

AGM Universal WEB Station (UWS) Series HPM7000-1
Manual Rev 25, Firmware Versions App0R8 & Data-Command Application

User Manual

UWS



Universal WEB Station

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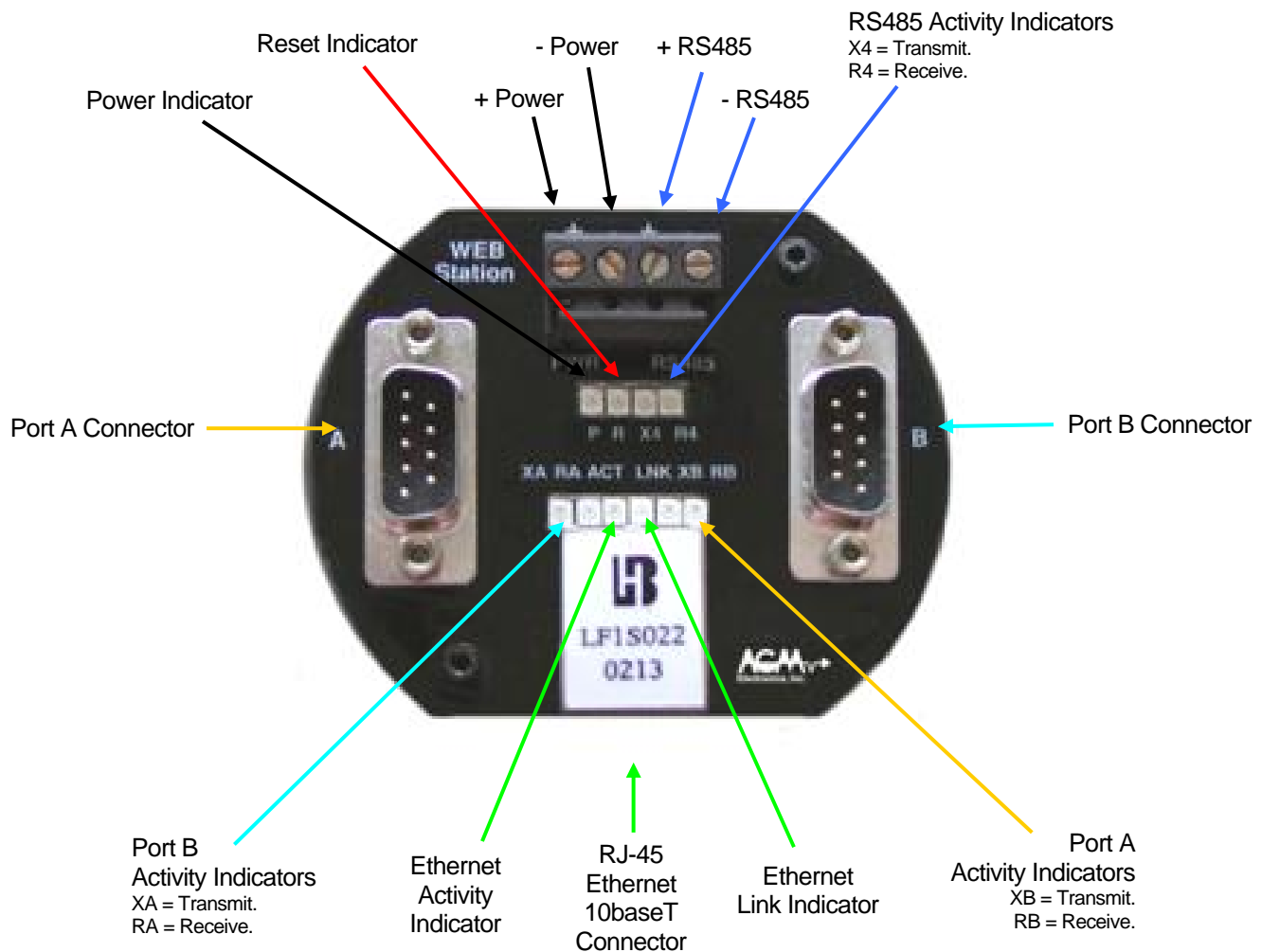
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Introduction

Introduction

Thank you for purchasing the AGM Universal WEB Station (UWS). The AGM Universal WEB Station provides a variety of cost effective data acquisition and control configuration possibilities. This manual covers installation and setup of the more commonly used configurations. Depending on the firmware installed in the UWS not all features covered in this manual will be available.



UWS Connections

Introduction

Overview

The AGM Series 7000 UWS is a universal communications interface tool for normalizing and simplifying connectivity to field data. It is available for general purpose data translation or with application specific firmware.

Application specific firmware variations of the UWS have additional protocols or features not available with the standard UWS firmware. Application specific firmware may not contain all features of the general purpose firmware.

General Purpose UWS

The general purpose firmware version of the UWS translates standard device interface protocols like ASCII ModBus, RTU ModBus, TCP/IP ModBus and Allen-Bradley DF1 Half-Duplex protocols. For the ASCII, RTU ModBus and DF1 protocols the UWS will perform as either a Master or Slave device. TCP/IP ModBus is available only as a Slave.

It includes an addressable mini-server that “serves” WEB pages, sends E-Mails, and accommodates uploading of remotely logged data.

The UWS may be used with a serial printer to print out values obtained from a ModBus or DF1 device.

Data-Command Application Specific UWS

The Data-Command firmware version of the UWS translates one of the standard device interface protocols such as ASCII ModBus, RTU ModBus, TCP/IP ModBus and Allen-Bradley DF1 Half-Duplex protocols into the 16 analog and 32 discrete variables used by the Data-Command web site. For the ASCII, RTU ModBus and DF1 protocols the UWS will perform as either a Master or Slave device. TCP/IP ModBus is available only as a Slave. Only one protocol is translated in the Data-Command firmware version.

The Data-Command version includes an addressable mini-server that “serves” WEB pages for configuration of the UWS. Unlike the general purpose UWS, custom web pages and E-Mail are not supported.

Theory of Operation and Construction

The heart of the UWS is an industrial hardened micro-controller with a built-in server.

Built-in configuration menu simplifies field setup and changes.

The factory at no additional charge will add customized WEB pages.

For ease on installation and maintenance, “plug & play” connectors are used for field wiring connections.

The hermetically sealed assembly minimizes installation costs.

Introduction

The UWS performs the translation of the protocols by maintaining a table of data elements and their protocol designations. When a protocol reads or writes data the micro-controller in the UWS will translate the data according to the table. This will allow multiple protocol translations and translation between completely different protocols such as ModBus and Allen-Bradley DF1. The data elements within the table can be maintained via any standard WEB browser.

The general purpose UWS also provides an intelligent switch for routing AGM Protocols from one on the serial inputs ports to a user specified TCP/IP Ethernet port.

General Specifications (Common to all UWS Variations)

Ports - 2 RS232C, 1 RS485, 1 10baseT

Baud Rate - RS232C/RS485 - up to 19200 bps

Clock - Yes

Status Indicators - 10

Operating Temperature Range, -20/80 deg C

Adjustments - Operator configurable locally or remotely by modem from a PC

Power - 12/24 VDC +/- 10%, nominal 3 Watts

Physical - 3 X 2.5 inches

Maximum number of different protocols: 1 per communications port.

Maximum number of bytes transmitted or received. 256 bytes.

Introduction

Specifications for General Purpose UWS

Protocols - Ethernet, HTTP, FTP, Telnet; ModBus Slave/Master (ASCII/Binary/TCP/IP), AB-DF1 Half-Duplex Slave/Master, AGM ICS Protocol, AGM DH Protocol, ASCII text, Point to Point Protocol (PPP).

Connections - ModBus and Allen-Bradley PLC's, Dial-up/Cell phone system, PC, fixed frequency/spread spectrum radio modem, cable, satellite, fiber optics, serial ASCII printer.

Maximum number of entries in conversion table: 1000

Maximum number of unique Device ID or Device address supported: Slave Protocols, 1 per communications port. Master Protocols, 1000 or maximum number of valid device addresses supported by the protocol whichever is lower.

Data Command Application Specifications

Protocols - Ethernet, HTTP, FTP, ModBus Slave/Master (ASCII/Binary/TCP/IP), AB-DF1 Half-Duplex Slave/Master, AGM ICS Protocol, AGM DH Protocol. (Only one PLC protocol supported per UWS.

Connections - ModBus and Allen-Bradley PLC's, Dial-up/Cell phone system, PC, fixed frequency/spread spectrum radio modem, cable, satellite, fiber optics.

Maximum number of entries in conversion table: 16 Analog, 32 Discrete.

Maximum number of unique Device ID or Device address supported: Slave Protocols, 1 per communications port. Master Protocols, maximum number of valid device addresses supported by the protocol.

Introduction

ModBus Specifications

Supported Modes: ASCII (Master/Slave)
 RTU or Binary (Master/Slave)
 TCP/IP (Slave Only)

Supported Registers:	Coils	00001 - 09999	Read / Write
	Discreet Inputs	10001 - 19999	Read Only.
	Input Registers	30001 - 39999	Read Only.
	Holding Registers	40001 - 49999	Read / Write

Supported Data Types 16 bit Integer
 32 bit Long Integer
 Single precision floating point.

NOTE 1: ModBus only specifies 16 bit integer data registers. Long Integer and Floating Point are supported by combining 2 sequential data registers. You may select whether the Least Significant bits (LSW) or the Most Significant bits (MSW) are in the first register.

NOTE 2: To preserve data integrity, when a register has been defined as being either a 32 bit Integer or floating point both registers must be written within the same command.

NOTE 3: Additional data types such as double precision floating point may be translated by using multiple registers. The UWS however can only transfer the data, displaying the data on a HTML page will be meaningless.

Supported Commands:	Code (Hex)	Description
	01	Read Coil Status
	02	Read Discreet Inputs
	03	Read Holding Register
	04	Read Input Register
	05	Force Single Coil
	06	Preset Single Register
	0F	Force Multiple Coils
10	Preset Multiple Registers	

Introduction

Allen-Bradley DF1 Protocol Specifications

Supported Modes:	DF1 Half Duplex (Master/Slave)	
PLC Emulated	SLC500 (Master/Slave), PLC-5 (Master/Slave)	
Supported Registers:	Binary	B000/00
	Floating Point	F000:000
	Inputs	I:000/00 or I:0000
	Integers	N000:000
	Outputs	O:000/00 or O:0000
	Status	S:000/00 or S:0000

NOTE 1: To support long integers, two DF1 Integers (N7:00) may be used. To preserve data integrity, when a register has been defined as being a 32 bit Integer both registers must be written within the same command.

NOTE 2: Additional data types such as double precision floating point may be translated by using multiple registers. The UWS however can only transfer the data, displaying the data on a HTML page will be meaningless.

Supported Commands:	CMD	FNC	Description
	0F	00	Word Range Write
	0F	01	Word Range Read
	0F	26	Read-Modify-Write (Write Bit)
	0F	A1	Typed Read
	0F	A9	Typed Write

NOTE 3: Only one message can be processed at the same time. To prevent data loss a master DF1 device communicating with the UWS must wait for the first message to complete before sending a second message.

Introduction

Data-Command Specifications

I/O Values:	16 Analog and 32 Discrete values. Values may be either inputs or outputs. Inputs and outputs mapped to the same set of registers.
Scaling:	Analog scaling set via Data-Commands web site or optionally through a configuration web page.
Check in Time:	Check In time set via Data-Commands web site or optionally through a configuration web page.
RBE Time:	RBE times set via Data-Commands web site or optionally through a configuration web page. Sets the minimum time between sending data to Data-Command after a change of state has been detected.
Network Settings:	IP and Port numbers for up to 6 addresses may be specified. Up to 3 text URL's may be specified in addition to the 6 IP addresses.
Default URL:	dls.data-command.com dls1.data-command.com dls2.data-command.com
Default TCP Port:	382
Additional Features:	Configuration settings stored in non-volatile memory.

Hardware Installation

The UWS is available pre-configured to your application. When pre-configured the UWS is ready for use and you only need to connect your equipment. If not pre-configured or if you need to modify the configuration you will need to connect the UWS to your computer for configuration with a web browser using an Ethernet network, Ethernet Crossover cable or serial port and Null-Modem cable. See below for instructions on connecting the UWS to your computer.

Connect through the Internet/Intranet via 10baseT Ethernet

NOTE: When shipped from the factory the IP address is set for 192.168.0.251. Check with your network administrator to determine if this is valid address before connecting the UWS to a working network. If this IP address is unavailable connect the UWS directly to your computer using a crossover cable for initial configuration. After initial configuration the UWS will operate on the IP address you specify.

Connecting to a 10/100baseT Ethernet Hub or Switch

1. Plug a standard Cat 3 or Cat 5 Ethernet patch cable into the RJ-45 Ethernet Jack located on the top of the UWS. Connect the other end of this patch cable to an unused RJ-45 jack on your Ethernet hub.
2. Power up the UWS and observe the green “LNK” light located on the top of the UWS. After approximately ten seconds this light should turn on. The yellow “ACT” light may also flash indicating network activity.
3. If equipped, check the Link light on your Hub or Switch. Both the “LNK” light on the UWS and Link light on your hub or switch should be on. Hubs or switches that support the faster 100baseT or 1000baseT may contain additional indicator lights used only for the faster connections. Typically these lights will not be lit when connected to a 10baseT device such as the UWS. Consult with your Hub or Switch documentation for the meaning of any status lights.

Connecting directly to your computer:

1. Plug a crossover Cat 3 or Cat 5 Ethernet patch cable into the RJ-45 Ethernet Jack located on the top of the UWS. Connect the other end of this patch to the Ethernet controller on your Computer.
2. Power up the UWS and observe the green “LNK” light located on the top of the UWS. After approximately ten seconds this light should turn on. The yellow “ACT” light may also flash indicating network activity.
3. If equipped, check the Link light on your Ethernet controller card. Both the “LNK” light on the UWS and Link light on your Ethernet card.

Hardware Installation

Connecting to a Personal Computer

You will need null-modem cable to connect to the UWS. This cable should have a 9 or 25 pin female connector on one end to match the connector on your computer and a 9 pin female connector on the other end to mate with the UWS. Null-Modem cables, adapters and gender changers designed for connecting two computers are available through many computer, electronic or office supply stores.

1. Plug one end of the RS232 Null-Modem cable into an available RS232 communications port on your PC. This port is normally a 9 pin male D connector; however it may also be a 25 pin D connector in some cases. Consult with your PC documentation for the location of this connector.
2. Plug the other end of the Null-Modem RS232 cable from your PC into one of the 9 pin male D connectors on the top of the UWS.

Connect using a Dial-Up modem

You will need a straight through PC to Modem cable to connect to the UWS. These cables are available through many computer, electronic or office supply stores. This cable should have a 9 pin female connector on one end to fit the UWS and a 25 or 9 pin male connector on the other to fit your modem.

1. Plug one end of the RS232 cable into your modem.
2. Plug the other end of the RS232 cable from your PC into one of the 9 pin male D connectors on the top of the UWS.

When used with a modem we recommend you configure your modem as follows:

1. The modem must be set to auto answer. Typically the command to set this option is "ATS0=1".
2. The modem must be set up to use a fixed baud rate. The baud rate must match the baud rate set in the UWS for the selected serial port. The default is 9600. Many modems will save the current baud rate and data format of the connection when the save command "&W" was used.
3. When used with a PPP connection the modem should be configured to use the Data Carrier Detect line (DCD or CD) line to indicate when a connection has been established.
4. The modem must be able to save all settings including the connected baud rate and data format.

Hardware Installation

Connecting to AGM Electronics Inc. Data Handler

RS-232 Data Handler SPM9000-x2x

To connect a UWS to a RS232 Data Handler you will need a 9 pin female to 9 pin female straight through cable.

1. Plug one end of the RS232 cable into the 9 pin male connector on the Data Handler.
2. Plug the other end of the RS232 cable into one of the 9 pin male D connector on top of the UWS. Select the connector marked "A" or "B" depending on the port selected during configuration. Typically port "A" will be used for the Data Handler.

RS-485 Data Handler SPM9000-x4x

To connect a UWS to one or more RS485 Data Handler(s) you will need a shielded twisted pair cable.

1. Connect one wire of the twisted pair cable to (+)RS485 and the other wire to (-)RS485. Connect the shield of the cable to (-)Power. If a separate signal ground wire is provided connect this wire to (-)Power.
2. Connect the other end of the twisted pair cable to the data handler connecting the (+)RS485 wire to (+)RS485 and the (-)RS485 wire to (-)RS485.
3. If separate power supplies are used connect either the shield or a separate ground wire to (-)Power. If the UWS and Data Handler are using the same power supply leave the shield disconnected.

NOTE: To prevent damage to RS485 drivers all devices connected to the RS485 buss must share a common (-)supply. When RS485 devices are used with different supplies the (-)output of the supplies should be connected together. Either a separate wire or the cable shield may be used to make this connection. If a separate ground wire is used then the shield of the cable should be connected at one location only.

4. If additional Data Handlers are to be used, connect the next device. RS485 devices should be daisy chained together with (+) and (-) RS485 connections of one device connected to the (+) and (-) connection on the next device. If a common power supply is used the each shield should be connected to (-)Power on one of the daisy chained devices only. If a separate power supplies are used then the common ground wire or shield should be connected to (-)Power of all devices not sharing a common power supply.
5. When all devices are connected the RS485 buss may require termination resistors. Install 120 - 150 ohm resistors across (+) and (-)RS485 on the first and last device only. If the RS485 cable run is less than 100 feet, installed in the same enclosure, and you do not encounter any communications problems the terminating resistors may be omitted.

Hardware Installation

Connecting to AGM Electronics Inc. ICS

To connect a UWS to a ICS you will need a 9 pin female to 25 pin female null-modem cable.

1. Plug the 25 pin end of the cable of the RS232 cable into the 25 pin D connector on the back of the ICS.
2. Plug the other end of the RS232 cable into one of the 9 pin male D connector on top of the UWS. Select the connector marked "A" or "B" depending on the port selected during configuration. Typically port "A" will be used for the ICS.

Connect to a Serial ASCII printer

You will need a null-modem PC to Serial Printer cable to connect to the UWS. These cables are available through many computer, electronic or office supply stores. This cable should have a 9 pin female connector on one end to fit the UWS and a 25 or 9 pin connector to fit your printer. Wiring for a UWS to Printer connection is the same as a PC to printer connection. Consult with your printer manual for additional details.

1. Configure your printer to use the selected baud rate with a data format of 8 data bits, 1 stop bit and no parity.
2. Configure your printer NOT to automatically add line feeds. The UWS will supply the line feed after the carriage return.
3. Configure any font, page or additional settings on your printer. The UWS does not send any control codes so the default settings will be used for printouts.
4. Plug one end of the RS232 cable into your printer.
5. Plug the other end of the RS232 cable from your PC into one of the 9 pin male D connectors on the top of the UWS.

Connecting to an Allen-Bradley PLC

The UWS supports Allen-Bradley DF1 Half Duplex Master/Slave protocol and may be connected to an Allen-Bradley PLC with the appropriate RS232 interface. Consult with your Allen-Bradley PLC documentation on selecting the appropriate interface for your PLC.

You will need a cable to connect from your PLC to a PC and not a Modem. If a cable of this type is not available you will need a Null-Modem adapter and possibly a female to female gender changer to connect your PLC to the UWS. Null-Modem adapters and gender changers are typically available through many computer, electronic or office supply stores.

1. Plug one end of the RS232 cable into your PLC. See your PLC documentation for making this connection.
2. Plug the other end of the RS232 cable from the PLC into the 9 pin male D connector marked "A" on the top of the UWS.

Hardware Installation

Connecting to a PLC Using Modbus

The UWS supports both ASCII and RTU (Binary) Modbus protocols and may be connected to a PLC with the appropriate RS232, RS485 or Ethernet interface. Consult with your PLC documentation on selecting the appropriate interface for your PLC.

If connecting via RS232 you will need a RS232 cable to connect from your PLC to a PC and not a Modem. If a cable of this type is not available you will need a Null-Modem adapter and possibly a female to female gender changer to connect your PLC to the UWS. Null-Modem adapters and gender changers are typically available through many computer, electronic or office supply stores.

1. Plug one end of the RS232 cable into your PLC. See your PLC documentation for making this connection.
2. Plug the other end of the RS232 cable from the PLC into the 9 pin male D connector marked "B" on the top of the UWS.

If connecting via RS485 use shielded twisted pair wire to connect from your PLC RS485 communications card or adapter and the UWS.

1. Connect one wire of the twisted pair cable to (+)RS485 and the other wire to (-)RS485. Connect the shield of the cable to (-)Power. If a separate signal ground wire is provided connect this wire to (-)Power.
2. Connect the other end of the twisted pair cable to your RS485 communications card or adapter. Different manufactures may mark RS485 connections differently. The wire from (+)RS485 on the UWS is the non-inverting input/output. (-)RS485 connection is the inverting input/output.
3. If separate power supplies are used connect either the shield or a separate ground wire to (-)Power. If the UWS and your PLC are using the same power supply leave the shield disconnected.

NOTE: To prevent damage to RS485 drivers all devices connected to the RS485 buss must share a common (-)supply. When RS485 devices are used with different supplies the (-)output of the supplies should be connected together. Either a separate wire or the cable shield may be used to make this connection. If a separate ground wire is used then the shield of the cable should be connected at one location only.

4. The RS485 buss may require termination resistors. Install 120 - 150 ohm resistors across (+) and (-)RS485 on the first and last devices only. If the RS485 cable run is less than 100 feet, installed in the same enclosure, and you do not encounter any communications problems the terminating resistors may be omitted.

Hardware Installation

Connecting to a PLC Using ModBus over TCP/IP (Ethernet)

If using ModBus over TCP/IP see the “Connect through the Internet/Intranet via 10baseT Ethernet” section. ModBus over TCP/IP will use the same physical connection as all other TCP/IP protocols.

Getting Started

The UWS may be configured at the factory. In this case your UWS should be ready to use after you have made all hardware connections. This configuration may be backed up via the procedure outlined in Appendix E.

If your UWS has not been configured connect the UWS to power and your computer or network using the Ethernet port. You may also connect your computer using a serial communications port connected to either Port A or Port B on the UWS provided the PPP protocol has been selected for the connected serial port.

Once connected go through the following Setup sections to set all required operating parameters.

This manual covers all common firmware options for the UWS. Not all features covered in this manual are available for all firmware variations.

The factory defaults for the UWS are:

IP Address:	192.168.0.251 for Ethernet connection. 192.168.250.1 for PPP connection to serial Port A. 192.168.251.1 for PPP connection to serial Port B.
Netmask	255.255.255.0
Communication Port "A":	9600 baud, 8 data bits, 1 stop bit, no parity.
Communication Port "B":	9600 baud, 8 data bits, 1 stop bit, no parity.
Protocol Port "A":	PPP
Protocol Port "B":	PPP

Setup

Setup

The following describe the steps required to set up the standard UWS. If using a Data-Command UWS go to the following Data-Command Setup section.

You have two options in setting up the UWS. You may use either Ethernet port or one of the two RS232 serial ports via a PPP network connection. The Ethernet port is always available but PPP connections are only available if the serial port A or B is set for PPP protocol. The factory defaults will set both Port A and Port B to the PPP protocol at 9600 baud.

To setup and use the UWS the following will be required:

1. Working knowledge of TCP/IP networks.
2. If the UWS will be connected to an existing Ethernet network a Static IP address that may be used on your network is required. See your network administrator for this number.

If connecting directly to your computer via an Ethernet crossover cable you may use the default address of 192.168.0.251. Set your computer to an address within this address block, typically 192.168.0.1.

If connecting via a serial port or modem using the PPP protocol you may use the default addresses of 192.168.250.1 for Port A or 192.168.251.1 for Port B.

3. If using the Ethernet Port you will need a computer with Ethernet 10baseT or 10/100baseT network card.
4. Internet browser installed on your computer. The UWS has been tested with Microsoft Explorer, Netscape Navigator and Mozilla Firefox. Although not tested other browsers that support HTML forms will work.
5. If using Ethernet a crossover cable or Ethernet hub will be required. If using the serial ports a Null-Modem cable will be required.
6. 12 to 24 volt power supply. The UWS typically draws 200 mA when operating. Recommended 250 mA supply or greater depending on any additional devices connected to the UWS.
7. The Universal Web Station (UWS).

The following instructions assume you are familiar with Ethernet and TCP/IP networks. The computer used for setting up the UWS must already have the correct TCP/IP and other network drivers installed prior to installation of the UWS.

The UWS is configured through either an Ethernet 10baseT or serial PPP connection using HTML web pages and your Internet Browser. The UWS has been tested with Microsoft Internet Explorer, Netscape Navigator and Mozilla Firefox, but any browser that supports HTML forms can be used.

Setup

Before the UWS can be configured you must connect your computer to the UWS. This may be done by connecting UWS to a 10baseT network using either a Ethernet Hub, Ethernet Switch, or a crossover cable. You may also connect to the UWS using the serial ports on your computer. See the Hardware Installation section for details on making these connections.

The default IP address of 192.168.0.251 is in a block of IP addresses reserved for local area networks. If installing in an existing network, check with your network administrator to determine if you may use addresses within this block or if this address is already in use.

See Appendix C for details on how to set up the network connections to work with a UWS using a Ethernet connection.

When used with the PPP protocol the default PPP IP addresses of 192.168.250.1 (UWS Port A) and 192.168.251.1 (UWS Port B) will not be seen beyond your computer. If however your computer has a network card set up for a address in the 192.168.250.x or 192.168.251.x block you will need to change the IP addresses for the PPP protocols in the UWS.

See Appendix D for details on how to set up network connection to access the UWS using a serial PPP connection.

1. With the UWS connected and powered up load your Internet browser and enter the following address:

[HTTP://192.168.0.251/UWSDefault.htm](http://192.168.0.251/UWSDefault.htm) for Ethernet

[HTTP://192.168.250.1/UWSDefault.htm](http://192.168.250.1/UWSDefault.htm) if connected to UWS Port A

[HTTP://192.168.251.1/UWSDefault.htm](http://192.168.251.1/UWSDefault.htm) if connected to UWS Port B

If all your connections are correct you will see the Default Home page. This page contains the following information:

- Site, Location, and Description as entered in the Titles section of the configuration.
- Variables you selected for displaying.
- Current date and time of the real time clock within the UWS.
- Date and time the data was last updated. If data has not been updated then "Unknown" will be displayed.
- Link to the Administration pages.



Default Home Page

Setup

2. Click on the Administration link located at the bottom of the Default Home page. This will bring up the Log On page.



Log On Page

3. Enter your ID and Password.

When shipped then ID and password is as follows:

ID: Admin

Password: password

The ID is not case sensitive and may be entered in either upper or lower case. The password however is case sensitive and must be entered as shown.

4. Click on the Log On button when both the ID and password are entered. You will either get the Administration page if the ID and password were correct. If you are returned to the Log On page then reenter the ID and password.

To protect the integrity of the UWS all configuration pages have a time limit of 15 minutes and a check to determine if the page was linked from another configuration page. If any pages are idle for more than the 15 minute interval or if you refresh or click on the go back button on your browser you will be required to reenter the user name and password before continuing. Do not use the go back button or bookmarks when reconfiguring the UWS or you may lose modifications you have just entered.

5. After you have logged on you will see the Administration menu as shown below. From this menu you can select the various configuration sections in the UWS.

The Setup section of this document will only lead you through the sections required for operation of the UWS as a data translator. Other menu options are not covered in this section. See the following Software Configuration for complete instructions on any settings not covered in the Setup Section.

Setup



Administration Page

6. Select the Port Setup. Port Setup must be selected before any Translation settings can be made. If setting up for Translation or as a WEB server, always start by defining the connections for each port. Modifying some settings such as the protocol setting will erase settings in the Translation tables.

The screenshot displays the 'UWS Port Setup' configuration page for 'Port A (RS232)'. It includes a 'Reset Communications Settings' button. The configuration fields are as follows:

Port A (RS232)	
Protocol:	PPP (Server) <small>WARNING: Changing protocol may reset Translation tables for Port A</small>
Baud Rate:	9600
Bit Format:	8, None, 1 Stop
Half-Duplex RTS On Time:	-1 Milliseconds. Enter -1 to disable.
Half-Duplex RTS Off Time:	-1 Milliseconds.
Common Address:	1
Update Interval:	0.0 Seconds.
Communications Fail Interval:	0 Seconds
Turbo Mode:	<input type="checkbox"/>
Pass Through Mode:	<input type="checkbox"/> Slave Protocols Only.
PPP IP Address:	192.168.250.1
Connected to Modem:	<input type="checkbox"/> (PPP Protocol Only)
Monitor DCD:	<input checked="" type="checkbox"/> (PPP Protocol Only)
Monitor DSR:	<input type="checkbox"/> (PPP Protocol Only)

UWS Communications Port Setup

NOTE: Do not use the Reset Communications Settings if connected via a PPP connection. Resetting Communications Settings will disconnect the PPP connection.

Setup

7. If the UWS has been previously set up and you wish to start from scratch click on the Reset Communications Settings button then on the Yes button on the confirmation page. This will clear all port and translation settings so you can start from a blank slate.
8. Determine which physical ports you will be using and select the correct protocol. It is important the correct protocol is selected. The UWS can switch between related protocols such as ASCII and RTU ModBus, or between Slave and Master. Switching between DF1, ModBus, or AGM protocols will clear the translation tables.
9. Set the baud rate used to connect to your device. 300, 1200, 9600 and 19200 baud is supported.
10. If using one of the Slave protocols. Enter the Device ID or Device Address that your master PLC will use to communicate to the UWS in the Common Address text box.

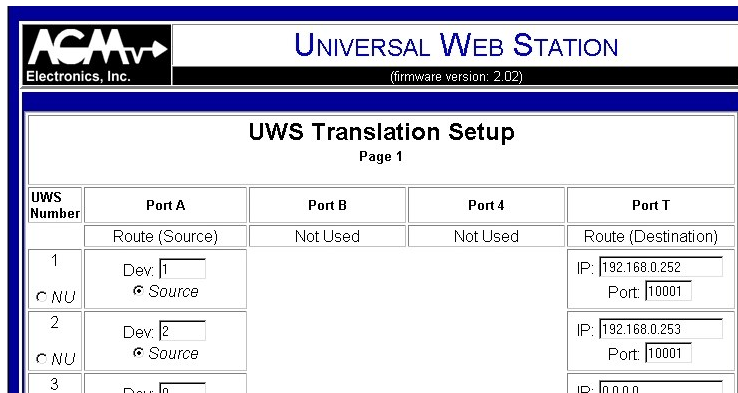
If using one of the Master protocols and only one device is connected, enter the Device ID or Device Address of the device in the Common Address text box.

If using a Master Mode and multiple devices on a port, leave Common Address text box set to -1. You will then enter the Device ID or Device Address of each PLC in the Translation Table. When using multiple devices you will need to enter the Device ID or Device Address for each address translated.
11. Unless you need to slow down the polling of remote devices by the Master protocols leave the Update Interval set to 0. The UWS will continuously poll all devices for data. Should you need to slow down this polling enter the number of seconds to wait between polls in the text box. The Update Interval will have no effect on Slave protocols or when the Translation table requires a value to be written to a PLC.
12. If you are connected to a device which you know will take more than a second to respond, set the Communications Fail Interval to a value greater than the maximum response time. Otherwise leave the Communications Fail Interval set to 0.0 for system startup.
13. Leave the Turbo Mode box unchecked for system startup. If you are transferring a large quantity of data, checking this box may improve your throughput, however Turbo Mode will not work with all devices.
14. When you have selected all protocols click on the Save button and wait for the Saved message. This operation may take 20 to 30 seconds to complete. Each time you save any settings the UWS will write the modified settings to non-volatile memory.

Setup

15. Click on Continue from the Saved message screen and you will be returned to the Administration menu page. Select Translation Setup next.
16. If setting up to use the UWS as a switch or router continue with the following steps If setting up to translate variables on a variable by variable basis continue with step 20.

UWS Used for Switching or Routing



ACM Electronics, Inc. UNIVERSAL WEB STATION (firmware version: 2.02)

UWS Translation Setup
Page 1

UWS Number	Port A	Port B	Port 4	Port T
	Route (Source)	Not Used	Not Used	Route (Destination)
1	Dev: 1 Source			IP: 192.168.0.252 Port: 10001
2	Dev: 2 Source			IP: 192.168.0.253 Port: 10001
3	Dev: 3			IP: 10.0.0.0

UWS Translation Setup Page for Routing Only

17. In the Ethernet Port (T) column enter the IP address and TCP Port number for each remote Ethernet device that will receive routed data from the "Route (Source)" port.
18. In the "Route (Source)" column enter the device ID number that will be used to switch to the port selected in the Port T column. "Route (Source)" may be in any of the three serial port columns A, B or 4.

In the above example. The UWS has been configured to route AGM Protocols from Port A to the Port T. Requests for address 1 will be routed to TCP/IP address 192.168.0.252:10001. Request for address 2 will be routed to 192.168.0.253:10001.

19. Continue filling in the table to include all connections that will be routed.
20. When done filling in the table. Click on the Save or Next button and wait for the Saved screen. If you clicked on the Next button the UWS will then automatically advance you to the next page of variables to route. The UWS supports up to 1000 variables for translation or routing.
21. Once you have completed the translation table your UWS is ready to use as a router. If also using as a WEB server you will need to continue to the next steps and then fill in the Select Variables to Display page, Titles and Clock Settings. If routing only then you are ready to use your UWS.

Setup

UWS Used for Translating Registers

22. The contents of the Translation Setup page will vary according to the protocols Below are two sample screens. The first is of a UWS set up to translate between DF1 and ModBus. The second is set up to Route request from Port A to the Port T and to collect data from a ICS connected to Port T.

This page is organized into 4 columns representing each of the 4 possible communications ports on the UWS. Each row represents one variable to translate.

UWS Number	Port A	Port B	Port 4	Port T
	DF1 Half-Duplex CRC (Master)	ASCII ModBus (Slave)	Not Used	Not Used
1	B013/00000 16 bits Source	00001 Integer (16 bits) Source		
2	B013/00001 16 bits Source	00002 Integer (16 bits) Source		
3	B013/00002 16 bits Source	00003 Integer (16 bits) Source		

UWS Translation Setup Page Translation Only

UWS Number	Port A	Port B	Port 4	Port T
	Route (Source)	Not Used	Not Used	ICS (Master)
1	Dev: 1 Source			IP: 192.168.0.252 Port: 10001 Dev: 0 Var: Source
2	Dev: 2 Source			IP: 192.168.0.253 Port: 10001 Dev: 0 Var: Source
3	Dev: 0 Source			IP: 192.168.0.252 Port: 10001 Dev: 0 Var: W600 Source

UWS Translation Setup Page Route and Translation

Setup

23. Start by entering the register number or address of the first variable you wish to translate. The UWS uses the same naming conventions as used by the selected protocol. In the above example the first register in a bit variable B013/000000 as defined for DF1. It will be translated to ModBus coil 00001.

In the case of AGM Electronics Inc. protocols the ICS will use the wiring numbers i.e. W600, W700. In the case of Data Handlers the variable number will be used.

On the Ethernet port (T) you may also be required to enter the IP address and TCP port numbers depending on the protocol selected.

24. Next select which port is connected to the source of the data to be translated. To a Master the Source indicates which variables to read from the connected PLC. To a slave protocol Source indicates which PLC to accept data from. To prevent possible synchronization problems only one port may be defined as the source of the data.
25. If required indicate the size of the data in the drop down list box. Not all variables will require a size to be specified. Only when translating between Floating Point and Integers or long integers will a selection be required.

NOTE 1: When translating ModBus registers as either floating point or long integers you will need to specify which register contains the most significant bits. Select "Long (32 bits) LSW 1st" or "Float (32 bits) LSW 1st" if the least significant bits are in the first register. "Long (32 bits) MSW 1st" or "Float (32 bits) MSW 1st" if the most significant bits are in the first register.

NOTE 2: If translating between a DF1 floating point value and a ModBus Integer register you must select Floating Point for the ModBus.

26. When done filling in the table. Click on the Next button and wait for the Saved screen. The UWS will then automatically advance you to the next page of variables to translate. The UWS supports up to 1000 variables for translation.
27. Once you have completed the translation table your UWS is ready to use as a translator. If also using as a WEB server you will need to fill in the Select Variables to Display page, Titles and Clock Settings. If you will be accessing the UWS through a Point to Point (PPP) connection continue with the following steps.

Setup

Point to Point Protocol (PPP) Setup

28. When PPP protocol is selected, only the Baud Rate; PPP IP Address; Connected to Modem; Monitor DCD; and Monitor DSR are used. The factory defaults set the UWS to use PPP for both Port A and Port B and will work with most PPP installations.
29. The default settings use the RS-232 DCD line to detect when a connected modem has made a connection. This will work with both direct connections and most modems. The modem must save the baud rate, data bit format and auto answer ring number. You must also set the Carrier Detect to turn on when a carrier is detected. Typically this is set with the AT&C1 command.

The screenshot displays the 'UWS Port Setup' web interface for 'Port A (RS232)'. The interface includes a header with the 'ACM Electronics, Inc.' logo and 'UNIVERSAL WEB STATION (firmware version: App0R5)'. A 'Reset Communications Settings' button is located at the top. The 'Protocol' is set to 'PPP (Server)', with a warning message: 'WARNING. Changing protocol may reset Translation tables for Port A.' The 'Baud Rate' is 9600, 'Bit Format' is 8, None, 1 Stop, 'Half-Duplex RTS On Time' is -1, 'Half-Duplex RTS Off Time' is -1, 'Common Address' is 1, 'Update Interval' is 0.0, and 'Communications Fail Interval' is 0. 'Turbo Mode' is disabled. 'Pass Through Mode' is disabled, and 'Slave Protocols Only' is unchecked. The 'PPP IP Address' is 192.168.250.1. 'Connected to Modem' is unchecked. 'Monitor DCD' is checked, and 'Monitor DSR' is unchecked. All time intervals are in milliseconds or seconds.

UWS Port Setup	
Reset Communications Settings	
Port A (RS232)	
Protocol:	PPP (Server) <small>WARNING. Changing protocol may reset Translation tables for Port A.</small>
Baud Rate:	9600
Bit Format:	8, None, 1 Stop
Half-Duplex RTS On Time:	-1 Milliseconds. Enter -1 to disable.
Half-Duplex RTS Off Time:	-1 Milliseconds.
Common Address:	1
Update Interval:	0.0 Seconds.
Communications Fail Interval:	0 Seconds
Turbo Mode:	<input type="checkbox"/>
Pass Through Mode:	<input type="checkbox"/> Slave Protocols Only.
PPP IP Address:	192.168.250.1
Connected to Modem:	<input type="checkbox"/> (PPP Protocol Only)
Monitor DCD:	<input checked="" type="checkbox"/> (PPP Protocol Only)
Monitor DSR:	<input type="checkbox"/> (PPP Protocol Only)

UWS Default Settings for PPP Connection

Data-Command Setup

The following describe the steps required to set up the Data-Command Application UWS. This manual only covers the UWS settings required to connect and send data to Data-Command. Setting up tags and screens on the Data-Command web site is not covered. Consult with your Data-Command documentation and help files for assistance in setting up your Data-Command web site.

To setup and use the UWS the following will be required:

1. Account with Data-Command.
2. Gateway or other connection to the Internet. An Internet connection is not required for setting up the UWS however it will be required to work with the Data-Command web site.
3. Working knowledge of TCP/IP networks.
4. Static IP address that may be used on your network. See your network administrator for this number.

If the UWS is directly connected to the Internet you will need a static IP address from your Internet Service Provider.

If however you are connecting to the Internet via a Gateway or other device that allows a Internet connection to be shared, the static IP address used by the UWS must be for the local network. A normal Internet connection with a dynamic IP address may be used for connecting to the Internet provided you do not intend to access the UWS from the Internet. If you will be accessing the UWS directly from the Internet a static IP from your Internet Service Provider is required.

For setting up you may connect the UWS directly to your computer via a crossover cable and you may use the default address of 192.168.0.251. Set your computer to an address within this address block, typically 192.168.0.1.

5. Computer with Ethernet 10baseT or 10/100baseT network card.
6. Internet browser installed on your computer. The UWS has been tested with Microsoft Explorer, Netscape Navigator and Mozilla Firefox. Although not tested other browsers that support HTML forms will work.
7. Crossover cable or Ethernet hub.
8. 12 to 24 volt power supply. The UWS typically draws 200 mA when operating. Recommended 250 mA supply or greater depending on any additional devices connected to the UWS.
9. The Universal Web Station (UWS).

Data-Command Setup

The following instructions assume you are familiar with Ethernet and TCP/IP networks. The computer used for setting up the UWS must already have the correct TCP/IP and other network drivers installed prior to installation of the UWS.

The UWS is configured through an Ethernet 10baseT connection using HTML web pages and your Internet Browser. The UWS has been tested with both Microsoft Internet Explorer and Netscape Navigator, but any browser that supports HTML forms can be used.

Before the UWS can be configured you must connect the UWS to a 10baseT network or to a PC using a crossover cable. See the Hardware Installation section.

The default IP address of 192.168.0.251 is in a block of IP addresses reserved for local area networks. If installing in an existing network, check with your network administrator to determine if you may use addresses within this block or if this address is already in use.

If you are unable to use this address or are having problems contacting the UWS use a crossover cable and connect directly to the UWS with your computer. See Appendix C, Setting your computer to access the UWS for instruction on modifying your computer's network settings to work with the UWS default settings.

1. With the UWS connected and powered up load your Internet browser and enter the following address:

[HTTP://192.168.0.251/UWSDefault.htm](http://192.168.0.251/UWSDefault.htm)

If all your connections are correct you will see the Default Home page. This page contains the following information:

1. Site, Location, and Description as entered in the Titles section of the configuration.
2. The Data-Command Serial Number. You will need to enter as part of the unit configuration when setting up the devices on the Data-Command web site.
3. Current date and time of the real time clock within the UWS.
4. Date and time the data was last updated. If data has not been updated then "Unknown" will be displayed.
5. Date and time data was sent to Data-Command.
6. Link to the Administration pages.

Data-Command Setup

ACM Electronics, Inc. UNIVERSAL WEB STATION
Data-Command Application, DF1 (firmware version: 1.00)

Site: AGM Electronics Inc. Universal Web Station

Location:

Description:

Data-Command S#: 04-01-FF-00-00-00-02-00-00-00

Device Time: 1/12/2007 4:07:39 PM

Last Communication Update: 1/12/2007 4:07:31 PM

Last Data-Command Update: 1/12/2007 4:06:19 PM

Administration

Default Home Page

2. Print the Default Home Page screen or write down the Data-Command S# for use in setting up your Data-Command pages on the Data-Command web site.
3. Click on the Administration link located at the bottom of the Default Home page. This will bring up the Log On page.

ACM Electronics, Inc. UNIVERSAL WEB STATION
Data-Command Application, DF1 (firmware version: 1.00)

Log On as Administrator

ID

Password

Log On

Main Page

Log On Page

4. Enter your ID and Password.

When shipped then ID and password is as follows:

ID: Admin
Password: password

The ID is not case sensitive and may be entered in either upper or lower case. The password however is case sensitive and must be entered as shown.

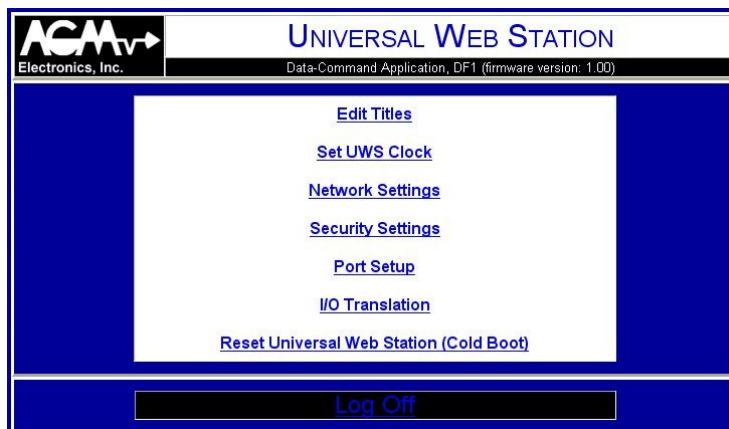
Data-Command Setup

5. Click on the Log On button when both the ID and password are entered. You will either get the Administration page if the ID and password were correct. If you are returned to the Log On page then enter the ID and password.

To protect the integrity of the UWS all configuration pages have a time limit of 15 minutes and a check to determine if the page was linked from another configuration page. If any pages are idle for more than the 15 minute interval or if you refresh or click on the go back button on your browser you will be required to enter the user name and password before continuing. Do not use the go back button or bookmarks when reconfiguring the UWS or you may lose modifications you have just entered.

6. After you have logged on you will see the Administration menu as shown below. From this menu you can select the various configuration sections in the UWS.

The Setup section of this document will only lead you through the sections required for operation of the UWS as a data translator. Edit Titles, Set UWS Clock, and Security Settings are not covered in this section. See the following Software Configuration for complete instructions on any settings not covered in this Setup Section.



Administration Page

Data-Command Setup

7. Select the Port Setup. Port Setup must be selected before any Translation settings can be made.

AGM Electronics, Inc. **UNIVERSAL WEB STATION**
Data-Command Application, DF1 (firmware version: 1.00)

UWS Port Setup

Port A (RS232)

Protocol: DF1 Half-Duplex CRC (SLC500 Master) ▼

Baud Rate: 9600 ▼

DF1 Node: 1

Update Interval: 0.0 Seconds.

Communications Fail Interval: 0.0 Seconds

Port B (RS232)

Protocol: Not Used ▼

Baud Rate: 9600 ▼

DF1 Node: -1

Update Interval: 0.0 Seconds.

Communications Fail Interval: 0.0 Seconds

Port 4 (RS485)

Protocol: Not Used ▼

Baud Rate: 9600 ▼

DF1 Node: -1

Update Interval: 0.0 Seconds.

Communications Fail Interval: 0.0 Seconds

Save Reset

UWS Communications Port Setup

8. Determine which physical port you will be using and select the correct protocol for that port.
9. Set the baud rate used to connect to your device.
10. If using one of the Slave protocols. Enter the DF1 Node, Device ID or Device Address that your master PLC will use to communicate to the UWS in the Common Address text box.

If using a Master protocols and only one device is connected, enter the DF1 Node, Device ID or Device Address of the device in the Common Address text box.

If using a Master protocol and multiple devices on a port, set the Common Address text box to -1. You will then enter the DF1 Node, Device ID or Device Address of each PLC in the Translation Table.

Data-Command Setup

11. Update Interval and Communications Fail Interval are only used for Master protocols.

Unless you need to slow down the polling of remote devices by the Master protocols leave the Update Interval set to 0. The UWS will continuously poll all devices for data. Should you need to slow down this polling enter the number of seconds to wait between polls in the text box. The Update Interval will have no effect on Slave protocols or when the Translation table requires a value to be written to a PLC.

If you are connected to a device which you know will take more than a second to respond, set the Communications Fail Interval to a value greater than the maximum response time. Otherwise leave the Communications Fail Interval set to 0.0 for system startup.

12. Click on the Save button and wait for the Saved message. This operation may take 20 to 30 seconds to complete. Each time you save any settings the UWS will write the modified settings to non-volatile memory.
13. Click on Continue from the Saved message screen and you will be returned to the Administration menu page. Select I/O Translation next.
14. The I/O Translation setup page lists the data registers that correspond to the 16 analog and 32 discrete I/O points used by Data-Command. Depending on the Communications settings there will be between 4 and 6 columns displayed.

See below for examples of the translation setup page.

15. . The first column indicates the Data Commands variable number for either the Analog or Discrete I/O.
16. The second column indicates if the specific I/O point will be used. Uncheck the box for all I/O points that you will be using. Unused I/O points will be set to 0.
17. The third column indicates if Data Command will be able to control the I/O point. Check this box only if the register is an output that will be controlled by Data-Command.
18. In the fourth column enter the register number that corresponds to the Data-Command I/O point. Typically the Analog I/O section will contain analog type of registers while the Discrete will contain discrete or bit types of registers. You may however enter any of the valid registers. If a Discrete I/O point is assigned a analog type of register then the discrete register will be set to 1 when the analog register is any other value except 0.

The register number entered here will use the register syntax typical of the protocol selected. See Appendix H for DF1 protocols and Appendix I for ModBus protocols.

19. The fifth column is only used when the UWS is connected to multiple devices. Enter the DF1 Node, Device ID or Address of the remote device that corresponds to the selected I/O point here.

Data-Command Setup

20. The sixth column is only used when more than one serial communications port is used. Select the communications port that is connected to the device that corresponds to the selected I/O here.
21. Continue filling in the table to include all I/O data points. You do not need exactly 16 analog and 32 discrete values. Check the box in the “NU” column and the selected data point will be set to 0. The “NU” column may also be use to temporally disable a data point.
22. When done filling in the table. Click on the Save button and wait for the Saved screen.

Below are two examples of a completed translation pages. The first example is for a single AB PLC using DF1 protocol. The second example shows a total of 3 AB PLCs using DF1 protocol.

Analog I/O				
#	NU	Is Output	DF1 Register	
1	<input type="checkbox"/>	<input type="checkbox"/>	I:0002	32 bits ▼
2	<input type="checkbox"/>	<input checked="" type="checkbox"/>	O:0002	32 bits ▼
3	<input type="checkbox"/>	<input type="checkbox"/>	I:0004	16 bits ▼
4	<input type="checkbox"/>	<input checked="" type="checkbox"/>	O:0004	16 bits ▼
5	<input type="checkbox"/>	<input type="checkbox"/>	N007:000	16 bits ▼
6	<input type="checkbox"/>	<input type="checkbox"/>	F008:000	32 bits ▼
7	<input type="checkbox"/>	<input type="checkbox"/>	S:000	16 bits ▼
8	<input checked="" type="checkbox"/>	<input type="checkbox"/>		16 bits ▼

Discrete I/O				
#	NU	Is Output	DF1 Register	
1	<input type="checkbox"/>	<input type="checkbox"/>	I:000/01	
2	<input type="checkbox"/>	<input checked="" type="checkbox"/>	O:000/02	
3	<input type="checkbox"/>	<input type="checkbox"/>	B000/00001	
4	<input type="checkbox"/>	<input type="checkbox"/>	S:001/01	
5	<input checked="" type="checkbox"/>	<input type="checkbox"/>		

Example 1: The above example screen shots show how the translation table will look when used with a single PLC. The above example shows a variety of DF1 registers being used. Below is a description of each Analog and Discrete I/O item.

- Analog I/O section #1 shows input register I:0002 translated to Data-Command register Ain1. The register size is also set for 32 bits. Setting for 32 bits will pair the indicated register I:0002 with the next register I:0003 to produce a 32 bit long integer. The value from the combined registers will be sent to Data-Command as a single value.

Data-Command Setup

- The second line show a similar setup except a output register O:0002 is used and the register is enabled as a output by the check box in the “Is Output” column. When checked the UWS will allow Data-Command to both read and write the status of the register.
- Line 3 and 4 show a similar setup as the preceding two lines except registers I:0004 and O:0004 are read as standard 16 bit integers.
- Line 5 shows DF1 Integer register N007:000 translated to Data-Command register Ain5. “Is Output” is not checked so Data-Command can read but not write the register.
- Line 6 shows DF1 floating point register F008:000 translated to Data-Command register Ain6. For floating point values the size drop down list automatically switches to 32 bits.
- Line 7 shows DF1 status register S:000 translated to Data-Command register Ain7.
- Line 8 shows an unused register location. The UWS will report any unused registers as 0. In this example Ain8 will always show 0 on the Data-Command web site.
- Line 1 of the Discrete Output section shows bit 1 of DF1 Input register translated to Data-Command Din1 register.
- Line 2 of the Discrete Output section shows bit 2 of the DF1 output register 0 controlled by Data-Command Din2 register.
- Line 3 of the Discrete Output section shows bit 1 of the DF1 bit register 0 translated to Data-Command Din3 register.
- Line 4 of the Discrete Output section shows bit 1 of the DF1 status register 1 translated to Data-Command Din4 register.

Data-Command Setup

Analog I/O						
#	NU	Is Output	DF1 Register		DF1 Node	Comm. Port
1	<input type="checkbox"/>	<input type="checkbox"/>	I:0002	32 bits	1	Port A
2	<input type="checkbox"/>	<input checked="" type="checkbox"/>	O:0002	32 bits	1	Port A
3	<input type="checkbox"/>	<input type="checkbox"/>	I:0004	16 bits	1	Port A
4	<input type="checkbox"/>	<input checked="" type="checkbox"/>	O:0004	16 bits	1	Port A
5	<input type="checkbox"/>	<input type="checkbox"/>	N007:000	16 bits	2	Port B
6	<input type="checkbox"/>	<input type="checkbox"/>	F008:000	32 bits	3	Port B
7	<input type="checkbox"/>	<input type="checkbox"/>	S:000	16 bits	3	Port B
8	<input checked="" type="checkbox"/>	<input type="checkbox"/>		16 bits	1	Port A

Discrete I/O						
#	NU	Is Output	DF1 Register		DF1 Node	Comm. Port
1	<input type="checkbox"/>	<input type="checkbox"/>	I:000/01		1	Port A
2	<input type="checkbox"/>	<input checked="" type="checkbox"/>	O:000/02		1	Port A
3	<input type="checkbox"/>	<input type="checkbox"/>	B000/00001		2	Port B
4	<input type="checkbox"/>	<input type="checkbox"/>	S:001/01		3	Port B
5	<input checked="" type="checkbox"/>	<input type="checkbox"/>			1	Port A

Example 2: The above example screen shots show how the translation table will look when used with multiple PLCs. The above example shows a variety of DF1 registers being used as in Example 1 but with a different communications port and DF1 node.

- In Analog I/O section #1 through #4 and in the Discrete I/O section #1 and #2 are connected to the PLC on communications port A. The PLC is set for DF1 node 1.
- In Analog I/O section #5 and in the Discrete I/O section #3 are connected to the PLC on communications port B. The PLC is set for DF1 node 2.
- In Analog I/O section #6 and #7 and in the Discrete I/O section #4 are connected to the PLC on communications port B. The PLC is set for DF1 node 3.

23. Once you have completed the translation table your UWS is ready for use. However you still need to set up or Data-Command web site.

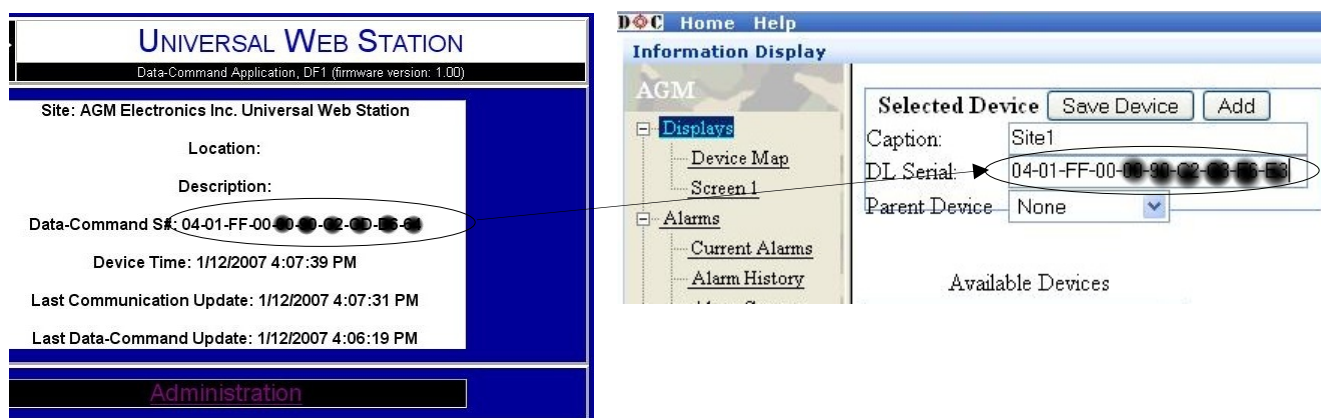
24. Go to the Data-Command web site <http://www.data-command.com> and login using the user ID and password obtained from Data Command.

25. Once you have logged in click on the "Your Information Display" link.

26. Click on "Devices" located in the left hand side of the Information Display page.

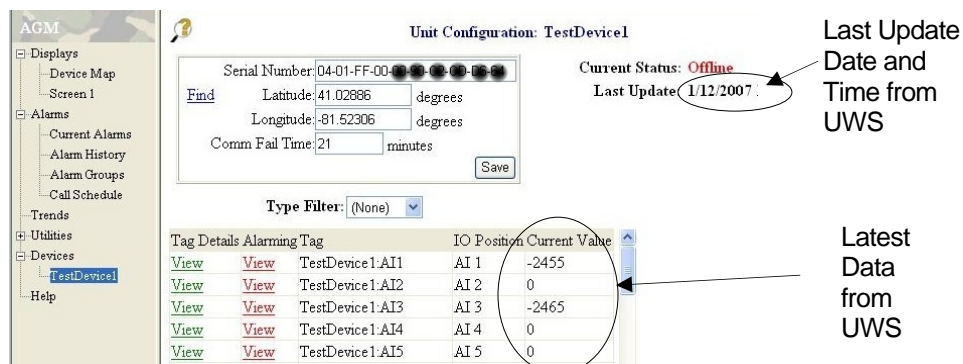
Data-Command Setup

27. Enter a name for the new device in the Caption box and the Data-Command Serial Number obtained from the default main page of the UWS in the DL Serial box. The Data-Command S# on the UWS default page and the DL Serial must match exactly.



Data-Command Serial Number, UWS Default Web Page & Data Command Unit Configuration Page

28. Click on the Add button to create a new Data-Command device for your Information Display.
29. Whether you are adding a new UWS to the Data-Command system or replacing a UWS you will need to inform Data-Command that you have added a device. Data-Command may require the Data-Command Serial Number from the UWS you just added.
30. To test the UWS you just added expand the Devices list on the left hand side of the Information Display screen. When expanded you should see the newly added device. If you don't see the newly added device then refresh your browser screen.
31. Click on the newly added device. That will bring up the Unit Configuration page. This page shows the status of the communications from the Data-Command perspective. On the upper right you will find the Current Status and below the Current Status the date and time of the last communication the UWS made with the Data-Command site. The current values are also available in the list box located on the same page.

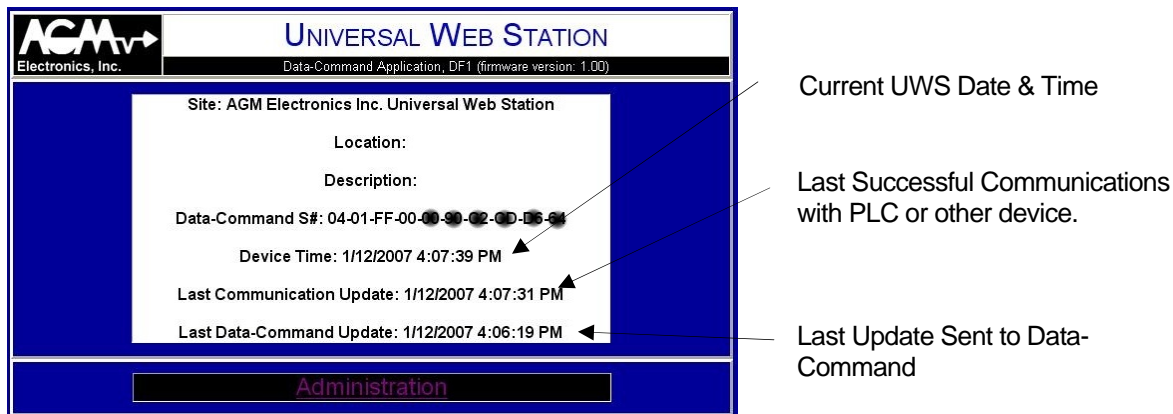
**Data Command Unit Configuration Page.**

Data-Command Setup

NOTE: The default update interval for the UWS to send data to Data-Command is 60 seconds or 15 seconds if RBE has been enabled and a change is detected. On initial setup you may need to wait for 1 to 2 minutes before the data on the Data-Command page is updated.

32. To check on communications between the UWS and the connected PLC go to the UWS Default web page. This page contains time stamps of the serial communications and Data-Command communications activity. The first time stamp is the current date and time from the internal clock on the UWS. The second time stamp is the last time the UWS has successfully communicated with any remote device. The third time stamp is the last time the UWS has made a connection with the Data-Command web site. See the illustration below for locations of these time stamps.

It is possible for the UWS to show that it is updating the Data-Command web site successfully but the Data-Command shows that it has not been updated. If you have just added or replaced a UWS and have not notified Data-Command you will not see an update until Data-Command has fully registered your new UWS.



UWS Default Web Page

33. Once you have verified communications you are ready to use your UWS. See your Data-Command documentation or help files for information on using your Data-Command web site.

Software Configuration

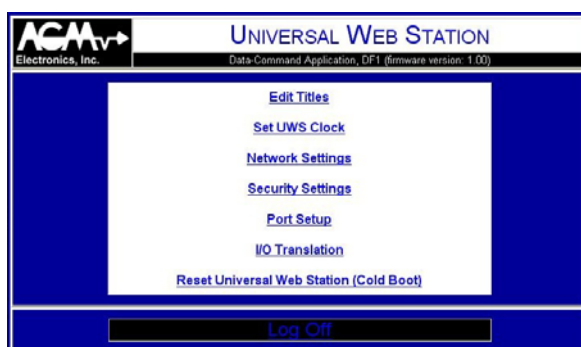
Software Configuration

To configure or modify the UWS settings you must first go to the Administration page from there select the menu option for the settings you wish to configure.

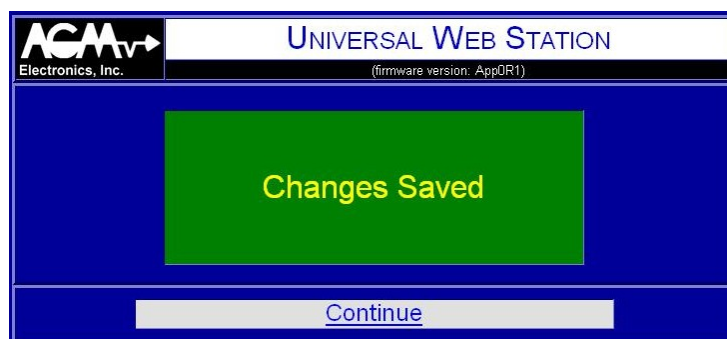
After selecting the menu options, make your changes then click on the Save button to save. Clicking on the Administration link at the bottom of each page will return you to the Administration page without modifying any settings.

With the exception of the Network settings you will be returned to the Administration page after the settings are saved. A Saved confirmation page will be displayed after each click of the Save button to show the changes have been successfully saved to non-volatile memory.

The contents of the Administration page will vary depending on the firmware installed in the UWS.



Administration Page



Saved Confirmation Page

Software Configuration

Edit Titles

Clicking on the Edit Titles link on the Administration Page will bring up the UWS Title Setup page. From this page you can define the Site, Location and Description that will appear on the Default Home page.

NOTE: The Site name is also used for the title for all internal web pages. Custom web pages that you design will have the title you specify.

Each entry in the UWS Title Setup page may be up to 64 characters long.

AGM Electronics, Inc. UNIVERSAL WEB STATION (firmware version: App0R1)

UWS Title Setup

Site Name: AGM Electronics Inc. Universal Web Station

Location:

Description:

Save Reset

[Administration](#)

UWS Title Setup Page

Set UWS Clock

Clicking on the Set UWS Clock link on the Administration page will bring up the UWS Time Setup page. From this page you can set the time and date in the UWS real time clock and define how the date and time will be displayed.

Regardless of the setting of the Time Display Format the Current Time must be entered as mm/dd/yyyy hh:mm or Month/Date/4 digit year Hour:Minute.

The drop down list will show all formats for displaying the date and time. The format selected here will affect the display of the date and time in all areas of the UWS including custom web pages.

AGM Electronics, Inc. UNIVERSAL WEB STATION (firmware version: App0R1)

UWS Time Setup

Current Time: 1/01/1980 0:51 (mm/dd/yyyy hh:mm)

Time Display Format: Month/Date/Year Hour:Minute

Save Reset

[Administration](#)

UWS Time Setup Page

Software Configuration

Network Settings

Clicking on the Network Settings link on the Administration page will bring up the UWS Network Setup page. From this page you can set the IP address and subnet mask for the UWS. You may also set the port numbers used for the HTTP server, Telnet Servers and FTP server functions of the UWS.

UWS Network Setup

IP Address: 192.168.0.251

Netmask: 255.255.255.0

MAC Address: 0090.C2C3.F6E3

Gateway IP: 192.168.0.1

Domain Name Server #1 (DNS): 198.77.116.8

Domain Name Server #2 (DNS): 0.0.0.0

HTTP Port: 80

FTP Port: 21

Telnet Port (To Port A): 0

Telnet Port (To Port B): 0

Telnet Port (To Port 4): 23

Telnet Activity Time Out: 120 Seconds.

Save Reset

Administration

UWS Network Setup

IP Address: 192.168.0.251

Netmask: 255.255.255.0

MAC Address: 0090.C2CD.D664

Gateway IP: 192.168.0.1

Domain Name Server #1 (DNS): 198.77.116.8

Domain Name Server #2 (DNS): 0.0.0.0

HTTP Port: 80

FTP Port: 21

FTP Activity Time Out: 300 Seconds.

Save Reset

Administration

Network Settings Page

The IP Address and Netmask must be set to values acceptable to your network. Consult with your network administrator for values for these two settings. For most local networks that are not connected to the Internet the first 3 digits of the IP Address will match the IP address set on other computers on the network. The 4th set of digits will be a unique number that is not duplicated on the network. The Netmask will typically be 255.255.255.0 for most small networks. This setting must match the other computers on the network.

If used on the Internet you have two options:

1. If connected directly to the Internet you must use the IP address and Netmask assigned by your Internet Provider. Enter these values where provided.
2. If connected through a firewall, gateway, or other device that translates IP addresses. Set the IP address to be compatible with the local network. Set up your firewall or gateway to pass HTML request to the UWS. The UWS allows you to set the port addresses of to accommodate firewalls. Setting up the UWS for this type of installation is beyond the scope of this manual. Consult your firewall or gateway documentation for instructions on setup up HTTP and other servers to be accessible from the Internet.

In both cases you will need an IP address, assigned by your Internet provider. The difference between the two options above is that with the second option the Internet IP address will be shared by all devices on the local network.

Software Configuration

The MAC (Media Access Control) Address is for informational purposes only. Depending on the configuration of your network, your network administrator may need this address.

Gateway IP is the IP address of the Router or Firewall that connects your network to the Internet or between one subnet and another. If access beyond the local network is not required set the Gateway IP to the same value as the UWS IP address.

Gateway IP, Domain Name Server #1 and #2 are required when the Messaging feature of the UWS is used. Your Internet Service provider, Network Administration can supply you with the correct IP addresses to use.

The HTTP Port and FTP Port TCP port numbers used by the HTTP and FTP server functions. When shipped the HTTP Port is set for 80 and FTP Port is set for 21. These port numbers are the standard port numbers recognized by most software. If used with a firewall you may need to change these port settings. Enter 0 to disable a feature.

Telnet allows a remote computer over an Ethernet connection to connect directly with one of the 3 serial communications ports on the UWS. Some firmware allows up to 3 Telnet Ports to be specified. The standard Telnet port is 23 and the default UWS configuration directs any Telnet connections to serial Port 4.

To direct Telnet connections to Port A or Port B, enter 23 for the desired serial port for either Port A or B then enter 0 for Port 4 to disable the port.

To access more than one serial communications port use the standard TCP port number of 23 for one communications port and a non-standard TCP port number for the remaining serial communications ports. HTTP, FTP, and the Telnet Ports must have a unique number between 1 and 65534. Enter 0 to disable.

Telnet Activity Timeout is the time in seconds the UWS will maintain a Telnet connection without any activity. When you make a Telnet connection to a port the normal protocol processing will stop for the duration of the connection. The UWS will break the connection and resume normal operation connection when the timeout specified here has elapsed without any activity on the Telnet connection.

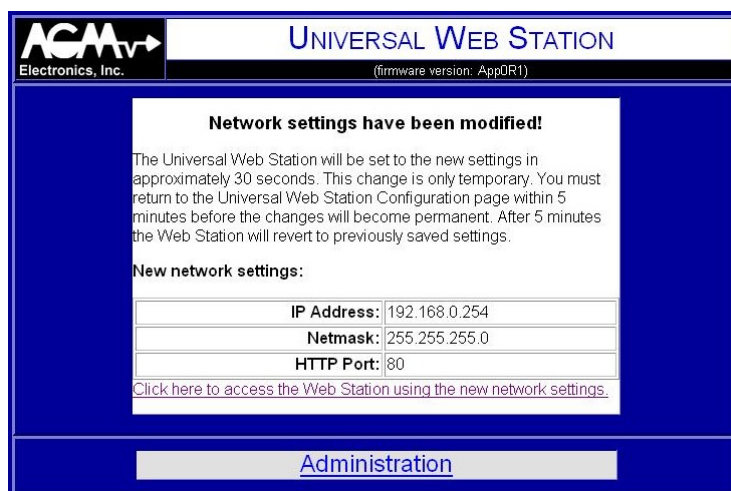
IMPORTANT: Unlike the other administration pages, Network Settings will not be immediately saved when you click on the Save button.

After changing the IP, NetMask or HTTP Port you will have 5 minutes to return to the Administration page before the changes are saved. After 5 minutes the Network Settings will revert to their previous settings. This is a failsafe delay designed to prevent setting an unreachable network configuration.

If you will be unable to return to the Web Station Configuration page within 5 minutes, turn off the power to the UWS until you can access the Web Station Configuration page. The 5 minute timer will reset when you apply power.

Should you make a mistake in setting up the Network Configuration, wait 5 minutes with the UWS powered up then try again.

Software Configuration



Network Changed Page

NOTE: The link on the Network Change Confirmation Page will not work in some cases. If accessing the UWS through a Firewall, Bridge, or other device that translates IP addresses the new address you entered will probably not be the address you need to contact the UWS. You will not be able to contact the UWS until the Firewall or other device is set up with the new address and you will need to use the IP address of the firewall and not the UWS.

Software Configuration

Security Settings

Clicking on the Security Settings link on the Administration page will bring up the UWS Security Setup page. From this page you change the administrator's password and set up additional users. The Admin user is fixed and is always available.

If additional security is required, the UWS must be operated behind a Firewall or Gateway that provides the additional security.

Unless the UWS is installed on a secure network, we recommend you change the Admin password.

The User ID's and Passwords may be up to 30 characters long. User ID's are not case sensitive. Passwords are case sensitive so watch your Caps Lock key when entering passwords.

For some firmware versions the User ID and Password are used for all functions. For the standard application User ID and Password are assigned to specific functions.

"Default User Name and Password" sets the password of the fixed "Admin" User ID. This password may be used for any function within the UWS.

User ID and Password under "Administration" heading is used for configuring the UWS through the web browser and for FTP access.

User ID and Password under "PPP (Serial) Connections" is used with the PPP protocol only, no other access is granted.

User ID and Password under "Telnet" is used for a Telnet connection only, no other access is granted. The 3 check boxes below the User Name and ID specified which serial ports will require the User ID and Password to be provided. If unchecked then an incoming Telnet connection will be automatically routed to the serial port without any interaction by the UWS.

UWS Security Setup

User ID: Admin Password: password

Default User Name and Password

Administration

PPP (Serial) Connections

Telnet

Use password for Port A: ☒

Use password for Port B: ☒

Use password for Port 4: ☒

Save Reset

Administration

UWS Security Setup

User ID: Admin Password: password

Default User Name and Password

Administration

Telnet

Use password for Port A: ☐

Use password for Port B: ☐

Use password for Port 4: ☐

Save Reset

Administration

Security Settings Page (All User ID and Password are Administrators)

Software Configuration

Messaging Setup

The general purpose firmware version of the UWS have the ability to send E-Mail messages on a periodic interval or on the change of state of up to 6 selected variables. To use this feature you must have access to a SMTP server. A SMTP server is the common E-Mail server used by most Internet providers for sending E-Mail messages. A local Intranet may also have a SMTP server set up as part of a local mail system. You will need to consult with your Internet provider or Systems Administrator for some of the settings required by the UWS.

To use the E-Mail messaging system of the UWS you will need to go to the UWS Message Setup page and provide the following information:

1. "To:" address. Enter the E-Mail address of the recipient for your message. You may send messages to standard E-Mail mailbox, list server or web enabled cell phone. Format is: name@domain.com.

Examples:

somebody@hotmail.com,
8005551212@messaging.sprintpcs.com (Cell phone message.)

2. "From:" address. Enter a valid E-Mail address where you would like error messages from the recipients mail service to be sent.

When a E-Mail message is sent only some error messages are reported immediately by the SMTP server. Other error messages such as a unknown address are reported back to the "From" address.

You may enter the same address for both "To" and "From". Be aware however that some anti-SPAM software may block messages with identical "To" and "From" addresses.

3. "Subject". Enter any text up to 63 characters long. Text entered here will appear on the subject header of the E-Mail message.
4. "Message Variable" is the name or number of the UWS internal variable that will be sent using the default message. Variables may be assigned a name using the "Select Variables to Display" menu option.
5. "Retry Count" is the number of times a message will be attempted to be sent when an error is detected sending the message.
6. "Retry Delay" sets how long the UWS should wait before attempting to resend the message after an error is detected sending the message.

NOTE: The UWS will only retry when it detect a failure sending. The UWS can not detect if the message reached its destination. Full mailbox or unknown addresses can not be detected by the UWS. These types of problems are reported to the senders E-Mail "From" address.

Software Configuration

7. "SMTP Server" is the name of the SMTP server on the network. Consult with your Internet Server Provider or network administrator for the SMTP Server name or IP address. Use the SMTP server from the provider supplying the Internet connection to the UWS. In an effort to control SPAM, many providers will block access to clients that do not originate on the providers network.
8. Leave the "SMTP Domain" box empty unless your SMTP server requires a specific IP address or domain name for the "HELO" command processed by the SMTP server. Unless a entry is made in this box the UWS will respond with it's own IP address for the "HELO" command which most SMTP servers will accept. Check the messaging log after an connection attempt has been made. If the connection is rejected after the "HELO" command consult with your Internet Service Provider for the correct SMTP Domain address.
9. "SMTP TCP Port" is the TCP port used by the remote SMTP mail server. The standard TCP port is 25 but may be different on some mail systems.
10. "Message Interval" indicates how often in minutes an E-Mail message will be sent by the UWS. If you do not want to periodically send a message set to 0. The UWS will still send messages due to alarm conditions described below.

NOTE: Due to the latency of Internet E-Mail you may not receive the E-Mail messages immediately after the UWS sends the message. Delays within the SMTP server as well as the server that receives and holds the E-Mail messages will have an impact on when you receive the message. This delay can vary from within seconds to several minutes. It is possible for a message to not be received even after several hours if one of the servers is not functioning.

When using either the default E-Mail message or when generating a message on alarm condition a "Message Variable" must be specified. Enter the UWS number of the variable defined on the Translation Setup page in which you wish to monitor for alarm conditions.

11. "Next Update" shows the time of day when the next periodic message is due to be sent. Enter the time of day when you want the UWS to start sending messages. Messages will then be synchronized to the time entered.
12. "Message Variable" sets the UWS internal variable used to initiate a message based on an event. Variables may be assigned a name using the "Select Variables to Display" menu option. Up to 6 event variables or events may be specified.

Software Configuration

13. The “Send Message When” drop down list selects the alarm condition that will initiate a message. The variable used for initiating a message is defined in the “Trip Variable” described above. The following options are available:

“(Select Trip Condition)”

Indicates the event has been disabled.

“Trip Variable NOT EQUAL to 0”

E-Mail message will be sent when the specified “Trip Variable” has changed from a zero to a non-zero value. .

“Trip Variable EQUAL to 0”

E-Mail message will be sent when the specified “Trip Variable” has changed from a non-zero to a zero value. .

“Trip Variable has changed”

E-Mail message will be sent when the specified “Trip Variable” has changed.

“Trip Variable GREATER THAN Trip Value”

E-Mail message will be sent when the specified “Trip Variable” is greater than the value entered for “Trip Value”.

This selection uses both “Trip Value” and “Dead Band” to determine when to send an E-Mail message. One E-Mail message will be sent when the value of the “Trip Variable” has increased to a value greater than the value specified for “Trip Value”. The UWS will not send an additional E-Mail message until the value of the “Trip Variable” has decreased below the “Trip Value” minus the “Dead Band”.

“Trip Variable LESS THAN Trip Value”

E-Mail message will be sent when the specified “Trip Variable” is less than the value entered for “Trip Value”.

This selection uses both “Trip Value” and “Dead Band” to determine when to send a E-Mail message. One E-Mail message will be sent when the value of the “Trip Variable” has decreased to a value less than the value specified for “Trip Value”. The UWS will not send an additional E-Mail message until the value of the “Trip Variable” has increased above the “Trip Value” plus the “Dead Band”.

“Message Variable has Changed by Dead Band”

E-Mail message will be sent when the specified “Trip Variable” has increased or decreased by the value specified by “Dead Band”.

Software Configuration

14. When either of the Greater Than or Less Than message options is selected the value entered for “Trip Point” will be the trip point for sending out the message.
15. When used with the Greater Than or Less Than message options the value entered for “Dead Band” will be used with the value entered for “Trip Point” to determine when the alarm condition will reset. When used with the Changed menu option the “Dead Band” value will determine by how much a variable must change before sending a message.
16. The Messaging Setup page has a “Test” button. The “Test” button is used to send a E-Mail message manually. When clicked it will first save all you settings then initiate a message. After the message is started, a “Message Sent” page will be displayed to allow monitoring of the SMTP transfer.

See E-Mail Messaging section for more information about E-Mail messaging.

The screenshot shows the 'UWS Messaging Setup' page within the 'UNIVERSAL WEB STATION' interface. The page is divided into several sections for configuring email messaging. At the top, the 'ACME Electronics, Inc.' logo and 'firmware version: App0R1' are visible. The main configuration area includes fields for 'To:', 'From:', 'Subject:', and 'Message Variable:'. Below these are 'Retry Count:' (set to 0) and 'Retry Delay:' (set to 0 minutes). The 'SMTP Server Settings' section includes 'SMTP Server:', 'SMTP Domain:', and 'SMTP TCP Port:' (set to 25). The 'Periodic Messaging' section has 'Message Interval:' (0 minutes) and 'Next Update:' (1:00 hh:mm). The 'Messaging Event #1' section includes 'Trip Variable:', 'Send Message When:' (a dropdown menu set to '(Select Trip Condition)'), 'Trip Value:' (0.000000), and 'Dead Band:' (0.000000).

Messaging Setup Page

The screenshot shows the 'Sending Message' page within the 'UNIVERSAL WEB STATION' interface. The page features a large green box with the text 'Sending Message' in yellow. Below this, there is a 'UWS Messaging Log' section with a table showing the status of the message. The table has columns for 'Started at:' and 'In Progress...'. The 'Started at:' column shows the date and time '4/04/2003 16:44:50'. The 'In Progress...' column shows a 'Refresh' button.

Sending Messaging Test Page

Software Configuration

Communications Settings

Clicking on the Communications Settings link on the Administration page will bring up the UWS Ports Setup page. The contents of this page will vary depending on the firmware variation installed in the UWS.

For firmware versions that support potentially incompatible protocols, the Reset Communications Settings button at the top of the screen is used to reset all communications settings back to factory defaults. This includes the communications port on this page as well as the Translation Settings and Names used for WEB pages. It does not include Title, Clock Network or Security settings. For messaging only the settings used for Automatic Messaging are reset. Before the reset will be completed you must first click on the Reset Communications Settings button and the Yes button on the confirmation page.

On the UWS Ports Setup page you will select which protocol will be used with each of the 4 possible communications ports and other port settings such as the baud rate used by the serial ports.

Each port is designated by one of the following letters:

- A RS232 serial port. Marked A on header overlay.
- B RS232 serial port. Marked B on header overlay.
- 4 485 serial port. Marked 4 on header overlay. RS485 connections are next to the power connection.
- T TCP/IP port or Ethernet port.

“Protocol” is a drop down list indicating all possible protocols for the specified port. Not all protocols may be available on all ports. Available protocols are:

- Not Used
- PPP (Server)
- ASCII ModBus Slave
- ASCII ModBus Master
- RTU ModBus Slave
- RTU ModBus Master
- DF1 Half-Duplex CRC (Slave).
- DF1 Half-Duplex BCC (Slave)
- DF1 Half-Duplex CRC (SLC500 Master)
- DF1 Half-Duplex BCC (SLC500 Master)
- DF1 Half-Duplex CRC (PLC-5 Master)
- DF1 Half-Duplex BCC (PLC-5 Master)
- SPM 9000 (Slave)
- SPM 9000 (Master)
- ICS (Master)
- ASCII Printer
- Route (Source)
- Route (Destination)

Software Configuration

NOTE 1: Changing between some protocols will reset the Translation Setting for that port. Translation settings are reset when you switch between two unrelated protocols. Switching between DF1 and ModBus protocols will reset the Translation Settings. Switching between ASCII and RTU ModBus will not.

NOTE 2: DF1 Half-Duplex protocols have different application layer commands for accessing the PLC's registers. These commands are different between the SLC500 and PLC-5 versions of AB PLC's. The DF1 slave protocol will process either register command. The master DF1 protocol requires the type, SLC500 or PLC-5 protocol to be selected.

NOTE 3: "Route (Source)" and "Route (Destination)" are special settings that allow the routing of AGM protocols.

When "Route (Source)" is selected for one of the serial ports and "Route (Destination)" is set for Port T, any received messages starting with a \$ followed by the specified address will be sent to the Port T. All replies on Port T will be sent to the serial port.

When "Route (Destination)" is set for the serial ports and "Route (Source)" is set for Port T. All messages received from Port T will be sent to the serial port and any messages received from the serial port will be sent to Port T. No \$ addressing is required.

"Baud Rate" is a drop down list on Ports A, B, and 4, indicating all communications data rates supported by the UWS. Supported data rates are: 300, 1200, 9600, 19200.

"Bit Format" is the data format used by the serial port. The first digit in the drop down list is the data bits, followed by the parity then the stop bits. Most protocols use 8 data bits, no parity, and one stop bit. The bit format must match the bit format used by the connected device.

"Half-Duplex RTS On Time" and "Half-Duplex RTS Off Time" set the time in milliseconds the RTS line will remain active before any characters are transmitted and how long the RTS line will remain active after the last character is transmitted. Unless you are connecting through a half-duplex device such as a radio that requires this type of RTS control, leave both settings to -1. The RTS control used by these settings is not the same as RTS/CTS flow control.

When used with a slave protocols, "Common Address" specifies the device ID or address the UWS will respond to. You should always enter a valid address in this field when the UWS is using a slave protocol.

When used with a master protocol "Common Address" can be used to enter a common Device ID or address for contacting one PLC. If the UWS will be interfacing with more than one PLC on the selected port you must enter -1 here and the Device ID or Address for each variable to be translated on the Translation Setup page. If only connecting to one PLC on the selected port, you may enter the address here and you will not need to enter the Device ID on the Translation Setup page.

Software Configuration

When used with TCP/IP ModBus protocols, the “Common Address” is not typically used. In the TCP/IP variation of the ModBus protocol the device address is optional and may be ignored by some implementations.

“Update Interval” is only used for Master protocols. It defines how often the UWS will poll the remote PLC. You can leave this setting to 0 and the UWS will continuously poll the PLC. If however you are connecting to a remote PLC over a phone line or radio you may not want to communicate continuously. In that case enter how often in seconds you wish the UWS to communicate.

“Update Interval” only effects polling done by the UWS. When the UWS needs to write to a remote PLC the write will happen as soon as the UWS can make the update. Unless other writes are pending this will be when the UWS completes its current read or write cycle.

The “Communications Fail Interval” is used to override the default setting the UWS uses for determining when communications has failed. It is used by master protocols only. Setting to 0.0 will use the default times of 1 to 2 seconds depending on the protocol. You should change this setting only when your device is slow to respond, or after your system is up and running to reduce throughput should a connected device has failed. Changing this setting will have no effect on throughput when all devices are communicating, only when one has failed. It will also have no effect if only one device is connected.

Some protocols of the UWS have the ability to request a single variable or block of variables when communicating. Checking the “Turbo Mode” checkbox enables the block reading of variables. This may improve your throughput however not all PLC’s can handle the long block reads. When using this mode the UWS will attempt to read unused registers as well as those required for translation. This can cause some devices to report an error in place of the requested data.

The T port contains an entry for a “TCP Port” number this port number is TCP port the UWS will listen on for a connection from a remote Ethernet device. For ModBus the standard port is port 502, however any valid TCP port number may be used to allow operation through a firewall.

The “Pass Through Mode” check box enables the UWS to pass communications transparently through the UWS. This gives the UWS the ability not only to translate communications but to perform as a RS232 to RS485 converter as well. This feature will also allow the UWS to be installed between two RS232 devices simplifying some installations. This option is only available for the slave or “Not Used” protocols. At least 2 of the 3 serial communications ports must have this check box checked. No filtering is done on the communications. All data received by one of the selected port will be transmitted to the other selected communications ports. The UWS will still monitor and respond to communications commands that match the address of the UWS. See Appendix K for more information.

Port A and B contain additional settings that are used for the PPP protocol only.

“PPP IP Address” is the IP address that the UWS will use once the PPP connection has been established.

Software Configuration

“Connected to Modem” checkbox indicates the UWS is connected to a modem and “Modem Initialization” must be sent to the modem and the “Connect Message” must be received before attempting a PPP connection.

“Monitor DCD” and “Monitor DRS” checkboxes are used by the UWS to determine when to initialize the PPP connection and when to close a PPP connection.

For most applications the RS232 Data Carrier Detect line may be used to detect the presence of either a Modem or Null-Modem cable. Check this box only if you will be using a direct connection via a Null-Modem cable or if the Modem can be set up to automatically answer and make a connection without any intervention by the connected device. For these types of modems the modem will connect automatically and indicate the successful connection via the RS232 DCD line. When the UWS detects the DCD line, the UWS will initialize the PPP connection.

For some cases such as a modem that requires initialization you will need to monitor the RS-232 DSR line and not the DCD line. For these types of connections the DSR line is monitored by the UWS to determine when the modem becomes active. The UWS then sends the text specified by “Modem Initialization” and then waits until the text specified by the “Connect Message” is received before initializing the PPP connection.

“Modem Initialization” and “Hang Up Command” set the text messages used by the UWS to either initialize the modem or to hang up the modem. “Connect Message” is the text message the UWS will use to determine when the modem has made a connection.

Software Configuration

AGM
Electronics, Inc.

UNIVERSAL WEB STATION
(firmware version: App0RS)

UWS Port Setup

Reset Communications Settings

Port A (RS232)

Protocol: PPP (Server)
WARNING: Changing protocol may reset Translation tables for Port A.

Baud Rate: 9600

Bit Format: 8, None, 1 Stop

Half-Duplex RTS On Time: -1 Milliseconds. Enter -1 to disable.

Half-Duplex RTS Off Time: -1 Milliseconds.

Common Address: 1

Update Interval: 0.0 Seconds.

Communications Fail Interval: 0 Seconds

Turbo Mode: ☐

Pass Through Mode: ☐ Slave Protocols Only.

PPP IP Address: 192.168.250.1

Connected to Modem: ☐ (PPP Protocol Only)

Monitor DCD: ☒ (PPP Protocol Only)

Monitor DSR: ☐ (PPP Protocol Only)

Port 4 (RS485)

Protocol: DF1 Half-Duplex BCC (Slave)
WARNING: Changing protocol may reset Translation tables for Port 4.

Baud Rate: 9600

Bit Format: 8, None, 1 Stop

Half-Duplex RTS On Time: -1 Milliseconds. Enter -1 to disable.

Half-Duplex RTS Off Time: -1 Milliseconds.

Common Address: 4

Update Interval: 0.0 Seconds.

Communications Fail Interval: 0 Milliseconds

Turbo Mode: ☐

Pass Through Mode: ☒ Slave Protocols Only.

Port T (TCP/IP)

Protocol: Not Used
WARNING: Changing protocol may reset Translation tables for Port T.

Port Number: 502

Common Protocol Address: -1

Update Interval: 0.0 Seconds.

Communications Fail Interval: 0 Milliseconds

Turbo Mode: ☐

Modem Settings (PPP Protocols)

Modem Initialization: ATSD=1

Hang Up Command: ATH0

Connect Message: CONNECT

Save Reset

AGM
Electronics, Inc.

UNIVERSAL WEB STATION
Date-Command Application, DF1 (firmware version: 1.00)

UWS Port Setup

Port A (RS232)

Protocol: DF1 Half-Duplex CRC (SLC500 Master)

Baud Rate: 9600

DF1 Node: 1

Update Interval: 0.0 Seconds.

Communications Fail Interval: 0.0 Seconds

Port B (RS232)

Protocol: Not Used

Baud Rate: 9600

DF1 Node: -1

Update Interval: 0.0 Seconds.

Communications Fail Interval: 0.0 Seconds

Port 4 (RS485)

Protocol: Not Used

Baud Rate: 9600

DF1 Node: -1

Update Interval: 0.0 Seconds.

Communications Fail Interval: 0.0 Seconds

Save Reset

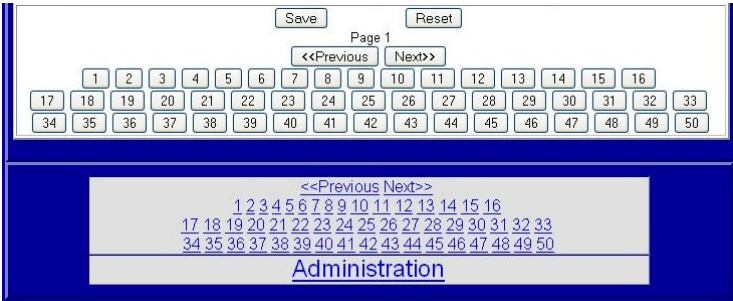
UWS Communications Port Setup

Software Configuration

Multi-Page Navigation

While most configuration settings are a single page. The Translation Setup and Select Variables to Display configuration is spread over 50 pages. Each page accommodates 20 register definitions for a total of 1000 registers.

At the bottom of the configurations pages are additional buttons and links. The buttons under the “Save” button are used for saving the current configuration and advancing to one of the other pages. The links at the bottom of the page above the “Administration” link are used to select a page without saving.



UWS Navigation Buttons and Links

Save Button	Saves the current settings and returns to the Administration Home page.
Reset Button	Resets all settings to saved values.
Previous Button	Saves the current settings and goes to the previous page. If already on page 1 then page 1 will be displayed again.
Next Button	Saves the current settings and advances to the next page. If the last page is already displayed then the last page will be selected again.
Numeric Buttons	Saves the current setting and goes to the selected page.
Previous Link	Displays the previous page without saving any settings.
Next Link	Displays the next page without saving any settings.
Numeric Links	Displays the selected page without saving any settings.
Administration Link	Displays the Administration Home Page without saving any settings.

Software Configuration

Translation Setup

This section contains settings for the general purpose UWS only. For the Data-Command version see the Data-Command I/O Translation section.

Translation Setup page is the key to setting up the UWS for use as a data translator or as a router. With this page you will define the following elements required for translation.

1. Register Number of each variable to be translated. In all cases the register numbers entered will match the register numbers used by the PLC.

The register number for DF1 protocols is a single letter (B, F, I, N, O, or S) followed by the file number, address, and bit number depending on the register number used.

The register numbers for ModBus will be number starting with either a 0, 1, 3, or 4. Where 0 is coils, 1 discrete inputs, 3 word inputs, and 4 holding registers. For ModBus 1 discrete inputs and 3 word inputs read only.

Register number for a AGM Electronics Inc. ICS are the wiring numbers. These are the number supplied with your ICS documentation. Typical register numbers are W600, W601, W700, etc.

Register numbers for a SPM 9000 are the variable numbers. These numbers are supplied with your Data Handler documentation.

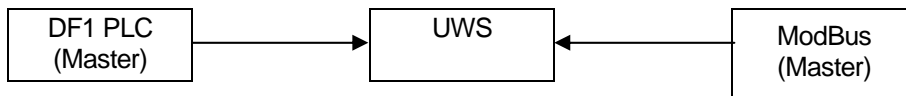
When the UWS is used for routing from a serial port to Port T, register numbers will not be used only the device ID or address. When the UWS is set to route from Port T to a serial port no additional settings are required. When routing the AGM protocols used by the SPM9000 and ICS are encapsulated in a TCP/IP packet and are not processed or modified.

2. Which port that will be considered the source. The source port is very important when using any of the Master protocols. The register selected as the source will be source of the data. When used with a Master protocol the source selects which registers the UWS will read from the remote PLC. Registers not selected as the source are assumed to be destinations and will be written by the Master protocols.

When using Slave protocols, the slave may read and write any register. When a register has been designated as a source on a slave protocol, and a Master protocol is running on the other port, the Master protocol will write the updated data to the remote PLC on it's port when the PLC writes to the port running the slave protocol.

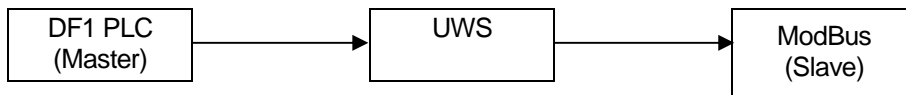
Software Configuration

Examples



- Configuration 1.** Both PLC's connected to the UWS are Masters on their respective networks. Transfer of data is controlled by the PLC. The role of the UWS is just a depository of data written by either PLC.

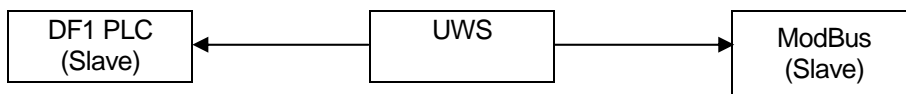
. Software Configuration



- Configuration 2.** One PLC connected to the UWS is a Master the other PLC is a slave. The UWS is setup to be a Slave to the Master PLC and a Master to the Slave PLC. The UWS will perform 2 roles. First the UWS will poll the Slave PLC for data to fill it's internal register table for the Master PLC to read.

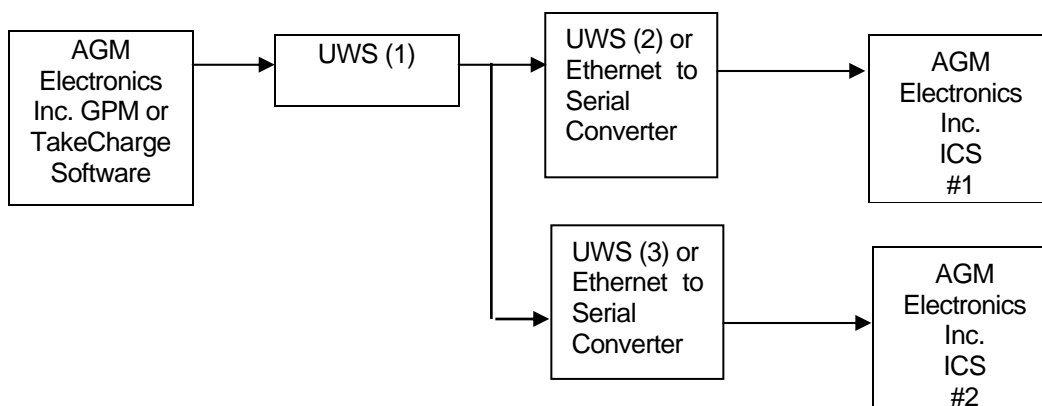
Secondly when the Master writes a register the UWS will translate and write the data to the Slave PLC.

The Source designation indicates to the UWS which registers are supplied by the Slave and must be read and which registers must be written to the Slave when written by the Master.



- Configuration 3.** Both PLC's are connected to the UWS are slaves the the UWS. The UWS is setup to be a Master to both PLC's. In this configuration the UWS will control all transfers of data. The Source designation indicates which PLC is supplying the data and needs to be read and which PLC needs to be updated.

Software Configuration



Configuration 4. The UWS is set up as a router to route commands from a AGM Electronics GPM or AGM Electronics Inc. TakeCharge Software to 2 or more ICS's connected via Ethernet. UWS (1) is set up with the "Route (Source)" for the serial port and Port T at the "Route (Destination)". UWS (2) and UWS (3) are set up with the "Route (Source)" as Port T and the serial port as "Route (Destination)".

3. Size of the data to transfer. Generally the type of register is used to determine the size of the data to transfer. However there are cases where special handling is required.
 - Long Integers.
 - Floating Point.
 - Other Multi-byte formats.

ModBus Registers are defined as 16 bit words. This definition presents a problem when working with long (32 bit) integers or floating point numbers which will not fit within a single ModBus register. To accommodate some types of multi-word translations a drop down list box is provided to indicate the size or type of data for the register. We a selection is made other than "Integer (16 bits) consecutive registers will be used to hold the 32 bit value for either long integers or single precision floating point. In addition to the size Floating Point also indicates to the routines serving WEB pages that the value should be displayed in floating point rather than integers.

NOTE 1: Double precision (64 bit) floating point as well as other data formats may be transferred through the UWS, however they will not be available for WEB pages. To use the UWS for multiple word transfers set up the required number of 16 or 32 bit consecutive registers. It will be up to the programming within the PLC's to decode the multiple registers.

Software Configuration

NOTE 2: Although the size drop down list box is displayed for every register, the setting of the list box is not always used.

For both ModBus and DF1 the bit types of data will be broken down to their individual bits.

For DF1 only the Integer “N” registers will use the size settings for defining long integers.

NOTE 3: When used with ModBus 32 bit long integers or floating points values may have either the first register used for the least significant or most significant word. Select “Long (32 bits) LSW 1st” or “Float (32 bits) LSW 1st” if the first register contains the least significant bits. Select “Long (32 bits) MSW 1st” or “Float (32 bits) MSW 1st” if the first register contains the most significant bits.

The first column on the Translation Setup page is the internal number used by the UWS and the remaining 4 columns represent each of the possible 4 ports. Each row within the table represents one register that will be transferred and translated.

Each page of the Translation Setup is limited to 20 variables and there are 50 pages to allow up to 1000 variable translations. The settings within each column will vary depending on the protocol selected. All columns will have a text box for entering the register number and a radio button for selecting the source of the data to translate.

If a Master protocol is used and “Common Address” was set to -1 then an additional text box is displayed. The text box preceded by “Dev:” is where you will enter the Device ID of the PLC that contains the defined data. Typically this will only be used with the RS-485 port or when multiple devices are connected over a radio link.

When used with Ethernet master protocols such as TCP/IP ModBus, the “Port T” column may contain additional text boxes for entering the “IP address” and “TCP Port” number. Standard “TCP Port” setting for TCP/IP ModBus is 502. The “Dev” address is optional for many implementations of TCP/IP ModBus protocol and should be set to 1 if not used.

Software Configuration

ACMv **UNIVERSAL WEB STATION**
Electronics, Inc. (firmware version: 2.01)

UWS Translation Setup

UWS Number	Port A	Port B	Port 4	Port T
	DF1 Half-Duplex CRC (Master)	ASCII ModBus (Slave)	Not Used	Not Used
1	<input type="text" value="0013/00000"/> <input type="button" value="16 bits"/> <input type="radio"/> Source	<input type="text" value="00001"/> <input type="button" value="Integer (16 bits)"/> <input type="radio"/> Source		
2	<input type="text" value="0013/00001"/> <input type="button" value="16 bits"/> <input type="radio"/> Source	<input type="text" value="00002"/> <input type="button" value="Integer (16 bits)"/> <input type="radio"/> Source		
3	<input type="text" value="0013/00002"/> <input type="button" value="16 bits"/> <input type="radio"/> Source	<input type="text" value="00003"/> <input type="button" value="Integer (16 bits)"/> <input type="radio"/> Source		

ACMv **UNIVERSAL WEB STATION**
Electronics, Inc. (firmware version: 2.02)

UWS Translation Setup
Page 1

UWS Number	Port A	Port B	Port 4	Port T
	Route (Source)	Not Used	Not Used	Route (Destination)
1	<input type="text" value="Dev: 1"/> <input type="radio"/> Source			<input type="text" value="IP: 192.168.0.252"/> <input type="text" value="Port: 10001"/>
2	<input type="text" value="Dev: 2"/> <input type="radio"/> Source			<input type="text" value="IP: 192.168.0.253"/> <input type="text" value="Port: 10001"/>
3	<input type="text" value="Dev: 3"/> <input type="radio"/> Source			<input type="text" value="IP: 0.0.0.0"/>

ACMv **UNIVERSAL WEB STATION**
Electronics, Inc. (firmware version: App0R9)

UWS Translation Setup
Page 1

UWS Number	Port A	Port B	Port 4	Port T
	Not Used	Not Used	ASCII ModBus (Slave)	TCP/IP ModBus (Master)
1			<input type="text" value="30001"/> <input type="button" value="Integer (16 bits)"/> <input type="radio"/> Source	<input type="text" value="IP: 192.168.0.254"/> <input type="text" value="TCP Port: 502"/> <input type="text" value="Dev: 1"/> <input type="text" value="Var: 30001"/> <input type="button" value="Integer (16 bits)"/> <input type="radio"/> Source
2			<input type="text" value="30003"/> <input type="button" value="Integer (16 bits)"/> <input type="radio"/> Source	<input type="text" value="IP: 192.168.0.254"/> <input type="text" value="TCP Port: 502"/> <input type="text" value="Dev: 1"/> <input type="text" value="Var: 30003"/> <input type="button" value="Integer (16 bits)"/> <input type="radio"/> Source

UWS Translation Setup Pages

Software Configuration

Data-Command I/O Translation

This section contains settings for the Data-Command version of the UWS.

The I/O Translation Setup page is the key to setting up the UWS to link the registers from a remote PLC to the 16 analog and 32 discrete I/O variables used by Data-Command. With this page you will define the following elements required for translation.

1. Register Number of each variable to be translated. In all cases the register numbers entered will match the register numbers used by the PLC.

The register number for DF1 protocols is a single letter (B, F, I, N, O, or S) followed by the file number, address, and bit number depending on the register number used.

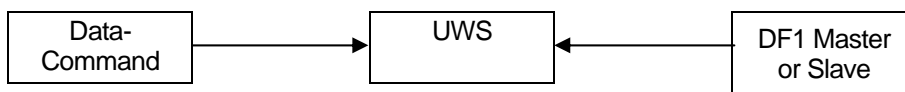
The register numbers for ModBus will be number starting with either a 0, 1, 3, or 4. Where 0 is coils, 1 discrete inputs, 3 word inputs, and 4 holding registers. For ModBus 1 discrete inputs and 3 word inputs read only.

Register number for a AGM Electronics Inc. ICS are the wiring numbers. These are the number supplied with your ICS documentation. Typical register numbers are W600, W601, W700, etc.

Register numbers for a SPM 9000 are the variable numbers. These numbers are supplied with your Data Handler documentation.

2. When using multiple PLC's you will also need the DF1 Node, Device ID, or Device Address and UWS communications port which connects to the PLC.

Examples

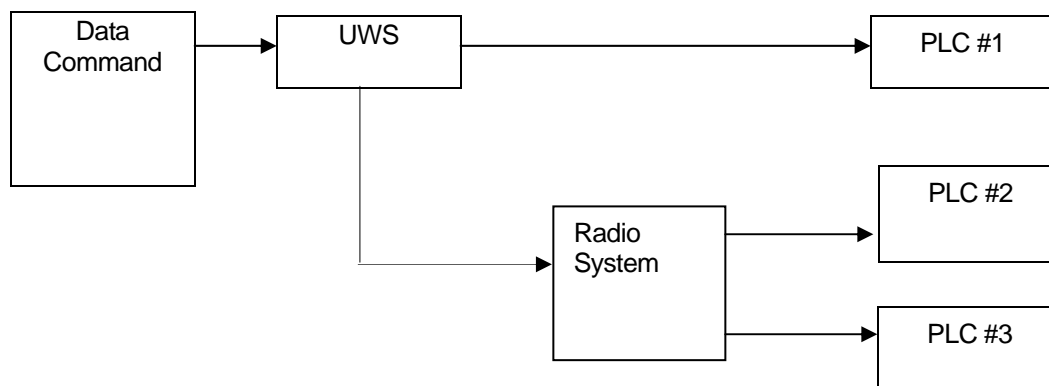


Configuration 1.

A single PLC connected to the UWS. Protocol, Node, Device ID or Device Address and communications port used selected in the Port Settings.

The Source designation indicates to the UWS which registers are supplied by the Slave and must be read and which registers must be written to the Slave when written by the Master.

Software Configuration



Configuration 2. In this example the UWS is set up to collect data from 3 different PLCs. One PLC is directly connected to Port A on the UWS. The other two PLCs are connected to the UWS via a radio system connected to Port B on the UWS. In this example you will need to set up the protocols and baud rates for the two ports in the Port Settings and the DF1 Node, Device ID or Device Address in the I/O Translation section.

3. Size of the data to transfer. Generally the type of register is used to determine the size of the data to transfer. However there are cases where special handling is required.
 - Long Integers.
 - Floating Point.

With the exception of the DF1 “F” registers, registers used by DF1 and ModBus uses 16 bit integers. This definition presents a problem when working with long (32 bit) integers or floating point numbers which will not fit within a single ModBus register. To accommodate some types of multi-word translations a drop down list box is provided to indicate the size or type of data for the register.

Software Configuration

Data-Command displays values as floating point. The conversion from the integer to floating point values will be performed by the UWS.

#	NU	Is Output	DF1 Register	DF1 Node	Comm. Port
1	<input type="checkbox"/>	<input type="checkbox"/>	N007:000 16 bits	1	Port A
2	<input type="checkbox"/>	<input checked="" type="checkbox"/>	N007:001 16 bits	1	Port A
3	<input checked="" type="checkbox"/>	<input type="checkbox"/>	16 bits	1	Port A

UWS Data-Command Translation Setup

The Data-Command I/O Translation page is divided into two sections. The first section is for Analog I/O and the second section is for Discrete I/O.

The first column on the Translation Setup page is the Data-Command variable number.

The second “NU” column indicates if the variable is not used. Uncheck this box to use the variable. If the box in this column is checked then the variable will always be reported as 0 to Data-Command.

The “Is Output” column indicates if Data-Command can write the variable. When checked the UWS will accept a write from the Data-Command web site and the specified register will be written. If unchecked then the Data-Command web site can only read the variable.

The next column contains the register number that will correspond to the Data Command variable. The text entered must be a valid register number for the selected protocol.

The drop down list following the register number indicates the size of the register. Some protocols use a 16 bit integer storing data, however the UWS can pair registers to form a 32 bit register. Select “32 bits” to enable this option. In the case of registers that inherently use a larger data size such as DF1’s “F” registers this list box will have no effect.

The following column is only displayed when the UWS has been set up to access multiple PLC’s and is using a Master protocol. The “DF1 Node”, “Device ID”, or “Device Address” column contains the device address of the PLC which contains the register with the data.

The last column is only displayed when multiple communications ports have been set up. The drop down list indicates the port connected to the PLC with the required register data.

Software Configuration

Select Variables to Display

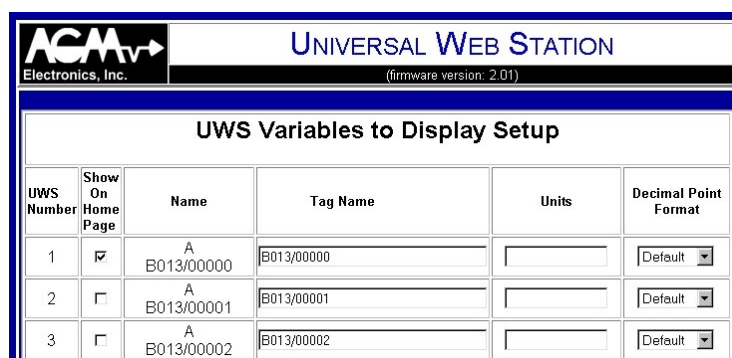
The Select Variables to Display options is only available on the general purpose UWS. The Data-Command firmware version does not contain this option.

Clicking on the Select Variables to Display link on the Administration page will display one of the pages used for defining the names and units of registers displayed on the default WEB page of the UWS. The defined names will also be used as tags when designing custom WEB pages.

The first column on this page is the register number. This number matches the number on the Translation Setup page. The third column is the source register as defined on the Translation Setup page. The top letter represents the port number either A, B, 4 or T. The second line is the register number.

On this page you can set up the following.

1. The check boxes indicate which registers will be displayed on the default WEB page.
2. The Tag Name column is used on the default WEB page and by custom web pages. The default WEB page will display the text entered here before the value of the register. When creating a custom WEB page the text entered here will be the Tag Name. See the Custom Web Pages section for more information.
3. The Units column is used for entering the units. The text entered here will be displayed after the values on the default WEB page as well as custom WEB pages. In the Translation report page
4. The Decimal Point Format column has a drop down list box that will allow you to select the precision of the decimal point when displaying floating point or integer number. When used with integers the integer value will be adjusted by the decimal point. For example the integer 1234 will be displayed as 12.34 when a decimal point of 0.00 is selected. This will allow you to work with Integer registers that assume a fixed decimal point.




UWS Number	Show On Home Page	Name	Tag Name	Units	Decimal Point Format
1	<input checked="" type="checkbox"/>	A B013/00000	B013/00000		Default
2	<input type="checkbox"/>	A B013/00001	B013/00001		Default
3	<input type="checkbox"/>	A B013/00002	B013/00002		Default

UWS Variable to Display Setup page

Software Configuration

Translation Report

The top section of the Translation Report page provides a listing of all registers being translated or used by the UWS. It also provides any Names and Units used for creating WEB pages. The bottom section indicate the communications protocols and settings for each of the four ports.



UNIVERSAL WEB STATION

(firmware version: 2.01)

UWS Translation Report

UWS Number	Source*	Destination(s)*	Tag Name (Units)	Decimal Point
1	A B013/00000	B 00001	B013/00000 ()	
2	A B013/00001	B 00002	B013/00001 ()	
3	A B013/00002	B 00003	B013/00002 ()	
4	A B013/00003	B 00004	B013/00003 ()	
5	A B013/00004	B 00005	B013/00004 ()	

*

Note

Source and destination addresses are prefixed by the port letter.
If multiple devices are connected to the same port then the device address is specified by a "@" following the address.
The following table shows the settings used on each port.

Port	Address	Protocol	Baud Rate
A	1	DF1 Half-Duplex CRC (Master)	19200
B	1	ASCII ModBus (Slave)	9600
4		Not Used	9600
T		Not Used	Port: 502

Administration

UWS Translation Report

Telnet

Telnet

This option is not available on the Data-Command UWS.

You may access a connected device via the Ethernet connection. Follow the following steps to connect and access a connected device using Telnet:

1. Configure your Telnet program to connect to the UWS. Use the IP address and port number you entered in the Network Settings Administration page. Each serial communications port has its own TCP Port number. Use the port number that matches the serial communications port.
2. When connected you may be requested for a user name then a password. Use the user ID and password defined in the Security Settings Administration page.
3. All characters typed on the keyboard will be sent to the connected device. All characters sent from the connected device will be sent to your Telnet program for display.
4. When done, disconnect from the UWS. Depending on the port used, Telnet will suspend normal operation of the communications protocols.

Custom Web Pages

This option is not available on the Data-Command UWS.

Creating a Web Page is optional when using the UWS. The Default Home Page can be used to display all data collected from a connected device. The UWS also supports customized web pages for the users who want a more customized look.

Creating a custom web page requires 3 steps. Creating your web page, downloading your web page to the UWS, and then testing your web page. Creating and downloading your web pages are discussed below.

Creating your Web Page

To create your web page you may use any Web Authoring tool. Designing a web page for the UWS is no different from designing a web page for any other HTML server with the following exceptions:

1. The UWS does not have the speed and throughput of a large server computer. Therefore, there are limitations on the size and number of files used. While the UWS can handle large graphics you will not get the same performance as a faster computer.
2. With the exception of the server side includes (SSI) defined below, custom CGI or other routines are not supported. Java scripts that run on the client may be used.

To access the variables and other information contained within the UWS include the following in your HTML file where the variable information is to be displayed.

```
<!--#echo var="tag name"-->
```

This is the standard syntax for accessing the variables of the UWS. To use copy the text exactly as shown but replace *tag name* with the name you entered while configuring the UWS.

Example:

```
<!--#echo var="Depth (Main) "-->
```

 Will place the Depth measured by the ADFM Flow Meter into your web page. The text displayed will include the formatted value and units.

```
<!--#echo var="*SiteTitle"-->
```

```
<!--#echo var="*SiteLocation"-->
```

```
<!--#echo var="*SiteDescription"-->
```

The above will include the Site information as entered on the Titles Setup page when you configured the UWS.

```
<!--#exec cmd="*Get_RTC"-->
```

The above will include the current UWS time.

Custom Web Pages

```
<!--#exec cmd="*Get_Last_Update"-->
```

The above will include the date and time the UWS received an update from the connected device.

Downloading your Web Page

After you have created your web pages you will need to download them to the UWS using a standard FTP program. Specifics for using the FTP program are not covered in this document due to the variations in programs.

UWS Limitations:

1. Anonymous use is not supported. Before viewing or modifying the files within the UWS you must log on with a User ID and password that has Administration level permissions.

NOTE: While testing the UWS we have found that some versions of Microsoft Internet Explorer will hang up if you attempt to access the UWS by the IP address only. You must use the syntax of admin@192.168.0.251 each and every time you access the web page. Netscape's Internet Browser and other FTP programs do not have this problem.

2. Subdirectories are not supported. This limitation should also be kept in mind when designing your web pages.
3. The maximum file name is 30 characters.
4. Only copying to and from the UWS or deleting a file is supported.
5. Only 14 user files are supported provided the file size does not exceed 64K bytes. If over 64K bytes reduce the number of supported files by 1 for each 64K bytes exceeded.
6. All web pages must have the extension of .htm or .html if they include any of the SSI links described above.

Uploading or Downloading:

All files may be copied either to or from the UWS using your FTP program. Old files may also be deleted.

NOTE: The files ending in ".bin" should not be deleted. These files contain the configuration of the UWS. **DO NOT DELETE!**

Setting the Default Page:

The name of the default UWS web page is Index.htm. When you design your web pages, give this name to your default or home page.

E-Mail Messaging

This option is not available on the Data-Command UWS.

The UWS has the option of sending an E-Mail message on a periodic interval, on an alarm condition, or both.

The message sent may be either a built in message displaying one variable of your choice or a custom message containing as many variables as required.

No action is required, beyond setting up the Messaging, for the default message. To use a custom message create a text file called "Message.eml" and use the same commands described in the Custom Web Pages section. If your E-Mail client supports HTML messages you may even create HTML E-Mail message using a HTML editor. For plain text message, used any text editor such as Windows Notepad. Regardless of how you create your message the message must be downloaded to the UWS with the name "Message.eml".

You may also create custom E-Mail messages for each of the events. For a event specific E-Mail message use "Message1.eml", "Message2.eml", up to "Message6.eml" in place of "Message.eml". "Message1.eml" is the message for event 1 only. "Message.eml" is used for periodic messaging or when the event specific message is not found.

Below are samples of a default message and more information on creating a custom message.

Default E-Mail Message

The default E-Mail message is designed for displaying a single variable only suitable for web enabled phones and any E-Mail client. The variable displayed is selected on the Messaging Setup page.

1. Time the selected variable was last updated.
2. Description of the selected variable as defined on the Variable Definition page.
3. The latest reading from the selected variable.

Example of the default E-Mail message:

```
Time:
04/01/2003 12:00
Description:
Tank Level
Reading:
12.3 Feet
```

E-Mail Messaging

Custom E-Mail Message

If more detail is required beyond the single variable status provided by the Default E-Mail message you may create a custom message. Creating a custom message is the same as creating a custom HTML page with the following exceptions:

1. Using a HTML editor and HTML tags are optional. The command tags used in a custom HTML page are the same for a plain text E-Mail message. Below is an example of a custom message page that provides two variables. The sample is in plain text but could have been created as a HTML page as well.

Dear Joe,

```
At <!--#exec cmd="*Get_Last_Update"--> the water  
In the <!--#echo var="*SiteLocation"--> reached  
<!--#echo var="Depth"-->. It's temperature was  
<!--#echo var="Temperature"-->.
```

Your UWS.

The message created would have looked like the sample below:

Dear Joe,

```
At 04/01/2003 8:00 the water In the tower tank reached 10 Feet.  
It's temperature was 63 Deg F.
```

Your UWS.

2. Only one E-Mail message is supported and the message must be named "Message.eml" whether written in plain text or HTML .

Download this file to the UWS using FTP the same as any custom HTML pages. See the Custom Web Pages section for more details on how to download the file.

E-Mail Messaging

E-Mail Diagnostics

During normal operation a E-Mail message will be sent automatically in response to the periodic interval or variable defined in the Messaging Setup page. This message will be sent in the background without affecting any other features of the UWS. Any errors or problems encountered sending the message will not be displayed as part of the normal operation of the UWS.

When a E-Mail message is sent over the Internet at least three computers are typically involved. The client computer, the SMTP server, and the POP3 Server. The client is the UWS. The SMTP server is provided by your Internet Service Provider to handle outgoing E-Mail. The POP3 server is provided by the recipients Internet Service Provider and is used for holding received E-Mail messages.

To assist in resolving E-Mail problems the UWS provides a log of it's last E-Mail transaction to the SMTP server. This log holds any error messages generated by the dialog between the UWS and SMTP server. It does not contain error messages generated by the recipients POP3 server.

POP3 error messages are sent to the E-Mail address listed in the "From" field of the message. For this reason we recommend you use a real "From" address when configuring your UWS. Under normal conditions you will not receive any E-Mail messages from the POP3 server, however if the recipients E-Mail box fills up or if you make a typo in the "To" field of the Messaging Setup page, the only way to detect the error is through the E-Mail message the POP3 server will send. The UWS can not detect these types of errors.

To troubleshoot problems on the SMTP side of the message go to the Messaging Setup page. Included on the Messaging Setup page are two tools to help you troubleshoot messaging problems.

The "Test" button will force the UWS to send a E-Mail message. After making any changes to the Messaging Setup you should always force an E-Mail transfer to check for errors.

The UWS Messaging Log located under the Message Settings and is from the last E-Mail message. When you click on the "Test" button the "Message Sent" page will also contain this log however it is for the message currently being sent..

If the last entry in the log is "In Progress", then the UWS is currently sending a E-Mail message. Click on "Refresh" link to update the log.

If the only entry is "Log Empty" then the log is empty. In this case no E-Mail messages have been sent since power was cycled on the UWS.

E-Mail Messaging

Below are descriptions of additional log entries:

1. "Messaging Not Configured!". Indicates when the UWS has not been completely configured for sending E-Mail messages. You must provide settings for "To", "From", "Subject", "SMTP Server" and either a custom web page or "Message Variable" before you can send any E-Mail messages.
2. "Started at:". Indicates when the E-Mail message was started.
3. "Sent:.". Indicates text sent to the SMTP server.
4. "Received:". Information received from the SMTP server. Errors from the SMTP server will appear in one of these fields. No data is hidden. It is normal to see strings of characters that may look like garbage. The content is beyond the scope of this documents. The full response is provided in this log to assist your Internet Service Provider in resolving any SMTP server problems.
5. "Socket Closed!", "Socket Timeout!", or "Error Opening Socket!". These three error messages indicate a TCP/IP socket problem. "Error Opening Socket" may be caused by a incorrect SMTP Server name. "Socket Closed" and "Socket Timeout" are caused by an unexpected closing of the socket by the SMTP Server. All three messages indicate problems connecting to the SMTP server, they may be caused by network problems as well as SMTP server problems.
6. "Connected!", "Sending Message!", "Message Written!", and "Connection Closing!" are normal progress indicators and do not indicate a error or problem.
7. "Done!". Indicates the UWS has completed sending the message.



Sample log when no E-Mail messages have been sent.

E-Mail Messaging

UWS Messaging Log	
Started at:	4/04/2003 16:44:50
Connected!	
Received:	220 [redacted]-fe04.[redacted].com ESMTP server (InterMail vK.4.04.00.00 201-232-137 license dcc4e84cb8fe01ca8f8654c982ec8526) ready Fri, 4 Apr 2003 18:45:48 -0500
Sent:	HELO 192.168.0.251
Received:	250 [redacted]-fe04.[redacted].com
Sent:	MAIL FROM: [redacted]<[redacted]@yahoo.com>
In Progress...	Refresh

Sample log. Typical E-Mail message in progress.

Sent:	MAIL FROM: <[redacted]@yahoo.com>
Received:	250 Sender <[redacted]@yahoo.com> Ok
Sent:	RCPT TO: <[redacted]@hotmail.com>
Received:	250 Recipient <[redacted]@hotmail.com> Ok
Sent:	DATA
Received:	354 Ok Send data ending with <CRLF>. <CRLF>
Sent:	From: <[redacted]@yahoo.com> To: <[redacted]@hotmail.com> Subject: Testing UWS
Sending Message!	
Message Written!	
Received:	250 Message received: 20030404234553.NZYU18411.[redacted]-fe04@[redacted]
Sent:	QUIT
Received:	221 [redacted]-fe04.[redacted].com ESMTP server closing connection
Connection Closing!	
Done!	

Sample log. Typical E-Mail message completed.

Diagnostics

Indicator Lights

To assist you in diagnosing possible communications problems the UWS is equipped with 10 indicator lights.

NOTE: Transmit and receive lights for the RS232 serial ports are not the lights nearest to their respective serial port. With the Ethernet connector on the bottom, Port A is on the left while the two lights corresponding to Port A are on the right. Port B is on the right while it's corresponding lights are on the left.

Light	Action	Description.
(Red)R	Off	Normal Operation
(Red)R	On Steady	Supply voltage below minimum threshold of 10V. May also be caused by a internal failure of the USW.
(Red)R	Periodically flashing	Indicates a possible internal failure. May also be caused by unstable power supply.
(Red)R	Flashes once on power up.	Normal Operation.
(Green)P	On Steady	Normal operation. Port B is in the RS232 mode.
(Green)P	Off	When all lights are off including this light there is no power to the UWS.
(Yellow)X4, XA, XB	Off	The UWS is not transmitting any data out the serial port.
(Yellow)X4, XA, XB	On steady	After power up the light may remain on until the processor is initialized. If the Red "R" light is also on see the description for the "(Red)R" light. If the "R" light is not on then there is a hardware failure inside the UWS.
(Yellow)X4, XA, XB	Flashing	Normal operation. This light will flash with each character transmitted out the serial port.
(Yellow)R4, RA, RB	Off	Indicates the UWS is not receiving any characters. This may indicate a connection problem with a connected device.
(Yellow)R4, RA, RB	On Steady	Indicates a connection problem.
(Yellow)R4, RA, Rb	Flashing	Normal operation. The light will flash with each character received through the corasponding port.
(Green)LNK	Off	Indicates the DC is not connected to an Ethernet Network.
(Green)LNK	On steady	Normal operation. A network cable is connected to the UWS.
(Green)LNK	Flashing	You may have a connection problem. Ethernet connections to the UWS may be intermittent.
(Yellow)Act	Off	Indicates there is no activity on the Ethernet connection.
(Yellow)Act	Flashing	Normal operation when connected to a Ethernet network. Indicates there is some form of activity on the Ethernet network. Even if the UWS is not currently being accessed this light will flash.

Diagnostics

Ethernet Connection Problem

Description of problem:

Due to the way computers and other devices operate when using an Ethernet and IP addresses a condition can occur which causes a temporary communications failure. Under normal conditions you will not see this problem but when troubleshooting a system this problem may occur.

If you are communicating with one UWS or other communications device and swap that device with another Ethernet device with the same IP address, you may not be able to connect to the second device. But if you reconnect the first device, communications seems normal. This may lead to you thinking there is a problem with the second device. You may also think the second device is intermittent, as sometime you can make the swap without problems.

Example:

DC #1 has the default address of 192.168.0.251. You connect and configure the DC without any problems. As you will not be using the Ethernet connection except for configuration you do not change the IP address.

Next you disconnect DC #1 and replace it with DC #2. DC #2 is also set up at the default address of 192.168.0.251. You find that it suddenly takes longer for the default page to be displayed and when it does the time is the same as the last page displayed with DC #1. You also find that you can not get to the administration page.

Next, you give up and go get a cup of coffee. When you return you try again and now you can communicate with DC #2.

The Problem:

Caching.

If you have browsed the Internet at any length you are probably aware of how Microsoft's Internet Explorer and other web browsers cache web pages. If you attempt to connect to a site and a connection is not successful, the web browser may pull up the last page displayed from the site you were trying to access.

What is not obvious is that other information is cached. Specifically, in the case of Ethernet, a MAC (Media Access Control) address is cached. Ethernet uses the MAC address for transferring data and not the IP address. Ethernet uses the IP address to find the MAC address and once the MAC address is found, it is placed in a cache on your computer. Your computer then uses the MAC address from the cache to communicate with the remote device. The IP is not used again until the MAC address is flushed out of the cache.

The problem is not with the DC or any other Ethernet devices. It's with the devices being asked to do something that is abnormal. Caching was designed to make Ethernet more efficient and under normal conditions you would not see this problem.

The Fix:

To fix the problem you need to clear the cache. You can either wait until the cache expires and clears itself, or you can take actions to clear the cache. If using Windows XP you can clear the cache by opening your Ethernet connections and selecting repair. See your Windows help files for specific instructions. Older versions of Windows require restarting your computer. Other devices may also require restarting.

Technical Support

Technical Support

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Frequently Asked Questions

Q. How can I restore my UWS configuration settings back to the factory defaults?

A. The UWS may be restored to the factory defaults by performing the following steps:

NOTE: Following this procedure will erase all configuration data within the UWS. It is intended to recover from problems where the configuration table has been corrupted and you are unable to communicate with the UWS.

1. Turn off the power to the UWS.
2. Connect a computer to either Port A or B using a null-modem cable.
3. Load Hyperterminal or other terminal program and set the communications settings to 9600 baud, 8 data bits, 1 stop bit and no parity.
4. Turn on the power to the UWS and enter “reset web station” without the quotes and followed by the enter key. You must enter this within the first 10 seconds the UWS has been powered up.
5. When prompted enter “YES’ without the quotes to verify that you wish to reset.
6. If successful a message indicating the web station has been reset to factory defaults will be displayed.
7. Without powering down the UWS, go to the Web Station Configuration page and click on the “Save Configuration” button.
8. If you have made a back up copy of your configuration continue with the following steps. If you do not have a back up copy you will need to reconfigure the UWS. If your UWS was shipped pre-configured, you will need to contact Technical Support to obtain a copy of how the UWS was configured at the factory.

NOTE: Configuration files are version specific. Do not use a configuration file from a different version of firmware.

9. Start your FTP program and connect to the UWS using the IP address of 192.168.0.251.
10. Use “admin” as the user ID and “password” as the password to open the FTP connection to the UWS.
11. Delete the existing configuration file in the UWS. Typically, “UWS Configuration 2.01.bin” for firmware 2.01.
12. Copy your back up configuration file to the UWS. The file name must match the name you just deleted in the above step.

Frequently Asked Questions

13. Copy any custom WEB pages you may have created to the UWS.
14. End your FTP session.
15. Cycle the power to the UWS.
16. Your UWS should now be back to the same configuration as when you created your back up configuration file.

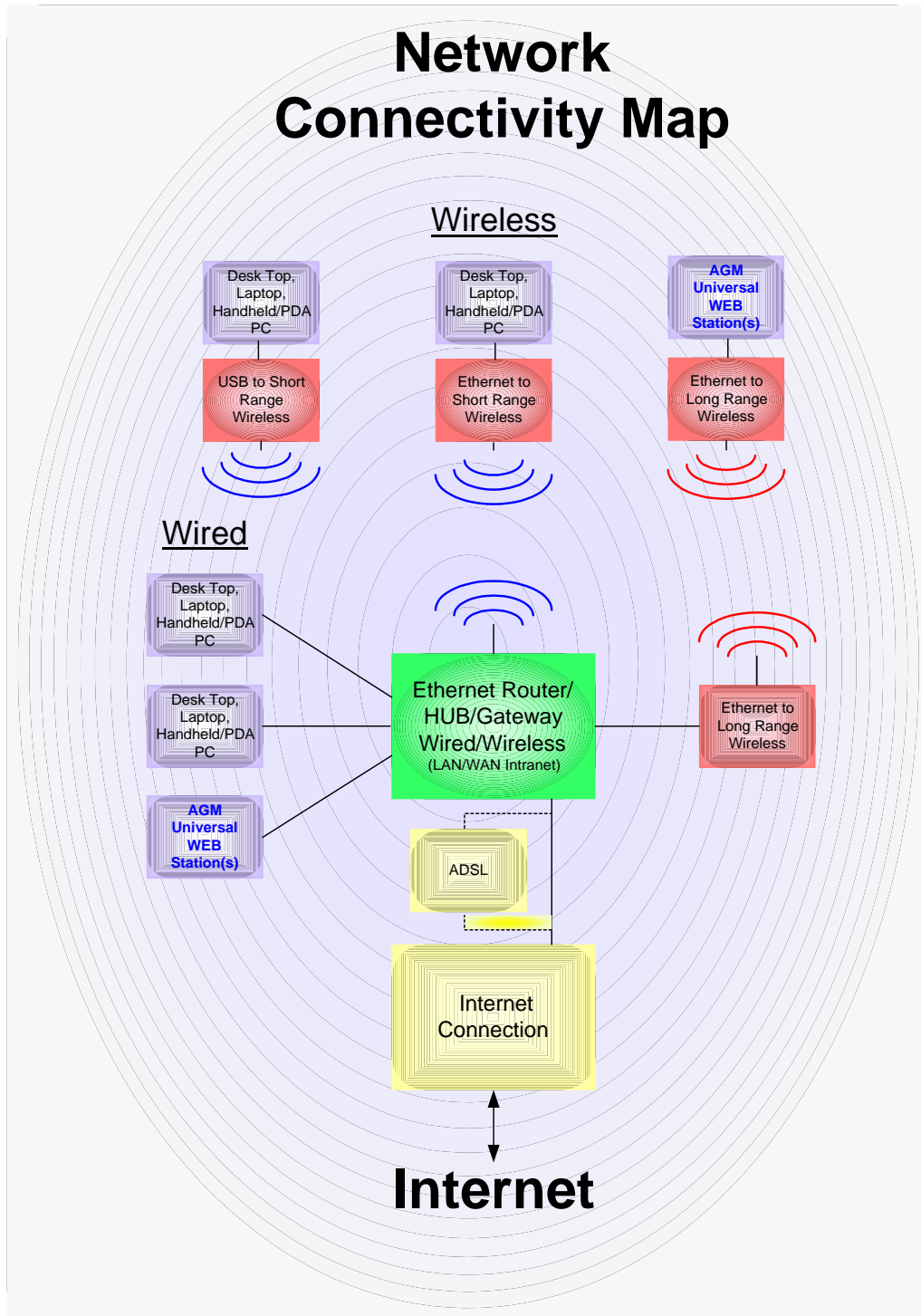
Q. How can I read my UWS network and security settings?

A. The UWS network and security settings may be displayed by performing the following steps:

1. Turn off the power to the UWS.
2. Connect up a computer to either Port A or B using a null-modem cable.
3. Load Hyperterminal or other terminal program and set the communications settings to 9600 baud, 8 data bits, 1 stop bit and no parity.
4. Turn on the power to the UWS and enter "display settings" without the quotes and followed by the enter key. You must enter this within the first 10 seconds the UWS has been powered up.
5. If successful, a message showing the networks and security settings will be displayed.

Appendix A

Network Connectivity Map



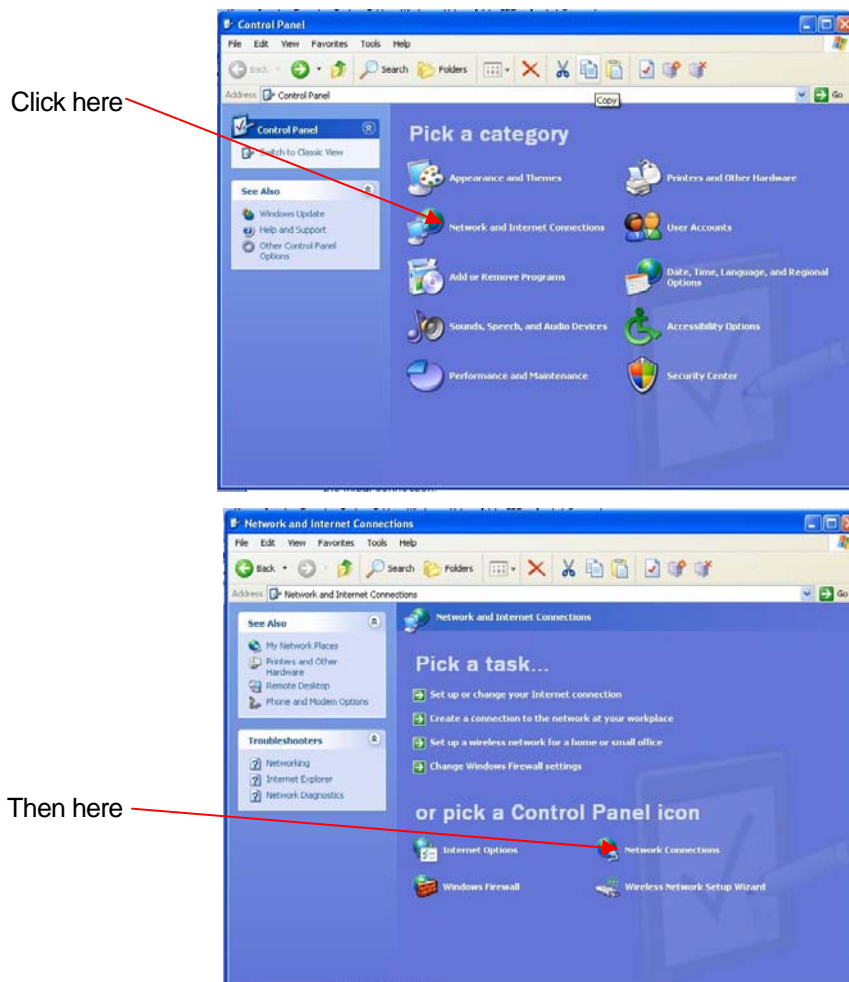


Appendix C

Setting your computer to access the UWS via Ethernet

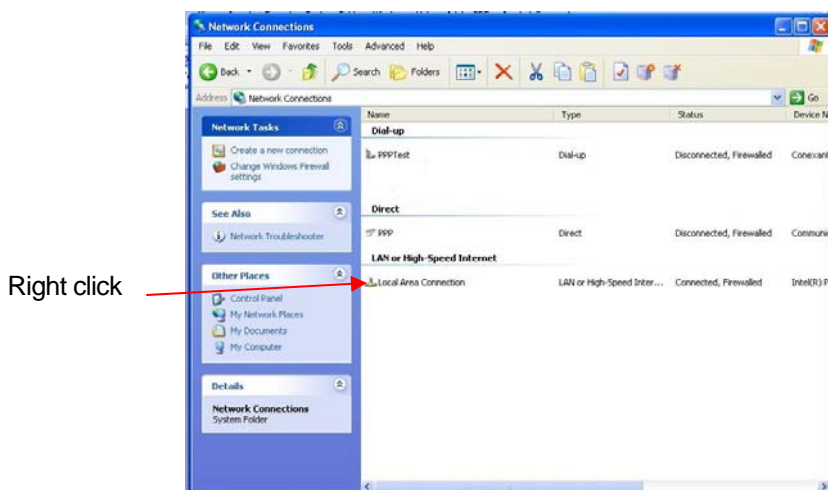
If you are having difficulty connecting to the UWS, it may be possible the network settings on your computer are incorrect for the default address of the UWS. To get around this problem or to access a UWS when you can't put a UWS on an existing network follow the steps outlined below:

1. If your computer is currently connected to a network temporarily disconnect it from the network and connect to the UWS using a crossover cable. You may skip this step if you know the changes made in this procedure will not effect the operation of your existing network.
2. Go to the Windows Control Panel and select "Network and Internet Connections" then select "Network Connections".

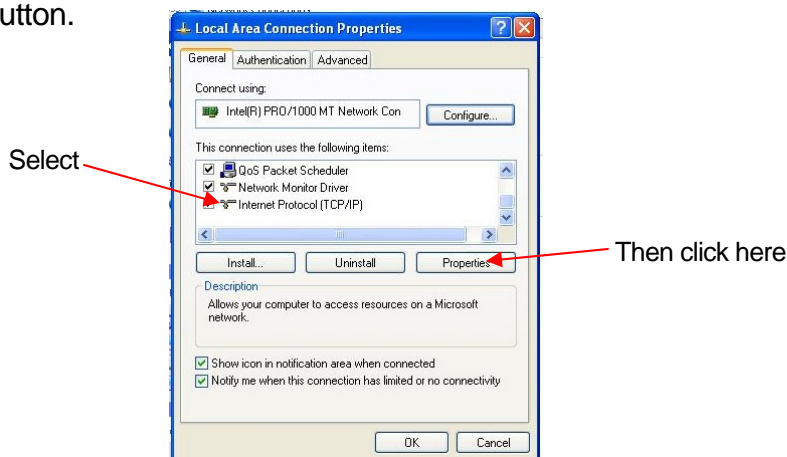


Appendix C

3. Right click on “Local Area Connection” located under “LAN or High Speed Internet” group heading and select “Properties”. If your computer has never been set up for LAN then select “Create a new connection” located under “Network Tasks” and follow the prompts to create the initial connection.

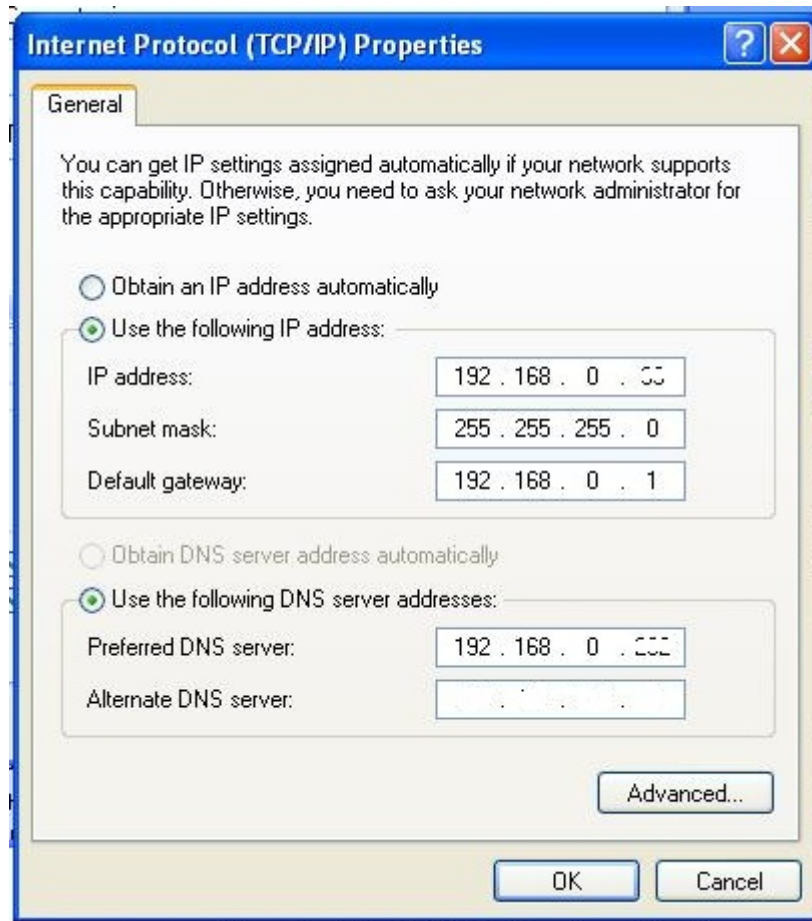


4. On the “General” tab look for “Internet Protocol (TCP/IP)” entry in the list box under “This connection uses the following items”. You will generally need to scroll down on the list box to find this entry. When found select “Internet Protocol (TCP/IP)” and then click on the “Properties” button.



Appendix C

5. You will now see the “Internet Protocol (TCP/IP) Properties” box. Write down the all the current settings. You will need to restore these settings before you will regain connections to your existing network.



6. Click on the “Use the following IP address.
7. Specify for “IP Address”:

192.168.0.1

If using an existing network, check to see if this address is in use. If in use, you may substitute any IP address in the 192.168.0.xxx block except for 192.168.0.251.

8. For “Subnet mask” enter:
255.255.255.0
9. For “Default gateway” enter:
192.168.0.1

10. You do not need to set any of the “DNS” settings. DNS is not used when communicating with a UWS.

Appendix C

11. Click the “OK” button to save the changes and close the “Internet Protocol (TCP/IP) Properties”.
12. Click the “OK” button again to close “Local Area Networking Properties”.
13. Try to connect to the UWS. If successful, go to the Administration page and then the Network Settings page.

If not successful, then check your connections and try again.

14. When you reach the Network Setting page, enter new IP and Netmask settings that will be compatible with your network. You may also make any other required changes to the UWS configuration.
15. When done making changes to the UWS, return to the “Internet Protocol (TCP/IP) Properties” and restore the “IP address”, “Subnet mask” and “Default gateway” setting on your computer.
16. Disconnect the UWS and reconnect your computer to your network.

NOTE: Setting the UWS to an IP address that is available on your network will make future configuration changes easier to implement even if the UWS will not be permanently connected to your network.

If your computer is not connected to a local area network, you may leave your computer set to the network settings described in this procedure.

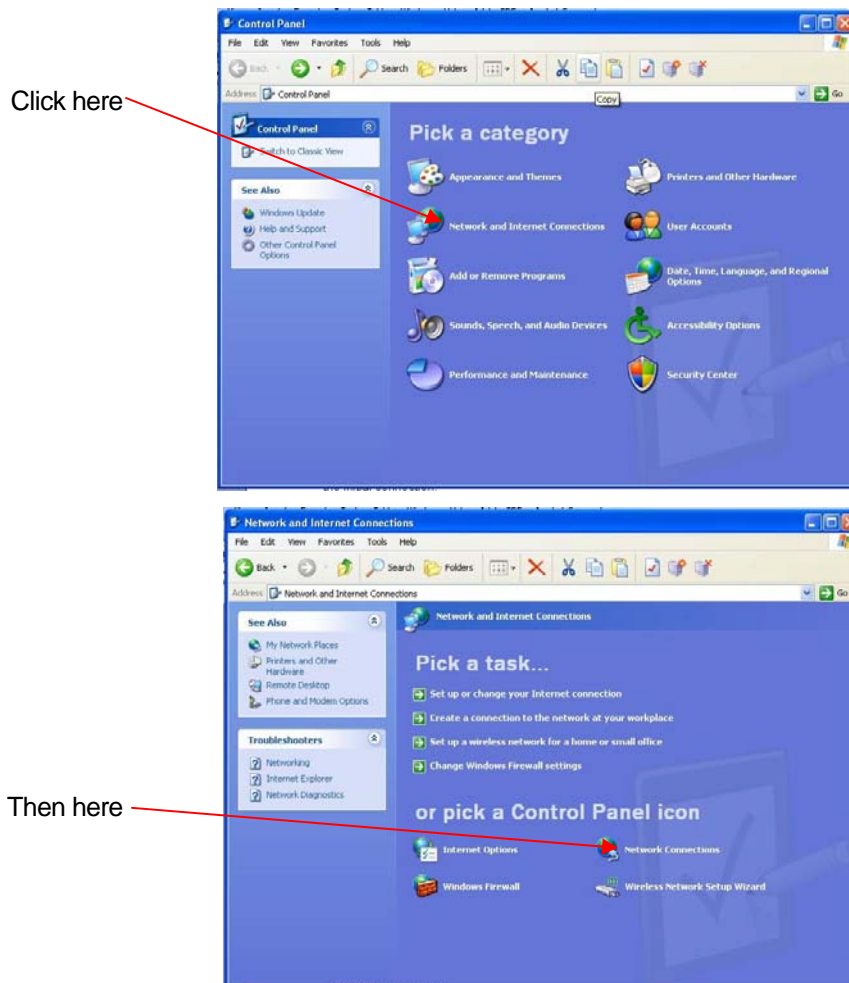
Appendix D

Setting your computer to access the UWS via PPP

In addition to the Ethernet connection, some firmware versions of the UWS have the ability to connect via a PPP serial connection. You may use this connection if your computer does not have an Ethernet port; you do not want the UWS on your network; or if the UWS is connected to a modem at a remote location.

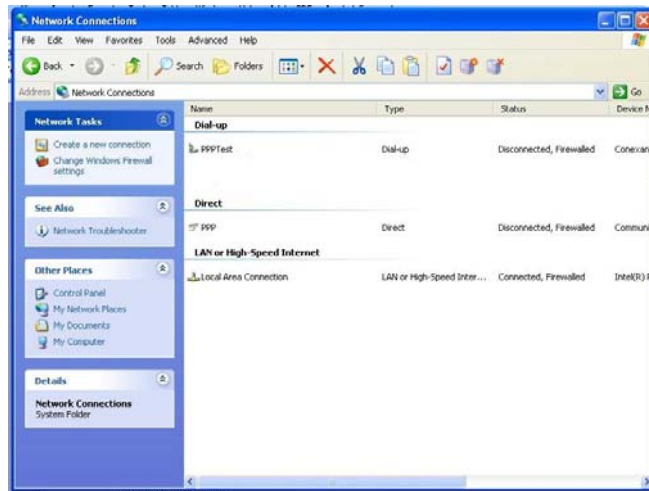
To set up your computer to access a UWS using your computers serial communications port or first you must open the Network Connections screen.

1. Go to the Windows Control Panel and select “Network and Internet Connections” then select “Network Connections”.



Appendix D

2. Create a new connection by selecting “File” then “New Connection” from the menu or click on the Create a New “Create a new connection” located under “Network Tasks”.

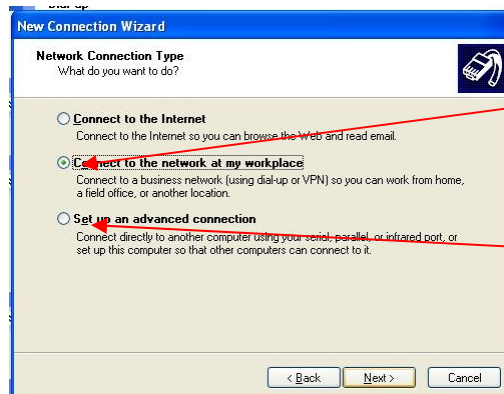


3. Follow the prompts on the New Connection Wizard. Click on the “Next” button to advance to the next screen.



4. On the Network Connection Type select the type of connection you will be creating. For the UWS you select “Connect to the Network at my workplace” and for a direct connection select “Set up an advanced connection”.

The following steps are for setting up a connection that will dial into a remote UWS. If setting up a direct connection that will connect your computer directly to the UWS then skip to the Direct Connection Section.



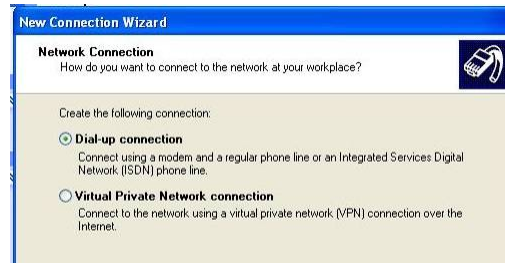
Select to connect to a UWS at a remote location

Select to connect to a local UWS connected to your computer

Appendix D

Dial Up Connection

1. Select Dial-up connection.



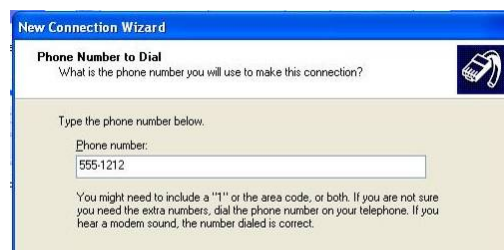
2. If your computer has more than one device that can be used for a PPP connection the wizard will display the following screen. You will need to select the device you will be using to connect to the UWS from this screen.



3. On the Connection Name screen enter a name for the connection. The name entered will appear on the Network Connections screen to identify the connection.



4. Enter the phone number of the remote UWS.



Appendix D

- Click on the “Next” then the “Finish” buttons to complete the Wizard.



- Once the Wizard has completed or when you connect from an existing connection on the Network Connections screen the following connect screen will be displayed. Enter the User Name and Password. The default User name for the UWS is “Admin” and the default password for the UWS is “password”. Click on the “Dial” button to connect to the remote UWS. If you need to make any changes to the settings click on the “Properties” button. See your Microsoft Windows help for more information on dial up connections.



- Once you click on the “Dial” button your computer will dial up the remote UWS and connect. If a successful the connection box will disappear. If any problems occurred the connection box will remain indicating a failed connection and the problem encountered.
- If a successful connection is made then you made you can then use your Web browser to access the UWS. You may also use a FTP connection to back up the configuration files or to upload custom web pages.

Appendix D

Direct Connection

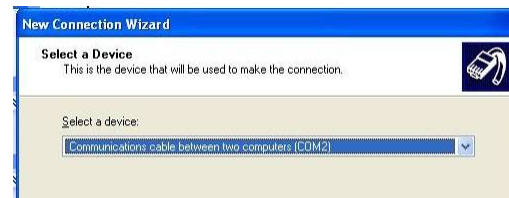
5. Select **Connect directly to another computer**.



6. On the Connection Name screen enter a name for the connection. The name entered will appear on the Network Connections screen to identify the connection.



7. Select the device you will use to connect to the UWS. Typically this will be "Communications cable between computers".



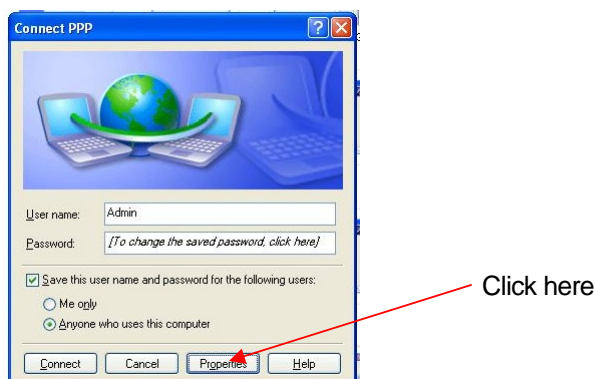
8. Click on the "Next" then the "Finish" buttons to complete the Wizard.



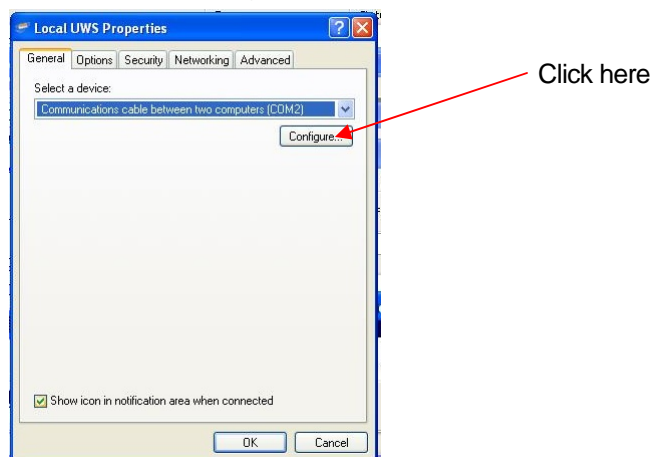
Appendix D

9. Once the Wizard has completed or when you connect from an existing connection on the Network Connections screen the following connect screen will be displayed. Enter the User Name and Password. The default User name for the UWS is "Admin" and the default password for the UWS is "password".

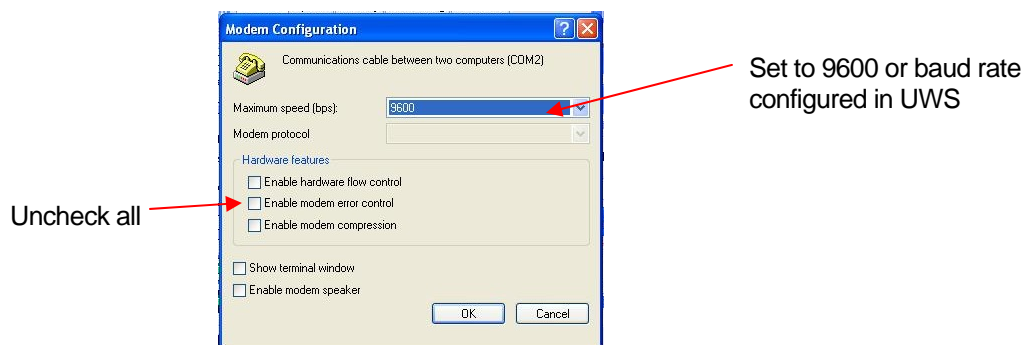
When making a direct connection there is a setting that must be modified before a connection can be made. Click on the "Properties" button.



10. On the "General" tab click on the "Configure" button.



11. Set "Maximum speed (bps)" to the same baud rate configured in the UWS for the connected port. The default is 9600. Uncheck "Enable hardware flow control".



Appendix D

- Click on the “Connect” button to connect to the UWS. If a successful the connection box will disappear. If any problems occurred the connection box will remain indicating a failed connection and the problem encountered.

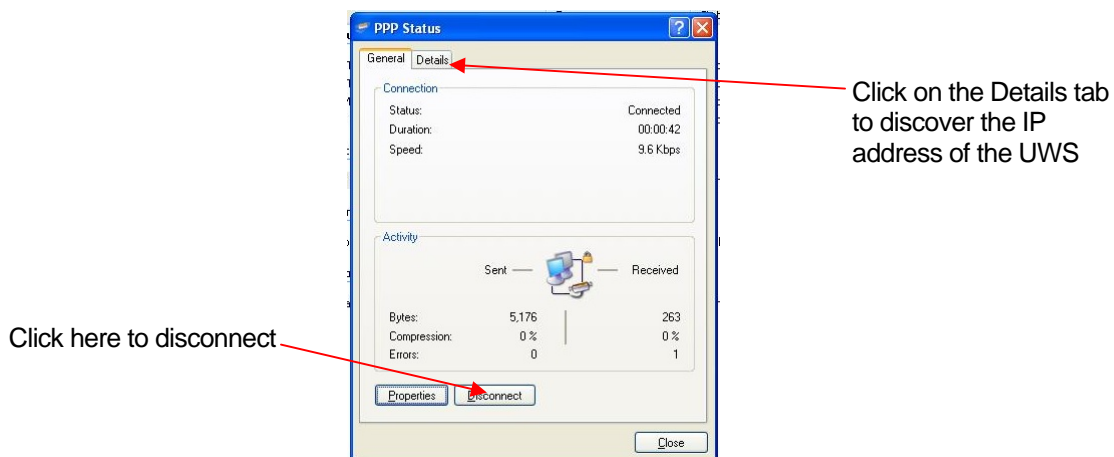


- If a successful connection is made then you made you can then use your Web browser to access the UWS. You may also use a FTP connection to back up the configuration files or to upload custom web pages.

Finding IP Address, PPP Connection Only

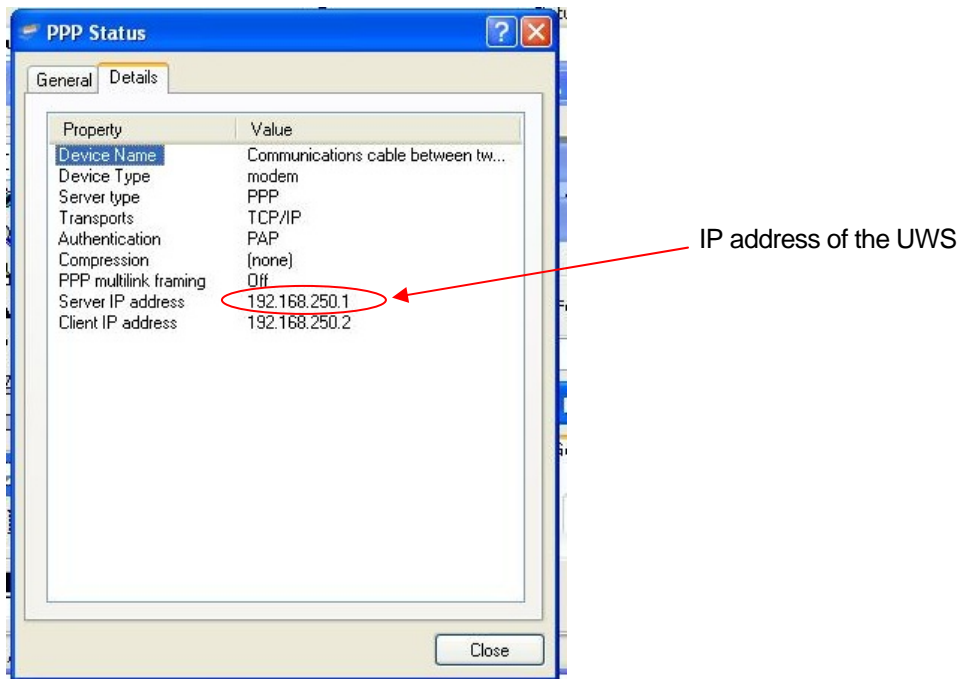
The default IP address for a PPP connection using Port A of the UWS is 192.168.250.1 and the default IP address for a PPP connection using Port B is 192.168.251.1. Unlike Ethernet connections, Microsoft Windows XP provides a way to discover the IP address of the UWS.

- Go to the Network Connections then open the PPP connection for the UWS. If you have enabled the icon in the System Tray of your computer you may also double click on the icon this will bring up the status box for the connection. Through the status box you may disconnect from the UWS or discover the IP address of the UWS.



Appendix D

2. Click on the “Details” tab. The “Server IP address” is the IP address of the UWS. Use this address to access the UWS with your Web browser.



Appendix E

Backing Up or Cloning the UWS Settings

After configuring your UWS we recommend you back up your settings. You may also use this procedure to clone the settings in a UWS. Cloning involves making a back up copy of a UWS settings and restoring the settings files to a different UWS.

To back up your UWS Settings:

1. Connect your UWS to the Ethernet.
2. Use your FTP program to connect to the UWS. You may use either the FTP.exe program that comes with various versions of Windows or a third party program.
3. Enter the user name and password as required. Default user name "Admin", password is "password".
4. Copy the following files to your computer:
 - a. UWS Config1 x.xx.bin
 - b. UWS Config2 x.xx.bin

NOTE: The files listed above are for the general purpose UWS application specific versions of the UWS will have a different file name. Some versions of the UWS may have only one file.

5. Close your FTP connection.

To restore or clone UWS Settings:

- A. Connect your UWS to the Ethernet.
- B. Use your FTP program to connect to the UWS. You may use either the FTP.exe program that comes with various versions of Windows or a third party program.
- C. Enter the user name and password as required. Default user name "Admin", password is "password".
- D. Copy the following 2 files from your computer to the UWS:
 - a. UWS Config1 x.xx.bin
 - b. UWS Config2 x.xx.bin
6. Close your FTP connection.
7. Cycle the power on your UWS.
8. If cloning a UWS, go to the Network Settings page and enter a new and unique IP address.

Appendix E

NOTE 1: When restoring the configuration you must spell the configuration files exactly as stated above. Any misspelling will cause the UWS not to recognize the new configuration file.

NOTE 2: The UWS configuration is version specific. You can not mix configuration files between firmware versions of a UWS. “UWS Config1 2.02.bin” and “UWS Config2 2.02.bin” are for firmware versions 2.02.

Application specific firmware versions may have different configuration file names. For some versions such as the Data-Command versions there is only one configuration file.

NOTE 3: The configuration files contain all settings used by the UWS including network settings. If you are cloning a UWS the clone will have the exact same IP address as the original. After copying the files you will need to set the IP address of each UWS to a unique number before you may use them on the same network.

Appendix F

Using a ASCII Printer

The UWS has the ability to print out values received from one of the other protocols to a serial ASCII printer.

To use this feature you will need to set up your PLC to provide at least one trigger variable in addition to any data to print. This trigger variable will initiate the printout when set to a value other than 0. When the UWS detects that the trigger variable, the UWS will print out all selected data and the trigger variable will be cleared to 0.

The format for printout will be:

1. Adjustable date and time stamp. The date and time printed, is the date and time when the selected variable was last updated. Normally this will match the current date and time in the UWS, but may be different in some configurations where all variables are not updated continuously.
2. Adjustable identifying text.
3. Value of selected register.
4. Adjustable units text.
5. Carriage Return / Line Feed.

Samples:

```
9/8/2004 10:32:47 AM Level 123.4 Feet
9/8/2004 15:32:47 Level 523.4 Feet
9/8/2004 10:32 Pressure 123.4 #
10:32:47 AM Level 123.4 Feet
```

To set up your UWS for printing:

1. Set up the UWS to communicate with your PLC. Don't forget you need to define a trigger variable as well as the data variables. See the Setup or Software Configuration sections for setting up the UWS to communicate with your PLC.
2. Go to the Administration menu and select "Set UWS Clock" to set or modify the format of the date and time stamp. The format of the date and time is the same as used on the web pages and is selected via the "Time Display Format" drop down list box.

Appendix F

3. Click on the "Save" button to save any changes to the date, time or format and return to the Administration menu. If no changes were required you click on the Administration link at the bottom of the page.
4. From the Administration menu select "Port Setup" to get the "UWS Port Setup" page.
5. On the port that will be connected to your printer select "ASCII Printer" from the "Protocol" drop down list.
6. Set the baud rate of your printer from the drop down list to the right of "Baud Rate".
7. "Common Address" and "Update Interval" settings do not apply to the printers and may be ignored.
8. Click on the "Save" button to save any changes and return to the Administration menu.
9. From the Administration menu select "Translation Setup" for the "UWS Translation Setup" page.
10. If you have not previously done so, fill in the column for the port connected to the PLC. See the Setup or Software Configuration sections for setting up the UWS to communicate with your PLC. Select the PLC column as the Source. Below is a sample screen of a UWS configured for ModBus on Port A and Printing on Port B.

UWS Number	Port A	Port B	Port 4	Port T
	RTU ModBus (Master)	ASCII Printer	Not Used	Not Used
1 Ⓢ NU	40001 Integer (16 bits) Ⓢ Source	Start Printout		
2 Ⓢ NU	40002 Integer (16 bits) Ⓢ Source	Print Value		
3 Ⓢ NU	 Integer (16 bits) Ⓢ Source	No Action		

Sample Printer Translation Table Setup

Appendix F

11. In the “ASCII” printer column you have a drop down list box used to select which register will be the use to start printing and which registers will be printed. Go down this column and select “Start Printout” on the register which will be used to start the printout. Select “Print Value” on the registers that contain data to be printed. Select “No Action” for all registers that will not be printed.

The above sample screen, ModBus register 40001 will start the printout and register 40002 contains the value to print.

12. Click on the “Save” button to save any changes and return to the Administration menu.
13. From the Administration menu select “Select Variables to Display” for the “UWS Variable to Display Setup” page. This page has a dual function. It defines the variables used for creating web page and it defines the identifying text, units, and decimal point.
14. Under the “Tag Name” column enter the identifying text to be displayed before the register value.
15. Under the “Units” column enter the text that will be displayed after the register value.
16. Under the “Decimal Point Format” column, select the required format from the drop down list. When the UWS is used with integer registers with an assumed decimal point the UWS will adjust the printed value accordingly. For example if you select “0.0”, a integer value of 1234 will be printed as 123.4.
17. Click on the “Save” button to save any changes. You have completed all required settings for using the printer.
18. Connect the PLC and printer then test the UWS settings. If using a limited column printer you may need to modify your date and time format, identifying text, or units so the printout will fit on a single line.

Appendix G

Data-Command Configuration

Under normal use the items covered in this appendix are set by Data-Command. The UWS web page described in this appendix is included for diagnostics and for modifying the settings should Data-Command have problems update the settings.

To display this web page enter <http://192.168.0.251/UWSDataCommand.htm> in the address bar of your web browser. You will then be required to enter an ID and Password. The ID and password is the same as the administration pages.

The Data-Command settings page is organized as a single page containing all settings normally set via the Data-Command web site and the initial URLs used to connect to the Data-Command web site.

The top line contains the Data-Command Serial Number. This is the same serial number displayed on the default page. It is provide for reference and can not be modified.

The second 3 lines specify the 3 URLs used by Data-Command. They should only be changed if instructed to by Data-Command. Unlike other settings on this page, these 3 URL's can not be modified by the Data-Command site.

Following the URL's are 3 more lines specifying the Primary and Backup IP addresses and TCP ports. Unlike the URL's these IP addresses and TCP Port number will be modified by the Data-Command web site. The IP addresses and TCP Port numbers listed will take precedence over the URL addresses specified above.

Primary		Backup	
IP	TCP Port	IP	TCP Port
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

Data-Command Network Settings

NOTE: The asterisk “*” before and after a URL or IP text box indicates the last URL or IP addresses used to make a connection to Data-Command. The UWS will try all IP addresses and URL's until it gets a connection.

Appendix G

The next section defines the timing settings used by the UWS for sending data to Data-Command. Only the Check In Time and RBE Time is used by the UWS. Other possible timing settings are not used by the UWS and are not displayed on this page.

The Check In Time specifies how often the UWS will send data to Data-Command regardless of the I/O status.

RBE Time specifies the minimum time between data packets to Data-Command are to be sent when a change in state has been detected.

Data-Command Configuration Settings	
Check In Time:	<input type="text" value="60"/> Seconds
RBE Time:	<input type="text" value="15"/> Seconds

Data-Command Timing Settings

The next section is used for scaling the 16 analog I/O values. Normally these scaling values are set when defining tags within your Information Display on the Data-Command web site. If scaling is not required then leave the Minimum values set to 0 and Maximum values set to 100.

Analog I/O Scaling				
#	Raw Minimum	EGU Minimum	Raw Maximum	EGU Maximum
1:	<input type="text" value="0.000000"/>	<input type="text" value="0.000000"/>	<input type="text" value="100.000000"/>	<input type="text" value="100.000000"/>
2:	<input type="text" value="0.000000"/>	<input type="text" value="0.000000"/>	<input type="text" value="100.000000"/>	<input type="text" value="100.000000"/>
3:	<input type="text" value="0.000000"/>	<input type="text" value="0.000000"/>	<input type="text" value="100.000000"/>	<input type="text" value="100.000000"/>
4:	<input type="text" value="0.000000"/>	<input type="text" value="0.000000"/>	<input type="text" value="100.000000"/>	<input type="text" value="100.000000"/>
5:	<input type="text" value="0.000000"/>	<input type="text" value="0.000000"/>	<input type="text" value="100.000000"/>	<input type="text" value="100.000000"/>
6:	<input type="text" value="0.000000"/>	<input type="text" value="0.000000"/>	<input type="text" value="100.000000"/>	<input type="text" value="100.000000"/>
7:	<input type="text" value="0.000000"/>	<input type="text" value="0.000000"/>	<input type="text" value="100.000000"/>	<input type="text" value="100.000000"/>
8:	<input type="text" value="0.000000"/>	<input type="text" value="0.000000"/>	<input type="text" value="100.000000"/>	<input type="text" value="100.000000"/>
9:	<input type="text" value="0.000000"/>	<input type="text" value="0.000000"/>	<input type="text" value="100.000000"/>	<input type="text" value="100.000000"/>
10:	<input type="text" value="0.000000"/>	<input type="text" value="0.000000"/>	<input type="text" value="100.000000"/>	<input type="text" value="100.000000"/>
11:	<input type="text" value="0.000000"/>	<input type="text" value="0.000000"/>	<input type="text" value="100.000000"/>	<input type="text" value="100.000000"/>
12:	<input type="text" value="0.000000"/>	<input type="text" value="0.000000"/>	<input type="text" value="100.000000"/>	<input type="text" value="100.000000"/>
13:	<input type="text" value="0.000000"/>	<input type="text" value="0.000000"/>	<input type="text" value="100.000000"/>	<input type="text" value="100.000000"/>
14:	<input type="text" value="0.000000"/>	<input type="text" value="0.000000"/>	<input type="text" value="100.000000"/>	<input type="text" value="100.000000"/>
15:	<input type="text" value="0.000000"/>	<input type="text" value="0.000000"/>	<input type="text" value="100.000000"/>	<input type="text" value="100.000000"/>
16:	<input type="text" value="0.000000"/>	<input type="text" value="0.000000"/>	<input type="text" value="100.000000"/>	<input type="text" value="100.000000"/>

Data-Command Scaling Settings

Appendix G

Following the scaling is the RBE settings. When a Analog I/O register has it's Enabled box checked and the Dead Band value is not 0, then a change of the analog I/O value equal to or greater than the specified dead band will result in a data packet being sent to Data Command.

Analog RBE Settings					
#	Enabled	Dead Band	#	Enabled	Dead Band
1:	<input type="checkbox"/>	0.000000	2:	<input type="checkbox"/>	0.000000
3:	<input type="checkbox"/>	0.000000	4:	<input type="checkbox"/>	0.000000
5:	<input type="checkbox"/>	0.000000	6:	<input type="checkbox"/>	0.000000
7:	<input type="checkbox"/>	0.000000	8:	<input type="checkbox"/>	0.000000
9:	<input type="checkbox"/>	0.000000	10:	<input type="checkbox"/>	0.000000
11:	<input type="checkbox"/>	0.000000	12:	<input type="checkbox"/>	0.000000
13:	<input type="checkbox"/>	0.000000	14:	<input type="checkbox"/>	0.000000
15:	<input type="checkbox"/>	0.000000	16:	<input type="checkbox"/>	0.000000

Discrete RBE Settings							
#	Enabled	#	Enabled	#	Enabled	#	Enabled
1:	<input type="checkbox"/>	2:	<input type="checkbox"/>	3:	<input type="checkbox"/>	4:	<input type="checkbox"/>
5:	<input type="checkbox"/>	6:	<input type="checkbox"/>	7:	<input type="checkbox"/>	8:	<input type="checkbox"/>
9:	<input type="checkbox"/>	10:	<input type="checkbox"/>	11:	<input type="checkbox"/>	12:	<input type="checkbox"/>
13:	<input type="checkbox"/>	14:	<input type="checkbox"/>	15:	<input type="checkbox"/>	16:	<input type="checkbox"/>
17:	<input type="checkbox"/>	18:	<input type="checkbox"/>	19:	<input type="checkbox"/>	20:	<input type="checkbox"/>
21:	<input type="checkbox"/>	22:	<input type="checkbox"/>	23:	<input type="checkbox"/>	24:	<input type="checkbox"/>
25:	<input type="checkbox"/>	26:	<input type="checkbox"/>	27:	<input type="checkbox"/>	28:	<input type="checkbox"/>
29:	<input type="checkbox"/>	30:	<input type="checkbox"/>	31:	<input type="checkbox"/>	32:	<input type="checkbox"/>

☐ Lock Data-Command Settings

Save Reset

Data-Command RBE Settings

Following the Analog RBE settings is the Discrete RBE Settings. Like the Analog RBE settings these are normally defined along with the tags on the Information display in the Data-Command web site. When a Discrete register has it's check box checked then a change of the discrete I/O value will result in a packet being sent to Data-Command.

NOTE 1: The Lock Data-Command Settings check box at the bottom of the page is used to prevent Data-Command from modifying any settings. If checked then all settings can be modified only from this page.

NOTE 2: You may save any changes by clicking on the "Save" button. Changes will be saved to non-volatile memory however unless the "Lock Data-Command Settings" box has been checked the Data-Command web site can overwrite any changes.

Appendix H

DF1 Register Syntax

The syntax used to define registers in the UWS translation tables is designed to match the common syntax used to define registers within the Allen-Bradley PLCs. The number and types of available registers will vary according to the model of PLC you are using.

The typical syntax of a DF1 register is:

1. First character defines the type of data. Available types are:
 - B** Binary or bit registers.
 - F** Floating point registers.
 - I** Input registers.
 - N** Integers register.
 - O** Output registers.
 - S** Status registers.
2. Optional file number. Used by the UWS only for F and N types of registers. The default file numbers are used for B, I and O register types. B = 3; I = 1; O = 0; S = 2;
3. Colon (:).
4. Register number. First register is 0. For all data types except F this register is a 16 bit word register. For F types this is a 32 bit single precision floating point register.
5. Optional slash. Used only when a bit is specified.
6. Optional bit. First bit is 0.

NOTE 1: Data types I and O use octal to represent register numbers and bit numbers. All other data types use decimal numbers. Octal is used to match the register syntax used by RSLinx and other AB applications for these two data types.

NOTE 2: Leading zeros are added to the file, register and bit numbers by the UWS. When entering the DF1 register you do not need to add these zeros. The examples below show typical register entries both with and without leading zeros.

Appendix H

Examples:

N7:0	Typically this is the first integer register in the PLC. The default file number for integer data is 7 however other file numbers may be used. This example shows the register without any leading zeros.
N007:000	Same register described above but with leading zeros.
N010:020	Register 20 of file 10.
F008:000	First floating point register
I:0017	Input register number 15. Unlike other registers I and O registers use octal numbers.
O:0017/17	Bit 15 of output register 15.
S:001	Second status register.
S:001/15	Bit 15 of second status register.

Appendix I

ModBus Register Syntax

The syntax used to define registers in the UWS translation tables is designed to match the common syntax used to define registers within PLCs using ModBus.

The typical syntax of a ModBus register is:

1. First character defines the type of register. Available types are:

- 0** Coil status or discrete output. Always single bit.
- 1** Discrete input. Read only register. Always single bit.
- 3** 16 bit integer input register. Read only register.
- 4** 16 bit integer output register.

2. Register number. Register numbers start with 1.

NOTE: Leading zeros are added to the file, register and bit numbers by the UWS. When entering the ModBus register you do not need to add these zeros. The examples below show typical register entries both with and without leading zeros.

Examples:

00001	Status of first coil or discrete output.
00010	Status of coil or discrete output number 10.
10001	First discrete input.
10010	Discrete input number 10.
30001	First input register.
30010	Input register number 10.
40001	First holding register.
40010	Holding register 10.

Appendix J

Special Purpose Registers

The UWS has three special purpose register names used to provide information or control optimization of data transfers. These special register names replace the normal protocol register names in the translation tables. To function properly they must be the last register defined in the Translation tables.

OPT Register

The Optimize (OPT) register is used to optimize data transfers when the UWS is the master. When working as a master device the UWS will first read remote registers then write the new values regardless of their value. When the OPT register is included the UWS will only write when either the value has changed or there was a communications error either on the source or destination communications port. This optimization has the effect of eliminating redundant register writes and therefore speeding up response times.

The following screen capture shows the OPT register name used on Ports A, B and the RS485 port. The OPT register must be also be selected as the source.

138	<input type="radio"/> NU <input type="radio"/> Source	OPT Integer (16 bits) <input checked="" type="radio"/> Source	<input type="radio"/> Source
139	<input type="radio"/> NU <input type="radio"/> Source	Integer (16 bits) <input type="radio"/> Source	OPT Integer (16 bits) <input checked="" type="radio"/> Source
140	<input type="radio"/> NU <input checked="" type="radio"/> Source	Integer (16 bits) <input type="radio"/> Source	Integer (16 bits) <input type="radio"/> Source

Sample Translation Table Showing OPT Option.

STAT Register

The Status (STAT) register is used to count up the communications errors on a communications port using one of the master protocols.

The sample screen capture shows the STAT command being used on communications Port A and providing the results in a Modbus register on communications Port B.

159	<input type="radio"/> NU <input checked="" type="radio"/> Source	STAT 40001 Integer (16 bits) <input type="radio"/> Source	<input type="radio"/> Source
-----	--	--	------------------------------

Sample Translation Table Showing STAT Option.

OK or CHECK Registers

The OK and CHECK registers are used to provide a 1 or 0 indications of any communications errors on a communications port using one of the master protocols.

The sample screen capture shows the CHECK command being used on communications Port A and providing the results in a Modbus register on communications Port B.

160	<input type="radio"/> NU <input checked="" type="radio"/> Source	CHECK 00001 Integer (16 bits) <input type="radio"/> Source	<input type="radio"/> Source
-----	--	---	------------------------------

Sample Translation Table Showing CHECK Option.

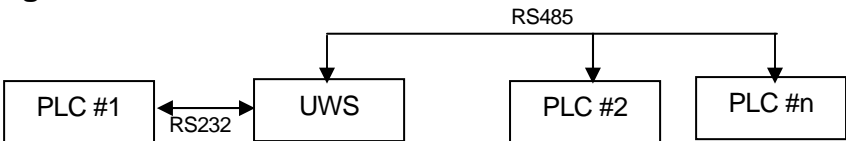
Appendix K

Pass Through Mode

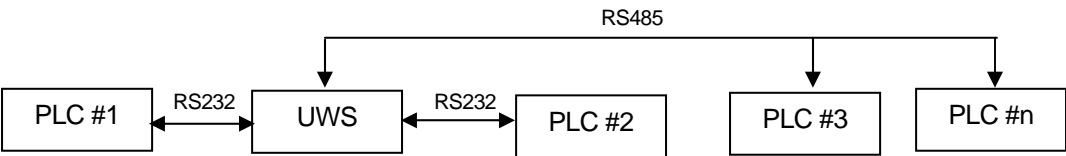
The UWS has the ability to pass through all communications transparently from one serial communications port to another. This allows the UWS to be installed between two existing devices or to act as a RS232 to RS485 converter in addition to the normal protocol translation functions.



RS232 Pass Through



RS232 to RS485 Pass Through



Pass Through RS232 and RS485

To enable this feature go to the UWS Port Setup page and check the “Pass Through Mode” check box for both or all serial communications ports which will pass through communications data. For example if passing information between both RS232 serial communications ports the “Pass Through Mode” must be checked for both Port A and Port B. If passing through communications between the RS232 Port A and RS485 port then both the “Pass Through Mode” for Port A and Port 4 must be checked. If passing information through all three then all three “Pass Through Mode” boxes must be checked.

NOTE 1: Pass Through Mode is only available for the “Unused” or slave protocols.

NOTE 2: Pass Through Mode does not apply to Ethernet connections.

Protocol: DF1 Half-Duplex CRC (Slave) WARNING. Changing protocol may reset Translation tables for Port A.

Baud Rate: 9600

Bit Format: 8, None, 1 Stop

Half-Duplex RTS On Time: -1 Milliseconds. Enter -1 to disable.

Half-Duplex RTS Off Time: -1 Milliseconds.

Common Address: 2

Update Interval: 0.0 Seconds.

Communications Fail Interval: 0 Seconds

Turbo Mode: ☐

Pass Through Mode: ☒ Slave Protocols Only.

Slave or “Unused” protocol only.

Check to enable pass through.

Pass Through Mode Enabled