology.com Languages spoken include: English, Hindi
North America (location in California)	Tel: +1.661.716.5100, E-mail: support@prosoft-technology.com Languages spoken include: English, Spanish
Latin America (Oficina Regional)	Tel: +1-281-2989109, E-Mail: latinam@prosoft-technology.com Languages spoken include: Spanish, English
Latin America (location in Puebla, Mexico)	Tel: +52-222-3-99-6565, E-mail: soporte@prosoft-technology.com Languages spoken include: Spanish
Brasil (location in Sao Paulo)	Tel: +55-11-5083-3776, E-mail: brasil@prosoft-technology.com Languages spoken include: Portuguese, English

5.1 Return Material Authorization (RMA) Policies and Conditions

The following Return Material Authorization (RMA) Policies and Conditions (collectively, "RMA Policies") apply to any returned product. These RMA Policies are subject to change by ProSoft Technology, Inc., without notice. For warranty information, see Limited Warranty (page 91). In the event of any inconsistency between the RMA Policies and the Warranty, the Warranty shall govern.

5.1.1 Returning Any Product

- a) In order to return a Product for repair, exchange, or otherwise, the Customer must obtain a Return Material Authorization (RMA) number from ProSoft Technology and comply with ProSoft Technology shipping instructions.
- b) 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 (page 87). A Technical Support Engineer will request that you perform several tests in an attempt to isolate the problem. If after completing these tests, the Product is found to be the source of the problem, we will issue an RMA.
- c) All returned Products must be shipped freight prepaid, in the original shipping container or equivalent, to the location specified by ProSoft Technology, and be accompanied by proof of purchase and receipt date. 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 Technology using a shipment method other than that specified by ProSoft Technology, or shipped without an RMA number will be returned to the Customer, freight collect. Contact ProSoft Technical Support for further information.
- d) A 10% restocking fee applies to all warranty credit returns, whereby a Customer has an application change, ordered too many, does not need, etc. Returns for credit require that all accessory parts included in the original box (i.e.; antennas, cables) be returned. Failure to return these items will result in a deduction from the total credit due for each missing item.

5.1.2 Returning Units Under Warranty

A Technical Support Engineer must approve the return of Product under ProSoft Technology's Warranty:

- a) A replacement module will be shipped and invoiced. A purchase order will be required.
- b) Credit for a product under warranty will be issued upon receipt of authorized product by ProSoft Technology at designated location referenced on the Return Material Authorization
 - i. If a defect is found and is determined to be customer generated, or if the defect is otherwise not covered by ProSoft Technology's warranty, there will be no credit given. Customer will be contacted and can request module be returned at their expense;
 - ii. If defect is customer generated and is repairable, customer can authorize ProSoft Technology to repair the unit by providing a purchase order for 30% of the current list price plus freight charges, duties and taxes as applicable.

5.1.3 Returning Units Out of Warranty

- a) Customer sends unit in for evaluation to location specified by ProSoft Technology, freight prepaid.
- b) If no defect is found, Customer will be charged the equivalent of \$100 USD, plus freight charges, duties and taxes as applicable. A new purchase order will be required.
- c) If unit is repaired, charge to Customer will be 30% of current list price (USD) plus freight charges, duties and taxes as applicable. A new purchase order will be required or authorization to use the purchase order submitted for evaluation fee.

The following is a list of non-repairable units:

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

5.2 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 Technology, Incorporated (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.

5.2.1 What Is Covered By This Warranty

- a) *Warranty On New Products:* ProSoft warrants, to the original purchaser, 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 three (3) years from the date of shipment for Product purchased **on or after** January 1st, 2008, or one (1) year from the date of shipment for Product purchased **before** January 1st, 2008 (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 39 months from date of original shipment. 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 remanufactured replacement parts. ProSoft reserves the right, and at its sole discretion, may replace unrepairable units with new or remanufactured equipment. All replacement units will be covered under warranty for the 3 year period commencing from the date of original equipment purchase, not the date of shipment of the replacement unit. 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.
- b) *Warranty On Services:* Materials and labor performed by ProSoft to repair a verified malfunction or defect are warranted in 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.

5.2.2 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) This Warranty 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, "C" or any variant of "C" programming languages) 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; or (viii) disasters such as fire, flood, earthquake, wind and lightning.
- c) 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 guide included with your original product purchase 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.

5.2.3 Disclaimer Regarding High Risk Activities

Product manufactured or supplied by ProSoft is not fault tolerant and is not designed, manufactured or intended for use in hazardous environments requiring fail-safe performance including and without limitation: the operation of nuclear facilities, aircraft navigation or communication systems, air traffic control, direct life support machines or weapons systems in which the failure of the product could lead directly or indirectly to death, personal injury or severe physical or environmental damage (collectively, "high risk activities"). ProSoft specifically disclaims any express or implied warranty of fitness for high risk activities.

5.2.4 Intellectual Property Indemnity

Buyer shall indemnify and hold harmless ProSoft and its employees from and against all liabilities, losses, claims, costs and expenses (including attorney's fees and expenses) related to any claim, investigation, litigation or proceeding (whether or not ProSoft is a party) which arises or is alleged to arise from Buyer's acts or omissions under these Terms or in any way with respect to the Products. Without limiting the foregoing, Buyer (at its own expense) shall indemnify and hold harmless ProSoft and defend or settle any action brought against such Companies to the extent based on a claim that any Product made to Buyer specifications infringed intellectual property rights of another party. ProSoft makes no warranty that the product is or will be delivered free of any person's claiming of patent, trademark, or similar infringement. The Buyer assumes all risks (including the risk of suit) that the product or any use of the product will infringe existing or subsequently issued patents, trademarks, or copyrights.

- a) Any documentation included with Product purchased from ProSoft is protected by copyright and may not be duplicated or reproduced in any form without prior written consent from ProSoft.
- b) ProSoft's technical specifications and documentation that are included with the Product are subject to editing and modification without notice.
- c) Transfer of title shall not operate to convey to Customer any right to make, or have made, any Product supplied by ProSoft.
- d) Customer is granted no right or license to use any software or other intellectual property in any manner or for any purpose not expressly permitted by any license agreement accompanying such software or other intellectual property.
- e) Customer agrees that it shall not, and shall not authorize others to, copy software provided by ProSoft (except as expressly permitted in any license agreement accompanying such software); transfer software to a third party separately from the Product; modify, alter, translate, decode, decompile, disassemble, reverse-engineer or otherwise attempt to derive the source code of the software or create derivative works based on the software; export the software or underlying technology in contravention of applicable US and international export laws and regulations; or use the software other than as authorized in connection with use of Product.
- f) **Additional Restrictions Relating To Software And Other Intellectual Property**

In addition to compliance with the Terms of this Warranty, Customers purchasing software or other intellectual property shall comply with any license agreement accompanying such software or other intellectual property. Failure to do so may void this Warranty with respect to such software and/or other intellectual property.

5.2.5 Disclaimer of all Other Warranties

The Warranty set forth in What Is Covered By This Warranty (page 91) are in lieu of all other warranties, express or implied, including but not limited to the implied warranties of merchantability and fitness for a particular purpose.

5.2.6 Limitation of Remedies **

In no event will ProSoft or its Dealer be liable for any special, incidental or consequential damages based on breach of warranty, breach of contract, negligence, strict tort or any other legal theory. Damages that ProSoft or its Dealer will not be responsible for include, but are not limited to: Loss of profits; loss of savings or revenue; loss of use of the product or any associated equipment; loss of data; cost of capital; cost of any substitute equipment, facilities, or services; downtime; the claims of third parties including, customers of the Purchaser; and, injury to property.

** Some areas do not allow time limitations on an implied warranty, or allow the exclusion or limitation of incidental or consequential damages. In such areas, the above limitations may not apply. This Warranty gives you specific legal rights, and you may also have other rights which vary from place to place.

5.2.7 Time Limit for Bringing Suit

Any action for breach of warranty must be commenced within 39 months following shipment of the Product.

5.2.8 No Other Warranties

Unless modified in writing and signed by both parties, this Warranty is understood to be the complete and exclusive agreement between the parties, suspending all oral or written prior agreements and all other communications between the parties relating to the subject matter of this Warranty, including statements made by salesperson. No employee of ProSoft or any other party is authorized to make any warranty in addition to those made in this Warranty. The Customer is warned, therefore, to check this Warranty carefully to see that it correctly reflects those terms that are important to the Customer.

5.2.9 Allocation of Risks

This Warranty allocates the risk of product failure between ProSoft and the Customer. This allocation is recognized by both parties and is reflected in the price of the goods. The Customer acknowledges that it has read this Warranty, understands it, and is bound by its Terms.

5.2.10 Controlling Law and Severability

This Warranty shall be governed by and construed in accordance with the laws of the United States and the domestic laws of the State of California, without reference to its conflicts of law provisions. If for any reason a court of competent jurisdiction finds any provisions of this Warranty, or a portion thereof, to be unenforceable, that provision shall be enforced to the maximum extent permissible and the remainder of this Warranty shall remain in full force and effect. Any cause of action with respect to the Product or Services must be instituted in a court of competent jurisdiction in the State of California.

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