



Koyo

DL05/06/105/106/205/405 Series and DL305 (D3-350 CPU)

Overview

Maple Systems' MAP Family & OIT Family Operator Interface Terminals (Maple OITs) communicate with Koyo DL05/DL06/DL105/106/205/405 Series of Programmable Logic Controllers (PLCs) and DL305 (D3-360 CPU) using the K Sequence protocol in a point-to-point single master, single slave format.

Compatible PLCs	
PLC Family	PLC Model
Koyo DL05 Series	D0-05 Micro PLC
Koyo DL06 Series	D0-06 Micro PLC
Koyo DL105 Series	F1-130 Micro PLC
Koyo DL106 Series	All
Koyo DL205 Series	D2-230, D2-240, D2-250 CPUs
Koyo DL305 Series	D3-350 CPU
Koyo DL405 Series	D4-430, D4-440, D4-450 CPUs

Communications Cable

The Maple OIT should be connected to the serial ports located directly on the CPUs. 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.
The Password must match the Password setting in the OITware-200 or MAPware-100.
The PLC must be set to use 'K' sequence protocol to communicate with the OIT.
The Koyo DL205 PLC (D2-240 CPU) has a two position switch on the CPU which can change the operating mode of the PLC (RUN/TERM). Set this switch to TERM mode when communicating with the OIT.
The Koyo DL205 PLC (D2-250 CPU), Koyo DL305 PLC (D3-350 CPU), and Koyo DL405 Series PLCs (D4-430, D4-440, D4-450 CPUs) have a three position switch on the CPU which can change the operating mode of the PLC (RUN/TERM/STOP). Set this switch to TERM mode when communicating 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
T0 to T377	Timer Accumulators (present values)
CT0 to CT177	Counter Accumulators (present values)
V1400 to V7377	User Data Registers
V7400 to V7777	System Parameter Registers
V10000 to V17777	User Data Registers
V37000 to V37777	System Parameter 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
X0 to X777	Inputs
Y0 to Y777	Outputs
GX0 to GX777	Remote Inputs and Outputs
C0 to C1777	Control Relays
S0 to S1777	Stages

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 PLC port settings. Use the fastest baud rate supported by both.
Parity	Odd	Even, Odd, None, Mark, Space	Must match the Koyo PLC port settings.
Data Bits	8	7, 8	Must match the Koyo PLC port settings.
Stop Bits	1	1, 2	Must match the Koyo PLC port settings.
Status Coils	C500	C0 to 1777	Must be within the PLC's supported memory range. Status coils occupy 16 bits or C500-517.
Address, Source Address, Destination Address	N/A		
Password	00000000 8 Zeros	Eight-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	V5000	V1400-7377, V7400-7777	Must be within the PLC's supported memory range.
Current Message Register (optional)	V5002	V1400-7377, V7400-7777	Must be within the PLC's supported memory range.
Function Key Coils (optional)	C520	C0 to 1777	Must be within the PLC's supported memory range. Function Key Coils occupy 6 to 16 bit depending on OIT selected. Ex. C520-C537.
Screen Dependent Function Key Coils (optional)	C560	C0 to 1777	Must be within the PLC's supported memory range. Applies to OITs with Screen Dependent Function Keys.

Control Key Coils (optional)	C600	C0 to 1777	Must be within the PLC's supported memory range.
Status LED Coils (optional)	C0	C0 to 1777	Must be within the PLC's supported memory range. Applies to OITs with Status LEDs.
Function Key LED Coils (optional)	C530	C0 to 1777	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 PLC port settings. Use the fastest baud rate supported by both.
Parity	Odd	Even, Odd, None, Mark, Space	Must match the Koyo PLC port settings.
Data Bits	8	7, 8	Must match the Koyo PLC port settings.
Stop Bits	1	1, 2	Must match the Koyo PLC port settings.
Status Coils	C500	C0 to 1777	Must be within the PLC's supported memory range.
Address, Source Address, Destination Address	N/A		
Password	00000000 8 Zeros	Eight-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	V5000	V1400-7377, V7400-7777	Must be within the PLC's supported memory range.
Function Key Coils (optional)	C520	C0 to 1777	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.

If no password is entered, the OIT creates a null password of "00000000." 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 eight-digit number must be entered, including any leading zeroes.*

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 X0-17, then X0 is the least significant bit displayed in the right-most position and X17 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. Y0-Y17, CR160-177, S460-477 are all examples of valid banks.