

# C O N T R O L L E R   I N F O R M A T I O N   S H E E T

## Maple Model(s)

HMI5000 Series  
cMT Series

## PLC or Controller

Modbus TCP Slave  
(Ethernet)



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## Summary

Maple Systems Graphic HMIs communicate with any device that uses the Modbus TCP protocol as a master device. The Graphic HMI uses the **MODBUS RTU/TCP Slave** protocol driver to configure the HMI as a slave in a point-to-point single-master, single-slave, or single-master, multiple-slave format.

## Communications Cable

The Maple HMI should be connected to the device's Modbus Ethernet port. A list of communications cables offered by Maple Systems as well as cable assembly instructions to assist you in assembling your own communications cable are available on our website at [www.maplesystems.com](http://www.maplesystems.com).

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**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.*

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## Controller Settings

The Modbus port on the controller must be set to Modbus TCP master mode in order to properly communicate with the HMI (working as a slave).
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## Accessible PLC Memory

### Register Memory

The following table lists the PLC's register memory ranges that the Graphic HMIs are able to access. Please note that your PLC's memory range may be *smaller* or *larger* than that supported by these HMIs. The following register memory can be displayed in 16, 32, or 64-bit format on the Graphic HMI.

Modbus Address	Map to HMI Local Word Address
300001 – 309999 or 400001 – 409999	LW0 – LW9998
310000 – 365535 or 41000 – 465535	RW0 – RW55535

### Discrete Memory

Modbus Address	Map to HMI Local Bit Address
00001 – 09999 or 10001 – 19999	LB0-LB9998

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**Note:** Some of the LW/LB addresses of the HMI are reserved for special use. Refer to the *EBPro User Manual* for more information on internal memory.

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The following Modbus function codes are supported by this communication driver.

Data Type	Read/Write	Description	Uses Modbus Code
0x	R	Read a coil	0x01
0x	W	Write to a single coil	0x05
0x_multi_coil	W	Write to multiple coils	0x0f (Function Code 15)
1x	R	Read a discrete input	0x02
3x	R	Read an input register	0x04
4x, 5x, 6x	R	Read a holding register	0x03
4x, 5x	W	Write to multiple registers	0x10 (Function Code 16)
6x	W	Write to single register	0x06

## EBPro Settings

The following table lists the communications settings that must be configured in EBPro. These settings can be found in the *System Parameters Device Settings* under the Home menu.

Please note:

- The **Recommended Settings** column provides the recommended setting based upon the default settings most commonly used in Modbus devices.
- The **Options** column lists EBPro's options; your PLC may not support every option.

Name	Recommended Settings	Options	Important Notes
Name:	Modbus RTU/TCP Slave		Description label
HMI or PLC	PLC		
Location	Local	Local	Select local if PLC is directly connected to HMI; remote if PLC is connected thru another HMI.
PLC type:	Modbus RTU/TCP Slave		
PLC I/F:	Ethernet	RS-232, RS-485 2W, RS-485 4W, Ethernet	Use Ethernet.
Settings: Port number	502	502	See <b>Note 1</b>
Settings: Update time	0	0-25 sec	See <b>Note 2</b>
Settings: Send response delay (ms)	0	0-9999	Increase delay for slower Modbus master devices.
Use UDP	Unchecked	Checked/Unchecked	See <b>Note 3</b>
Station Number	1	1 – 255	Not required for most Modbus devices
Modbus TCP/IP Gateway			See <b>Note 4</b>

**Note 1:** For cMT Series, set the port number in the Device Settings window. For all other models, set the port number in the System Parameters > Model tab.

**Note 2:** Enable caching when multiple clients are frequently requesting data. By default, the setting is 0 and the caching feature is not enabled. Settings greater than 0 will enable caching. If the client requests data from the same address within the designated update time, the server will use the data previously obtained as a response.

**Note 3:** Modbus Server (Ethernet) supports UDP communication protocol. When “Use UDP” is selected, the port number is entered in the Settings window.

The Modbus Server port number cannot be the same as the HMI port number, which is set in the System Parameters > Model tab.

The Modbus TCP/IP Gateway is disabled when UDP is selected.

**Note 4:** The original mapping between Modbus addresses and HMI addresses will be canceled when the Modbus TCP/IP Gateway is enabled.

## Additional Settings

- The IP Address of the HMI must be set using the HMI’s internal setup screens.
- The Modbus TCP port is 502.