Pacific Scientific Programmable Indexer/Drives

Overview

When configured with STEPware-100, Maple Systems' OIT Family Operator Interface Terminals (Maple OITs) can communicate with Pacific Scientific Indexer/Drives. This document describes the various STEPware-100 settings and provides some simple StepperBasic examples.

Compatible Controllers		
Family	Model	
Pacific Scientific Indexer/Drives	5345, 5445, 5645	

Communications Cable

The Maple OIT should be connected to the RS232/RS422/RS485 communication port (J3).

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.

STEPware-100 Settings

The following table lists the communications settings that must be configured in STEPware-100. Please note:

- the Settings column lists STEPware-100's settings; for the Pacific Scientific Controllers
- the Options column lists STEPware-100'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 port settings. Use the fastest baud rate supported by both.
Parity	None	Even, Odd, None, Mark, Space	Pacific Scientific drives support only no parity.
Data Bits	8	7, 8	Pacific Scientific drives support only 8 data bits.
Stop Bits	1	1,2	Pacific Scientific drives only 1 stop bit.
Operating Mode	Block	Interactive, Block, Network Modes	Attached sample code requires Block Mode.
Line Terminator	CR	CR, LF, CR/LF, ETX	Attached sample code requires CR.
Turn-around Delay	No Delay	50, 100, 250, No Delay	
Handshaking	None	None, Xon/Xoff, RTS/CTS, both	Pacific Scientific does not use handshaking.
Password	00000	Any 5-digit value	Application specific
Local Echo	Enabled	Enabled/Disabled	
Local Setup Enabled	Enabled	Enabled/Disabled	
Local Keyboard Enabled	Enabled	Enabled/Disabled	
Key Click Enabled	Enabled	Enabled/Disabled	
Block Echo Enabled	Enabled	Enabled/Disabled	
Delayed Line Feed Enabled	Disabled	Enabled/Disabled	
Append Line Feed	Disabled	Enabled/Disabled	
Use 3-Wire RS485	Disabled	Enabled/Disabled	Available only 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.

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Sample Programs

StepperBasic Examples

Below are fragments of StepperBasic code for performing common tasks.

In each of the following examples, the OIT should be set for **Block** mode. The Line Terminator should be set as **CR**.

' text is sent to the OIT

' speed is shown on OIT

' set drive to new speed

' pause for 2 seconds

' drive is started

' set pause time

' set speed to 0

' all done

' text is returned into NewSpd
' speed is set to new speed value

Setting/Showing Drive Speed

```
PRINT "New Speed: ";
INPUT FLT1
RUN.SPEED = FLT1
GO.VEL
PRINT "Speed is " + VELOCITY
WAIT.TIME = 2
PAUSE
RUN.SPEED = 0
GO.VEL
END
```

Setting/Showing Drive Position

```
' home drive
GO.HOME
                                       ' wait for Home position
WHILE IN. POSITION 1
WEND
PRINT "New Position: ";
                                       ' text is sent to the OIT
                                       ' text is returned into NewPos
INPUT FLT1
                                       ' set speed
RUN.SPEED = 250
TARGET.POS = FLT1
                                       ' set new position
GO.ABS
                                       ' move to new position
WHILE MOVING = 1
PRINT "Position is " + POSITION
                                      ' position is shown on OIT
WEND
```

Starting/Stopping the Motor from the OIT

Using Function Key ASCII Strings, the OIT can send messages to Start, Stop, and adjust the motor speed.

The OIT's Function Keys should be programmed as follows:

- **F1:** 1{CR}
- **F2:** 2{CR}
- **F3:** 3{CR}
- **F4**: 4{CR}

Each key should have the Send Immediately option checked.

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Starting/Stopping the Motor from the OIT (continued)

Use the following StepperBasic code:

```
REM F1 is Start, F2 is Stop, F3 is Increase Speed, F4 is Decrease Speed
100 \text{ FLG1} = 1
110 \text{ FLT1} = 100
                                              ' Initial Speed
                                              ' Speed Increment/Decrement Amount
120 \text{ FLT2} = 25
                                              ' Max Speed
130 \text{ FLT3} = 500
140 RUN.SPEED = FLT1
200 WHILE INP1 = 0
                                              ' Loop while Input #1 is ON
                                              ' Reset Instruction
210 \text{ INT1} = 0
220 INPUT INT1
230 IF INT1 = 1 THEN GOSUB 500
                                              ' Start Motor
230 IF INT1 = 1 THEN GOSUB 500' Start Moto240 IF INT1 = 2 THEN GOSUB 1000' Stop Motor250 IF INT1 = 3 THEN GOSUB 1500' Increase S260 IF INT1 = 4 THEN GOSUB 2000' Decrease S
                                              ' Increase Speed
                                             ' Decrease Speed
270 WEND
280 STOP.MOTION
                                              ' stop motor
                                              ' disable motor
290 ENABLE = 0
                                              ' all done
300 END
500 REM Start Motor Subroutine
510 IF ENABLED = 0 THEN ENABLE = 1
                                              ' Enable Drive
520 GO.VEL
530 RETURN
1000 REM Stop Motor Subroutine
1010 RUN.SPEED = 0
1020 GO.VEL
1030 RETURN
1500 REM Increase Motor Speed
                                              ' get new speed
1510 \text{ FLT1} = \text{FLT1} + \text{FLT2}
                                              ' don't exceed max speed
1520 IF FLT1 > FLT3 GOTO 1550
                                              ' set new speed
1530 RUN.SPEED = FLT1
                                              ' update speed
1540 UPD.MOVE
1550 RETURN
2000 REM Decrease Motor Speed
                                              ' get new speed
2010 FLT1 = FLT1 - FLT2
2020 IF FLT1 < 1 GOTO 2050
                                              ' don't allow 0 or negative speed
                                              ' set new speed
2030 RUN.SPEED = FLT1
2040 UPD.MOVE
                                              ' update speed
2050 RETURN
```

Displaying a Pre-Programmed Message

The Indexer can instruct the OIT to display a pre-programmed message. This can be useful for showing alarm or status messages, without having to place code in the Servo for a lot of Text messages.

The following StepperBasic code will display message numbers 1-25.

```
100 FOR MSG = 1 TO 25
110 ' format a message to the OIT: ESC m [msg num] STX
120 PRINT CHR(27) + "m";MSG;CHR(2)
130 NEXT MSG
```

Sounding the OIT's Built-In Buzzer

The Indexer can instruct the OIT to sound its buzzer for a specified number of seconds.

The following StepperBasic code will sound the OIT's buzzer for 2 seconds.

100 ' format a message to the OIT: ESC g [seconds] STX 110 PRINT CHR(27) ;"g2"; CHR(2)

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