CONTROLLER INFORMATION SHEET

# Modicon Series PLCs

## Overview

Maple Systems' MAP Family & OIT Family Operator Interface Terminals (Maple OITs) communicate with MODICON Series of Programmable Logic Controllers (PLCs) using the MODBUS protocol in a point-to-point single master, single slave format.

| Compatible PLCs | |
|---|---|
| **PLC Family** | **PLC Model** |
| Modicon 984 Series | 984-XXX, Micro 984 |
| Modicon TSX Quantum | 140CPU11302, 140CPU11303, 140CPU21304, 140CPU42402 |
| Modicon Micro | 110CPU311xx, 110CPU411xx, 110CPU512xx, 110CPU612xx (xx = 00 to 03) |
| Modicon Compact | A120, 130, 131, 141, 145 |
| Modicon Momentum | 171CCS700 |

## Communications Cable

The Maple OIT should be connected to the MODBUS port located on the programmable controller. In applications requiring multiple OITs, the MODBUS Plus BM85 Bridge Multiplexer provides four additional MODBUS ports for connecting OITs. Refer to Technical Note 1061 for information on communication cable part numbers and cable assembly instructions. If you will be assembling your own communications cable, cable assembly instructions are also available on our web site at www.maple-systems.com.

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

## PLC Settings

The MODBUS port on the Modicon Series PLCs must be set to RTU mode in order to communicate properly with the OIT.

# Accessible PLC Memory

### *PLC Register Memory*

The following table lists the PLC register memory ranges that Maple's OITs are able to access. Please note that your PLC's memory range may be ***smaller*** or ***larger*** than that supported by Maple's OITs. The following PLC register memory is displayable in 16-bit or 32-bit formats on the Maple OIT.

| PLC Register Address | PLC Register Description | Access |
|---|---|---|
| 30001 to 39999 | Input Registers | Read Only |
| 40001 to 49999 | Holding/Output Registers | Read/Write |

### *PLC Discrete Memory*

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

| PLC Bit Address | PLC Bit Description | Access |
|---|---|---|
| 00001 to 09999 | Discrete Coils/Output | Read/Write |
| 10001 to 19999 | Discrete Inputs | Read Only |

# OITware-200 Settings

The following table lists the communications settings that must be configured in OITware-200. Please note:

- the Default column lists OITware-200's default setting; your PLC's default may be different
- the Options column lists OITware-200's options; your PLC may not support every option

| Name | Default | Options | Important Notes |
|---|---|---|---|
| Baud Rate | 9600 | 19200, 9600, 4800, 2400, 1200, 600, 300 | Must match the Modicon port settings. Use the fastest baud rate supported by both. |
| Parity | Even | Even, Odd, None, Mark, Space | Must match the Modicon port settings. |
| Data Bits | 8 | 7, 8 | Must match the Modicon port settings. |
| Stop Bits | 1 | 1, 2 | Must match the Modicon port settings. |
| Status Coils (optional) | 00385 | 00001 to 09999 | Must be within the PLC's supported memory range. |
| Address, Source Address | N/A | | |

| Name | Default | Options | Important Notes |
|---|---|---|---|
| Destination Address | 1 | 0 to 247 | Must match the Modicon port settings. |
| Password | N/A | | |
| Message Request Register (optional) | 40001 | 40001 to 49999 | Must be within the PLC's supported memory range. |
| Current Message Register (optional) | 40003 | 40001 to 49999 | Must be within the PLC's supported memory range. |
| Function Key Coils (optional) | 00401 | 00001 to 09999 | Must be within the PLC's supported memory range. |
| Screen Dependent Function Key Coils (optional) | 00369 | 00001 to 09999 | Must be within the PLC's supported memory range. Applies to OITs with Screen Dependent Function Keys. |
| Control Key Coils (optional) | 00433 | 00001 to 09999 | Must be within the PLC's supported memory range. |
| Status LED Coils (optional) | 00001 | 00001 to 09999 | Must be within the PLC's supported memory range. Applies to OITs with Status LEDs. |
| Function Key LED Coils (optional) | 00417 | 00001 to 09999 | Must be within the PLC's supported memory range. Applies to OITs with Function Key LEDs. |

# MAPware-100 Settings

The following table lists the communications settings that must be configured in MAPware-100. Please note:

- the Default column lists MAPware-100's default setting; your PLC's default may be different
- the Options column lists MAPware-100's options; your PLC may not support every option

| Name | Default | Options | Important Notes |
|---|---|---|---|
| Baud Rate | 9600 | 19200, 9600, 4800, 2400, 1200, 600, 300 | Must match the Modicon port settings. Use the fastest baud rate supported by both. |
| Parity | Even | Even, Odd, None, Mark, Space | Must match the Modicon port settings. |
| Data Bits | 8 | 7, 8 | Must match the Modicon port settings. |
| Stop Bits | 1 | 1, 2 | Must match the Modicon port settings. |
| Status Coils | 00385 | 00001 to 09999 | Must be within the PLC's supported memory range. |

| Name | Default | Options | Important Notes |
|---|---|---|---|
| Address,<br>Source Address | N/A | | |
| Destination Address | 1 | 0 to 247 | Must match the Modicon port settings. |
| Password | N/A | | |
| Message Request Register | 40001 | 40001 to 49999 | Must be within the PLC's supported memory range. |
| Function Key Coils (optional) | 00401 | 00001 to 09999 | Must be within the PLC's supported memory range. |

# Important PLC Memory Considerations

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

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

**Accessing the 1XXXX Registers**
When accessing the 1XXXX registers, these inputs are designed to be read only, even though the OITware-200 configuration software allows the programmer to select read/write access for discrete inputs.

**On using Bank 8 or Bank 16 formats**
When using these formats, each PLC coil (bit) is individually displayed in terms of 1 and 0, with the lowest addressed coil displayed in the left-most position in the field. Therefore, if using coils 00001-00016, then 00016 is the least significant bit displayed in the right-most position and the 00001 is the most significant bit displayed in the left-most position. The address used must start on a word boundary, which can be determined if the first coil's address, minus 1 and then divided by 16, leaves no remainder.

Using Long or 8 Digit BCD is not currently supported. Modicon PLCs split long numbers into two registers as decimal.
Example: For number 16,000, register 40001 would be 10000 and register 40002 would be 6000.