



Koyo DL305 Series

Overview

Maple Systems' MAP Family & OIT Family Operator Interface Terminals (Maple OITs) communicate with Koyo DL305 Series of Programmable Logic Controllers (PLCs) using the CCM (N Sequence) protocol in a point-to-point single master, single slave format.

Compatible PLCs	
PLC Family	PLC Model
Koyo DL305 Series	D3-330, D3-340

The Koyo DL305 Series model D3-350 using the K sequence protocol can be found referenced in Controller Information Sheet Koyo DL05, DL105, DL205 and DL405.

Communications Cable

The Maple OIT should be connected to the communications port located on the CPU module of the PLC. 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

Full duplex operation must be set in the PLC.

No Hardware Handshaking must be set in the PLC.

Some versions of the Koyo DL305 have a turnaround delay setting which is set either in the DCU module or in a data register. Because this setting affects communications speed with the OIT, it should always be set to 0.

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
CR 160 to 377, 770 to 777, 1000 to 1067	Internal Control Relays
R 400 to 577, 700 to 777	Data Registers
TMR/CNT 600 to 677	Timer/Counter Accumulator 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
I/O 0 to 157, 700 to 767	Discrete Input/Output Coils
SR 400 to 577	Shift Register Bits
TC 600 to 677	Timer/Counter Bits

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 Koyo DL305 Series port settings. Use the fastest baud rate supported by both.
Parity	None	Even, Odd, None, Mark, Space	Must match the Koyo DL305 Series port settings.
Data Bits	8	7, 8	Must match the Koyo DL305 Series port settings.
Stop Bits	1	1, 2	Must match the Koyo DL305 Series port settings.

Status Coils	CR160	CR160 to 377, CR770 to 777, or CR1000 to 1067	Must be within the PLC's supported memory range.
Address	1	1 to 90	Must match the station address set in the KOYO DL305 Series CPU.
Source Address, Destination Address	N/A		
Password	Null (Empty)	Four-digit password using 0-9	Must exactly match the access password that is set in the PLC. Otherwise, the Maple OIT will not be able to log on to the PLC.
Message Request Register	R400	R400 to R577	Must be within the PLC's supported memory range.
Current Message Register (optional)	R402	R400 to R577	Must be within the PLC's supported memory range.
Function Key Coils (optional)	CR200	CR160 to 377, CR770 to 777, or CR1000 to 1067	Must be within the PLC's supported memory range.
Screen Dependent Function Key Coils (optional)	CR240	CR160 to 377, CR770 to 777, or CR1000 to 1067	Must be within the PLC's supported memory range. Applies to OITs with Screen Dependent Function Keys.
Control Key Coils (optional)	CR300	CR160 to 377, CR770 to 777 or CR1000 to 1067	Must be within the PLC's supported memory range.
Status LED Coils (optional)	CR160	CR160 to 377, CR770 to 777, or CR1000 to 1067	Must be within the PLC's supported memory range. Applies to OITs with Status LEDs.
Function Key LED Coils (optional)	CR200	CR160 to 377, CR770 to 777, CR1000 to 1067	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 Koyo DL305 Series port settings. Use the fastest baud rate supported by both.
Parity	None	Even, Odd, None, Mark, Space	Must match the Koyo DL305 Series port settings.
Data Bits	8	7, 8	Must match the Koyo DL305 Series port settings.
Stop Bits	1	1, 2	Must match the Koyo DL305 Series port settings.
Status Coils	CR160	CR160 to 377, CR770 to 777, or CR1000 to 1067	Must be within the PLC's supported memory range.
Address	1	1 to 90	Must match the station address set in the Koyo DL305 Series CPU.
Source Address	N/A		
Destination Address	N/A		
Password	Null (Empty)	Four-digit password using numbers 0-9	Must exactly match the access password that is set in the PLC. Otherwise, the Maple OIT will not be able to log on to the PLC.
Message Request Register	R400	R400 to R577	Must be within the PLC's supported memory range.
Function Key Coils (optional)	CR220	CR160 to 377, CR770 to 777, or CR1000 to 1067	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.

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 I/O 000-017, then I/O 000 is the least significant bit displayed in the right-most position and I/P 017 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. Since all addresses are expressed in octal, the first coil's address must end in 0 to make a valid bank address. I/O 000-017, CR 160-177, SR460-477 are all examples of valid banks.

If no password is entered, the OIT creates a null password of "0000." If this password does not exactly match the access password in the PLC, the OIT will be unable to log on to the PLC. **Note:** *Since this is a password field, a full four-digit number must be entered, including any leading zeroes.*

Using the Data (R) Registers

The R (data) register addresses are represented using octal notation. Since all R (data) registers are 8-bit registers, the OIT will monitor two successive registers per monitor when a 16-bit format is selected. For example, if R400 is selected, then the OIT will monitor R400 and R401 with R401 being the most significant byte. **NOTE:** *R777 is used as a turn-around delay time for connections to modems. Inputting a non-zero value in this register will significantly degrade the operation of the OIT.*

PLC Error Messages

Communications error messages can be displayed on the OIT if a 16-bit register monitor is created to monitor an 8-bit register which is located at the upper range of the PLC's memory map. For example, if data register R777 is monitored by the OIT using a 16-bit register format (Example: Signed), then the OIT will try to read the contents of data register R777 and R778. Since R778 is non-existent, the OIT will generate an error. To monitor R777 as a 16-bit register, R776 should be selected.

Other error messages can be displayed when using a Data Communications Unit (DCU) module that sends an error back to the OIT. Therefore, a malfunctioning DCU or a DCU that has not been configured properly for communications with the OIT may cause errors. For example, the DCU must be in RUN mode or it will not allow access to the memory registers by the OIT.