



WinMerik®

Version 3.0

Merrick Industries, Inc
10 Arthur Drive
Lynn Haven, FL 32444
Ph. +1 850.265.3611
Fax +1 850.265.9768
Web <http://www.merrick-inc.com>

PROPRIETARY NOTE

The information in this manual, including technical data and copies of drawings, embodies information proprietary to Merrick Industries, Inc. and this manual is provided to the user of equipment purchased from Merrick Industries, Inc. for use only in operation or maintenance of such equipment. Such information in this manual is not to be used, disclosed, copied, or reproduced in whole or part for any use other than that indicated above, or for any other purpose detrimental to the interests of Merrick Industries, Inc. Patents owned by Merrick Industries, Inc. have been issued or are pending on at least some of the information in this manual, and unauthorized use of this subject matter of such patents is a violation of such patents and is prohibited.

WinMerik is a registered trademark of Merrick Industries, Inc.

Table of Contents

Revision History	1
Introduction.....	2
System Requirements.....	2
Installation	3
Opening Screen	4
Communications Settings	5
Starting Communications	9
Saving and Restoring Registers	11
Save Options	11
Log Registers to File.....	17
DDE (Dynamic Data Exchange)	18
Error Messages.....	21

Revision History

Date	Version	Comment
11/7/2000	1.0.1107	Initial release
11/28/2000	1.0.1128	Added bar graph status to application, no changes to the manual.
3/15/2002	2.0.11	Added ability to upload registers as formatted, no reset after upload, various other changes. Renamed to WinMerik.
8/29/2005	3.0.6	Added Ethernet capability, various other changes. Manual revised

Introduction

WinMerik was designed to be a simple, easy to use Windows® application to allow the user to monitor a single Merrick controller through communications. The communication may be via direct serial connection (ie. RS-232 or RS-485), or via Ethernet. In the case of Ethernet, a serial to Ethernet converter must be used. In either case it is possible to have several Merrick controllers connected to one PC, although only may be addressed at any given time.

WinMerik allows the user to “tag” up to 10 registers to monitor and also log data to disk if desired. An added feature is the ability to save the entire register contents of a controller to disk, and if necessary, restore the registers back to a controller.

Note: “Registers” are memory locations in Merrick Microprocessor controllers that hold all the necessary data and parameters for operation of the controller and the equipment it is connected to (ie. Merrick Belt Feeder or Loss-in-Weight Feeder). Through WinMerik it is possible to access and monitor this data for recordkeeping, troubleshooting or diagnostic purposes. Each register has a unique number and contains a specific value, ie. the current feedrate, etc. Every Merrick controller application has its own unique register list. For help in knowing which registers contain which data for your particular application, contact Merrick Industries, Inc.

System Requirements

WinMerik must be installed on an IBM-compatible PC running Windows 95 or later. It does not have intensive processor or memory requirements, nor does it require extensive hard drive space. It should run well on any reasonably modern PC. To communicate with the Merrick controller via direct serial connection, it will require one free serial port (COM port) and appropriate cabling (see below). A ready-made cable is available from Merrick or see the Appendices for wiring information. To communicate via Ethernet, in addition to the converter mentioned above, the PC will require an Ethernet connection and access to the network to which the Merrick controllers are connected.

Note: If your PC does not have a serial port (com port), it is possible to purchase and use a USB to serial converter. Follow the manufacturer's instructions for installation and note the com port number assigned (it will normally be a number higher than 4). Use this com port number when configuring WinMerik for serial communication.

® Windows is a registered Trademark of the Microsoft Corporation

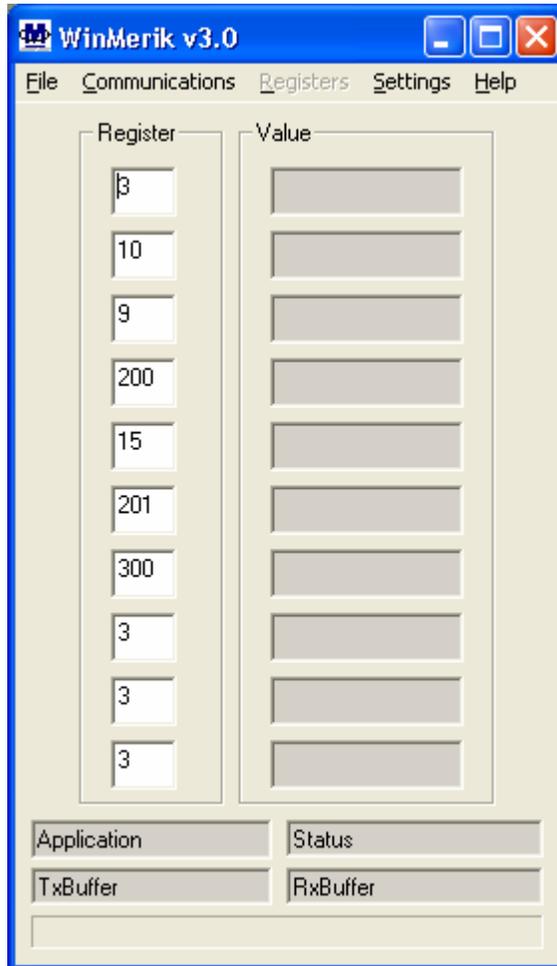
Installation

To install WinMerik on your computer, place the CD in your CD-ROM drive and run the program named "setup.exe". The installation program will copy the necessary files to your hard-drive and create a WinMerik item in your "Start/Programs" menu. Click on the WinMerik item to run the program.

Note: WinMerik will be installed as "WinMerik.exe" in your "Program Files" folder.

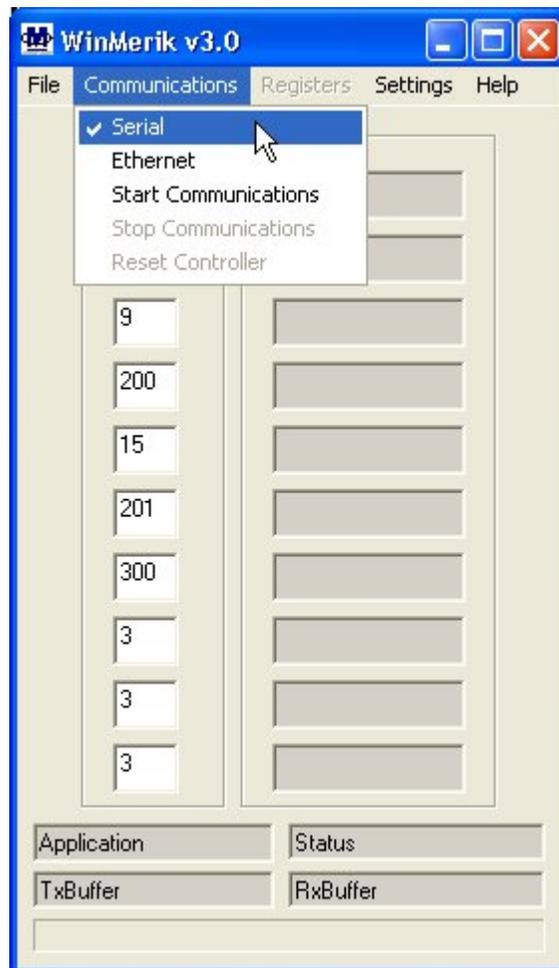
Opening Screen

WinMerik uses the Windows system registry to remember all of its settings. Therefore when you start the application it will display the register numbers that were previously entered in the register list. However, the Register values will not be updated until you start communications.



Communications Settings

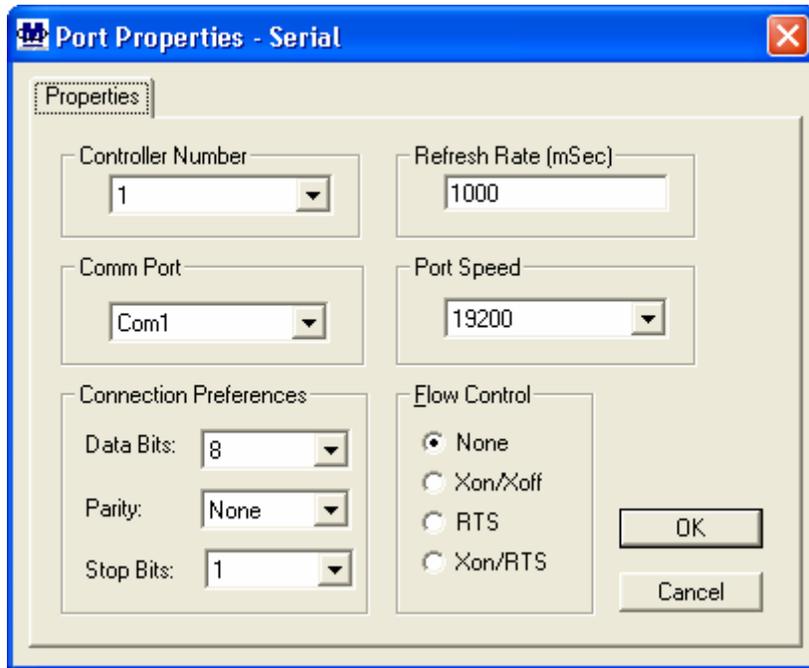
Before communications can begin, the communications settings need to be verified, and, if necessary, modified for your particular application. The first selection that must be made, is Communications Mode, either Serial (direct) or Ethernet.



Once communications mode is selected the remaining settings are accessed using the menu Settings > Port Settings...

Serial Communications

If you have selected "Serial" as your communications mode, then you will be represented with the screen below when you click on Port Settings in the Settings menu. The parameters set here must match the corresponding parameters in the Merrick controller.



Controller Number – The serial communications ID of the Merrick controller.

Comm Port - The serial port in the PC used to communicate with the controller.

Refresh Rate – The time (in milliseconds) for WinMerik to update the register values and, if enabled, log data to the hard drive.

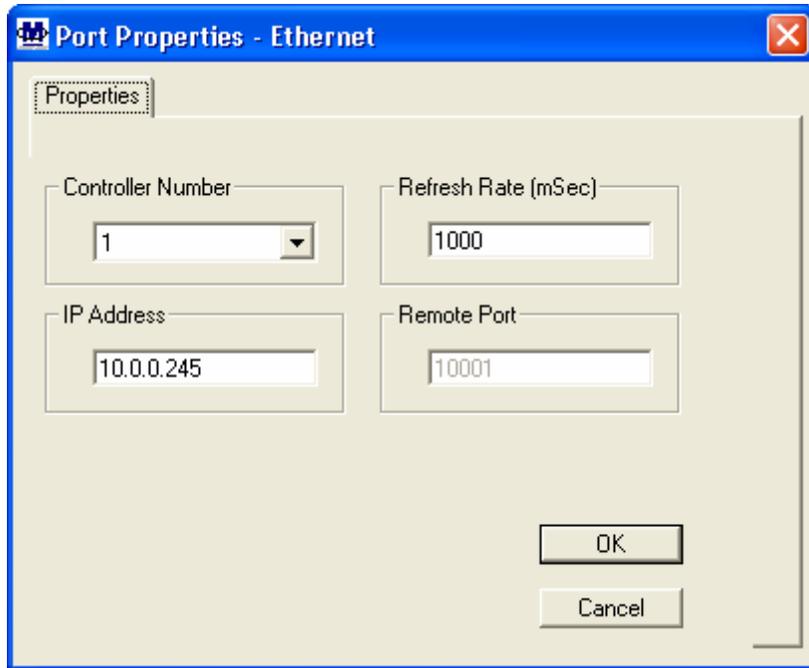
Port Speed – The serial port data speed.

Connection Preferences – Typically set to 8,N,1

Flow Control – Set based on your particular hardware. Note: Only the option “None” is currently supported by Merrick controllers

Ethernet Communications

If you have selected “Ethernet” as your communications mode, then you will be presented with the screen below when you click on Port Settings in the Settings menu. The Controller Number and Refresh Rate are as described in the section above under Serial Communications. The only other parameter selectable is the IP address of the Serial/Ethernet converter.



Note: The Serial/Ethernet converter must itself be configured separately. Besides assigning an IP address to the unit, you must also select serial communication parameters that match the Merrick controllers that it will be connected to. See the manufacturer's literature for the device that you are using for more information.

If you purchased the Serial/Ethernet converter from Merrick, an effort has been made to pre-configure it for your specific application. Unless you specified otherwise it will arrive programmed with a default IP address of "10.0.0.245" which should allow you to connect it to your network and finalize the configuration.

Note: WinMerik expects the remote port ID of the Serial/Ethernet converter to be "10001". If you change this in the Serial/Ethernet converter configuration, WinMerik will not function correctly. If port ID 10001 will not work on your network, please contact Merrick for assistance.

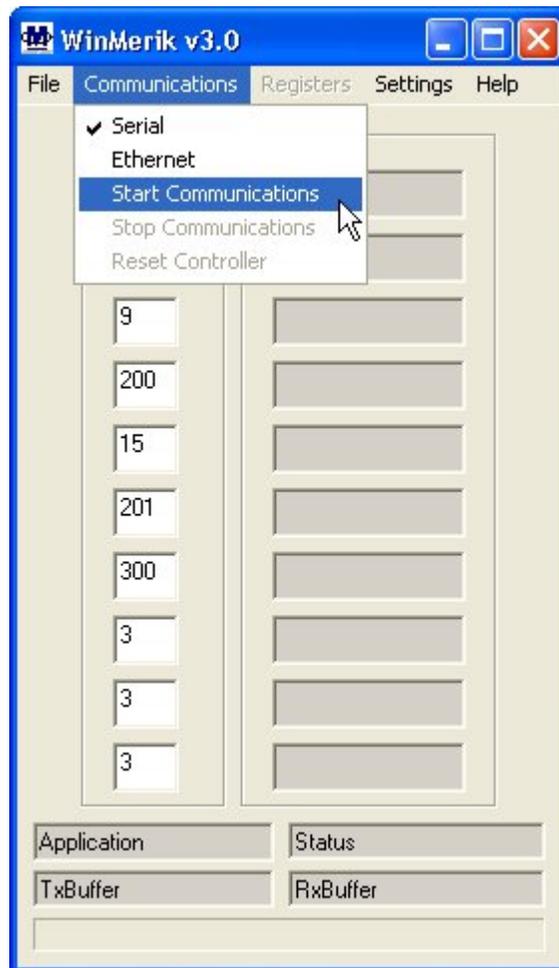
Merrick Controller Settings

Regardless of whether you are using Ethernet or direct Serial communications, the Merrick controller(s) must also be configured for serial communication such that the settings match either WinMerik (direct Serial) or the serial/Ethernet converter (Ethernet). Typical settings for the MC³ are 19200, N, 8, 1. Also, newer MC³ applications that support more than one communication protocol (ie. DF-1, Modbus RTU) must be set for protocol 0

(zero). See your MC³ operating manual for more information on setting the MC³ communications parameters.

Typical settings for the MC² family of controllers are 9600,N,8,1

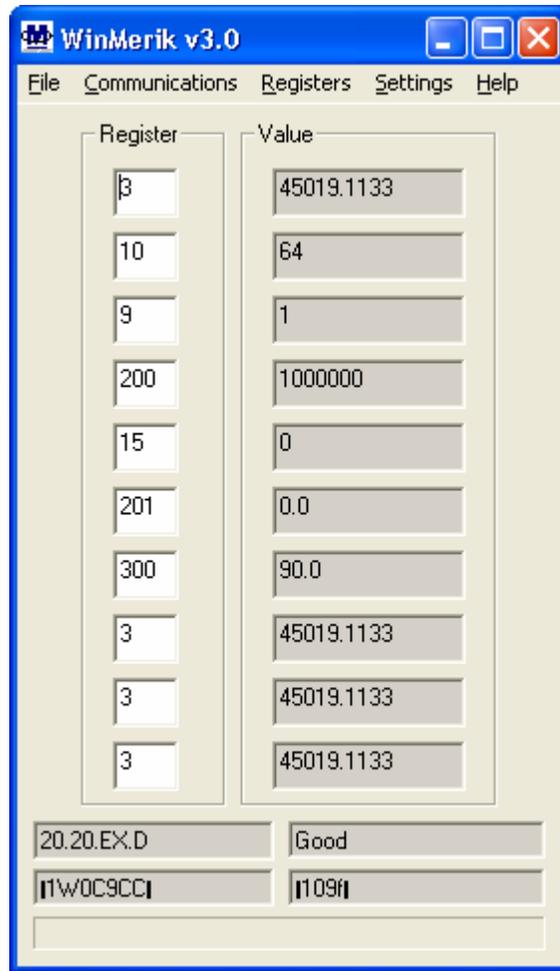
Starting Communications



To start communicating with the Merrick controller, choose the menu item "Start Communications" from the Communications menu as shown above. This will cause WinMerik to initialize the controller for communication and read the application and version IDs. If this is successful then the application name will be displayed at the bottom of the main screen. If any registers are tagged, the value of those registers will be shown in the appropriate window. While WinMerik is running the list of tagged registers can be changed at any time simply by entering new numbers in the column marked "Registers".

Note if you enter a value for a register number that is invalid, WinMerik will not return data, or you may see the error message "Access Error".

Once communication is successfully started, the register values will automatically be updated and the main screen should look something like this:



You must start communications before any further actions, such as Saving or Writing registers, can take place.

Saving and Restoring Registers

WinMerik allows you to save the contents of all of the registers in the Merrick controller. It also gives you the ability to restore them in the future. This can be very helpful if you make a programming mistake or have to replace a controller.

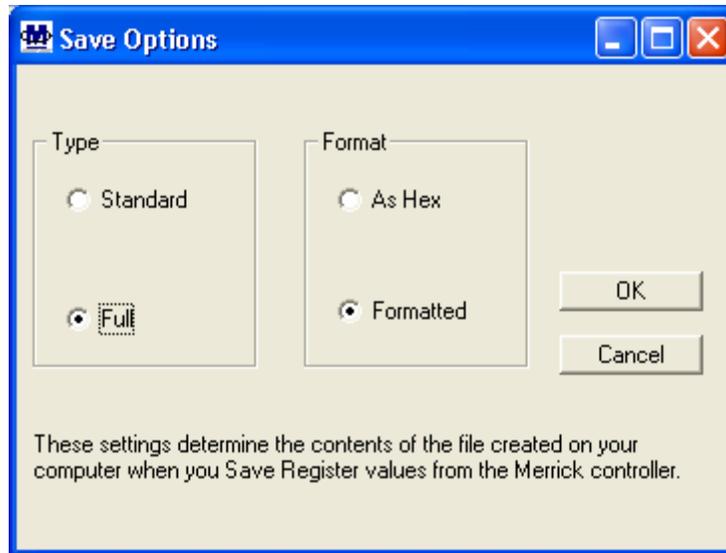
***** IMPORTANT *****

If you plan to save the registers with the possibility of writing the registers back in to a controller in the future, there are some things you need to do before you save the registers. You need to go into the Digital Input menu of the Merrick controller and set the logical input "Extended Access" to "Always On". Failure to do so may result in an improper reload in the future. Also, before you reload the registers into a controller you need to set the "Extended Access" logical input to "Always On" before you start the reload process. For more information on how to set digital outputs in Merrick controllers please refer to the O/M Manual for your particular controller.

Also, if you plan to save registers from one controller then restore them to another, you should set both controller ID's to the same value before performing the save. If, by restoring the registers from a different controller, you inadvertently change the value of the controller ID, the restoration will halt and this may result in an improper reload and a non-functioning controller.

Save Options

Before saving the contents of the registers to a file, you should select the type of file you want to create. Under the Settings menu, select "Save Options...". This will launch a dialog box as shown below.

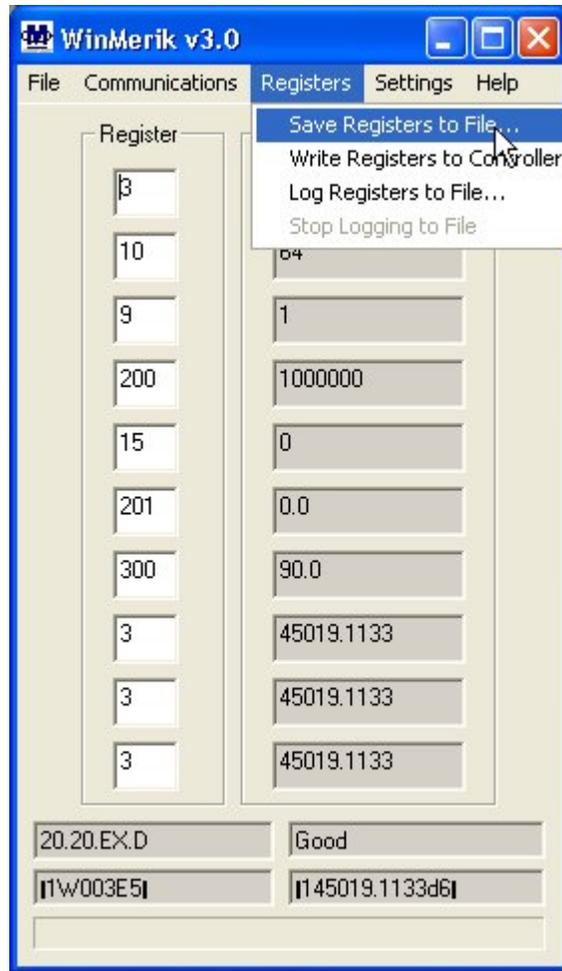


The default settings are as shown above. They may be changed as follows:

Type refers to the length of the file created. “Standard” length saves only those registers that are valid and normally useful to the user. It does not record registers that are read-only, as these cannot be written to later. The “Full” option will save every register to the specified file.

Format refers to the format of the data as it is written to the file. The “Hex” format writes all data as hexadecimal values. On the other hand, if you would like to be able to read the data yourself, or import it into another application (for example a spreadsheet), you may select “Formatted” output. In this case the data will be written in decimal form, and will be directly readable or usable by other programs. Either format may be used for a file that will be written back to the Merrick controller.

To save the registers to a file, select “Save Registers to File...” from the Registers menu as shown below.



A dialog box will appear that allows you to specify the file name and location for the file. The extension ".mcr" (Merrick Controller Registers) will automatically be appended to the file name. As the file is being written, all other communication with the controller will stop, and the values on the main screen will not be updated. The progress of the write process will be indicated on the bar graph at the bottom of the main screen. At completion, the bar graph will be blank, and the main screen will again be updated. If Logging of registers is enabled, this too will restart. An example of a register file is shown below:

Register Number	Register Value	Property Word	Type Value	of
2	"0.0000"	"C114"	"F"	
3	"1.2345"	"C114"	"F"	
4	"0.0000"	"C114"	"F"	
5	"2"	"8110"	"I"	
6	"0"	"8110"	"I"	
7	"0"	"8110"	"I"	
8	"2"	"8110"	"I"	
9	"0"	"8010"	"I"	
10	"60"	"8110"	"I"	
11	"67"	"8110"	"I"	
12	"0"	"0110"	"L"	
15	"0"	"8110"	"I"	
16	"75.00"	"C115"	"F"	
17	"20.00"	"C118"	"F"	
18	"0"	"C119"	"F"	
20	"5000"	"8110"	"I"	

This file was created with the "Formatted" option turned on. The values shown in the column labeled "Property Word" are codes that identify the format and type of register. You normally do not need to worry about these data. The last column identifies the type of value (F=floating point number, I = integer, L= long integer, C = character). Note the columns are comma separated. They may be opened and edited with a variety of programs such as Windows Notepad, or spreadsheet applications.

Note: If, during the creation of the file, communication errors were encountered, the following message will be displayed

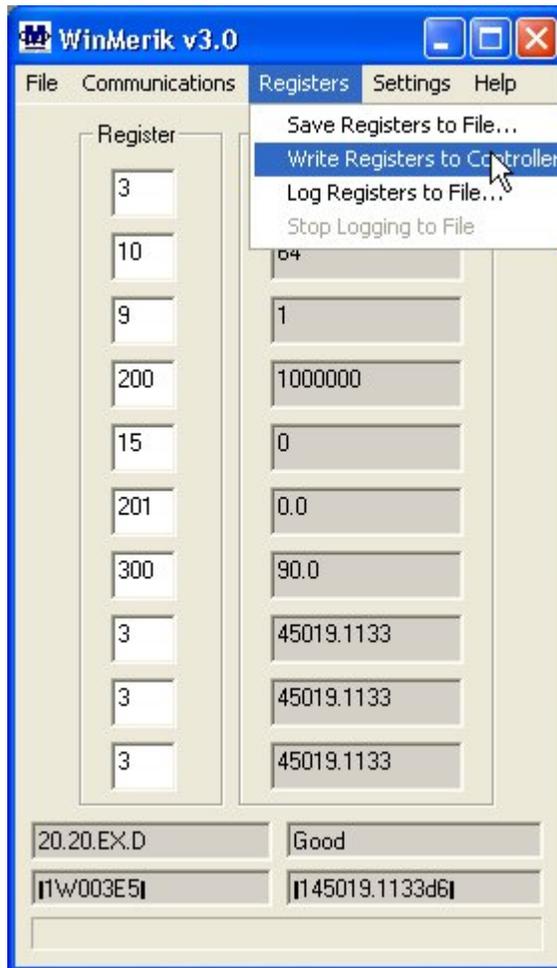


You should not attempt to write this file back to the controller, as improper or incomplete data may be written. Usually, if errors are encountered this indicates a serious problem with the communications link. Correct these problems, then try to save the registers again.

*****IMPORTANT*****

You should never edit one of these files unless you are confident you understand what you are doing. If you make a mistake, it is very possible to write data back to the controller that halts the process, changes the calibration or changes the process in such a way as to cause significant problems.

Once a file with register values is created, it is possible to restore these values to a Merrick controller at a later date. To restore the registers from a file, select "Write Registers to Controller..." from the Registers menu as shown below.



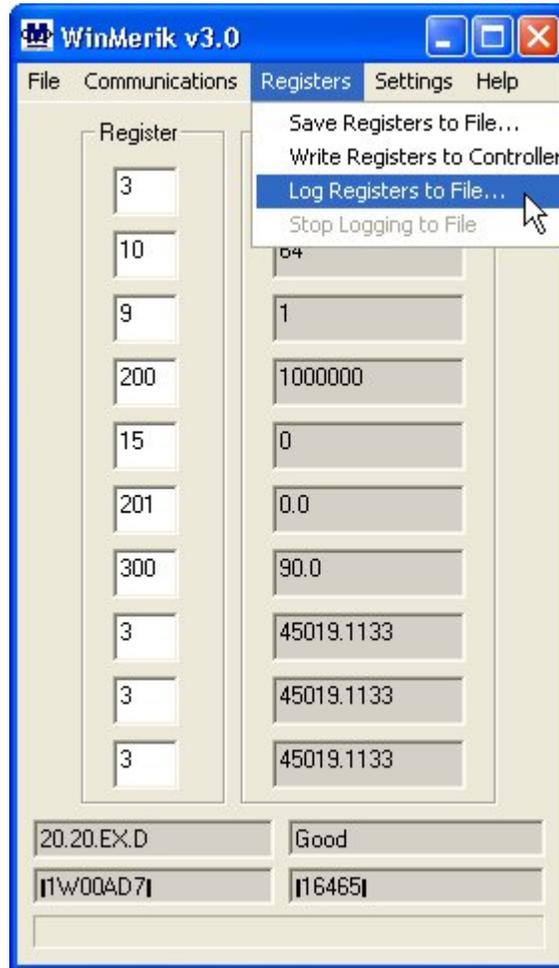
A dialog box will appear that allows you to specify the file name and location of the file. As the registers are being written, all other communication with the controller will stop, and the values on the WinMerik screen will not be updated. The progress of the write process will be indicated on the bar graph at the bottom of the main screen. At completion, the bar graph will be blank.

*****IMPORTANT*****

Before writing the registers to the controller, WinMerik will halt the controller. This will cause the controller to stop controlling the process and no longer respond to key presses until the controller is reset. At the completion of the download process, WinMerik will restart (re-boot) the controller, and it will be ready for use.

Log Registers to File

WinMerik has the ability to log the tagged register values to a file. The data is logged as a Comma Separated Variable (CSV) file that is readable by most spreadsheet or database applications. To start logging, select “Log Registers to File...” from the Registers menu as shown below



A dialog box will appear that allows you to specify the name and location of the file to write the data to. The default file name will appear as today's date in the format YYYYMMDD, with the .csv extension, but you may name the file anything you wish. Note, if you select a file that already exists, the new data will be appended to whatever logged data is already in the file.

The rate that data is logged is based on the refresh rate in “Port Settings” under the Settings menu. Each time a log is started a header is written and each subsequent data entry is time stamped. An example of the format is shown below (opened in Excel).

	A	B	C	D	E	F	G	H
1								
2	*****							
3	***** WinMerik *****							
4	Date: 04-25-2002 Time: 10:33:29							
5	AppName: 20.10.EX.E							
6	*****							
7								
8	Time	Reg #3	Reg #150	Reg #176				
9	10:33:30	9962.861	1	89.354				
10	10:33:31	9962.861	1	89.354				
11	10:33:32	9962.861	1	89.354				
12	10:33:33	9962.861	1	89.354				
13	10:33:34	9962.861	1	89.354				
14	10:33:35	9962.861	1	89.354				
15	10:33:36	9962.861	1	89.354				
16	10:33:37	9962.861	1	89.354				
17	10:33:38	9962.861	1	89.354				
18	10:33:39	9962.861	1	89.354				
19	10:33:40	9962.861	1	89.354				
20	10:33:41	9962.861	1	89.354				

Note, the accuracy of the timing at which WinMerik logs data is usually very good, but can be affected by how many registers are selected, baud rate, PC processor speed, any other processes active on the PC, etc. Usually, data can be logged accurately at rates up to 500 mS (2 records per second), sometimes faster. If the Refresh Rate you select is faster than what WinMerik is capable of, it will log data at the fastest rate possible, usually between 5 records per second and 2 records per second.

DDE (Dynamic Data Exchange)

WinMerik supports Dynamic Data Exchange (DDE) which allows many Windows applications to share information via dynamic links. For example, WinMerik can automatically update the cells of an Excel spreadsheet with data from registers in Merrick controllers. The data will be updated whenever it changes, as long as WinMerik is running, and communicating with the Merrick controller.

All of the register data that is shown on the main screen of WinMerik are available via DDE as *topics* in a DDE conversation. Note while the standard definition for a DDE link includes the *application*, *topic*, and *item* elements, the actual syntax used within applications for a destination link to a source application may vary slightly. For example, within Microsoft Excel, you use the syntax:

application!topic!item

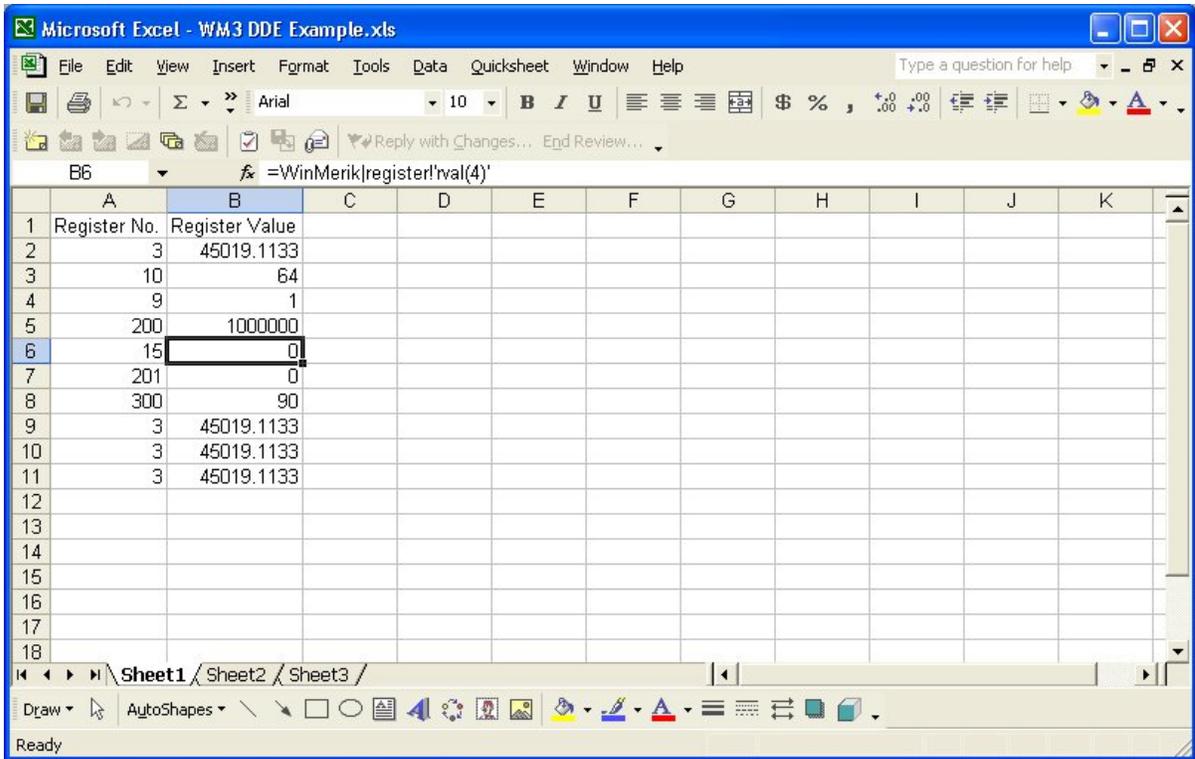
Within Microsoft Word for Windows, you use:

application topic item

[Don't use the pipe character [|] or exclamation mark [!].]

A thorough explanation of DDE is beyond the scope of this document, however an example using Excel is included on the installation CD, named "WM3 DDE Example.xls". It basically duplicates the WinMerik main screen, showing the contents of the registers selected as shown below. The specific DDE calls are contained in the cells on the example spreadsheet for those users that want to explore the usefulness of DDE on their own.

To view the example, launch the Excel spreadsheet "WM3 DDE Example" while WinMerik is running. Click on the update button and within a few seconds, live data should appear in the cells, and from then on be updated automatically every time it changes.



Error Messages

WinMerik may display the following error messages:

Format Error: A bad telegram was sent to the controller, this could be the result of a questionable serial communications link.

Busy Error: The controller is busy and can not respond at the present time.

Access Error: An invalid register number was requested, or an attempt was made to write to an invalid register. For example, this can happen while writing registers to the controller from a file, if the file was created while "Extended Access" was turned off (see Page 11).

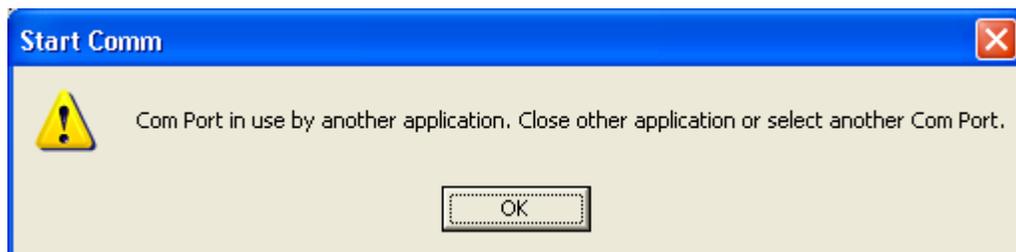
Bad Data The data in the telegram to the controller was out of range.

Power Up Error: The controller has not been initialized for serial communications.

Bad Command: A bad command was sent to the controller. This could be the result of attempting to communicate with an old MC² application that does not support the newer telegrams.

Timeout Error: The controller did not respond within a 1 second timeout period in three consecutive tries. This is most likely due to a serious problem with the communications link.

If you see the following message:



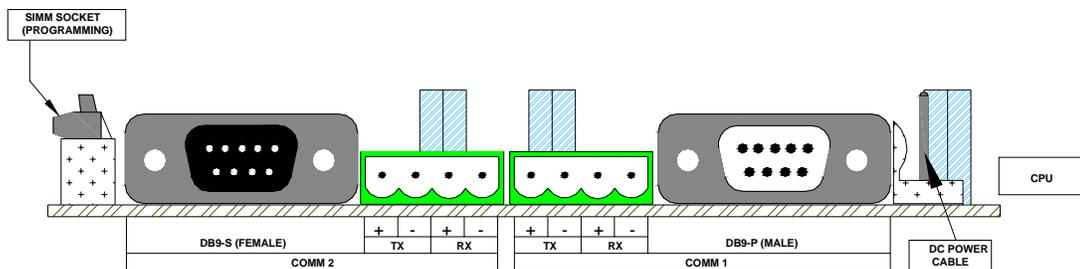
this means that you have attempted to initialize serial communication with a PC Com Port that is already in use.

Appendix A

MC³ Serial Port Connections

New CPU Board (Rev 11 or Newer)

Note: If your MC³ CPU board appears differently than this, contact Merrick for instructions on how to connect WinMerik.



Communication Ports

COM 1 RS-232 (9 pin male D-sub connector)

Pin	Signal
2	Rx
3	Tx
4	DTR (+5VDC) Not Fused
5	Com (DC GND)
7	RTS (OUT)
8	CTS (IN)

The RS-232 serial port is not isolated.

COM 1 RS-485 4 WIRE (4 pin green connector)

Pin	Signal
1	TX +
2	TX -
3	RX +
4	RX -

The 4 wire RS-485 serial port is not isolated, but may float ± 50 V with respect to MC³ ground.

COM 2 RS-232 (9 pin female D-sub connector)

Pin	Signal
2	Tx
3	Rx
5	Com (DC GND)
6	DSR (+5VDC) NONFUSED
7	RTS (IN)
8	CTS (OUT)

The RS-232 serial port is not isolated.

COM 2 RS-485 4 WIRE (4 pin green connector)

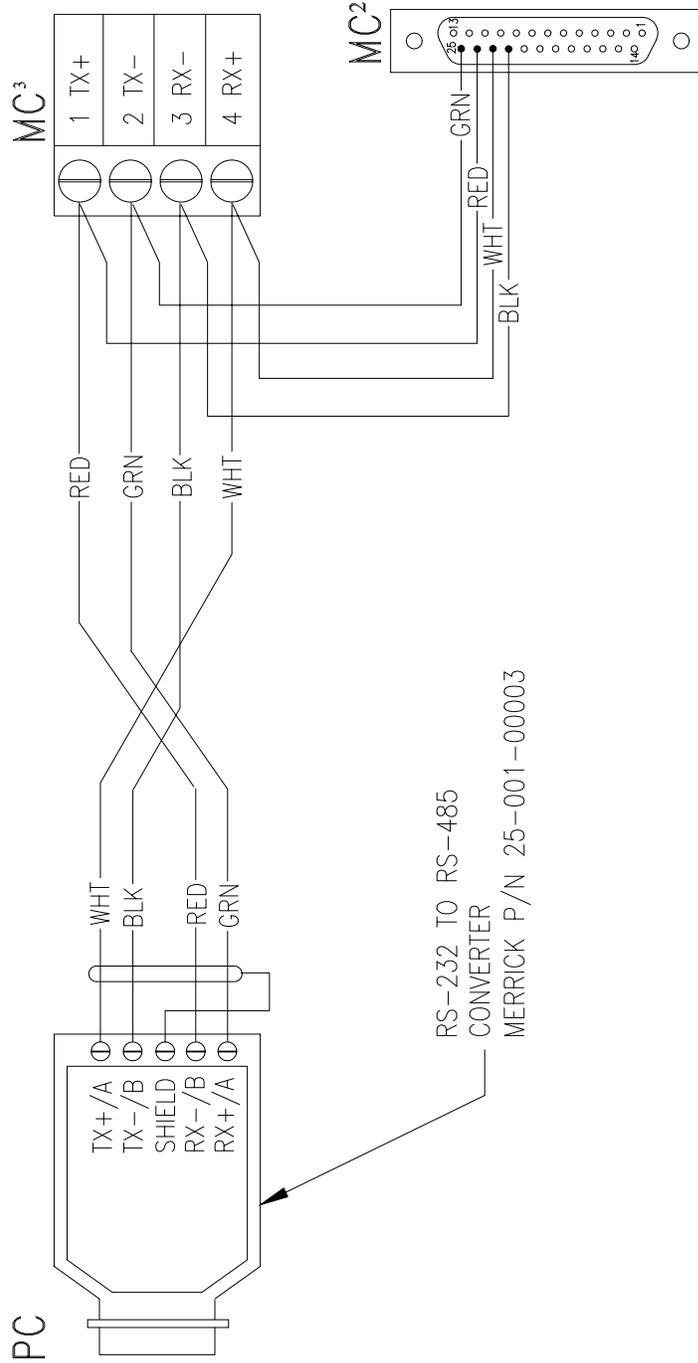
Pin	Signal
1	TX +
2	TX -
3	RX +
4	RX -

The 4 wire RS-485 serial port is not isolated, but may float ± 50 V with respect to MC³ ground.

Note: Only Comm 1 (either RS-232 or 4-wire RS-485) on the MC³ is used for WinMerik communication

Appendix B

Cabling between PC and Merrick Controllers



Appendix C

WinMerik Accessories

Merrick Part No.	Description
25-01-00003	RS232 to RS485 (4 wire) adapter. Can support multiple Merrick controllers. Wiring and RS485 connectors not included.
N43659-1	Cable assy, RS232 to RS485. Includes cable and RS485 connector for Merrick MC ³ controller
N43659-2	Cable assy, RS232 to RS485. Includes cable and RS485 connector for Merrick MC ³ controller, and RS485 connector for Merrick MC ² controller
S61209-4	Ethernet to Serial adaptor
N45708-2	RS485 cable for S61209-4 adaptor. Supports connection to one Merrick MC ³ controller

To purchase any of these accessories contact the Merrick Spare Parts department.