



Compumotor

6000, 6K & Germini Series (OITware)

Overview

Maple Systems' OIT Family Operator Interface Terminals (Maple OITs) communicate with Compumotor 6000 and 6K Controllers using the Compumotor 6000 and 6K Series Protocol. When configured with **OITware-200**, the **Maple OIT is the master** in a point-to-point single master, single slave format.

Compatible Controllers	
Controller Family	Controller Model
6K Series	6Kn
6000 Series	610n, 615n, 620n, 625n, 6270
Germini Series	GT6, GV6, GT6K, GV6K

Communications Cable

The Maple OIT should be connected to the COM1 (via 3-wire RS-232) COM2 (via 3-wire RS-232 or 5-wire RS-485), or AUX (via 3-wire RS-232) serial communications ports on the Compumotor Controller, which ever is available.

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.

Controller Settings

Name	Setting	Options	Important Notes
Electrical Interface: COM1, AUX COM2	RS-232 RS-232	No options RS-485	The Controller has DIP switches to select the RS232 or RS485 settings.
Baud Rate:	9600	1200, 2400, 4800, 9600, 19200	Must match the OIT Configuration setting. Use the fastest baud rate supported by both.
Data Bits:	8	No options	Must match the OIT Configuration setting.
Parity:	None	No options	Must match the OIT Configuration setting.
Stop Bits:	1	No options	Must match the OIT Configuration setting.

Accessible Controller Commands and Memory

Accessible Controller Commands and Memory

The following tables list the Controller commands and memory ranges that Maple's OITs are able to access: (Please note that your Controller's memory range may be *smaller* or *larger* than that supported by Maple's OITs.)

For Register Monitors:

Register	Address	Sub-Element	Preferred Format	Access	Data Range
VAR	1-225	None	Long	R/W	999,999,999.99999999
VARI	1-225	None	Long	R/W	±2,147,483,648
VARB	1-125	1-32	1/0, On/Off or ASCII String	R/W	0 = On 1 = Off
Motion	A (Acceleration)	1-8 (Axis)	Long (+)	R/W	0.00025 to 24,999,999
	AD (Deceleration)	1-8 (Axis)	Long (+)	R/W	0.00025 to 24,999,999
	D (Distance)	1-8 (Axis)	Long	R/W	0.00000 to 999,999,999
	DRIVE (enable/disable motor)	1-8 (Axis)	1/0, On/Off or ASCII String	R/W	0 = de-energize 1 = energize
	LH (Hard Limit Enable)	1-8 (Axis)	Signed or Decimal	R/W	0=dis+- 1=dis+ 2=dis- 3=en+-
	V (Velocity)	1-8 (Axis)	Long (+)	R/W	0.00000 to 1600000
Jog	JOG (Jog Mode Enable)	1-8 (Axis)	1/0, On/Off or ASCII String	Write	0 = disable 1 = enable

Register	Address	Sub-Element	Preferred Format	Access	Data Range
Jog (con't)	JOGA (Jog Acceleration)	1-8 (Axis)	Long (+)	R/W	0.00025 to 24,999,999
	JOGAD (Jog Deceleration)	1-8 (Axis)	Long (+)	R/W	0.00025 to 24,999,999
	JOGVH (Jog Velocity Hi)	1-8 (Axis)	Long (+)	R/W	0.00000 to 1,600,000
	JOGVL (Jog Velocity Lo)	1-8 (Axis)	Long (+)	R/W	0.00000 to 1,600,000
Joystick	JOY (Joystick Mode Enable)	1-8 (Axis)	1/0, On/Off or ASCII String	Write	0 = disable 1 = enable
	JOYV (Joystick Velocity Hi)	1-8 (Axis)	Long (+)	R/W	0.00020 to 1,600,000
	JOYVL (Joystick Velocity Lo)	1-8 (Axis)	Long (+)	R/W	0.00020 to 1,600,000
Transfer	TANI (Transfer Analog Input Voltage). 6000 only	1-4	Long	Read	-10.0000 to +10.0000
	TDAC (Transfer Digital-to- Analog Converter)	1-8 (Axis)	Long	Read	-10.0000 to +10.0000
	TER (Transfer Error status)	1-32	1/0, On/Off or ASCII String	Read	0 = Varies 1 = Varies
	TIN (Transfer Input status)	1-28	1/0, On/Off or ASCII String	Read	0 = Varies 1 = Varies
	TINO (Transfer Other Input status)	1-8	1/0, On/Off or ASCII String	Read	0 = Varies 1 = Varies
	TLIM (Transfer Limits)	1-24	1/0, On/Off or ASCII String	Read	0 = Varies 1 = Varies
	TOUT (Transfer Output stat)	1-28	1/0, On/Off or ASCII String	Read	0 = Varies 1 = Varies
	TPANI (Transfer Position of Analog Input). 6000 only	1-4	Long	Read	-10.0000 to +10.0000
	TPC (Transfer Position Commanded)	1-8 (Axis)	Long	Read	±2,147,483,648
	TPER (Transfer Position Error)	1-8 (Axis)	Long	Read	±2,147,483,648
	TSS (Transfer System Stat)	1-32	1/0, On/Off or ASCII String	Read	0 = Varies 1 = Varies
	TTIM (Transfer Timer)	None	Long (+)	Read	0 to 999,999,999
	TVEL (Transfer Velocity)	1-8 (Axis)	Long	Read	±2,147,483,648

Register	Address	Sub-Element	Preferred Format	Access	Data Range
Transfer (con't)	TVELA (Transfer Current Actual Velocity)	1-8 (Axis)	Long	Read	2,147,483,648
	TPE (Transfer Position of Encoder)	1-8 (Axis)	Long	Read	±2,147,483,648
	TPM (Transfer Position of Motor)	1-8 (Axis)	Long	Read	±2,147,483,648
TAS	1-8 (Axis) 0 (All)	1-32	1/0, On/Off or ASCII string	Read	0 = Varies 1 = Varies
TASX	1-8 (Axis) 0 (All)	1-32	1/0, On/Off or ASCII string	Read	0 = Varies 1 = Varies
TPCE	1-8 (Axis)	1-5 (1=A, 2=B,3=C, 4=D,5=M)	Long	Read	±2,147,483,648
Recipe Preset	SCREEN: Screen # with Recipe	PRESET: Preset #	Same format as Recipe	R/W	Same Data Range as Recipe

For Recipe Presets:

Register	Address	Sub-Element	Preferred Format	Access	Data Range
VAR	1-225	None	Long	R/W	±999,999,999.99999999
VARI	1-225	None	Long	R/W	±2,147,483,648
VARB	1-225	1-32	1/0, On/Off or ASCII String	R/W	0 = On 1 = Off
Motion	A (Acceleration)	1-8 (Axis)	Long	R/W	0.00025 to 24,999,999
	AD (Deceleration)	1-8 (Axis)	Long	R/W	0.00025 to 24,999,999
	D (Distance)	1-8 (Axis)	Long	R/W	0.00000 to ±999,999,999
	DRIVE (Drive (de)energize)	1-8 (Axis)	1/0, On/Off or ASCII String	R/W	0 = de-energize 1 = energize
	LH (Hard Limit Enable)	1-8 (Axis)	Signed or Decimal	R/W	0=disable both 1=disable +2=disable -3=enable both
	V (Velocity)	1-8 (Axis)	Long	R/W	0.00000 to 1600000
Jog	JOG (Jog Mode Enable)	1-8 (Axis)	1/0, On/Off or ASCII String	Write	0 = disable 1 = enable
	JOGA (Jog Acceleration)	1-8 (Axis)	Long	R/W	0.00025 to 24,999,999
	JOGAD (Jog Deceleration)	1-8 (Axis)	Long	R/W	0.00025 to 24,999,999

Register	Address	Sub-Element	Preferred Format	Access	Data Range
Jog (con't)	JOGVH (Jog Velocity Hi)	1-8 (Axis)	Long	R/W	0.00000 to 1,600,000
	JOGVL (Jog Velocity Lo)	1-8 (Axis)	Long	R/W	0.00000 to 1,600,000
Joystick	JOY (Joystick Mode Enable)	1-8 (Axis)	1/0, On/Off or ASCII String	Write	0 = disable 1 = enable
	JOYVH (Joystick Velocity Hi)	1-8 (Axis)	Long	R/W	0.00020 to 1,600,000
	JOYVL (Joystick Velocity Lo)	1-8 (Axis)	Long	R/W	0.00020 to 1,600,000

For Screen-Definable Function Keys (OIT3160/4160, 3165/4165, 3175/4175, 5400) and Function Keys (OIT3160/4160, 3165/4165, 3175/4175):

Register	Address	Sub-Element	Action	Data Range
VARB	1-125	1-32	Latched, Push, On/Off, Momentary	0 = On 1 = Off
OUT	1-28	None	Latched, Push, On/Off, Momentary	0 = off 1 = on
Motion	HOME	1-8 (Axis)	Latched, Push, On/Off, Momentary	0 = + direct 1 = - direct
	GO	1-8 (Axis) 0 (All)	Latched, Push, On/Off, Momentary	0 = don't go 1 = go
	KILL	1-8 (Axis) 0 (All)	Latched, Push, On/Off, Momentary	0 = not kill 1 = kill
	STOP	1-8 (Axis) 0 (All)	Latched, Push, On/Off, Momentary	0 = not Stop 1 = Stop
	CONTINUE	None	Latched	None
	PAUSE	None	Latched	None
	HALT	None	Latched	None
	RESET	None	Latched	None
Jog	JOG (Jog Mode Enable)	1-8 (Axis)	Latched, Push, On/Off, Momentary	0 = disable 1 = enable
Joystick	JOY (Joystick Mode Enable)	1-8 (Axis)	Latched, Push, On/Off, Momentary	0 = disable 1 = enable
RUN	RUN 1 - 50	None	Latched	None

For Function Keys (Global Settings for OIT3600, 3200/3250, 4400/4450):

Register	Address	Action	Data Range
VARB	1-125	Latched, Push, On/Off, Momentary	0 = On 1 = Off

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Run Command Data Table:

The OIT3160/4160, OIT3165/4165, OIT3175/4175, and OIT5400 Function Keys or Screen-Definable Function keys have the ability to run programs using the 'RUN' statement. Using the Function Key Editor or Screen-Dependent Function Key Editor, configure the key as a momentary, push on/off, or latched key. Then use the drop-down box titled "Command", select the "RUN" command, and enter a number 1 to 50 that refers to the program's name that is (or will be) stored in the Run Command Data Table. This table can be added to and modified using the "RUN Command Editor" by selecting "Edit Strings". Up to 50 names with a maximum of six characters each can be configured.

Important Controller Memory Considerations

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

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

Do not configure the Maple OIT Fn or SDF keys as Push On/Off or Momentary for any of the available Motion commands. Use the Latch action for Motion commands.

When using the Bank 8 or Bank 16 register monitor formats to display information from discrete memory, the bits displayed must start on a byte boundary. The byte boundaries leave no remainder when the following formula is used: $(\text{discrete memory address} - 1) / 8$.

4 digit BCD and 8 digit BCD formats do not support floating-point controller values.

1/0, On/Off and ASCII string formats will be 0/Off for the following controller values:

Bit:	0 or X
Integer:	0
Floating point:	Integer value = 0 (i.e. for 0.123, integer value = 0)

Memory values maybe displayed truncated or with zeros added as required by the Separator Location specified by OITware and the floating point value specified by the Controller. Any memory value specified by the controller that exceeds the displayable range specified by OITware will display the "Data out of Range" message until the value changes to within range or is no longer being read by the OIT (i.e. a screen is called that does not have this condition).

The following examples are with Signed Format and Separator Location = 2 (displayable range is then +-327.67):

Example1:	If the controller memory = 0.00123,	then the OIT displays "0.00".
Example2:	If the controller memory = 0.123,	then the OIT displays "0.12".
Example3:	If the controller memory = 12.3,	then the OIT displays "12.30".
Example3:	If the controller memory = 1230.0,	then the OIT displays "Data out of Range" message.

OITware-200 Settings

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

Please note:

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

Name	Settings	Options	Important Notes
Baud Rate	9600	19200, 9600, 4800, 2400, 1200, 600, 300	Must match the controller's programming port settings. Use the fastest baud rate supported by both.
Parity	None	Even, Odd, None, Mark, Space	Must match the controller's programming port settings.
Data Bits	8	7, 8	Must match the controller's programming port settings.
Stop Bits	1	1, 2	Must match the controller's programming port settings.
Status Coils	VARB21	VARB1-125	Must be within the controller's supported memory range.
Message Request Register (optional)	VAR99	VAR1-125	Must be within the controller's supported memory range.
Current Message Register (optional)	VAR100	VAR1-125	Must be within the controller's supported memory range.
Function Key Coils (optional)	VARB22	VARB1-125	Must be within the controller's supported memory range.
Screen Dependent Function Key Coils (optional)	VARB20	VARB1-125	Must be within the controller's supported memory range. Applies to OIT3160B, OIT3165, OIT3175, OIT4160B, OIT4165, OIT4175 and OIT5400B.
Control Key Coils (optional)	VARB25	VARB1-125	Must be within the PLC's supported memory range.
Status LED Coils (optional)	VARB24	VARB1-125	Must be within the PLC's supported memory range. Applies to OIT3250, OIT4450 and OIT5400B.
Function Key LED Coils (optional)	VARB23	VARB1-125	Must be within the PLC's supported memory range. Applies to OIT3250, OIT4450 and OIT5400B.

Error Messages

“Can not connect”

The OIT could not communicate with the controller during initial communications. Check for consistent communication parameters between the controller and the OIT. Check the cable and connectors for integrity and correctness. Move cables away from noise sources. Check for proper grounding and power supply. Check that all Fn or SDF keys set as a Motion command are configured for Latch Action.

“Communication Error”

The OIT did not receive a response or a valid response. Check the cable and connectors for integrity. Move cables away from noise sources. Check for proper grounding and power supply.

“Error: Cannot Write!”

A write command was sent to the controller to write data to a register that is read only. Using OITware, make the register read-only access.

“Error: Cannot Read!”

A read command was sent to the controller to read data from a register that is write only. Using OITware, remove the register from the screen. Write-only registers can be accessed in Recipe presets, Function Keys and Screen-Defined Function Keys.

“Protocol Error”

The controller responded that the request was invalid. Check that the register is available and type of access is allowed for the particular controller.

“Data out-of-range!”

The value received from the controller was too large to display. Using OITware, adjust the format, number of digits and/or the decimal location of the register for proper display.

“Error: Not Signed or Long Format!”

The value received from the controller was signed, but the display format is not a signed type. Using OITware, change the format of the register to Signed or Long.

“Invalid Command”

The protocol driver was requested to perform an invalid command. Contact Maple Systems technical support.