



Wago

750-842 (Modbus TCP/IP)

Overview

Maple Systems' **Silver Series / HMI500 Series** Human Machine Interface terminals (Maple HMIs) communicate with the Wago 750-842 using the **Modbus RTU TCP/IP** protocol. The Maple HMI acts as the "master" in a **point-to-point single master, single slave format**.

The **MODBUS RTU TCP/IP** protocol driver in EZware-500 also has the following features:

- Ability to communicate over Ethernet up to 100 meters!
- Ability to communicate over Ethernet at a speed of 10 Mbps!
- Ability to read/write to individual bits in 3x and 4x memory registers!

Communications Cable

The Maple HMI must be connected to the Wago's Ethernet port.

A crossover (Cat-5 or better) Ethernet cable is required between the HMI and the Wago 750-842, unless a hub, switch, or router is used in-between, in which a standard straight-through Ethernet cable can be used. A list of cables offered by Maple Systems as well as cable assembly instructions to assist you in assembling your own Ethernet cable are available on our website at www.maple-systems.com/cables.htm.

WARNING: If your communications cable is not wired exactly as shown in our cable assembly instructions, damage to the HMI or loss of communications can result.

Controller Settings

The Ethernet port on the Wago must be set to Modbus TCP/IP Slave mode in order to properly communicate with the HMI.

Accessible Memory

Register Memory

The user must set up “PLC Variables” in the Wago PLC program, which are accessible from the fieldbus and PLC program. Contact Wago for more information on setting up PLC Variables and referencing them from the fieldbus and PLC program.

The following table lists the controller’s register memory ranges that the Maple HMIs are able to access.

PLC Address	Modbus Device Type	Modbus Device Address	Controller Register Description	Offset
%IW0-255	3x	1 - 256	Real World Analog Inputs, Read Only (%IW0=300001)	+1
%IW256-9486	3x	769-9999	Available Memory (%IW256=400769)	+513
%QW0-255	4x	1 - 256	Real World Analog Outputs, (%QW0=400513)	+1
%QW256-9486	4x	769 - 9999	Available Memory (%QW256=400769)	+513
%IB0-9998	4x	1-9999	Real World Digital Input Byte (%IB0-1 = 400001)	+1
%QB0-4096	4x	513	Real World Output Byte (%QB0-1 = 400513)	+513

Discrete Memory

The following table lists the controller’s discrete memory ranges that the Maple HMIs are able to access. Please note that your controller’s memory range may be **smaller** or **larger** than that supported by these HMIs. The following discrete memory is displayable in single-bit format on the Maple HMI.

PLC Address	Modbus Device Type	Modbus Device Address	Controller Register Description	Offset ¹
%IX0.0-9.9	1x	1-9999	Real World Digital Input	+1
%QX0.0-9.9	0x	513	Real World Output	+513

NOTE: The Wago 750-842 allows different data to be mapped to the same Modbus addresses. Therefore care should be taken to decide which addresses are mapped.

EZware-500 Settings

The following table lists the communications settings that must be configured in EZware-500. These settings can be found in the Edit-Set System Parameters menu under the PLC tab. Please note:

- the **Recommended Settings** column provides the recommended setting based upon default settings most commonly use in the Wago 750-842.
- the **Options** column lists EZware-500's options; your controller may not support every option

Name	Recommended Settings	Options	Important Notes
PLC type:	Modbus RTU TCP/IP		
PLC I/F Port:	Ethernet	RS232, RS485 default, RS485 4W, RS485 2W, Ethernet	Using Modbus TCP/IP requires the use of the Ethernet port.
Data Bits:	n/a	7 or 8	Does not apply to this protocol.
Stop Bits:	n/a	1 or 2	Does not apply to this protocol.
Baud Rate:	n/a	9600,19200, 38400,57600, 115200	Does not apply to this protocol.
Parity:	n/a	Even, Odd, None	Does not apply to this protocol.
HMI station No.:	0	0-255	Use only for multiple HMIs
PLC station No.:	0	0-255	Does not apply to this protocol.
Multiple HMI:	Disable	Disable, Master, Slave	Use for multiple HMIs
HMI-HMI link speed:	38400	38400, 115200	Use for multiple HMIs
Connect I/F:	n/a	Ethernet, Serial	Use for multiple HMIs
Local IP Address:	10.5.140.10	XXX.XXX.XXX.XXX	The IP address assigned to the HMI Use first three octets as the Wago
Server IP Address:	10.5.140.200	XXX.XXX.XXX.XXX	Use the IP address assigned to the Wago (possibly different)
Subnetwork Mask:	255.255.255.0	XXX.XXX.XXX.XXX	A mask for the IP addresses
Default Route IP Address:	0.0.0.0	XXX.XXX.XXX.XXX	Used if the HMI is connected to a a router
PLC time out constant (sec)	3.0	1.5 to 5.0	adjust if longer timeout is required
PLC block pack:	0	0-10	Number of words read at one time
Parameter 2	15	1-999	Turn around delay (x10mS incr.)