



Keyence KV Series

Overview

Maple Systems’ **Silver Series/HMI500 Series** Operator Interface Terminals (Maple OITs) communicate with Keyence KV Series of Programmable Controllers using the programming port located on the front of the PLC. When configured with EZware-500, 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 programming port.

Compatible PLCs	
PLC Family	PLC Model
Keyence KV Series	KV10, KV16, KV24, KV40, KV80, KV300

Communications Cable

The Maple OIT should be connected directly to the programming port located on the front of the PLC.

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 at www.maple-systems.com/cables.htm.

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.

PLC Settings

Keyence KV10 to KV80 support 9600 baud rate only. Keyence KV300 with a KVL2 module will support other baud rates.

Accessible PLC Memory

Register Memory

The following table lists the PLC's register memory ranges that the Maple OITs are able to access. Please note that your PLC's memory range may be *smaller* or *larger* than that supported by these OITs.

PLC Register Address	Address Range	Format	PLC Register Description
DM	0-9999	dddd (d=decimal)	Data Memory
TM	0-31	dd	Temporary Registers
TA	0-249	ddd	Timer Accumulated Values (T@)
TP	0-249	ddd	Timer Preset Values (T#)
CA	0-249	ddd	Counter Accumulated Values (C@)
CTHA	0-1	d	High-speed Counter Accumulated Values (CTH@)
CTCC	0-3	d	High-speed Counter Compare Values (CTC@)
CP	0-249	ddd	Counter Preset Values (C#)
Trimmer	0-1	d	Digital Trimmer Register

Discrete Memory

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

PLC Bit Address		Format	PLC Bit Description
Relay ¹	000 to 176150	ddd0	Relay
DM_Bit	000 to 999915	ddd0	Bit Data
T ²	00 to 2490	ddd0	Timer Bit
C ²	00 to 2490	ddd0	Counter Bit
CTH ²	00 to 10	d0	High-Speed Counter Bit

Note¹: When accessing Relay data, use the following syntax in the Device Address field:

<Word><bit>0

The bit value must have the 0 added at the end. For example, to address bit 8 in word 5, the Device Address field would contain: 5080.

Note²: For Timer and Counter bits, a 0 must be appended to the address. For example, Timer Bit 249 would be entered as Device Type: T, Device Address: 2490

Important PLC Memory Considerations

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

Accessing Individual Bits in the PLC

EasyBuilder provides access to 2 types of Bit Data in the PLC: Relays, and bits within DM registers.

Relays and Timers/Counters (choose *Relay*, *T*, *C*, or *CTH* from the Device list)

The Silver products can address any valid Relay or Timer/Counter bit. However, the address must be entered with a trailing 0. For example, Relay Bit 512 would be entered as Address 5120, and Timer Bit T112 would be entered as Address 1120. Refer to the next section for another way to use individual bits in the Keyence PLC.

Note: EasyBuilder will accept an invalid Relay or Timer/Counter bit address. If this occurs, the HMI will display the *Unsupported Operation* error message.

Bits Within DM Registers (choose *DM_Bit* from the Device list)

The HMI can access individual bits within DM registers. In the address field, enter *nnnnbb*, where *nnnn* is the DM register, and *bb* is the bit number. By using the controller's **LDA** and **STA** instructions, relay coil data can be copied to DM registers, and vice versa. This will allow the HMI to have access to all relay coil addresses. See the examples below.

Example 1: Copy 16 bits of Relay data from 1500 to DM register DM50 for display on the HMI. This will copy the data from Relay Coil 1500-1515 into DM50. Relay 2002 is the PLC's *Always On* coil.

```
copy the data from Relays
  2002                                     1500
---- [ ]-----<LDA>

store the data to DM
  2002                                     DM0050
---- [ ]-----<STA>
```

Example 2: Copy 16 bits of data from DM60 to Relay 600 for use in the PLC. This will copy the data in DM60 to Relay Coils 600-615. Relay 2002 is the PLC's *Always On* coil.

```
copy the data from DM
  2002                                     DM0060
---- [ ]-----<LDA>
```

store the data to Relays
 2002
 ---- []-----

0600
 <STA>

EZware-500 Settings

The following table lists the communications settings that must be configured in EZware-500. 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 Keyence Controller.
- the **Options** column lists EZware-500's options; your controller may not support every option

Name	Recommended Settings	Options	Important Notes
PLC Type:	Keyence KV Vn.n		n.n is the version.
Serial port I/F:	RS232	RS232, RS485	
Data Bits:	8	7, 8	Must match the Keyence KV Series programming port settings.
Stop Bits:	1	1, 2	Must match the Keyence KV Series programming port settings.
Baud Rate:	9600	9600, 19200, 38400, 57600, 115200	Must match the Keyence KV programming port settings. Use the fastest baud rate supported.
Parity:	Even	Even, Odd, None	Must match the Keyence KV Series programming port settings.
HMI Station No:	0	0 to 255	Not used.
PLC Station No:	0	0 to 255	Not used.
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 to 10	See <i>Silver Series Installation and Operation Manual</i> .
Parameter 1	0	0-999	Turn-Around Delay (msec). Causes the HMI to wait for the specified interval before issuing next command.