

# CTC (Control Technology Corp)

## Automation Controller Series

### Overview

Maple Systems' **Silver Series/HMI500 Series** Human-Machine Interfaces (Maple HMIs) communicate with CTC (Control Technology Corp) Automation Controllers using the CTC Serial Data communication protocol. When configured with EZware-500, the Maple HMI is the master in a point-to-point single master, single slave format. Please refer to the *HMI500 Series Installation and Operation Manual* for information on connecting multiple Maple HMIs to a single Automation Controller port.

Compatible PLCs	
Family	Model
CTC Series	2200(XM), 2400(iE, iEA), 2600(XM), 2601, 2700, 2800(iE, iEA), 28EAXM, Multipro Family, 2216, Blue Fusion, RS232 or 2716 Dual Channel RS232 Communications Module

### Communications Cable

The Maple HMI should be connected via 3-wire RS-232 to the comm. port on the CTC Automation Controller.

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.maple-systems.com/cables.htm](http://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.



# 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.

PLC Register Type	Address Range	Format	PLC Register Description
DataTable	001001 to 255255	rrrccc (r=row, c=column)	Row/Column in the Data Table. The row and column are specified in decimal digits, and must be padded to 3 digits each. <sup>1</sup>
NumericRegister	1 to 65535	dddd (d=decimal)	32-bit values in a single Numeric Register
NR.W	1 to 65535	dddd	32-bit values in multiple Numeric Registers. <sup>1</sup>
AnalogInput	1 to 128	ddd	16-bit values read from an Analog Input
AnalogOutput	1 to 128	ddd	16-bit values read/written from an Analog Output
ServoPosition	1 to 16	dd	Position of the specified axis (not supported on CTC 2200)
ServoError	1 to 16	dd	Error on the specified axis (not supported on CTC 2200)

<sup>1</sup> **NOTE:** Values up to 65535 are stored in the lowest 16 bits of the specified memory location. Because the HMI treats all values as signed, the value will be displayed as -1. Scaling can be used to display this as an unsigned value. Values greater than 65535 are stored in 2 consecutive memory locations, with the least-significant 16 bits stored in the specified location, and the most-significant 16 bits stored in the next consecutive location. For data table locations, the most-significant 16-bits are stored in the next column.

## 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.

PLC Bit Type	Address Range	Format	PLC Bit Description
Flag	1 to 32	bb	Flag Registers
NR.B	1.00 to 65535.15	dddd.bb	Individual bits within Numeric Registers. Only the first 16 (00-15) bits in each register are supported. Bits must be specified with 2 digits.
DigitalInput	1 to 1024	dddd	Digital Inputs
DigitalOutput	1 to 999	ddd	Digital Outputs

## 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.

# 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 the default settings most commonly used in the Automation Controller.
- the **Options** column lists EZware-500's options; your controller may not support every option

Name	Recommended Settings	Options	Important Notes
PLC type:	CTC 2200-2800 Vx.y		X.Y denotes the version of the driver. Use the latest driver for new projects.
Serial port I/F:	RS232	RS232, RS485	Must match the Controller's port setting.
Data Bits:	8	7 or 8	Must match the Controller's port setting.
Stop Bits:	1	1 or 2	Must match the Controller's port setting.
Baud Rate:	9600	9600,19200, 38400,57600, 115200	Must match the Controller's port setting. Use the fastest baud rate supported.
Parity:	None	Even, Odd, None	Must match the Controller's port setting.
HMI station No.:	0	0-31	Does not apply to this protocol.
PLC station No.:	0	0-31	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
PLC time out constant (sec)	3.0	1.5 to 5.0	adjust if longer timeout is required
PLC block pack:	0	0-10	see <i>HMI500 Series Installation and Operation Manual</i>
Parameter 1	0-15	0-999	Turn-Around Delay (msec) Causes the HMI to wait for the specified interval before issuing the next command.
Parameter 2	0	0-8999	Error Code Register (see Errors Section)

# Error Messages

**“PLC No Response”** - The HMI did not receive a reply from the controller. Check the cable for proper wiring and connections. Make sure that the HMI’s baud rate, parity, and stop bits match the settings in the controller.

**“PLC Response Error”/“Always Responded Error”** - The HMI received an unexpected reply or an error from the controller. Check that the controller register address configured in the HMI exists in the controller. For example, the position of a non-existent servo, or the address of an I/O channel that does not exist will cause this error.

## Using the Error Code Register

If Parameter 2 is set to be a non-zero value, the HMI will write the error code sent by the controller into the specified Local Word. For example, if Parameter 2 is set to 510, the HMI will write the error code into register LW510.

Possible Error Codes:

101: checksum error, or incorrect data format

102: illegal register number specified

104: value out of range (i.e., specified input number not present in controller)