

Communicating to EnviroRanger & BW500 Using Wonderware

Version 7.0.1

This application guide gives some useful advice on how to set Wonderware InTouch HMI to communicate to either an EnviroRanger or BW500. In particular it was found that there is a way of setting up the software so that the user thinks that bits in the device are being set when in fact they are not.

The Problem:

All data in the EnviroRanger and BW500 are packed into registers. There are some registers that have status/control bits in them that the user will need to set and clear.

If the bit in the register map are referenced as I/O Discrete, the bits can be read with out problems. However, if the user then tries to write to the bits, Wonderware will permit this, but the driver will not pass them on. As a result, the user will see the bit change on the screen and then flip back to what it was. Also, no error message will be generated.

Not all Modbus drivers have this problem. In fact, of the HMI's tested so far, the two drivers for Wonderware InTouch are the only ones that have this problem. However, given the nature of the problem, it would not be surprising to find other HMI's with this problem.

The Solution:

To overcome this problem, the user has to reference the registers as I/O Integers and then reference the bits in the registers on the Wonderware InTouch screen. Also, the registers have to be scaled from 0 to 65536, or the scaling will create problems.

The details and some other useful information are listed below.

Keywords:

Wonderware Intouch, Modbus RTU, HMI, Standard Automation & Control.

Using The Wonderware Modbus Driver:

The Tags in Wonderware InTouch can be set up to reference many different data types in a device. For this application, the three data types that are of interest, are: Integer, double precision Integer, bit data.

Integers are configured as follows:

- Type: I/O Integer
- Read only or read/write depending on variable
- Scaling is either -32768 to 32767 for signed integer or 0 to 65536 for unsigned integer
- Item name is the register number (i.e. 41130)

Double precision Integers are configured as follows:

- Type: I/O Integer
- Read only or read/write depending on variable
- Scaling is, -2147483647 to 2147483647.
- Item name is the register number with a space and a L at the end of the number (i.e. 41440 L).
- Format word in the Modbus memory map must be 0, for the correct word order.

Bit data that are read only are configured as:

- Type: I/O Discrete
- Read only
- Item name is register number followed by a colon and then the bit number. The bit number is numbered from most significant bit to least significant bit (1 to 16). (i.e. 40093:15 would be 1 if R40093=2)

Bit data that are read/write, are configured as:

- Type: I/O Integer
- Read/Write
- Scaling is 0 to 65536
- Item name is the register number (i.e. 40093)
- On the Wonderware InTouch screen the user references it by the tagname followed by a period and the bit number is numbered from least significant bit to most significant bit (0 to 15). (i.e. Station_1_Pump1_Control_Status.00 is the Available bit)

Using The Standard Automation Modbus Driver:

The same information as above applies to this driver as well, except for handling double precision integers and the word and bit order.

Double precision Integers are configured as follows:

- define three tagnames, one for the high word and one for the low word, one for the write value
- $value = Low\ word + (High\ word * 65536)$
- Scaling for the tagname for the high word/low word is 0 to 65536. For the write tagname the scaling is 0 to 2147483647.
- For the write tagname, the Item name is the register number with a space and a L at the end of the number (i.e. 41440 L).

The Wonderware driver does not let you control word or bit order, however, the standard automation driver does. In the Windows 95 version that was tested, the default configuration of the driver made it work just like the Wonderware driver. Please see the Standard Automation documentation for more information.

Note: The information in this document is intended as a “guide” only. Milltronics assumes no responsibility for its application.