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APPLICATION NOTE 803

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Using the PC830 with a Maple Systems Operator Interface Terminal (OIT)

Note: *This application note only applies to PC830 drives with firmware version 1.90 and higher. It also only applies to OITWARE 200 software version 3.09 and higher.*

Introduction

The PC830 servo drive can be interfaced for RS-232/422/485 serial communications with a Maple Systems Terminal. An OIT3185 terminal and OITWARE 200 version 3.09 software were used for the purposes of this application note.

Maple Systems has installation reference manuals for their products which can be consulted for additional information. These may be obtained by contacting Maple Systems at 425-486-4477 or at their website www.maple-systems.com.

Powering the Maple OIT3185 Terminal

Pacific Scientific recommends that you purchase a ready made Maple Terminal power cable from Maple Systems. The cable part number is **6030-0009**. Additional information concerning the power cable interface for the OIT3185 should be referenced in the OIT3185 product manual(s).

Communications Wiring for Configuring the Maple OIT3185 Terminal

Pacific Scientific recommends that you purchase a ready made PC to Maple Terminal cable from Maple Systems. The cable part number is **7431-0096**. Additional information concerning the communications cable interface can be referenced in Technical Note 106 written by Maple Systems as well as the OIT3185 product manual(s).

Once the Maple OIT3185 terminal has been powered and is configured for communications, you are ready to configure the terminal using the Maple Systems OITWARE software package.

Configuring the Maple OIT3185 Terminal using OITWARE

Procedure

To setup a simple Maple OIT3185 program and download it to the OIT3185 terminal, perform the following:

1. Select **File|New**.

2. Select **Pac Sci Motion PC830 Drives** as the PLC Type and **OIT3185** as the OIT Type. Click on the **Start New Project** button.

3. In the OIT Controller Settings screen, setup the communications for 19200 baud, no parity, 8 data bits, and 1 stop bit. Click **Done**.

4. Once communications have been established between the OIT3185 and the OITWARE software, setup the terminal for upload/download mode by pressing <Enter> on the OIT3185 three times. The terminal will then prompt you for a password. The default password is <Enter>. The terminal then asks whether you would like to enter the download/upload mode. Press <Enter> to enter this mode.

5. From the main screen of the OITWARE software, type the following:

   Enable:<F3> 'where <F3> is the F3 function key on your PC's keyboard

6. In the Register Monitor Editor screen select the following settings:

   Keyword: Enable
   Format: I/O Coil
   Access: Read/Write

7. Click the **Add** button in the Register Monitor Editor screen.

8. In the main screen of the OITWARE software, ensure that there is an "X" checked next to **Start Up Screen** in the special effects box of the main screen. This will ensure that the terminal will power up with our configured screen.

9. Select File|Save to save this program.

10. In OITWARE, select **Transfer|Send to OIT** to reach the enter screen.

11. Click **Options**. Select **Project and OIT PLC Protocol Software**. Select **Done**.

12. Click **OK** to download this simple program to the terminal. The terminal will go through an initialization process and then should power up to the screen that was just configured. Connect the OIT3185 terminal to the PC830 to establish the communications link.

Communications Wiring for the OIT3185 Terminal and the PC830

RS-232 and RS-422/485 communications can be used to communicate between the configured OIT3185 terminal and a configured PC830. The following tables list the pinouts for RS-232 and RS-422/485 communications between the PC830 and the OIT3185.

RS-232 Communications

PC830	OIT3185
RTN (5)	RTN (4)
RXD (2)	TXD (5)
TXD (3)	RXD (6)

RS-422/485 Communications

PC830	OIT3185
RTN (5)	RTN (4)
RXD+ (8)	TXD+ (1)
RXD- (9)	TXD- (2)
TXD+ (6)	RXD+ (8)
TXD- (7)	RXD- (7)

Pacific Scientific recommends that you purchase a ready made PC830 to Maple Terminal communications cable from Maple Systems. The cable part number is **7442-0089-X** (where X designates the cable length in feet) and is for RS-422/485 communications.

Demo Package for the OIT3185 Terminal and the PC830

Two configuration files (830maple.cfg, 830maple.map) are available for free download from the Pacific Scientific internet web site (www.pacsci.com). These files will be necessary in order to setup the PC830/OIT3185 Maple terminal demonstration package.

The PC830 should be configured by downloading the *830maple.cfg* configuration file. This file configures a PC833/PMA22B motor combination. If a different drive/motor combination is being, modify the configuration as necessary. This file also configures inputs 2 and 3 as CW and CCW inhibits (active hi). Fault Reset is NOT mapped as an input.

The Maple OIT3185 terminal should be configured by downloading the 830maple.map configuration file. This file will configure a series of screens which the user can then monitor PC830 performance, read the current state of I/O, as well as provide online tuning of drive parameters. This file is merely an example terminal setup and is provided as a reference only.

KEYWORDS

The following table contains a listing of keywords for PC830/Maple Terminal setup. For the meaning of a particular keyword, please consult the 830Tools on-line help system.

KEYWORD	Sub Element	Read/Write	Format
AccelLmt	N/A	W	FLOAT
ActiveAccelRate	N/A	R	FLOAT
ActiveDecelRate	N/A	R	FLOAT
ActiveDistance	N/A	R	LONG
ActiveDistOffset	N/A	R	LONG
ActiveHomeDir	N/A	R	COIL
ActiveHomeMode	N/A	R	DECIMAL
ActiveMove	N/A	W	DECIMAL
ActiveMoveType	N/A	R	DECIMAL
ActiveRegSelect	N/A	R	COIL
ActiveRunSpeed	N/A	R	FLOAT
ActualILmtMinus	N/A	R	FLOAT
ActualILmtPlus	N/A	R	FLOAT
ADF0	N/A	W	FLOAT
ADOffset	N/A	W	FLOAT
AInNull	N/A	W	COIL
AnalogIn	N/A	R	FLOAT
AnalogOutX	1-2	W	FLOAT
ARFX	0-1	W	FLOAT
AxisAddr	N/A	W	DECIMAL
Brake	N/A	R	COIL
CcwInh	N/A	W	COIL
CfgD	N/A	R	DECIMAL
CmdGain	N/A	W	FLOAT
CmdGain2	N/A	W	FLOAT
CommSrc	N/A	W	DECIMAL
CwInh	N/A	W	COIL
DecelLmt	N/A	W	FLOAT
DigitalCmd	N/A	R	LONG
DigitalCmdFreq	N/A	R	FLOAT
DMXF0	1-2	W	FLOAT
DMXGain	1-2	W	FLOAT

DMXMap	1-2	W	DECIMAL
DMXOut	1-2	R	FLOAT
DriveStatus	N/A	R	DECIMAL
ElecAngTau	N/A	W	DECIMAL
Enable	N/A	W	COIL
Enable2	N/A	W	COIL
Enabled	N/A	R	COIL
EncAlignRampIcmd	N/A	W	DECIMAL
EncAlignTestDist	N/A	W	DECIMAL
EncAlignTime	N/A	W	DECIMAL
EncFreq	N/A	R	FLOAT
EncIn	N/A	W	DECIMAL
EncInF0	N/A	W	FLOAT
EncMode	N/A	W	DECIMAL
EncOut	N/A	W	DECIMAL
EncPos	N/A	R	LONG
ExtFault	N/A	R	DECIMAL
Fault	N/A	R	COIL
FaultCode	N/A	R	DECIMAL
FaultReset	N/A	W	COIL
FVelErr	N/A	R	FLOAT
FwV	N/A	R	DECIMAL
GearingOn	N/A	W	COIL
HallOffset	N/A	W	DECIMAL
HallState	N/A	R	DECIMAL
HomeSwitch	N/A	R	COIL
HSTemp	N/A	R	FLOAT
HwV	N/A	R	DECIMAL
ICmd	N/A	R	FLOAT
IFB	N/A	R	FLOAT
ILmtMinus	N/A	W	DECIMAL
ILmtPlus	N/A	W	DECIMAL
InpX	1-6	R	LONG
InpMapX	1-6	W	DECIMAL
InPosLimit	N/A	W	DECIMAL
Inputs	N/A	R	DECIMAL
IntgStopThresh	N/A	W	FLOAT

Ipeak	N/A	R	FLOAT
ItF0	N/A	W	FLOAT
ItFilt	N/A	R	FLOAT
ItThresh	N/A	W	DECIMAL
ItThreshA	N/A	R	FLOAT
IU	N/A	R	FLOAT
IV	N/A	R	FLOAT
IW	N/A	R	FLOAT
KdEnc	N/A	W	DECIMAL
KiEnc	N/A	W	DECIMAL
Kii	N/A	W	FLOAT
Kip	N/A	W	FLOAT
KpEnc	N/A	W	DECIMAL
Kpp	N/A	W	FLOAT
Kvff	N/A	W	FLOAT
Kvi	N/A	W	FLOAT
Kvp	N/A	W	FLOAT
Model	N/A	R	DECIMAL
MotorX	1-2	R	SIGNED
MoveXAccelRate	1-7	W	FLOAT
MoveXDecelRate	1-7	W	FLOAT
MoveXDistance	1-7	W	LONG
MoveXDistOffset	1-7	W	LONG
MoveXHomeDir	1-7	W	COIL
MoveXHomeMode	1-7	W	DECIMAL
MoveXRegSelect	1-7	W	COIL
MoveXRunSpeed	1-7	W	FLOAT
MoveXType	1-7	W	DECIMAL
MoveDone	N/A	R	COIL
MoveSelectBitX	0-2	W	COIL
NVLoad	N/A	W	COIL
NVSave	N/A	W	COIL
OutX	1-4	W	COIL
OutMapX	1-4	W	DECIMAL
Outputs	N/A	W	DECIMAL
PoleCount	N/A	W	DECIMAL
PosCmdSet	N/A	W	LONG

PosCommand	N/A	R	LONG
PosError	N/A	R	LONG
PosErrorMax	N/A	W	LONG
Position	N/A	R	LONG
PulsesIn	N/A	W	LONG
PulsesOut	N/A	W	SIGNED
RegXActiveEdge	1-2	W	COIL
RegXEncoderPosition	1-2	R	LONG
RegXResolverPosition	1-2	R	LONG
RemoteFB	N/A	W	DECIMAL
ResPos	N/A	R	DECIMAL
RunStop	N/A	W	COIL
StartMove	N/A	W	COIL
StopTime	N/A	W	FLOAT
Unconfigure	N/A	W	COIL
VBus	N/A	R	FLOAT
VBusThresh	N/A	W	FLOAT
VelCmd	N/A	W	FLOAT
VelCmd2	N/A	W	FLOAT
VelCmdA	N/A	R	FLOAT
VelCmdSrc	N/A	W	COIL
VelErr	N/A	R	FLOAT
VelFB	N/A	R	FLOAT
VelLmtHi	N/A	W	FLOAT
VelLmtLo	N/A	W	FLOAT
Velocity	N/A	R	FLOAT
ZeroSpeedThresh	N/A	W	FLOAT

NVLoad, NVSave, and Unconfigure are functions which can be setup using the OIT3185 Maple terminal, however, they must be setup using Screen Dependent Function Keys (SDFn).

Procedure

1. In OITWARE, single click on a **SDFn key** to open the editor screen.

2. Select **Latched** as the Action.

3. Select the appropriate keyword you intend to setup.

4. Click **Done**.

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