



API Motion (STEPware)

Overview

API Motion manufactures a diverse group of motion control products that are designed to control motors with encoders, drivers and other I/O signals. A Maple Systems’ OIT Family Operator Interface Terminal (Maple OIT) can be used to monitor and modify the operating parameters of the motor and to allow the plant floor operator program control. Below is a listing of the API Motion controllers which can communicate with a Maple Systems OIT:

Compatible Controllers	
Controller Family	Controller Model
Centennial Controller Series	PS-3306c, PS-3310c, PS-3320c
Digital Drive Series	PS-3303d, PS-3306d, PS-3310d, PS-3320d
Intelligent Drive Series	PS-3303i, PS-3306i, PS-3310i, PS-3320i
Mini Servo Drives	DS-3402i, DS-3402d, DS-3405i, DS-3405d
Mini Stepper Drives	DM-2403i, DM-2403d, DM-2406i, DM-2406d

Maple Systems’ OIT Family Operator Interface Terminals (Maple OITs) communicate with API Motion controllers using the STEPware-100 configuration software. The STEPware-100 configuration software allows a Maple OIT to operate as an ASCII terminal using the STEP1 protocol. When configured with **STEPware-100**, the **Maple OIT is the “pseudo” master** in a point-to-point single master, single slave or single master, multiple slave format.

Even though the Maple OIT is the master, the API Motion controller is still considered the host because it never initiates communications. Therefore, any STEPware commands initiated by the host are not valid.

Reference Documentation

Though this controller information sheet attempts to provide you with pertinent information to connect your Maple System's OIT to an API Motion controller, it is not, by any means, comprehensive on all aspects of operation of the OIT or the motion controller. For a more detailed description of how these products work, we recommend that you refer to the following:

Reference Document	Information
Maple Systems Operator Interface Installation Manual	Covers installation requirements of your specific Operator Interface Terminal
Maple Systems STEP1 Protocol Operation Manual	Details how to operate and program your Operator Interface Terminal when using the STEPware100 configuration software
API Motion Application Note 3001	Example using an OIT with an API Motion drive
API Motion 151-ISAP.PDF document	Details and examples of the ISAP commands
API Motion IML.PDF document	Details and examples of the IML commands

Technical Support

If you need more information regarding the use of your Maple Systems Operator Interface Terminal, please consult the manuals listed above. These manuals were designed to provide you with detailed descriptions on the operation and installation of your OIT. We also have additional information about our Operator Interface Terminals available on our website at www.maple-systems.com.

If you have questions regarding the operation of your API Motion controller which are not addressed in the API Motion Operations Manuals, we recommend that you contact your distributor or call API's Motion technical assistance at 1-716-691-9100.

Any questions that you may have about your Maple Systems Operator Interface Terminal which are not covered in the Operations Manuals can be answered by our technical support staff at 1-425-486-4477.

Communications Cable

The Maple OIT can be connected to the API Motion controller using RS232 or RS422 communications with the OIT and the motion controllers COMM port.

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.

Programming the OIT

The Maple Systems Operator Interface Terminal is programmed using the STEPware-100 configuration software. The following table lists the communications settings that must be configured:

- the Default column lists suggested STEPware-100 settings when using the API Motion controller
- the Options column lists STEPware-100's options; your motion controller may not support every option

Name	Default	Options	Important Notes
Baud Rate	19200	19200, 9600, 4800, 2400, 1200, 600, 300	Must match the controller port settings. Use the DIP switch to select the RS232/RS422 settings.
Parity	None	Even, Odd, None, Mark, Space	
Data Bits	8	7, 8	
Stop Bits	1	1, 2	
Operating Mode	Block	Interactive, Block, Network	
Line Terminator	CR	CR, LF, CR/LF, ETX	
Turn-around Delay	No Delay	50, 100, 250, No Delay	
Handshaking	None	None, Xon,Soff, RTS/CTS, Both	
Setup Password	00000	Any 5-digit value	
Local Echo	Enabled	Enable or Disable	
Local Setup	Enabled	Enable or Disable	
Local Keyboard	Enabled	Enable or Disable	
Key Click	Enabled	Enable or Disable	
Block Echo	Enabled	Enable or Disable	
Delayed Line Feed	Disabled	Enable or Disable	
Append Line Feed	Disabled	Enable or Disable	
Use 3-Wire RS485	Disabled	Enable or Disable	Available only when in Network Mode.

NOTE: STEPware provides a full range of display and control functions. See STEPware Help, under *ESCAPE Control Commands*, for a complete list.

Sample Programs

Sending Immediate Commands to Controller

The Maple Systems OIT is capable of sending the API commands to the motion controller by pressing function keys on the OIT's keyboard. Each function key can be configured to send two 40 character ASCII strings to the motion controller. These ASCII strings can contain printable ASCII characters as well as any control characters, (e.g. stx or cr).

The following table represents some examples of how function keys can be configured to send commands to the motion controller:

Key	Action	Key State	ASCII String Sent	Description
F1	Momentary	Pressed Key	JOG = 1	Sets the user variable "Jog"
		Released Key	JOG = 2	Clears the user variable "Jog"
F2	Push On/Off	'On' State	SWE=1	Drive is enabled
		'Off' State	SWE=0	Drive is disabled
F3	'Shifted'	Non-Shift	RUN	Run the loaded subroutine in the motion controller
		Shift State	LOAD Auto	Load the subroutine in the motion controller titled "Auto"

For networked API Motion controllers, the network address needs to precede the command. For example, send the ASCII string "[2]SWE=1" to software enable the drive attached to the controller whose network address is two (2).