



Siemens

TI505 Series

Overview

Maple Systems' MAP Family & OIT Family Operator Interface Terminals (Maple OITs) communicate with Siemens SIMATIC TI505 Series Programmable Logic Controllers (PLCs) using the NITP protocol in a point-to-point single master, single slave format.

Compatible PLCs	
PLC Family	PLC Model
Siemens SIMATIC TI505 Series	TI520, TI525, TI530, TI535, TI545, TI555, TI560, TI565, TI575

Communications Cable

The Maple OIT should be connected to the communications port located on the programmable controller. 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.

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
TCP1 to TCP10240	Timer/Counter Preset Values
TCC1 to TCC10240	Timer/Counter Current Values
STW1 to STW192	Status Word Registers
V1 to V28480	User Data Registers

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
C1 to C49152	Internal Relay Coils
X1 to X8192	Discrete Input Coils
Y1 to Y8192	Discrete Output Coils
WX1 to WX8192	Word Discrete Inputs
WY1 to WY8192	Word Discrete Outputs

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.

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 right-most position in the field. Therefore, if using coils C1-16, then C1 is the least significant bit displayed in the right-most position and C16 is the most significant bit displayed in the left-most position. When selecting the address of the register, the address should be on a byte boundary. For instance, coils C1 through C16 could be displayed together in bank format. Similarly, coils Y17-Y32, X33-X48, C81-C96, and Y193-Y208 are all valid banks. Coils C72-C87 are not a valid bank, because $(72-1) \div 16$ leaves a remainder of 7.

On using X or WX formats

Although the OITware-200 configuration software allows the programmer to select read/write access for discrete and word inputs (X or WX formats) these inputs are designed to be 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	19200	19200, 9600, 4800, 2400, 1200, 600, 300	Must match the PLC port settings. Use the fastest baud rate supported by both.
Parity	Odd	Even, Odd, None, Mark, Space	Must match the PLC port settings.
Data Bits	7	7, 8	Must match the PLC port settings.
Stop Bits	1	1, 2	Must match the PLC port settings.
Status Coils	C385	C1 to 49152	Must be within the PLC's supported memory range.
Address, Source Address, Destination Address	N/A		
Password	N/A		
Message Request Register	V500	V1 to 28480	Must be within the PLC's supported memory range.
Current Message Register (optional)	V502	V1 to 28480	Must be within the PLC's supported memory range.
Function Key Coils (optional)	C401	C1 to 49152	Must be within the PLC's supported memory range.
Screen Dependent Function Key Coils (optional)	C433	C1 to 49152	Must be within the PLC's supported memory range. Applies to OITs with Screen Dependent Function Keys.
Control Key Coils (optional)	C449	C1 to 49152	Must be within the PLC's supported memory range.
Status LED Coils (optional)	C1	C1 to 49152	Must be within the PLC's supported memory range. Applies to OITs with Status LEDs.
Function Key LED Coils (optional)	C417	C1 to 49152	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	19200	19200, 9600, 4800, 2400, 1200, 600, 300	Must match the PLC port settings. Use the fastest baud rate supported by both.
Parity	Odd	Even, Odd, None, Mark, Space	Must match the PLC port settings.
Data Bits	7	7, 8	Must match the PLC programming port settings.
Stop Bits	1	1, 2	Must match the PLC port settings.
Status Coils	C385	C1 to 49152	Must be within the PLC's supported memory range.
Address, Source Address Destination Address	N/A		
Password	N/A		
Message Request Register	V500	V1 to 28480	Must be within the PLC's supported memory range.
Function Key Coils (optional)	C401	C1 to 49152	Must be within the PLC's supported memory range.

PLC Error Messages

<p>“OIT Issued INVALID COMM command”</p> <p>This error message is displayed if the OIT issues an invalid command to the PLC.</p>
<p>“OIT Address Table Fault”</p> <p>This error message is displayed if the OIT requests to read or write to a PLC address that is out of range. This may be due to connecting to a member of the TI505 PLC family that has limited memory range.</p>
<p>“Buffer Pointer Null”</p> <p>This error message is displayed if the OIT attempts to use an incorrect pointer to a buffer to a buffer that is used to store data that will be sent/received from the PLC.</p>
<p>“Connection to PLC Lost”</p> <p>This error message is displayed if the OIT cannot pass the attach sequence during startup or gets no response (e.g., it is disconnected) from the PLC.</p>
<p>“OIT Internal Protocol Error”</p> <p>This error message is displayed if the OIT has performed several retries in an attempt to communicate to the PLC but continually gets some type of error response back from the PLC (e.g., there is a Checksum error).</p>
<p>“PLC Returned Error”</p> <p>This error message is displayed if the PLC returns an incorrect response code to one of the OIT’s commands (e.g., the PLC returns a write bit response code to a read register command). It is also displayed if an error has occurred that does not fit in any of the other categories.</p>
<p>“PLC Non Legal Task Code”</p> <p>This error message is sent by the PLC if it considers a command by the OIT to be illegal.</p>
<p>“PLC Access Locked”</p> <p>This error indicates that the communications port that the OIT is attached to is configured to be locked. The PLC programmer must unlock this port before the OIT can use it.</p>
<p>“PLC Variable Protected from Writes”</p> <p>This error message is displayed if the OIT attempts to write to a PLC register that has been programmed as write-protected. The PLC programmer must allow write access to this PLC register by the OIT to prevent this error from recurring.</p>