



Yaskawa

MP Series Controllers

Overview

Maple Systems' **HMI500 Series** Operator Interface Terminals (Maple OITs) communicate with Yaskawa Controllers using the Memobus protocol. When configured with EZware-500, the Maple OIT 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 OITs to a single Memobus port.

Compatible PLCs	
Family	Model
MP Series	MP 920, MP 930, MP 940

Communications Cable

The Maple OIT should be connected directly to the Port 1 (RS232) or Port 2 (RS485) port on the 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.

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

PLC Settings

Must be set to Memobus Slave protocol.

Accessible PLC Memory

Register Memory

The following table lists the PLC's register memory ranges that the Maple OITs are able to access. Please note that your PLC's memory range may be *smaller* or *larger* than that supported by these OITs.

PLC Register Type	Address Range	Format	PLC Register Description
IF ¹	0-FFE	hhh (h=hexadecimal)	Input Registers (Float)
IL ²	0-FFE	hhh	Input Registers (Long)
IW	0-FFF	hhh	Input Registers (Integer)
MF ¹	0-32766	dddd (d=decimal)	Holding Registers (Float)
ML ²	0-32766	dddd	Holding Registers (Long)
MW	0-32767	dddd	Holding Registers (Integer)

Note ¹: Reads 2 consecutive registers. On the Attribute dialog's General tab, set the number of words to "2." On the Numeric tab, set the Display to "Single Float."

Note ²: Reads 2 consecutive registers. On the Attribute dialog's General tab, set the number of words to "2."

Discrete Memory

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

PLC Bit Type	Address Range	Format	PLC Bit Description
IB ³	00 to FFFF	hhhh (h=hexadecimal)	Discrete Inputs
MB ⁴	00 to 4095F	dddh	Coils

The right most digit specifies the bit number, and must be in Hex (0-F).

Note ³: Specify the word number in Hex.

Note ⁴: Specify the word number in decimal.

Important PLC Memory Considerations

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

Broadcast Messages

The HMI500 does not support Memobus Broadcast Messages. However, there are several ways to send data to multiple controllers.

1. In the HMI500, create several Set Word objects. Configure each one to write to the appropriate Memobus Station Number. Stack the Set Word objects in the order in which the commands are to be sent to the controllers. For more information, see Maple Systems' Technical Note 1070, Networking Multiple Controllers using Modbus RTU Protocol".
2. Using Memobus, Mechatrolink, or DeviceNet, the controller can send messages to other controllers. Use the HMI to set a bit in the HMI, which can trigger a Send Message instruction in the ladder program.

Communications Error Messages

During communications with the controller, the HMI may display one or more of the following messages.

1. PLC No Response: the controller did not respond to the HMI's request; or the response was shorter than the HMI was expecting.
2. PLC Response Error: the HMI received an unexpected response from the controller.
3. Always Responded Error: despite several retries, the HMI continued to receive unexpected responses from the controller.
4. Not Support Operation: an attempt was made to perform an illegal operation.

For messages 1, 2 and 3, check the following:

- Cabling between the HMI and the controller
- Communications settings (baud rate, parity, etc.)
- Controller Memobus Address.
- Controller Register Addresses. Make sure that all registers configured in the HMI have been configured in the controller. For Bit addresses, the HMI will always issue requests in groups of 16. Therefore, make sure that a sufficient number of MB and IB addresses exist to contain the bit(s) being requested.

If, after double-checking the above items, the problem has not been resolved, try introducing some Turn-Around delay. Set Parameter 1 to a small value (start with 15), and experiment with increasing values.

For message 4, check the following:

- An attempt was made to write to an IB, IF, IL, or IW register. This is not supported.

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 Yaskawa Controller.
- the **Options** column lists EZware-500's options; your controller may not support every option

Name	Recommended Settings	Options	Important Notes
PLC type:	Yaskawa Memobus Vn.n		n.n is the version
Serial port I/F:	RS232 (for 232) RS485 4W (for 485)	RS232, RS485 default, RS485 4W, RS485 2W	
Data Bits:	8	7 or 8	Must match the Controller's Memobus port setting.
Stop Bits:	1	1 or 2	Must match the Controller's Memobus port setting. For Controller Port 2, must be 1.
Baud Rate:	19200	9600,19200, 38400,57600, 115200	Must match the Controller's Memobus port setting. Use the fastest baud rate supported.
Parity:	Even	Even, Odd, None	Does not apply to this protocol.
HMI station No.:	0	0-31	use for multiple OITs
PLC station No.:	0	0-31	Must match the Memobus address assigned to the controller.
Multiple HMI:	Disable	Disable, Master, Slave	use for multiple OITs
HMI-HMI link speed:	38400	38400, 115200	adjust if longer timeout is required

Name	Recommended Settings	Options	Important Notes
PLC time out constant (sec)	3.0	1.5 to 5.0	<i>see HMI500 Series Installation and Operation Manual</i>
PLC block pack:	0	0-10	<i>see HMI500 Series Installation and Operation Manual</i>
Parameter 1	0 (for RS232) 15 (for RS485)	0-999	Turn-Around Delay (msec) Causes the HMI to wait for the specified interval before issuing the next command.