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)	PLC or Controller
HMI5000 Series	Emerson Motion Control Epsilon Series

Summary

Maple Systems' **HMI5000 Series** Human/Machine Interface Terminals (Maple HMIs) communicate with Emerson Motion Control Epsilon Drives (Emerson controllers) using the Modbus RTU protocol. When configured with EZware-5000, the Maple HMI is the master in a point-to-point single master, multiple slave format. Please refer to the *HMI5000 Series Programming Manual* (Maple p/n 1010-1007) for information on connecting multiple Maple HMIs to a single PLC port.

Compatible PLCs

PLC Family	PLC Model
Epsilon Drives	E(x)-202, E(x)-203, E(x)-205

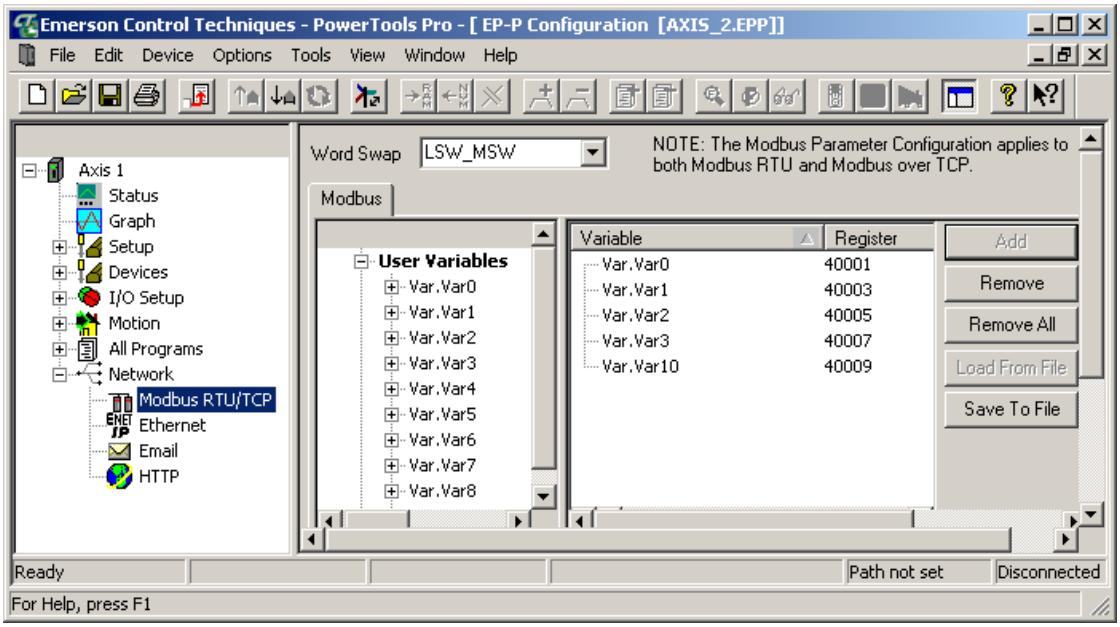
Communications Cable

The Maple HMI should be connected to either Emerson Serial Communications 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.

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 E-Series Drives Serial Communication Protocol is Modbus RTU Slave with a 32-bit Data Extension.
Variables that the HMI is to read/write must be assigned a Modbus address using the network setting of the Emerson Power Tools Pro software.



Accessible PLC Memory

Register Memory

The following table lists the PLC's register memory ranges that the Maple 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 or 32-bit format on the Maple HMI.

Controller Register Address	Controller Register Description
30001 – 9999	Input Register, Read-Only, 16-bit format
40001 – 49999	Holding/Output Register, 16 –bit format

Note *The 5x memory designator under Device Type is used for 32-bit representation. This memory area 'swaps' the most significant word and least significant word. Depending on the setting of the word swap in the Power Tools software, the 4x or 5x designator may be used.*
The 6x memory designator forces the HMI to use MODBUS function code 6 instead of function 16 when writing to multiple data registers.

Discrete Memory

The following table lists the PLC's discrete memory ranges that the Maple 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 discrete memory is displayable in single-bit format on the Maple HMI.

Controller Bit Address	Controller Bit Description
00001 – 09999	Discrete Coils/Output, Bit Format
10001 – 19999	Discrete Inputs, Read-Only, Bit Format

Note *The 3x_Bit memory designator under Device Type is used to write in individual bits of the 3x register memory. The 4x_Bit memory designator is used for the 4x register memory.*

Important Memory Considerations

If your PLC's memory range is smaller than the range supported by the Maple HMIs, it is possible to configure the HMI to monitor a PLC memory address which does not exist. Since this can cause unpredictable results, when you configure the HMI please ensure that all selected PLC memory addresses are valid for your PLC model.

Do not configure the HMI to write to any PLC memory address which should only be written to by the PLC.

The Maple HMIs use the following Modbus function codes:

- 01 – Read output coils (ex. 00001)
- 02 – Read input coils (ex. 10001)
- 03 – Read data registers (ex. 40001)
- 04 – Read input registers (ex. 30001)
- 05 – Write output coils (ex. 00001)
- 06 – Write data registers (ex. 40001)
- 15 – Write multiple output coils (ex. 00001-00016)
- 16 – Write multiple data registers (ex. 40001-40016)

EZware Settings

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

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

Name	Recommended Settings	Options	Important Notes
Name:	Modbus RTU		Description label
HMI or PLC	PLC		
Location	Local	Local, Remote	Select *Local* if PLC directly connected to HMI, *Remote* if PLC connected thru another HMI.
PLC type	Modbus RTU		
PLC I/F:	RS-232	RS-232, RS-485 2W, RS-485 4W, Ethernet	Must match the PLC port setting.
PLC default station no.:	1	0-255	Must match the default station no. assigned to the PLC.
Settings: COM:	COM 1	COM1-COM3	Serial port of HMI connected to PLC.
Settings: Baud rate:	9600	9600, 19200, 38400, 57600, 115200	Must match the PLC's port setting. Use the fastest baud rate supported by the PLC.
Settings: Data bits:	8	7 or 8	Must match the Modbus port setting.
Settings: Stop bits:	2	1 or 2	Must match the Modbus port setting.
Settings: Parity:	None	Even, Odd, None	Must match the Modbus port setting.
Settings: Timeout (sec)	1.0	0.1 to 25.5	Adjust if longer timeout is required.
Settings: Turn around delay (ms)	0	0-1000	Timeout period between HMI polls.
Settings: Send ACK Delay:	0		Not Applicable

Name	Recommended Settings	Options	Important Notes
Settings: Parameter 1:	0		Not Applicable
Settings: Parameter 2:	0		Not Applicable
Settings: Parameter 3:	0		Not Applicable
Interval of block pack words	5	0-512	See *HMI5000 Series Programming Manual* (Maple p/n 1010-1007)
Max. read-command size (words):	32		Not Adjustable
Max. write-command size (words):	32		Not Adjustable