



## *Appendix A Porting Series 3000 Applications to PPT 41xx Terminals*

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### **Introduction**

The tables in this appendix are provided to aid programmers who have written system level applications for Series 3000 terminals and want to modify some of these applications for use with the PPT 41XX terminal. Symbol Technologies does not, however, encourage the porting of Series 3000 library calls to PPT 41XX, and suggests instead using standard PC libraries.

Table A-1 lists Series 3000 C library functions that can be used without change in applications for the PPT 41XX

Table A-2 lists Series 3000 BIOS calls for which there are XSYMBIOS functions that are similar, with the degree of similarity noted as:

- identical
- different interrupt number only
- different
- not supported at all in XSYMBIOS
- requiring the PCCEMM.SYS device driver

Table A-3 lists the C interface routines in the DOS function library used in Series 3000 system level applications that apply in applications for the PPT 41XX terminal

## Table A-1. Series 3000 BIOS Library Calls That Can Be Used in PPT 41XX Application Programs

This table lists Series 3000 BIOS.LIB Functions that can be used in system level applications for the PPT 41XX terminal.

**Table A-1. Series 3000 BIOS Library Calls That Can Be Used in PPT 41XX Application Programs**

Function Name	Interrupt Number	Function Code (AH Register)
BiosAllocTimer	AC	00
BiosBeep	AD	02
BiosBeepFreq	AD	00
BiosBeepOff	AD	01
BiosCalcCRC	AE	01
BiosCheckTimer	AC	07
BiosDelay	AC	08
BiosFreeTimer	AC	01
BiosResetTimer	AC	04
BiosResumeTimer	AC	06
BiosSetEventTimer	AC	03
BiosSetTimer	AC	02
BiosSuspendTimer	AC	05
BiosUpdateTimer	AC	09

## Table A-2. Series 3000 ROM BIOS Services and PPT 41XX BIOS/XSYMBIOS Services with Similar Functionality

This table lists Series 3000 ROM BIOS services and similar or equivalent services provided by PPT 41XX BIOS/XSYMBIOS. The list is sorted by interrupt number, function code (if any), and subfunction code (if any). Hyphens (-) are used instead of numerals to indicate that no function code or no subfunction code is required to access the service. An asterisk (\*) indicates that the row applies to all subfunctions of the specified service.

The degree of similarity is indicated by the number in the right-most column (with the heading **See Note ...**), which refers to the appropriate note in the list provided at the end of the table.

**Table A-2. Series 3000 ROM BIOS Services and PPT 41XX BIOS/XSYMBIOS Services with Similar Functionality**

Series 3000 ROM BIOS Service		BIOS/XSYMBIOS Equivalent Service	
Service Description	Interrupt/ Function/ Subfunction	Interrupt/ Function/ Subfunction	See Note ... at the end of this table
Set Video Mode	A1/00/*	10/00/*	2
Set Cursor Size	A1/01/-	10/01/-	3
Set Cursor Position	A1/02/-	10/02/-	2
Read Cursor Position	A1/03/-	10/03/-	2
Set Active Display Page	A1/05/-	10/05/-	2
Scroll Window Up	A1/06/-	10/06/-	2
Scroll Window Down	A1/07/-	10/07/-	2
Read Character and Attribute	A1/08/-	10/08/-	2
Write Character and Attribute	A1/09/-	10/09/-	2

**Table A-2. Series 3000 ROM BIOS Services and PPT 41XX BIOS/XSYMBIOS Services with Similar Functionality (Continued)**

Series 3000 ROM BIOS Service		BIOS/XSYMBIOS Equivalent Service	
Service Description	Interrupt/ Function/ Subfunction	Interrupt/ Function/ Subfunction	See Note ... at the end of this table
Write Character	A1/0A/-	10/0A/-	2
Write Character as TTY	A1/0E/-	10/0E/-	2
Get Current Video Mode	A1/0F/-	10/0F/-	2
Write String	A1/13/*	10/13/*	2
Set Display Brightness Level	A1/80/-	32/86/-	3
Get Display Brightness Level	A1/81/-	32/86/80	3
Turn Backlight On	A1/82/0	32/82/01-02	3
Turn Backlight Off	A1/82/1	32/82/00	3
Set Backlight Timeout Delay	A1/82/2	B1/13/02	3
Get Backlight Timeout Delay	A1/82/3	B1/13/00	3
Turn Backlight On/Toggle	A1/82/4		4
Set Emulated Video RAM Size	A1/83/0		4
Get Emulated Video RAM Size	A1/83/1		4
Get Display Type	A1/84/-		4
Set Logical Screen Size	A1/85/0		4
Get Logical Screen Size	A1/85/1		4
Set Cursor Mode	A1/86/-		4
Get Cursor Mode	A1/87/-		4

**Table A-2. Series 3000 ROM BIOS Services and PPT 41XX BIOS/XSYMBIOS Services with Similar Functionality (Continued)**

Series 3000 ROM BIOS Service		BIOS/XSYMBIOS Equivalent Service	
Service Description	Interrupt/ Function/ Subfunction	Interrupt/ Function/ Subfunction	See Note ... at the end of this table
Set Cursor Translation Table	A1/88/0		4
Get Cursor Translation Table	A1/88/1		4
Set Physical Screen Position	A1/89/0		4
Get Physical Screen Position	A1/89/1		4
Save Screen Window	A1/8A/-		4
Restore Screen Window	A1/8B/-		4
Select Font	A1/8C/-		4
Get Font Mode	A1/8D/-		4
Get Current LCD Update Frequency	A1/8E/0		4
Set Current LCD Update Frequency	A1/8E/1		4
Get Standard Equipment List	A2/-/-	11/-/-	2
Get Usable Memory Size	A3/-/-	12/-/-	2
Reset Disk Drive	A4/00/-	13/00/-	2
Get Diskette Status	A4/01/-	13/01/-	2
Read Diskette Sectors	A4/02/-	13/02/-	2
Write Diskette Sectors	A4/03/-	13/03/-	2
Verify Diskette Sectors	A4/04/-	13/04/-	2
Format Sectors	A4/05/-	13/05/-	2

**Table A-2. Series 3000 ROM BIOS Services and PPT 41XX BIOS/XSYMBIOS Services with Similar Functionality (Continued)**

Series 3000 ROM BIOS Service		BIOS/XSYMBIOS Equivalent Service	
Service Description	Interrupt/ Function/ Subfunction	Interrupt/ Function/ Subfunction	See Note ... at the end of this table
Initialize serial Port (IBM Standard)	A5/00/-	14/00/-	2
Send One Character	A5/01/-	14/01/-	2
Receive One Character	A5/02/-	14/02/-	2
Get Serial Port Status (IBM Standard)	A5/03/-	14/03/-	2
Extended Serial Port Initialization	A5/80/-	14/80/-	2
Get Current Port Configuration	A5/81/*	14/81/*	2
Open Serial Port	A5/82/-	14/82/-	2
Close Serial Port	A5/83/-	14/83/-	2
Send Block	A5/84/-	14/84/-	2
Receive Block	A5/85/-	14/85/-	2
Queue Status	A5/86/-	14/86/-	2
Get System Status	A5/87/-	14/87/-	2
Transmit Enable (Half-Duplex Line Turn Around)	A5/88/-	14/88/-	2
Receive Enable (Half-Duplex Line Turn Around)	A5/89/-	14/89/-	2
Transmit Done	A5/8A/-	14/8A/-	2
Set UART Control Commands	A5/8B/-	14/8B/-	2
Clear UART Control Commands	A5/8C/-	14/8C/-	2

**Table A-2. Series 3000 ROM BIOS Services and PPT 41XX BIOS/XSYMBIOS Services with Similar Functionality (Continued)**

Series 3000 ROM BIOS Service		BIOS/XSYMBIOS Equivalent Service	
Service Description	Interrupt/ Function/ Subfunction	Interrupt/ Function/ Subfunction	See Note ... at the end of this table
Allocate Communications Queues	A5/8D/-	14/8D/-	2
Purge Communications Queues	A5/8E/-	14/8E/-	2
Transmit Queue Empty Notification Control	A5/8F/-	14/8F/-	2
Request Data Bus	A5/90/0	32/88/01	3
Release Data Bus	A5/90/1	32/88/00	3
Delete Queues	A5/91/-	a4/91/-	2
Get Queue Pointer	A5/92/-	14/92/-	2
Get COMM TYpe ID Number	A5/93/-		4
Secure Optical Channel Override	A5/94/-		4
Return Next Character and Scan Code	A7/00/-	16/00/-	2
Check for Character Ready	A7/01/-	16/01/-	2
Get Shift Status	A7/02/-	16/02/-	2
Set Key Click Duration	A7/04/-		4
Enable Auto Key Repeat (Set)	A7/80/0		4
Enable Auto Key Repeat (Get)	A7/80/1		4
Get Keyboard Configuration	A7/81/-		4
Set Keyboard No Activity Timer	A7/82/0	B1/13/02-03	3

**Table A-2. Series 3000 ROM BIOS Services and PPT 41XX BIOS/XSYMBIOS Services with Similar Functionality (Continued)**

Series 3000 ROM BIOS Service		BIOS/XSYMBIOS Equivalent Service	
Service Description	Interrupt/ Function/ Subfunction	Interrupt/ Function/ Subfunction	See Note ... at the end of this table
Get Keyboard No Activity Timer	A7/82/1	B1/13/00-01	3
Set Keyboard State	A7/83/-		4
Get Keyboard State	A7/84/-		4
Select ABORT Key	A7/85/-		4
Get ABORT Key Status	A7/86/-		4
Set Keyboard Operation Mode (One-finger Keyboard Mode)	A7/87/0		4
Set Keyboard Operation Mode (PC Keyboard)	A7/87/1		4
Program Trigger Key	A7/88/-		4
Send Byte Out Printer Port	A8/00/-		4
Initialize Printer Port	A8/01/-		4
Get Printer Status	A8/02/		4
Send Block	A8/83/-		4
Read the Current Timer Tick Count	AA/00/-	1A/00/-	2
Set the Current Timer Tick Count	AA/01/-	1A/01/-	2
Read Time of Day	AA/02/-	1A/02/-	2
Set Time of Day	AA/03/-	1A/03/-	2
Read Date	AA/04/-	1A/04/-	2



**Table A-2. Series 3000 ROM BIOS Services and PPT 41XX BIOS/XSYMBIOS Services with Similar Functionality (Continued)**

Series 3000 ROM BIOS Service		BIOS/XSYMBIOS Equivalent Service	
Service Description	Interrupt/ Function/ Subfunction	Interrupt/ Function/ Subfunction	See Note ... at the end of this table
Set Date	AA/05/-	1A/05/-	2
Set Alarm	AA/80/-	B1/00/02	3
Get Alarm	AA/81/-		4
Reset Alarm	AA/82/-		4
Set Usable Memory Size	AB/00/-		4
Get Actual Size of RAM	AB/01/-		4
Set Write-Protect Fence Address	AB/02/-		4
Get Write-Protect Fence Address	AB/03/-		4
Get Total Logical Page Count	AB/04/-	67/42/-	5
Get EMS Page Frame Configuration	AB/05/-	67/41/-	5
Set EMS Page Frame Address	AB/06/-		4
Map Logical Pages	AB/07/-	67/50/*	5
Get Current EMS Context	AB/08/-	67/48/-	5
Set EMS Context	AB/09/-	67/49/-	5
Swap EMS Context	AB/0A/-		4
Erase EEPROM	AB/0B/-		4
Write/Program Block to EEPROM	AB/0D/-		4
Blank Check System EEPROM	AB/0D/-		4

**Table A-2. Series 3000 ROM BIOS Services and PPT 41XX BIOS/XSYMBIOS Services with Similar Functionality (Continued)**

Series 3000 ROM BIOS Service		BIOS/XSYMBIOS Equivalent Service	
Service Description	Interrupt/ Function/ Subfunction	Interrupt/ Function/ Subfunction	See Note ... at the end of this table
Turn On Programming Voltage	AB/0E/0		4
Turn Off Programming Voltage	AB/0E/1		4
Set Write-Protect	AB/0F/-		4
Get Write-Protect Status	AB/10/-		4
Get Mapped Logical Pages	AB/11/-		4
Allocate Timer	AC/00/-	AC/00/-	1
Deallocate Timer	AC/01/-	AC/01/-	1
Set Timer	AC/02/-	AC/02/-	1
Set Event Timer	AC/03/-	AC/03/-	1
Reset Timer	AC/04/-	AC/04/-	1
Suspend Timer Operation	AC/05/-	AC/05/-	1
Resume Timer Operation	AC/06/-	AC/06/-	1
Check Timer	AC/07/-	AC/07/-	1
Delay	AC/08/-	Ac/08/-	1
Update Timer	AC/09/-	AC/09/-	1
Turn Alarm On	AD/00/-	AD/00/-	1
Turn Alarm Off	AD/01/-	AD/01/-	1
Generate Beep	AD/02/-	Ad/02/-	1

**Table A-2. Series 3000 ROM BIOS Services and PPT 41XX BIOS/XSYMBIOS Services with Similar Functionality (Continued)**

Series 3000 ROM BIOS Service		BIOS/XSYMBIOS Equivalent Service	
Service Description	Interrupt/ Function/ Subfunction	Interrupt/ Function/ Subfunction	See Note ... at the end of this table
Get Speaker Volume	AD/03/0	AD/03/0	1
Set Speaker Volume	AD/03/1	AD/03/1	1
CRC Byte	AE/00/-	AE/00/-	1
CRC Buffer	AE/01/-	AE/01/-	1
CRC Check User Image	AE/02/-		4
CRC System EPROM	AE/03/-		4
Get BIOS and Hardware Version	AF/-/-		4
Power Off terminal	B1/00/-	B1/00/*	3
Select Wake Up Events	B1/01/-	B1/01/-	3
Get Last Wake Up Cause	B1/02/-	B1/02/-	3
Report Battery Cell Status	B1/03/-	B1/03/-	3
Set Power Save Mode	Bi/05/*	B1/05/*	3
Get Power Save Mode	B1/06/-	B1/05/2	3
Enter Power Save Mode	B1/09/-	B1/0B/-	3
Disable Power Key	B1/0C/0	B1/07/00	3
Enable Power Key	B1/0C/1	B1/07/01	3
Turn Communications Power On/Off Switch 0 = off; 1 = on	B1/0E/-	B1/08/-	3

**Table A-2. Series 3000 ROM BIOS Services and PPT 41XX BIOS/XSYMBIOS Services with Similar Functionality (Continued)**

Series 3000 ROM BIOS Service		BIOS/XSYMBIOS Equivalent Service	
Service Description	Interrupt/ Function/ Subfunction	Interrupt/ Function/ Subfunction	See Note ... at the end of this table
Get Power Source	B1/0F/-	B1/12/-	3
Power Down Terminal	B1/10/-	B1/00/*	3
Enable/Disable Spotting Beam	B3/0E/-		4
Force Start of Acquisition	B3/11/-		4
Force System Warm Boot	B4/-/-	19/-/-	2
Turn LED On	B6/00/-	32/80/1	3
Turn LED Off	B6/01/-	32/80/0	3
Turn LED On for Specified Time	B6/02/-		4
Get Cradle Type	B8/00/-		4
Get Current Charging Rate	B8/01/0		4
Set Current Charging Rate	B8/01/1		4
Get Current State of Stop-Red LED	B8/02/0		4
Set State of Stop-Red LED	B8/02/1		4
Get Modem Grant Status	B8/03/0	32/8A/01	3
Request/Release Modem	B8/03/1	32/8A/00	3
Test for Optical Interface	B8/05/-		4
Queue Raw Scan Mode	BA/00/-		4
Stop Auto Repeat	BA/01/-		4

**Table A-2. Series 3000 ROM BIOS Services and PPT 41XX BIOS/XSYMBIOS Services with Similar Functionality (Continued)**

Series 3000 ROM BIOS Service		BIOS/XSYMBIOS Equivalent Service	
Service Description	Interrupt/ Function/ Subfunction	Interrupt/ Function/ Subfunction	See Note ... at the end of this table
<b>Note 1:</b> The Series 3000 service and the XSYMBIOS service are identical.			
<b>Note 2:</b> The Series 3000 service and the XSYMBIOS service are identical except for the interrupt number.			
<b>Note 3:</b> The Series 3000 service and the XSYMBIOS service are significantly different.			
<b>Note 4:</b> The Series 3000 service is not supported by XSYMBIOS.			
<b>Note 5:</b> The service requires the device driver PCCEMM.SYS.			

## Series 3000 DOS Functions Portable to PPT 41XX Applications

The DOS function library (dos.lib) is a collection of C interface routines for accessing DOS services on Series 3000 terminals. Programmers who used these routines in applications they created for Series 3000 terminals may want to adapt some of these applications for use on PPT 41XX terminals.

Table A-3 lists MS-DOS services accessed by C interface functions in dos.lib and portable to applications for PPT 41XX terminals. The table provides the name of the routine, the hex value of the associated interrupt, and the hex value of the function code required in register AH to access the associated service.

**Table A-3. Series 3000 DOS Library (dos.lib) Functions Portable to PPT 41XX Application Programs**

C Interface Routine in dos.lib	Interrupt (HEX)	Function Code (AH Register)
DosAbsDiskRead	0x25	-
DosAbsDiskWrite	0x26	-
DosAllocMem	0x21	0x48
DosClose	0x21	0x3E
DosCreate	0x21	0c3C
DosFreeMem	0x21	0x49
DosGetCh	0x21	0x01
DosGetCurDrv	0x21	0x47
DosGetDate	0x21	0x2A
DosGetIntVector	0x21	0x35
DosGetTime	0x21	0x2C
DosIoCtrlDrvRdData (See <b>Note</b> below)	0x21	0x44
DosIoCtrlGetInfo (See <b>Note</b> below)	0x21	0x44
DosIoCtrlRDDData (See <b>Note</b> below)	0x21	0x44

**Table A-3. Series 3000 DOS Library (dos.lib) Functions Portable to PPT 41XX Application Programs (Continued)**

C Interface Routine in dos.lib	Interrupt (HEX)	Function Code (AH Register)
DosIoCtrlSetInfo (See <b>Note</b> below)	0x21	0x44
DosIoCtrlWrData (See <b>Note</b> below)	0x21	0x44
DosOpen	0x21	0x3D
DosRead	0x21	0x3F
DosReadLine	0x21	0x3F
DosSetDate	0x21	0x2B
DosSetIntVector	0x21	0x25
DosSetTime	0x21	0x2D
DosWrite	0x21	0x40
DosWriteLine	0x21	0x40
<b>Note:</b> Although these function calls do work, the Series 3000 drivers that are accessed through these calls are not available on the PPT 41XX.		