6303-WA-MBP to 6303-WA-MBP

ProLinx Wireless

High Speed Wireless Modbus Plus Gateway

Setup Guide

June 15, 2007

Please Read This Notice

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

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

Under no conditions will ProSoft Technology be responsible or liable for indirect or consequential damages resulting from the use or application of the product.

Information in this manual is subject to change without notice and does not represent a commitment on the part of ProSoft Technology Improvements and/or changes in this manual or the product may be made at any time. These changes will be made periodically to correct technical inaccuracies or typographical errors.

Important Installation Instructions

Power, input and output wiring must be in accordance with Class I, Division 2 wiring methods – Article 501-4 (b) of the National Electrical Code, NFPA 70 and in accordance with the authority having jurisdiction. The following warnings must be heeded:

a WARNING – EXPLOSION HAZARD – SUBSTITUTION OF COMPONENTS MAY IMPAIR SUITABILITY FOR CLASS I, DIV. 2;

b WARNING – EXPLOSION HAZARD – WHEN IN HAZARDOUS LOCATIONS, TURN OFF POWER BEFORE REPLACING OR WIRING MODULES, and

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

d "THIS DEVICE SHALL BE POWERED BY CLASS 2 OUTPUTS ONLY."

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ProSoft Technology
1675 Chester Avenue, Fourth Floor
Bakersfield, CA 93301
+1 (661) 716-5100
+1 (661) 716-5101 (Fax)
http://www.prosoft-technology.com

6303-WA-MBP Setup Guide
June 15, 2007
PSFT.MBP.ProLinx.UM.07.06.15

Contents

1 Introduction

In This Chapter

This manual is intended to guide you through the setup and configuration of your ProLinx Wireless Modbus Plus devices.

Important: This Setup Guide shows you how to set up a simple Modbus wireless network between a ProLinx Wireless Modbus Plus Node 2 and a ProLinx Wireless Modbus Plus Node 3. This guide should be used as a starting point only.

In all likelihood, the requirements of your particular application will involve additional configuration and development. For detailed information on the Modbus Plus Node 2, Modbus Plus Node 3 and ProLinx Wireless protocols, please refer to the following Driver Manuals, on your ProSoft Solutions CD-ROM:

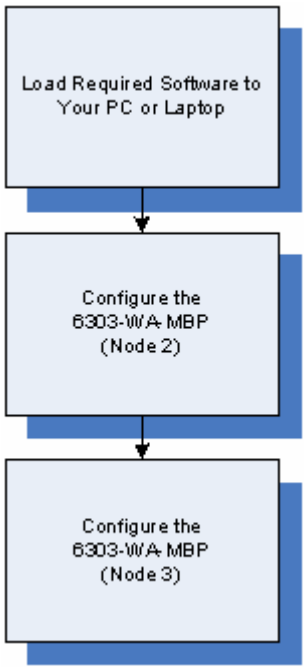
- MBP Driver Manual
- PWP Driver Manual

For general information on installing and configuring ProLinx modules, please refer to the ProLinx Reference Guide, also on your ProSoft Solutions CD-ROM.

1.1 Before You Begin

The insert included with your product page describes a SINGLE-REMOTE SITE SAMPLE application. It is important that you read through the insert and perform any required steps.

Setting up the Modbus Plus network is relatively simple using the sample files included on the ProLinx Solutions CD. The flow diagram illustrates the high-level steps used to configure each module.



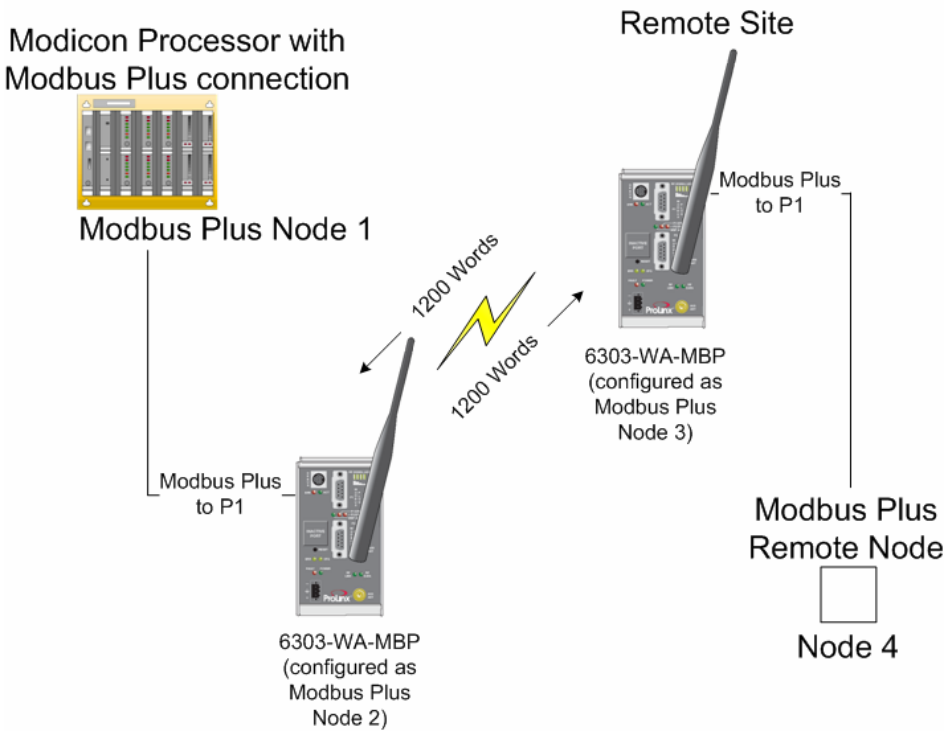
The sample configuration file contains separate configurations for each module. You can use the sample files to get started or you can create the configuration files from scratch. The easiest way to begin is to use the sample configurations. Once you understand how they are created, setting up your

network is easy.

1.2 Using the Sample ProSoft Configuration Builder Files

The sample application uses two 6303-WA-MBP modules to establish wireless communications between a Primary Node 2 at a main site and a Node 3 located at a remote site. One Modbus Plus module is configured as a Node 2. The following diagram illustrates this application.

Single Site Application



This Quick Start describes a sample application on how to set up a single (point-to-point) site application based on the following scenario:

A Modbus Plus processor needs to communicate with a remote Modbus Plus node.

The application uses 2 ProLinx 6303-WA-MBP modules. One module is configured as Modbus Plus Node 2 and the other as Modbus Plus Node 3 to establish communication between the Processor at the main site and the remote Node

Both of the module's radio communication parameters are preset and configured to pass up to 1200 words in either direction once the sample configurations are loaded.

- The 6303-WA-MBP configured as Node 2 connected to the Modbus Plus Processor

- The 6303-WA-MBP configured as Node 3 is connected to remote Node 4

You can use this guide in one of two ways. First, you can use it as a learning tool to see how the ProSoft Configuration Builder files make the sample application work. You can also follow along with the example and modify the configuration files as you go along.

Whether you are configuring your modules on the fly or just reading through to understand how to use the sample application, there are steps that you must perform even if you are not yet configuring any modules to suit your own application.

1.3 About Transmission Casts

The sample uses a UNICAST transmission type. UNICAST means that you set up Produce and Consume Commands that transfer or receive data between two individual modules. . For example, a Produce command can specify that this data is only produced to one particular consuming module bas ed on the consuming modules IP address.

In addition to UNICAST, you also have the flexibility of using MULTICAST (data sent to multiple modules in a MULTICAST Group List but only picked up by the module within that list with a Consume command that has the matching Exchange ID and the IP address of the module multicasting the command), and BROADCAST which sends data out to all modules. With BROADCAST, each

module receives the transmission whether it be two modules or 50 modules. Each module receiving the BROADCAST has to check every message to determine if it is intended for the module or not. This can decrease performance times since the module may be checking hundreds of messages that are not intended for it.

Use MULTICAST to limit the modules that should receive the message. For example, five modules may be part of a MULTICAST Group, yet there may be 15 modules on the network. Only five of the 15 modules on the network will be configured to handle certain types of commands while the remaining 10 that are not in the MULTICAST group will ignore the messages not intended for them.

2 Load the Required Software

In This Chapter

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

2.1 Install ProSoft Configuration Builder (PCB)

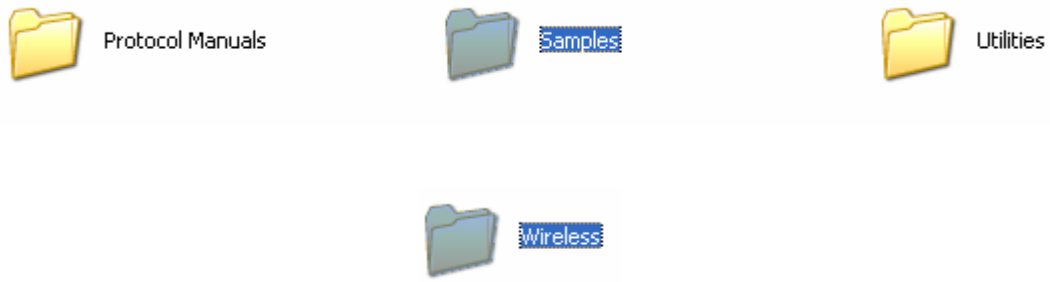
ProSoft Configuration Builder helps you configure the module for your application.

1 Insert the ProLinx Solutions CD into the CD-ROM drive on your PC or Laptop. The ProLinx Solutions splash page appears:

2 Select Install Configuration Tool.
3 Follow the prompts to install ProSoft Configuration Builder to your hard disk.

2.2 Copy the Sample Application File

1 From the ProLinx Solutions splash screen, click **Product Documentation**.
2 Choose **Samples** → **Wireless**.



3 Copy the **PROLINX WIRELESS SAMPLE.PPF** file to a location on your PC or Laptop.

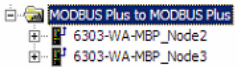
3 Configure the 6303-WA-MBP Node 2

In This Chapter

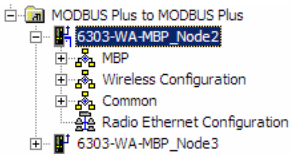
Based on the sample application, the remote Node 3 is connected to a 6303-WA-MBP configured as a Node 2. The goal here is to begin to establish communications between the two Modbus Plus modules. The sample configuration is designed to pass 1200 words between each module. Each module is configured separately.

Configuration is accomplished using ProSoft Configuration Builder (PCB). The sample configuration file is **PROLINX WIRELESS SAMPLE.PPF**.

1 Start ProSoft Configuration Builder.
2 Select **File** → **Open**.
3 Navigate to the location where you copied the **PROLINX WIRELESS SAMPLE.PPF** file and select this file.
4 Expand the **MODBUS Plus to MODBUS Plus** folder.



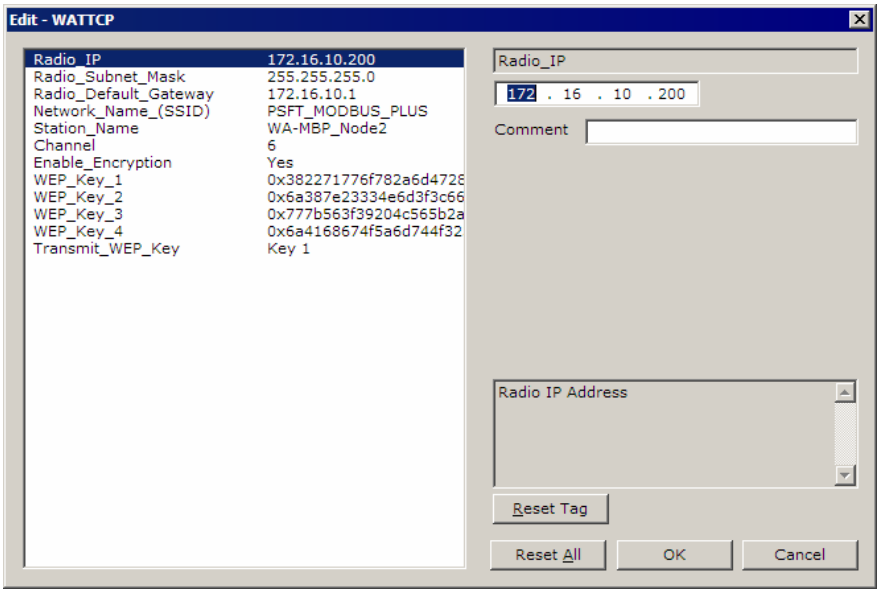
5 Expand the **6303-WA-MBP_Node2** module selection.



3.1 Complete the ProSoft Configuration Builder Sections

3.1.1 Radio Ethernet Configuration

1 Double-click the Radio Ethernet Configuration icon.



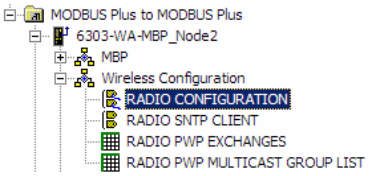
Every Modbus Plus module is set up with the defaults shown in the example. You may have to modify values such as the Radio Default Gateway, the Network Name (SSID), and the Station Name to suit the needs of your network. The Station Name may be modified when using more than one Modbus Plus module.

Note: All modules must have the same Subnet Mask, Default Gateway, and Network Name (SSID) if they are all located on the same network. Only the fourth octet in the Radio_IP address must be different for each module. Please refer to ***Default Module Configuration Assignments*** (page 36) for a list of pre-assigned ProSoft product IP addresses.

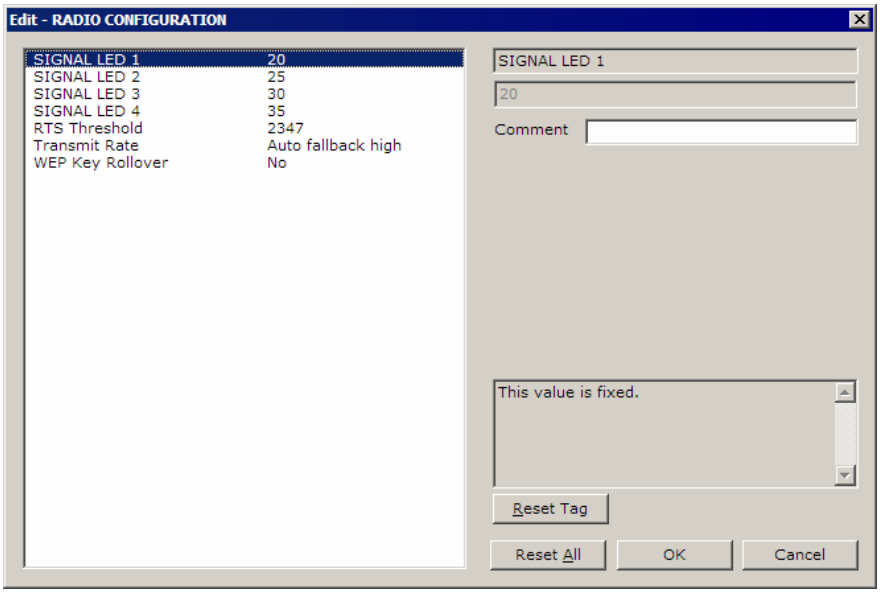
The PWP Driver Manual located on the ProLinx Solutions CD contains a description of the remaining parameters. If you are making changes, be sure to save your changes before moving on to the next step.

3.1.2 Radio Configuration

Expand the Wireless Configuration section

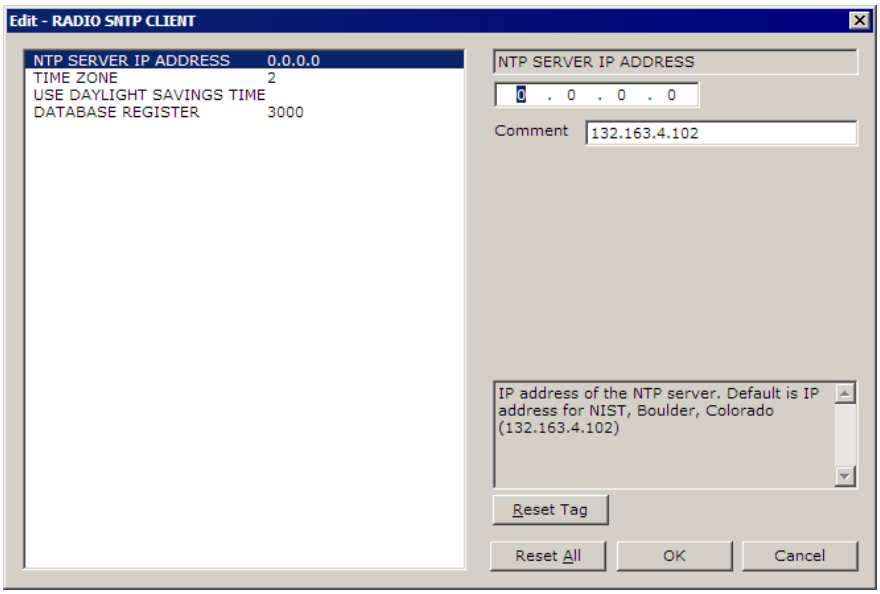


and double-click on the RADIO CONFIGURATION icon.



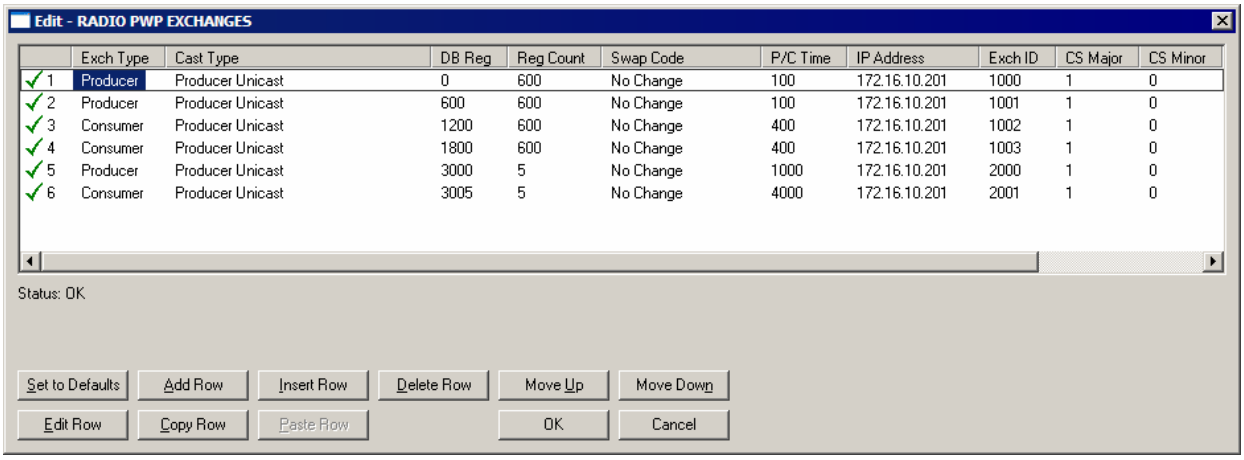
The default Signal LED 1 through 4 parameter values should work fine "as is". If you need to change the values for the remaining parameters in this dialog box, make sure to save your changes before moving on to the next step. As you select each parameter, the help text area in the lower right area of the dialog box displays information to help you make your selections. The PWP Driver Manual located on the ProLinx Solutions CD describes each of these parameters in greater detail.

Radio SNTP Client Double-click on the RADIO SNTP CLIENT icon.



This section is used to synchronize the time using a centralized atomic clock. This feature is only usable if your modules are communicating through an access point such as a RadioLinx Industrial Hotspot. The values in this window should be left with the default values. As you select each parameter, the help window on the screen displays information to help you make your selections. The PWP Driver Manual describes each of these parameters.

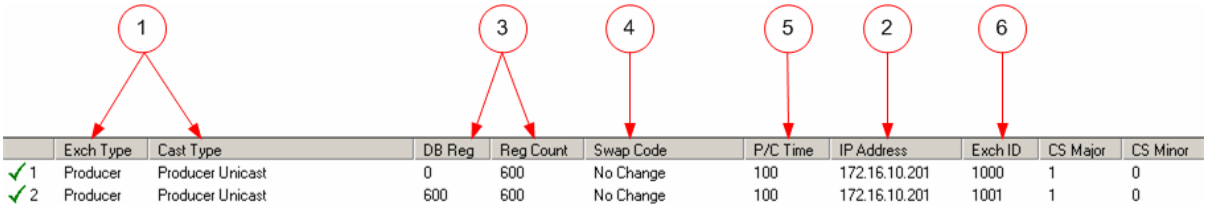
Radio PWP Exchanges Double-click the RADIO PWP EXCHANGES icon.



This is the area where you set up radio data exchange between the Modbus Plus modules. Communication is accomplished using Producer and Consumer commands. Using these commands, you specify the IP address of the receiving (Consumer) and sending (Producer) module as well as the database locations where the data will be Produced from or Consumed to.

In the sample application, the modules are set up to send 1200 words back and forth between the each Modbus Plus module. Each module contains a database and both modules are capable of producing or consuming data. This is accomplished using ProSoft Wireless Protocol (PWP) commands. In the sample, we are sending all 1200 words and receiving 1200 words back even though we are actually sending only 50 words of data from remote Node 3 5.

Two Produce commands and two Consume commands are used to make this happen Each command sends (or receives) 600 words of data. The following example shows both produce commands from the sample application.



	Exch Type	Cast Type	DB Reg	Reg Count	Swap Code	P/C Time	IP Address	Exch ID	CS Major	CS Minor
✓1	Producer	Producer Unicast	0	600	No Change	100	172.16.10.201	1000	1	0
✓2	Producer	Producer Unicast	600	600	No Change	100	172.16.10.201	1001	1	0

Producer Command Narrative for the First Command:

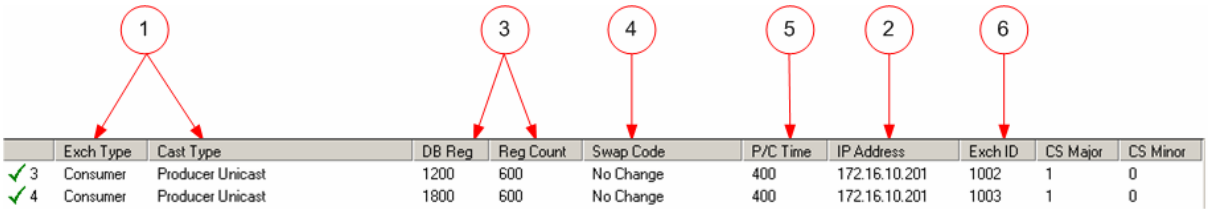
1 Send data using Unicast Mode
2 Send the data to IP Address 172.16.10.201.
3 Send 600 registers beginning at DB Register 0.
4 Do not set a Swap Code.
5 Send the data every 100 ms.
6 Use an Exchange ID of 1000.

Producer Command Narrative for the Second Command:

1 Send data using Unicast Mode
2 Send the data to IP Address 172.16.10.201.
3 Send 600 registers beginning at DB Register 600.
4 Do not set a Swap Code.
5 Send the data every 100 ms.
6 Use an Exchange ID of 1001.

Note: IP Address 172.16.10.201 is the other 6303-WA-MBP module that will be configured as Modbus Plus Node 3

The Consume commands perform the same function for data coming into the module from the Modbus Plus Node 3 once configured.



	Exch Type	Cast Type	DB Reg	Reg Count	Swap Code	P/C Time	IP Address	Exch ID	CS Major	CS Minor
✓3	Consumer	Producer Unicast	1200	600	No Change	400	172.16.10.201	1002	1	0
✓4	Consumer	Producer Unicast	1800	600	No Change	400	172.16.10.201	1003	1	0

These commands are prepared the same way.

Consumer Command Narrative for the First Command:

1 Consume data using Unicast Mode.
2 Consume this data from IP Address 172.16.10.201.
3 Consume 600 words and store them beginning at DB register 1200.
4 Do not use a Swap Code.
5 Consume data within 400 ms.
6 Only consume data with an Exchange ID of 1002.

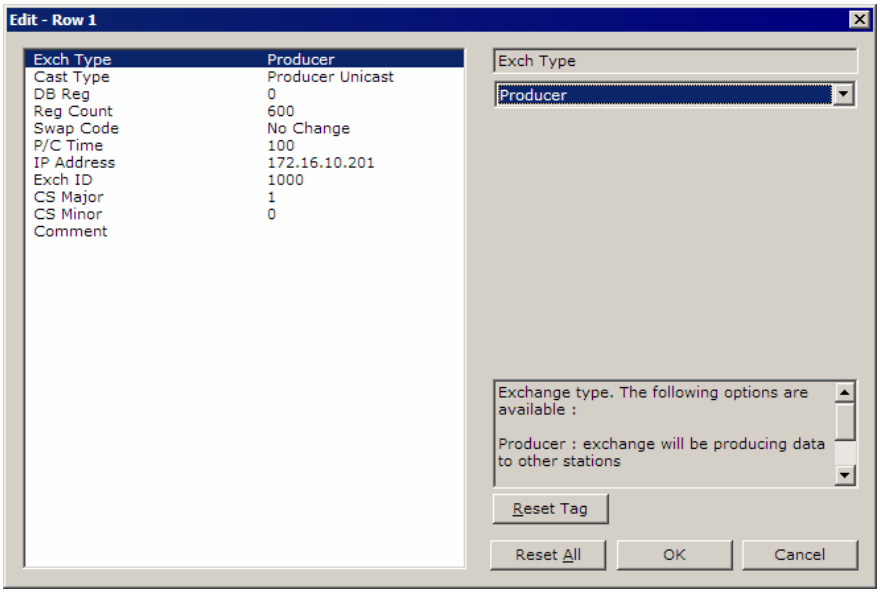
The second line does exactly the same thing for another 600 words. However it consumes this data into database registers beginning at register 1800 and uses an Exchange ID of 1003.

In order for these commands to work, the 6303-WA-MBP (to be configured as Node 3) must also be configured to consume data being produced by the 6303-WA-MBP (configured as a Node 2) into the appropriate database registers and as well as be set up to produce data to allow the Modbus Plus Node 2 to consume. Setting up the corresponding Modbus Plus Node 3 configuration is discussed later in this guide.

Note: The sample configuration file also shows an additional Produce and Consume command. These commands are designed to pass a time value from the Modbus Plus Node 2 to the Modbus Plus Node 3 module and then loop back from the Modbus Plus Node 3 to the Modbus Plus Node 2. These commands are included for testing and verification purposes only and are not necessarily required for your application. You should delete any commands that are not used by your application.

How it's Done

1 Double-click on the RADIO PWP EXCHANGES icon.
2 Click the Add button. ProSoft Configuration Builder adds a default row.
3 Click the Edit button. The Edit window appears.



4 Define each element of the command by selecting the element, then select or enter the desired values.
5 Choose OK when done.

Note: In addition to the help on the dialog, the PWP Driver Manual located on the ProLinx Solutions CD provides descriptions of each parameter.

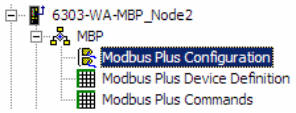
3.1.3 Radio PWP Multicast Group List

This section does not contain any data for the sample application. The sample application uses UNICAST transmission and therefore there is no need to enter IPs of other devices in this section. The ProLinx PWP Driver Manual describes this section in detail.

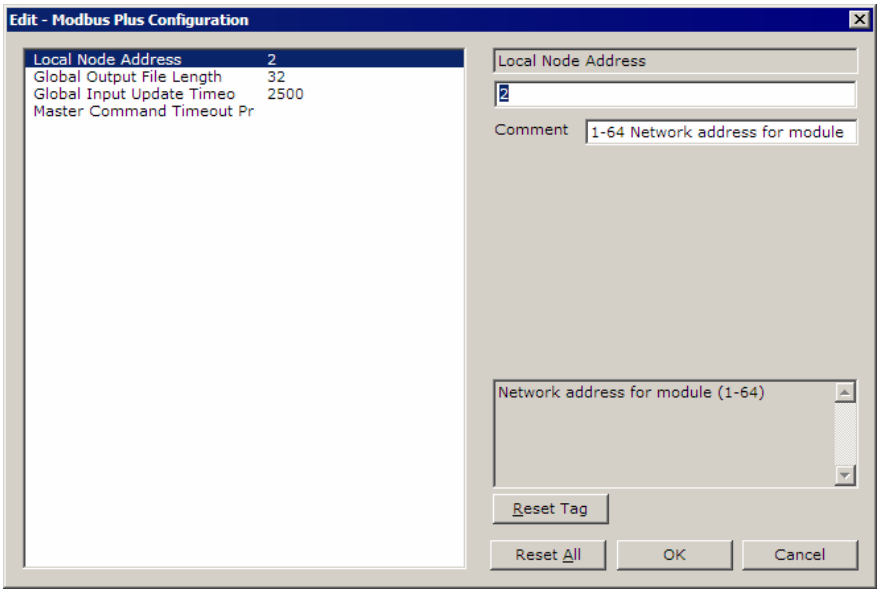
3.1.4 MBP

The sample configuration file requires that the module currently being configured be configured as Node 2. This was done in the MBP section.

1 Expand the MBP section.



2 Double-click on the Modbus Plus Configuration icon.

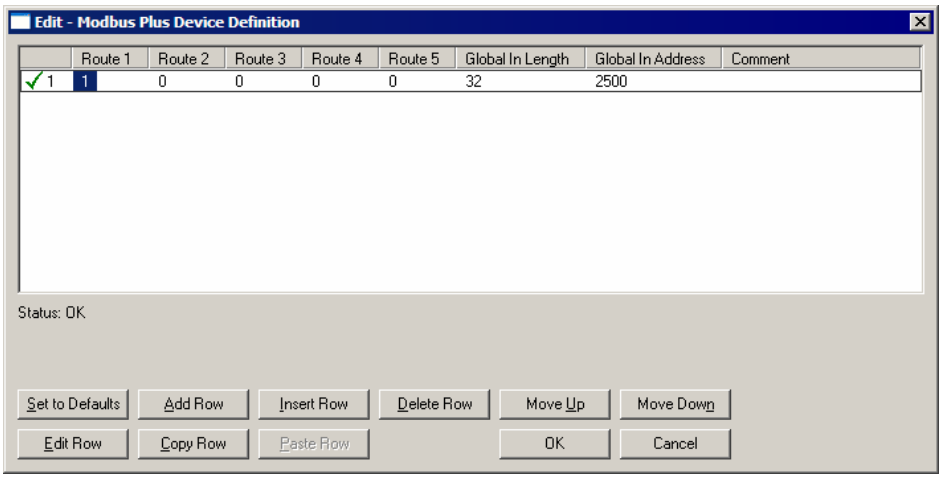


The Local Node Address for this module is 2. Modules identify each other on the network by node number. Modbus Plus modules operate on a peer-to-peer token holding network. Any Modbus Plus module can issue commands to any modules present and accurately addressed on the network. Any Modbus Plus module on the network can respond to commands.

The remaining parameters are set to ensure that the Modbus Plus module can communicate with other Modbus Plus nodes on the network. Refer to the MBP

Driver Manual located on the ProLinx Solutions CD for detailed information on each of these parameters.

3.1.5 Modbus Plus Device Definition



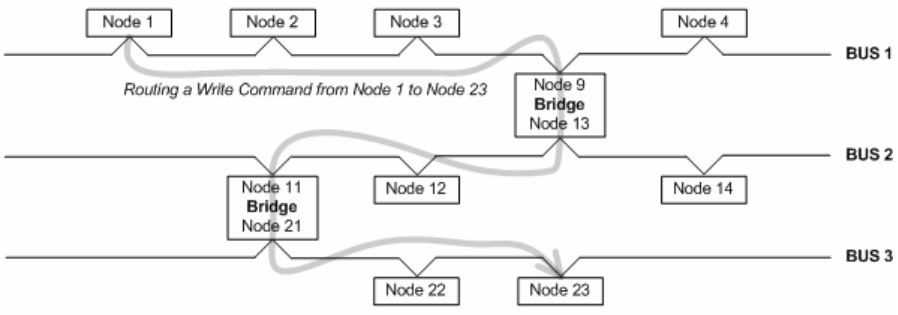
The Modbus Plus Device Definition portion of the file represents the roadmap to get data from one destination to the next. If the Modbus Plus is going to be configured to operate in the Global In and/or Master Command modes, the Modbus Plus Device Definition file must be set up. This file allows the user to configure specific operating parameters for each device on the Modbus Plus network.

Each Modbus Plus device on the network must be defined in the [Modbus Plus Device Definition] section of the configuration file. The table starts after the START label and continues until the END label.

Route Values

The Routing Path is required by the Modbus Plus module and the Modbus Plus chipset to address specific nodes on the network. The routing path allows the module to support the addressing of nodes separated by Bridge Multiplexers.

Three Bus Modbus Plus Network Example for Command Routing



Route 1	Route 2	Route 3	Route 4	Route 5	Global In Length	Global In Address
9	11	23	0	0	32	2500

In this illustration, Modbus Plus Node 1 is sending a command (read or write) to the Modbus Plus node 23 located on Bus 3 of the Modbus Plus network.

Global In Length

The Global Input Length defines how many words of Global Input Data the module will be expecting from each of the network nodes. If less data is returned, an error code is returned to the module status table and the data is rejected.

Conversely, if more data is returned, it is accepted and no error is flagged.

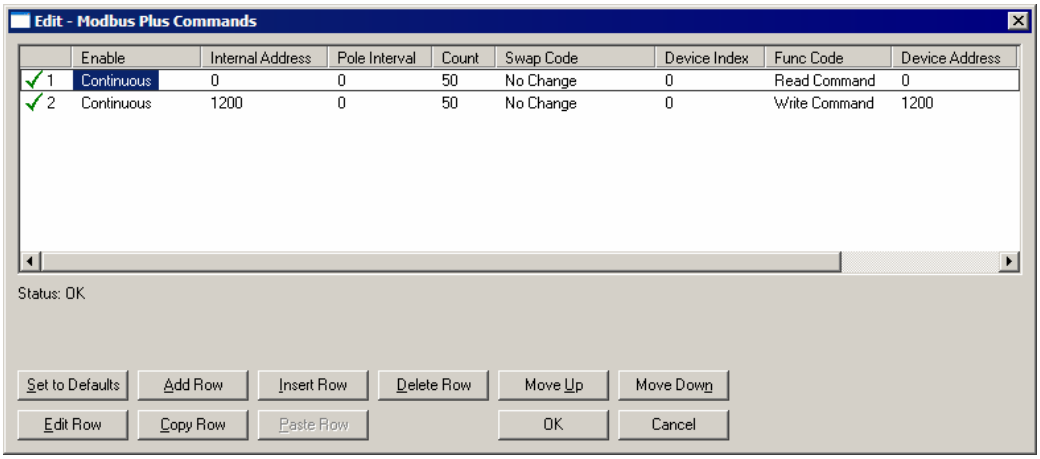
Valid values range from 0 to 32. Note that a value of 0 tells the Modbus Plus module not to request Global Data from a node.

Global In Address

The Global Input Address tells the module where to place the Global Input Data received from the network nodes into the module's database. Valid locations are from 0 to 3999.

3.1.6 Modbus Plus Commands

1 Double-click on the Modbus Plus Commands icon.



In the sample application, there is one device connected to the Modbus Plus Node 2 module. Node 2 reads from and writes to the Remote Device addressed as Node 1.

Line 1

In this command line, Modbus Plus Node 2 continuously reads 50 words as fast as possible, from Device Node 1 addressed in the first row of the Modbus Plus Device Definition table column labeled Route 1. The 50 words are read from Device Node 1 register address 0, and are stored in the Node 2 register address 0.

Line 2

In this command line, Modbus Plus Node 2 continuously writes 50 words as fast as possible to Device Node 1, addressed in the first row of the Modbus Plus

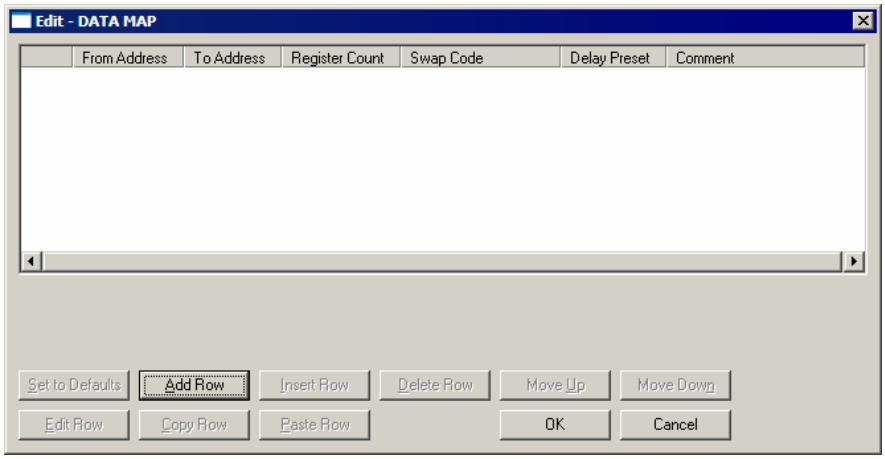
Device Definition table column labeled Route 1. The 50 words are read from Node 2 register address 1200, and are stored in the Device Node 1 register address 1200.

How it's Done

The sample has the two commands already set up. You can use these commands and modify them to your needs by clicking the **Edit Row** button after selecting the command. You can also add new commands by clicking the **Add Row** button, and then clicking the **Edit Row** button.

Common Expand the Common section.

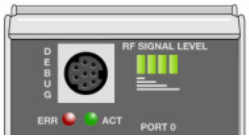
Double-click on the DATA MAP icon.



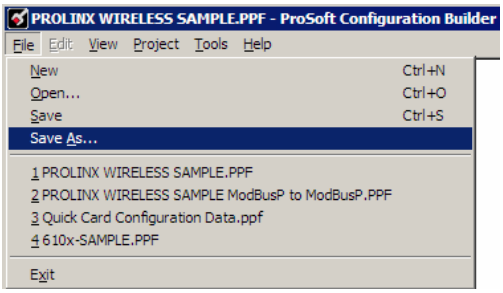
This section does not require any editing for the sample application. Refer to the Modbus Plus Driver Manual located on the ProLinx Solutions CD for information on setting up data mapping for your application

3.1.7 Save and Download the File to the 6303-WA-MBP (Node 2)

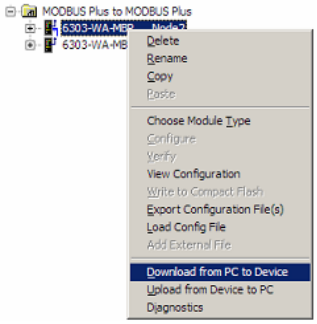
1 Connect your PC or Laptop to the DEBUG port of the **6303-WA-MBP (Node 2)** module. Apply power to the module if you have not already done so.



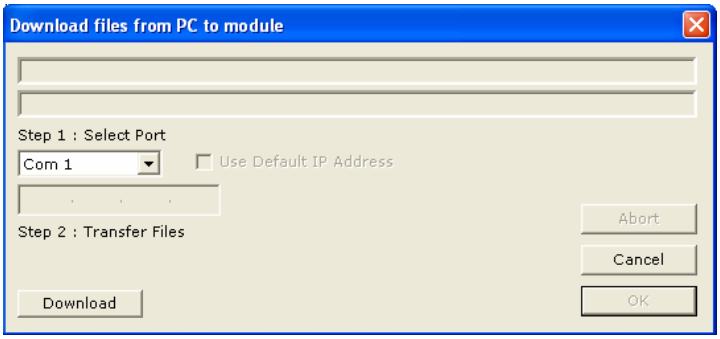
2 Choose **File** → **Save As…** and save the .PPF file to a location on your hard drive.



3 Right-click on 6303-WA-MBP_NODE 2 and select **Download from PC to Device**.



4 Select the appropriate COM port and click the **Download** button.



The download is complete when the OK button becomes active. When the download is complete, click **OK**.

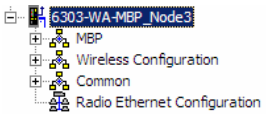
4 Configure the 6303-WA-MBP Node 3

In This Chapter

Configuring this module as a Node 3 is done the same way as the Node 2 with a few exceptions outlined in this section.

1 Remove the cable from the Debug port of the Modbus Plus Node 2 module and plug it into the Debug port of the Modbus Plus module to be configured as a Node 3.

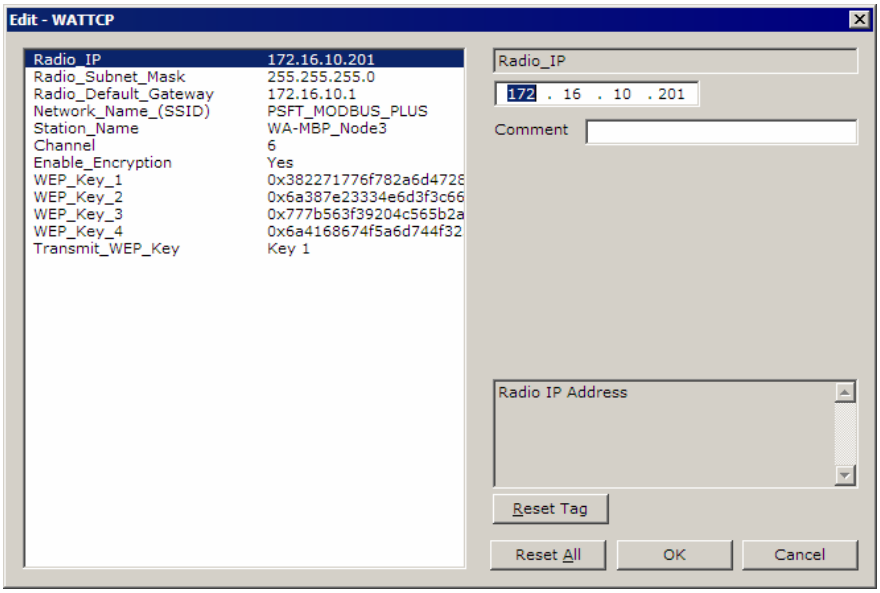
2 With ProSoft Configuration Builder open, expand the 6303-WA-MBP_Node 3 module selection.



4.1 Complete the ProSoft Configuration Builder Sections

4.1.1 Radio Ethernet Configuration

1 Double-click the Radio Ethernet Configuration icon.



This section is identical for all 6303-WA-MBP modules shipped from the factory. In the sample application, this radio's IP address is set to **172.16.10.121**

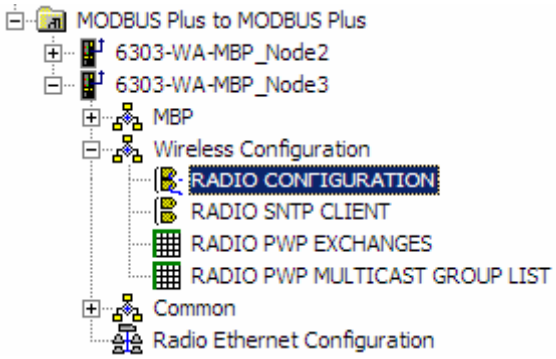
Every Modbus Plus module is set up with the defaults shown in the example. You may have to modify values such as the Radio Default Gateway, the Network Name (SSID), and the Station Name to suit the needs of your network. The Station Name may be modified if using more than one Modbus Plus.

Note: All modules must have the same Subnet Mask, Default Gateway, and Network Name (SSID) if they are all located on the same network. Only the fourth octet in the Radio_IP address must be different for each module. Please refer to ***Default Module Configuration Assignments*** (page 36) for a list of pre-assigned ProSoft product IP addresses.

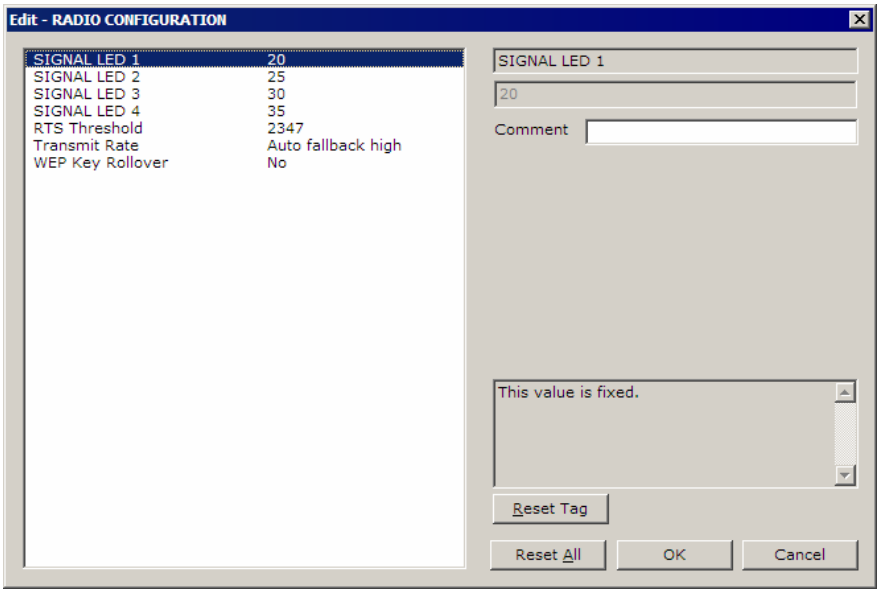
The PWP Driver Manual located on the ProLinx Solutions CD contains a description of the remaining parameters. If you are making changes, be sure to save your changes before moving on to the next step.

4.1.2 Radio Configuration

Expand the Wireless Configuration section

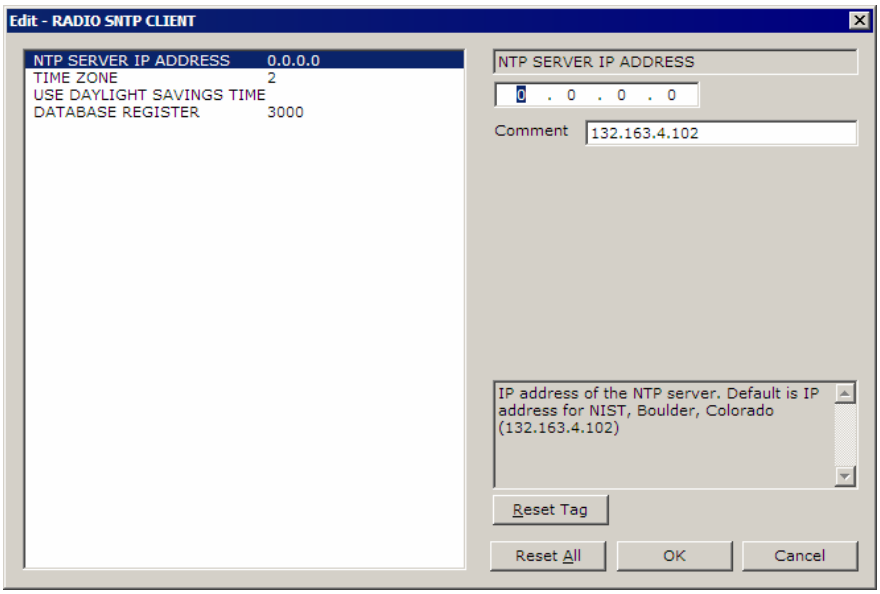


and double-click on the RADIO CONFIGURATION icon.



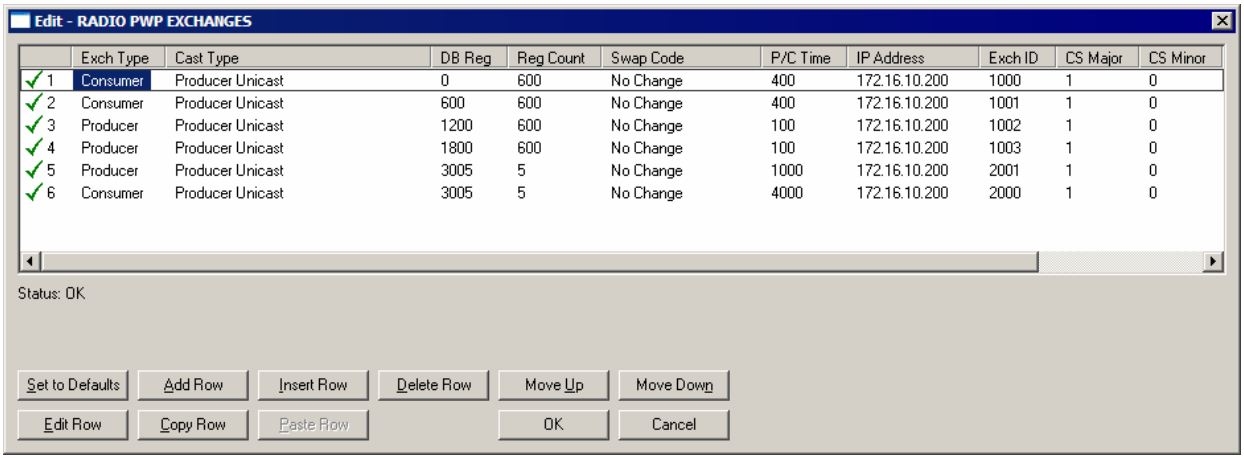
The default Signal LED 1 through 4 parameters should work fine "as is". If you need to change the values for the remaining parameters in this dialog box, make sure to save your changes before moving on to the next step. As you select each parameter, the help text area in the lower right area of the dialog box displays information to help you make your selections. The PWP Driver Manual located on the ProLinx Solutions CD describes each of these parameters in greater detail.

Radio SNTP Client Double-click on the RADIO SNTP CLIENT icon.



This section is used to synchronize the time using a centralized atomic clock. This feature is only usable if your modules are communicating through an access point such as a RadioLinx Industrial Hotspot. The values in this window should be left with the default values. As you select each parameter, the help window on the screen displays information to help you make your selections. The PWP Driver Manual located on the ProLinx Solutions CD describes each parameter in detail.

Radio PWP Exchanges Double-click the RADIO PWP EXCHANGES icon.



The commands in this section correspond to commands set up in the Modbus Plus Node 2 module. For example, the Modbus Plus Node 2 module has a Produce command to send data to the Modbus Plus Node 3. The Modbus Plus Node 3 must have a corresponding Consume command to match up with the

Modbus Plus Node 2 Produce command in order to accept the Modbus Plus Node 2 produced data.

If you remember the example in the **Modbus Plus Node 2** section, the first Produce command is as follows.

	Exch Type	Cast Type	DB Reg	Reg Count	Swap Code	P/C Time	IP Address	Exch ID	CS Major	CS Minor
✓ 1	Producer	Producer Unicast	0	600	No Change	100	172.16.10.201	1000	1	0

This command states:

Send 600 words of data beginning at data register 0 to 172.16.10.201 (Modbus Plus Node 3) using an exchange ID of 1000. Send data within 100 ms using UNICAST.

We now need to build the Consume command on the **Modbus Plus Node 3** in order to accept the data. The corresponding Consume command on the Modbus Plus Node 3 looks like this:

	Exch Type	Cast Type	DB Reg	Reg Count	Swap Code	P/C Time	IP Address	Exch ID	CS Major	CS Minor
✓ 1	Consumer	Producer Unicast	0	600	No Change	400	172.16.10.200	1000	1	0

This command states:

If the Exchange ID transmitted from 172.16.10.200 (Modbus Plus Node 2) is 1000, receive 600 words of data and place them in 600 registers beginning at database register 0. This command will wait up to 400 milliseconds for the data.

The second Consume command is set up the same way. It must correspond to the second Produce command in order to accept the data coming from it.

Referring to the Modbus Plus Node 2 PWP Exchanges section, the **Modbus Plus Node 2** also had two Consume commands. These commands are as follows:

✓ 3	Consumer	Producer Unicast	1200	600	No Change	400	172.16.10.201	1002	1	0
✓ 4	Consumer	Producer Unicast	1800	600	No Change	400	172.16.10.201	1003	1	0

This first command states:

If the Exchange ID transmitted from 172.16.10.201 (Modbus Plus Node 3) is 1002, receive 600 words of data and place them in 600 registers beginning at database register 1200.

The second Consume command is set up the same way. It must correspond to the second Produce command from the Modbus Plus Node 3 in order to accept the data coming from it.

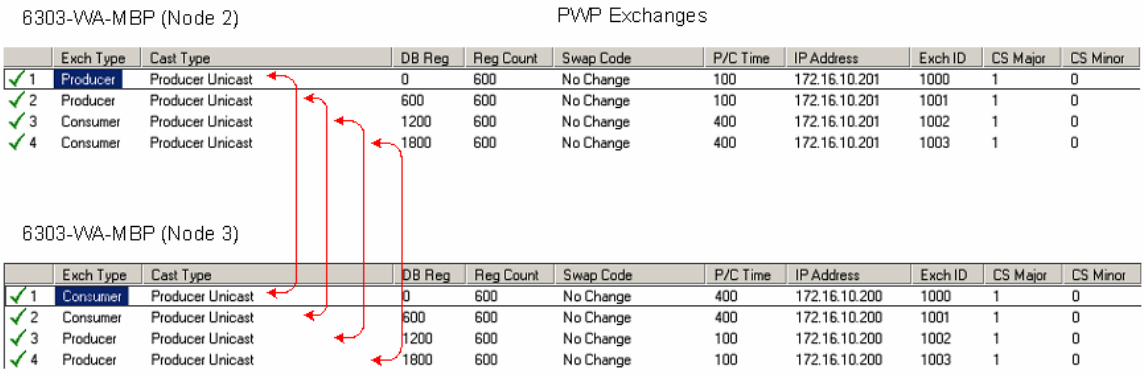
We now need to build the Produce commands on the **Modbus Plus Node 3** to correspond with the Consume commands on the Modbus Plus Node 2. The corresponding command looks like this:

✓ 3	Producer	Producer Unicast	1200	600	No Change	100	172.16.10.200	1002	1	0

This command states:

Send 600 words of data beginning at data register 0 to 172.16.10.200 (Modbus Plus Node 2) using an exchange ID of 1002. Send data within 100 milliseconds using UNICAST.

Both the Modbus Plus Node 3 and the Modbus Plus Node 2 have corresponding Produce and Consume commands. The following diagram illustrates the sample application:



	Exch Type	Cast Type	DB Reg	Reg Count	Swap Code	P/C Time	IP Address	Exch ID	CS Major	CS Minor
✓1	Producer	Producer Unicast	0	600	No Change	100	172.16.10.201	1000	1	0
✓2	Producer	Producer Unicast	600	600	No Change	100	172.16.10.201	1001	1	0
✓3	Consumer	Producer Unicast	1200	600	No Change	400	172.16.10.201	1002	1	0
✓4	Consumer	Producer Unicast	1800	600	No Change	400	172.16.10.201	1003	1	0

	Exch Type	Cast Type	DB Reg	Reg Count	Swap Code	P/C Time	IP Address	Exch ID	CS Major	CS Minor
✓1	Consumer	Producer Unicast	0	600	No Change	400	172.16.10.200	1000	1	0
✓2	Consumer	Producer Unicast	600	600	No Change	400	172.16.10.200	1001	1	0
✓3	Producer	Producer Unicast	1200	600	No Change	100	172.16.10.200	1002	1	0
✓4	Producer	Producer Unicast	1800	600	No Change	100	172.16.10.200	1003	1	0

Both modules send 1200 words (using two commands) between each other even though in our sample application, Node 3 is sending 50 words to Node 2. This allows the ability to connect additional Nodes to a single device up to the capacity of the Modbus Plus database. In addition, this has been done to use the maximum Modbus Plus exchange data with only two PWP transmission packets. Each PWP packet can transmit up to 600 words. The PWP Driver Manual located on the ProLinx Solutions CD describes each command parameter in detail.

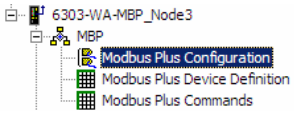
4.1.3 Radio PWP Multicast Group List

This section does not contain any data for the sample application. The sample application uses UNICAST transmission and therefore there is no need to enter IPs of other devices in this section. The ProLinx PWP Driver Manual describes this section in detail.

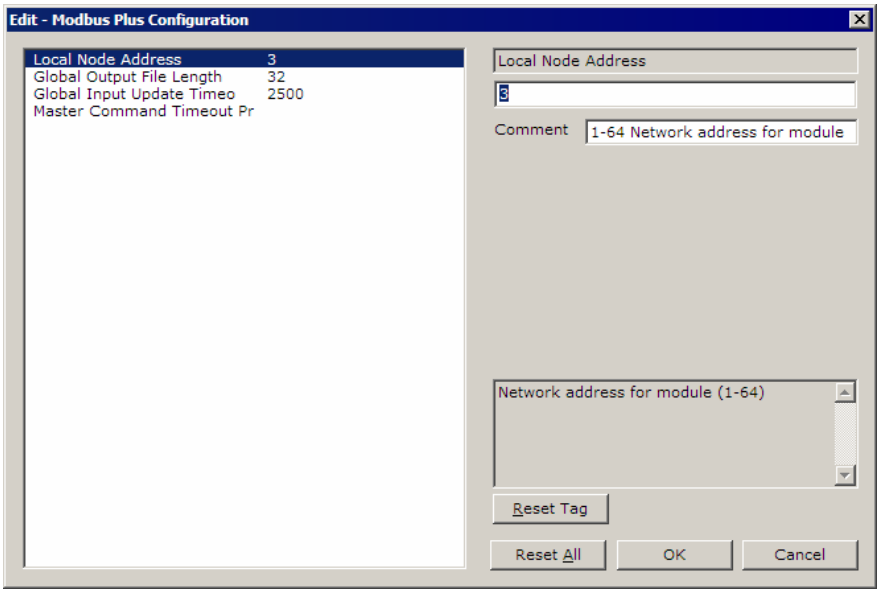
4.1.4 MBP

The sample configuration file requires that the module currently being configured be configured as Node 3. This was done in the MBP section.

1 Expand the MBP section.



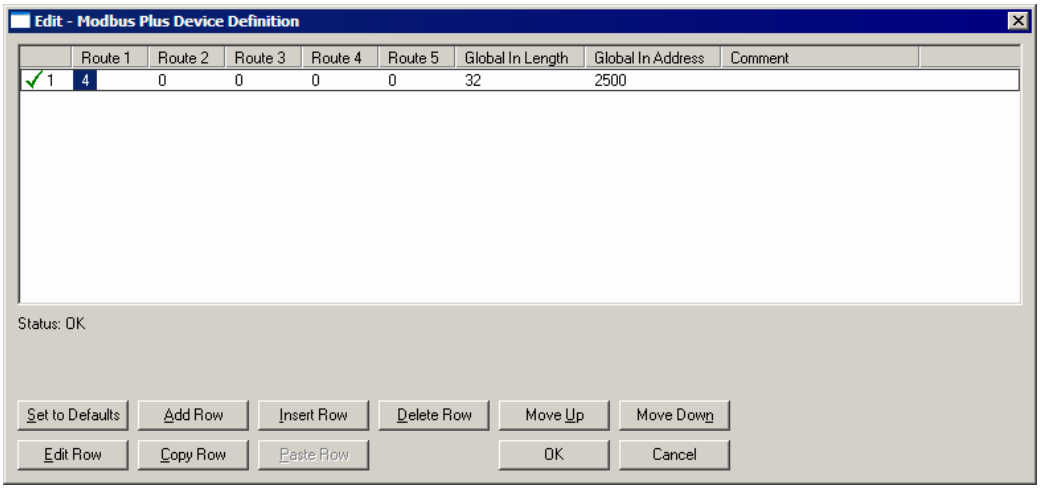
2 Double-click on the Modbus Plus Configuration icon.



The Local Node Address for this module is 3. Modules identify each other on the network by node number. Modbus Plus modules operate on a peer-to-peer token holding network. Any Modbus Plus module can issue commands to any modules present and accurately addressed on the network. Any Modbus Plus module on the network can respond to commands.

The remaining parameters are set to ensure that the Modbus Plus module can communicate with other Modbus Plus nodes on the network. Refer to the MBP Driver Manual located on the ProLinx Solutions CD for detailed information on each of these parameters.

4.1.5 Modbus Plus Device Definition

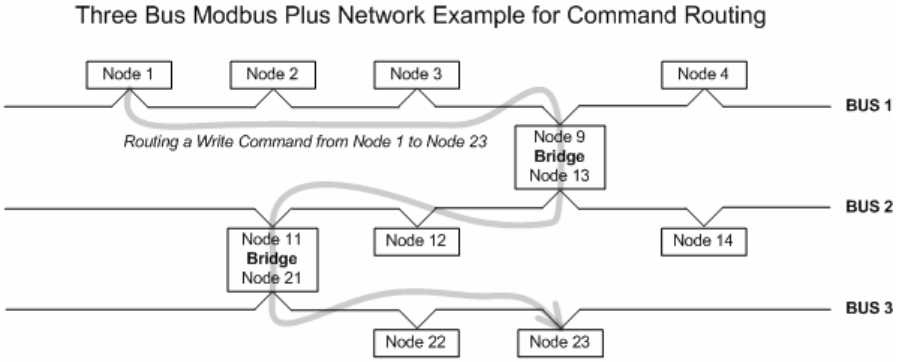


The Modbus Plus Device Definition portion of the file represents the roadmap to get data from one destination to the next. If the Modbus Plus is going to be configured to operate in the Global In and/or Master Command modes, the Modbus Plus Device Definition file must be set up. This file allows the user to configure specific operating parameters for each device on the Modbus Plus network.

Each Modbus Plus device on the network must be defined in the [Modbus Plus Device Definition] section of the configuration file. The table starts after the START label and continues until the END label.

Route Values

The Routing Path is required by the Modbus Plus module and the Modbus Plus chipset to address specific nodes on the network. The routing path allows the module to support the addressing of nodes separated by Bridge Multiplexers.



Route 1	Route 2	Route 3	Route 4	Route 5	Global In Length	Global In Address
9	11	23	0	0	32	2500

In this illustration, Modbus Plus Node 1 is sending a command (read or write) to the Modbus Plus node 23 located on Bus 3 of the Modbus Plus network.

Global In Length

The Global Input Length defines how many words of Global Input Data the module will be expecting from each of the network nodes. If less data is returned, an error code is returned to the module status table and the data is rejected.

Conversely, if more data is returned, it is accepted and no error is flagged.

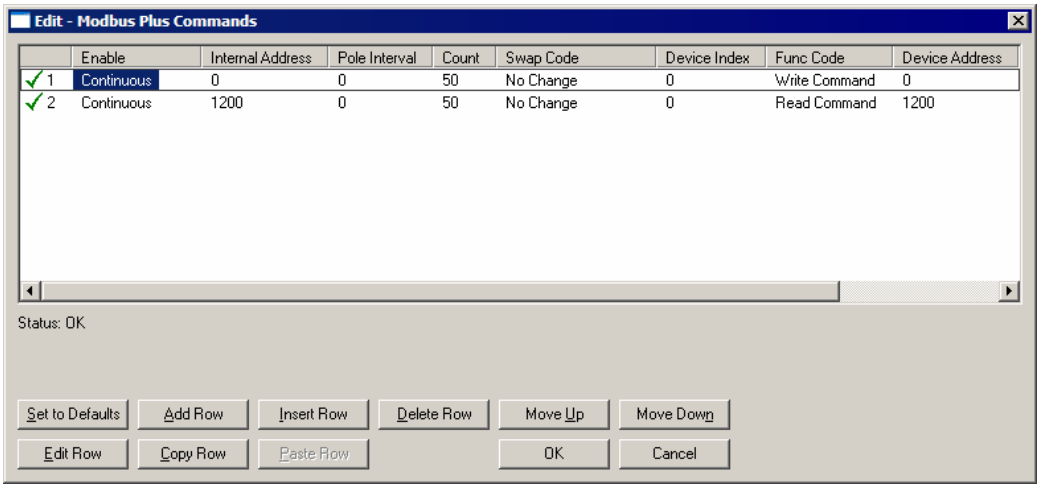
Valid values range from 0 to 32. Note that a value of 0 tells the Modbus Plus module not to request Global Data from a node.

Global In Address

The Global Input Address tells the module where to place the Global Input Data received from the network nodes into the module's database. Valid locations are from 0 to 3999.

4.1.6 Modbus Plus Commands

1 Double-click on the Modbus Plus Commands icon.



In the sample application, there is one device connected to the Modbus Plus Node 3 module. Node 3 reads from and writes to the Remote Device addressed as Node 4.

Line 1

In this command line, Modbus Plus Node 3 continuously writes 50 words as fast as possible to Device Node 4, addressed in the first row of the Modbus Plus Device Definition table column labeled Route 1. The 50 words are read from Node 3 register address 0, and are stored in the Device Node 4 register address 0.

Line 2

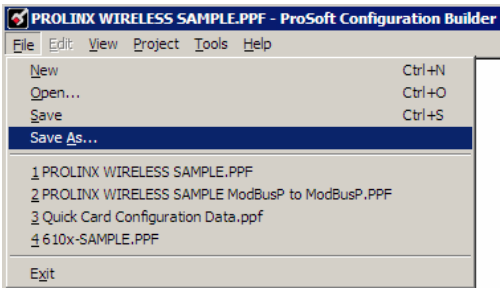
In this command line, Modbus Plus Node 3 continuously reads 50 words as fast as possible, from Device Node 4 addressed in the first row of the Modbus Plus Device Definition table column labeled Route 1. The 50 words are read from Device Node 4 register address 1200, and are stored in the Node 3 register address 1200.

How it's Done

The sample has the two commands already set up. You can use these commands and modify them to your needs by clicking the **Edit Row** button after selecting the command. You can also add new commands by clicking the **Add Row** button, and then clicking the **Edit Row** button.

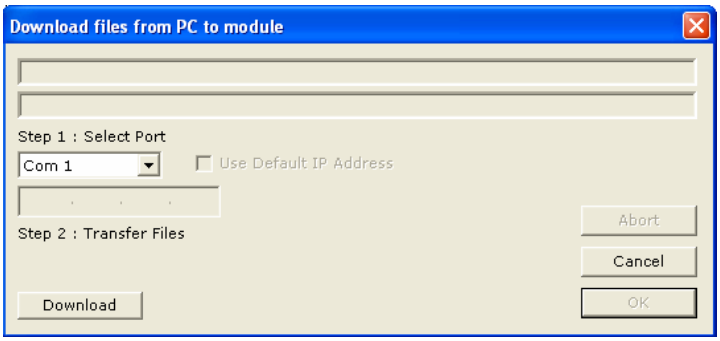
4.2 Save and Download the Configuration File to the 6303-WA-MBP

1. Ensure that your PC or Laptop is still connected to the DEBUG port of the **6303-WA-MBP (Node 3)** module. Apply power to the module if you have not already done so.
2. Choose **File** → **Save As…** and save the .PPF file to a location on your hard drive.



3. Right-click on 6303-WA-MBP Node 3 and select **Download from PC to Device**.

4. Select the appropriate COM port and click the **Download** button.

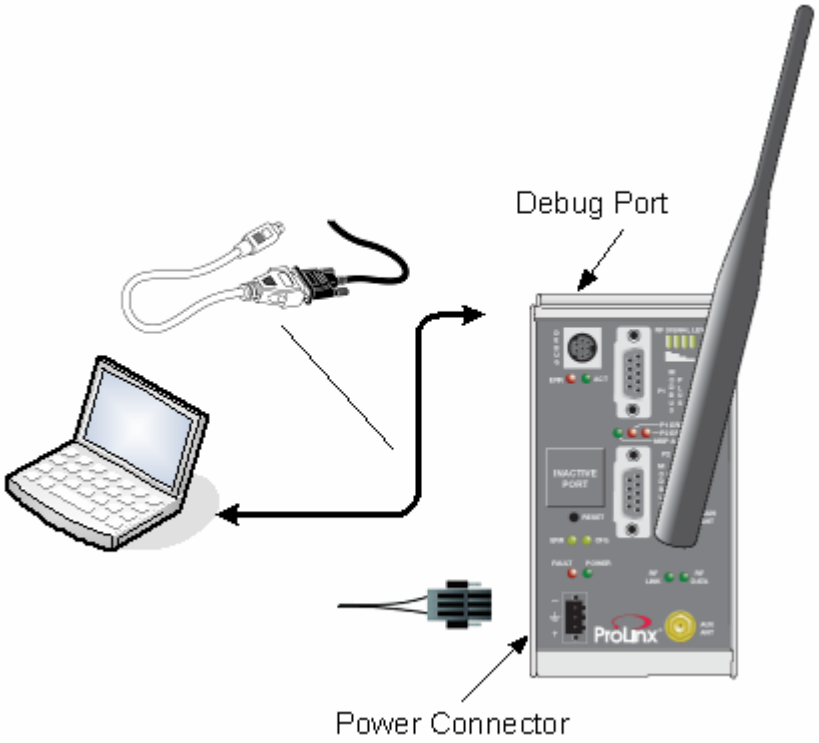


5. The download is complete when the OK button becomes active. When the download is completed, click the **OK** button.

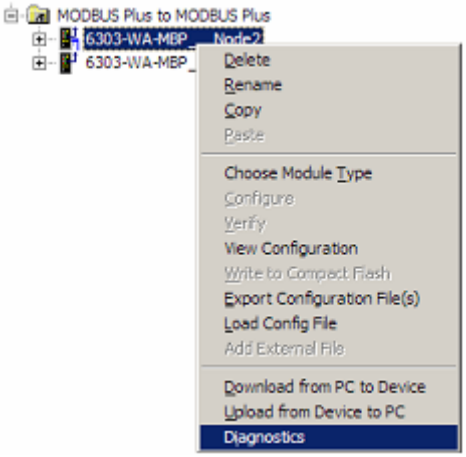
5 Verify Data Exchange

Run Diagnostics Using ProSoft Configuration Builder

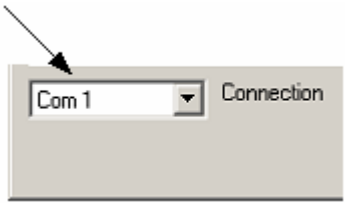
1 Move the connector from the Debug Port on the Node 3 module and plug it into the Debug Port of the Node 2 module. Ensure that power is applied to both modules.



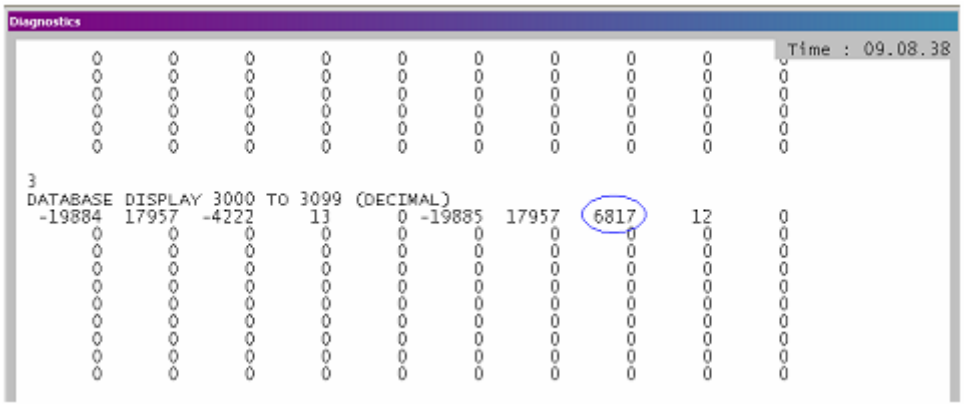
2 Right-click on 6303-WA-MBP Node 2 and select Diagnostics.



3 Select the appropriate Com port



4 Press “?” to display the Diagnostic menu.
5 Press “D” to display the Database menu.
6 Press “3” to show database registers beginning at 3000.
7 Press the “S” key to refresh the database values. The circled values in the example should change each time you press the “S” key indicating that data is being passed between modules. If these values do not change, contact ProSoft Technical Support.



The data shown represents clock values originating from the 6303-WA-Modbus Plus Node 2. The values are stored in 10 registers beginning with register 3000. The clock values are being passed wirelessly to the 6303-WA-MBP Node 3. The 6303-WA-MBP Node 3 module is taking this data and passing it back to the 6303-WA-MBP Node 2 and placing it into 5 registers beginning at register 3005.

6 Default Module Configuration Assignments

In This Chapter

6.1 IP Addresses

IP Address are assigned in ranges to each of the WA modules. This information is used in the Radio Ethernet Configuration section of the configuration file. The following table shows the range assignments and the default value pre-configured in the module:

Module	IP Address Range	Address Set in the Module (Default)
6105-WA-PDPM	172.16.10.100 – 172.16.10.109	172.16.10.100
6104-WA-PDPS	172.16.10.110 – 172.16.10.119	172.16.10.110
6201-WA-MCM	172.16.10.120 – 172.16.10.129	172.16.10.120
6201-WA-MNET	172.16.10.130 – 172.16.10.139	172.16.10.130
6201-WA-DFCM	172.16.10.140 – 172.16.10.149	172.16.10.140
6201-WA-DFNT	172.16.10.150 – 172.16.10.159	172.16.10.150
6201-WA-ASCII	172.16.10.160 – 172.16.10.169	172.16.10.160
6201-WA-104S	172.16.10.170 – 172.16.10.179	172.16.10.170
6201-WA-DEM	172.16.10.180 – 172.16.10.189	172.16.10.180
6201-WA-RIO	172.16.10.190 – 172.16.10.199	172.16.10.190
6303-WA-MBP	172.16.10.200 – 172.16.10.209	172.16.10.200

The purpose for reserving up to 10 IP addresses per module is for addressing and establishing radio communications between modules of the same model number (for example 6303-WA-MBP to 6303-WA-MBP).

6.2 WATTCP Parameters

The following default parameters are applicable to all WA modules:

Radio_Subnet_Mask : 255.255.255.0

Radio_Default_Gateway: 172.16.10.1

Support, Service & Warranty

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

Internet	Web Site: http://www.prosoft-technology.com/support
	E-mail address: support@prosoft-technology.com
Phone	+1 (661) 716-5100
	+1 (661) 716-5101 (Fax)
Postal Mail	ProSoft Technology, Inc.
	1675 Chester Avenue, Fourth Floor
	Bakersfield, CA 93301

Before calling for support, please prepare yourself for the call. In order to provide the best and quickest support possible, we will most likely ask for the following information:

1. Product Version Number
2. System architecture
3. Module configuration and contents of configuration file, if the module requires one.
4. Module Operation
   - Configuration/Debug status information
   - LED patterns
5. Information about the processor and user data files as viewed through the processor configuration software and LED patterns on the processor
6. Details about the serial devices interfaced

An after-hours answering system allows pager access to one of our qualified technical and/or application support engineers at any time to answer the questions that are important to you.

Module Service and Repair

The 6303-WA-MBP device is an electronic product, designed and manufactured to function under somewhat adverse conditions. As with any product, through age, misapplication, or any one of many possible problems the device may require repair.

When purchased from ProSoft Technology, Inc., the device has a 1 year parts and labor warranty (3 years for RadioLinx) according to the limits specified in the warranty. Replacement and/or returns should be directed to the distributor from whom the product was purchased. If you must return the device for repair, obtain an RMA (Returned Material Authorization) number from ProSoft Technology, Inc. Please call the factory for this number, and print the number prominently on the outside of the shipping carton used to return the device.

General Warranty Policy – Terms and Conditions

ProSoft Technology, Inc. (hereinafter referred to as ProSoft) warrants that the Product shall conform to and perform in accordance with published technical specifications and the accompanying written materials, and shall be free of defects in materials and workmanship, for the period of time herein indicated, such warranty period commencing upon receipt of the Product. Limited warranty service may be obtained by delivering the Product to ProSoft in accordance with our product return procedures and providing proof of purchase and receipt date. Customer agrees to insure the Product or assume the risk of loss or damage in transit, to prepay shipping charges to ProSoft, and to use the original shipping container or equivalent. Contact ProSoft Customer Service for more information.

This warranty is limited to the repair and/or replacement, at ProSoft's election, of defective or non-conforming Product, and ProSoft shall not be responsible for the failure of the Product to perform specified functions, or any other non-conformance caused by or attributable to: (a) any misuse, misapplication, accidental damage, abnormal or unusually heavy use, neglect, abuse, alteration (b) failure of Customer to adhere to ProSoft's specifications or instructions, (c) any associated or complementary equipment, software, or user-created programming including, but not limited to, programs developed with any IEC1131-3 programming languages, 'C' for example, and not furnished by ProSoft, (d) improper installation, unauthorized repair or modification (e) improper testing, or causes external to the product such as, but not limited to, excessive heat or humidity, power failure, power surges or natural disaster, compatibility with other hardware and software products introduced after the time of purchase, or products or accessories not manufactured by ProSoft; all of which components, software and products are provided as-is. In no event will ProSoft be held liable for any direct or indirect, incidental consequential damage, loss of data, or other malady arising from the purchase or use of ProSoft products.

ProSoft's software or electronic products are designed and manufactured to function under adverse environmental conditions as described in the hardware specifications for this product. As with any product, however, through age, misapplication, or any one of many possible problems, the device may require repair.

ProSoft warrants its products to be free from defects in material and workmanship and shall conform to and perform in accordance with published technical specifications and the accompanying written materials for up to one year (12 months) from the date of original purchase (3 years for RadioLinx products) from ProSoft. If you need to return the device for repair, obtain an RMA (Returned Material Authorization) number from ProSoft Technology, Inc. in accordance with the RMA instructions below. Please call the factory for this number, and print the number prominently on the outside of the shipping carton used to return the device.

If the product is received within the warranty period ProSoft will repair or replace the defective product at our option and cost.

Warranty Procedure: Upon return of the hardware product ProSoft will, at its option, repair or replace the product at no additional charge, freight prepaid, except as set forth below. Repair parts and replacement product will be furnished on an exchange basis and will be either reconditioned or new. All replaced product and parts become the property of ProSoft. If ProSoft determines that the Product is not under warranty, it will, at the Customer's option, repair the Product using then current ProSoft standard rates for parts and labor, and return the product freight collect.

Limitation of Liability

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Where directed by State Law, some of the above exclusions or limitations may not be applicable in some states. This warranty provides specific legal rights; other rights that vary from state to state may also exist. This warranty shall not be applicable to the extent that any provisions of this warranty are prohibited by any Federal, State or Municipal Law that cannot be preempted. Contact ProSoft Customer Service at +1 (661) 716-5100 for more information.

RMA Procedures

In the event that repairs are required for any reason, contact ProSoft Technical Support at +1 661.716.5100. A Technical Support Engineer will ask you to perform several tests in an attempt to diagnose the problem. Simply calling and asking for a RMA without following our diagnostic instructions or suggestions will lead to the return request being denied. If, after these tests are completed, the module is found to be defective, we will provide the necessary RMA number with instructions on returning the module for repair.

Index