



International Parallel Machines

IPM Series

Overview

Maple Systems' **Silver Series** Operator Interface Terminals (Maple OITs) communicate with International Parallel Machines Controllers using the Modbus RTU protocol. When configured with EZware, the Maple OIT is the master in a point-to-point single master, single slave format. Please refer to the *Silver Series Installation and Operation Manual* for information on connecting multiple Maple OITs to a single Modbus RTU port.

Compatible Controllers	
Family	Model
IPM Series	IP3416, IP3416DL, IP3416RM, IP3416A

Communications Cable

The Maple OIT should be connected to the RS-485 Port of 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.

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.

Controller Settings

DIP Switch #2 must be set to the *Off* position to place the Controller in Slave mode. The DIP Switches are located at the lower left-hand corner of the Controller.

Accessible Memory

Register Memory

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

Controller Register Address	Controller Register Description
40001 - 40032 (T0 - T31)	Timer Current Value, 16-Bit Format, 15-Bit Value, Read-Only
40033 - 40064 (C0 - C31)	Counter Current Value, 16-Bit Format, 15-Bit Value, Read-Only
40065 - 40096 (D0 - D47)	Data Register, 16-Bit Format, 16-Bit Value
40097 - 40112 (R0 - R255)	Relay Register, 16-Bit Format, 1-Bit Value
30121 - 30128 (A24 - A31)	Analog Input, 16-Bit Format, 16-Bit Value, Read Only

Discrete Memory

The following table lists the controller's discrete memory ranges that the Maple OITs are able to access. Please note that your controller'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.

Controller Bit Address	Controller Bit Description
00001 - 00048 (X0 - X47)	Input Coil, 1-Bit Format, Read Only
10001 - 10016 (Y0 - Y15)	Output Coil, 1-Bit Format

Important Memory Considerations

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

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

The Maple OITs 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-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 International Parallel Machines controller
- the **Options** column lists EZware's options; your controller may not support every option

Name	Recommended Settings	Options	Important Notes
PLC type:	Modbus RTU Extend V3		See Controller Information Sheet 1033-0045 <i>Modbus Generic Series</i> for more information
Serial port I/F:	RS485	RS232, RS485	
Data Bits:	8	7 or 8	Must match the Modbus port setting.
Stop Bits:	1	1 or 2	Must match the Modbus port setting.
Baud Rate:	9600	9600,19200, 38400,57600, 115200	Must match the Modbus port setting. Use the fastest baud rate supported by the controller.
Parity:	None	Even, Odd, None	Must match the Modbus port setting.
HMI station No.:	0	0-255	Does not apply to this protocol.
PLC station No.:	1	0-255	Must match the Modbus port setting.
Multiple HMI:	Disable	Disable, Master, Slave	use for multiple OITs
HMI-HMI link speed:	38400	38400, 115200	use for multiple OITs
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>Silver Series Installation and Operation Manual</i>