unitech

PA500 Programming Manual

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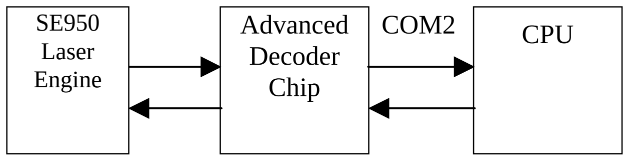
1. *Introduction*

1.1 How to download data from scanner

The major difference between the PA500 and a standard HPC/PalmPC is barcode input capability. The WinCE Reference Manual contains no information regarding barcode input. This section will introduce the programming structure of the barcode sub-system and the programming utility library for the PA500. Inside the PA500 there is an advanced decoding chip to control SE900 laser engine and to handle barcode decoding. Below is system diagram for the PA500 barcode:



According to the above diagram, the PA500 communicates with Decoder Chip by mean of serial port COM2. Its communication parameter is fixed on 38400,N,8.1. Normally, the Decoder Chip is in sleep mode when COM2 is not activated. When COM2 is activated, the Decoder Chip will start working, and it will decode the barcode “signal” from the laser engine when the trigger key is pressed. After decoding, barcode data and its symbology type will be sent directly to PA500.

Many programmers find it difficult to control the Decoder Chip via programming language alone, especially if they are not familiar with barcode and serial port controls. Because of this, Unitech provides the following utility library and program for the user or application programmer to control the Decoder Chip:

1. Application program “Scan2Key.exe” is a useful application program that can read input data from the laser scanner and then directly input the data into PA500’s keyboard buffer. “Scan2Key.exe” makes barcode data input simple, and can be especially valuable to those programmers not familiar with COM port programming. User program simply reads the barcode data from the keyboard. For barcode symbologies setting, you can run **Scanner Setting** from **Control Panel** to define all of supporting symbologies and delimiter.

2. Utility library:
   For programming control, PA500 provides USI.DLL to let user control scanner input, symbologies setting and profile controlling. Please refer to 2 for detail API lists.

   USI.DLL is Unitech’s new scanner function library on PA500. For backward compatible issue, Unitech still provide Scanner3.DLL and ScanKey3.DLL for existing PT930/PT930SA user to port their software into PA500, but several APIs on Scanner3.DLL and ScanKey3.DLL have already been removed on PA500. User can refer to 0and 5 for detail supporting API.

1.2 COM definition for PA500

COM 1	Reserve
COM2	Scanner (Hamster)
COM 3	IrDAComm
COM 4	Bluetooth Modem
COM 5	RawIR
COM 6	BTModem UART

2. USI.DLL – Unitech Scanner Interface DLL

Note : For PA500 programming, it need to dynamically load DLL for using Unitech built-in DLL (Unitech will not provide *.H and *.LIB for compiler for mobile 5.0 OS), please refer to Chapter 7 for programming guide.

2.1. Register the application to the USI DLL

Function Description: Register the application to the USI DLL, so that the DLL can communicate with the application. It will also open and initial scanner port (COM2, for example) and set the scanner to the working mode. The application should call USI_Unregister to unregister from the DLL after done with the scanner.

Function call:

```
BOOL USI_Register(HWND hwnd, UINT msgID);
```

Parameter: (input)

hwnd: Handle of the window to which USI DLL will send messages to report all activities, including error messages, scan data ready, etc.

msgID: Specifies the message to be posted. DLL will post messages by calling: PostMessage(hwnd, msgID, msg, param).

The window procedure will receive custom message about msgID and wParam parameter can be one of the followings:

SM_ERROR_SYS:	Indicates a system error, which is caused by a call to the system function. Param contains the error code from GetLastEror().
SM_ERROR	Indicates an error. Param contains the cause of error, which can be on of followings:

SERR_INVALID_HWND:	Invalid window handle.
SERR_INVALID_MSGID:	msgID cannot be 0.
SERR_OPEN_SCANNER:	Open or initial scanner port failed.
SERR_CHECKSUM:	Checksum error in received packet.
SERR_DATALOST:	New scan data is lost because data buffer is not empty.
SERR_BUFFEROVERFLOW:	Data buffer overflow. The default size is 4K bytes.

SM_REPLY	Indicates received a reply. All the responses from the scanner except the scan data will be notified by this message.
SM_DATAREADY	Indicates that scan data is successfully decoded and ready to retrieve.
SM_ACK	Indicates received a ACK.
SM_NAK	Indicates received a NAK.
SM_NOREAD	Indicates received a No-Read packet.

Note: Scanner port settings are defined in registry as described below:

```
[HKEY_LOCAL_MACHINE\SOFTWARE\Unitech America Inc.\Scanner\Settings]
"COMPORT"="COM2:"
"BAUDRATE"="38400"
"STOPBITS"="1"
"PARITY"="None"
```

"CHECKPARITY"="1"

2.2. Unregister the application from the USI.DLL

Function Description: Unregister the application from the DLL. It will close the scanner port, and by default it will disable the scanner.

Function call: void USI_Unregister();

Return code: None

2.3. Enable / Disable Scanner

Function Description: To start or stop USI function. This function is useful for application to temporarily stop scanner function if it is only need keypad input or keep clear input buffer.

Function call: **BOOL** USI_EnableScan(BOOL bStatus);

Parameter: (input)

bStatus:	TRUE	: Enable Scanner
	FALSE	: Disable Scanner

Return code: BOOL : **TRUE : OK**
FALSE : Failure

2.4. Reset Scanner

Function Description: Set the scanner to the working mode, and reset the communication control.

Function call: BOOL USI_Reset();

Return: Always TRUE

2.5. Get error code

Function Description: Returns the error code (SERR_***).

Function call: DWORD USI_GetError();

Return: Returns the error code (SERR_***), which has been described in USI_Register function.

2.6. Returns the system error code

Function Description: Returns the system error code, which is returned by GetLastError. It will also return the description of the error in buffer if it is not NULL.

Function call: DWORD USI_GetLastSysError(LPTSTR buffer, int len);

Return: Returns the system error code, which is returned by system function GetLastError. It will also return the description of the error in buffer retrieved by system function FormatMessage if it is not NULL.

For a complete list of error codes, refer to the SDK header file WINERROR.H.

2.7. *Get scan data*

Function Description:

Retrieves the scan data into the buffer. Returns the length of characters. It also returns the barcode type if type is not NULL. Return 0 means that the buffer is too short to hold the data.

USI_GetData should be called when SM_DATAREADY message is received. Or call USI_ResetData to discard the data. Both of them will reset the data buffer so that next scan data can come in.

If the data buffer is not empty and a new scan data occurs, it will be discarded and an error message SM_ERROR with code of SERR_DATALOST will be sent.

Function call:

```
UINT USI_GetData(LPBYTE buffer, UINT len, UINT* type);
```

Parameter: (input)

len : UINT : Len specifies the maximum length of the buffer.

Parameter: (output)

buffer : LPBYTE : Data buffer for storing scanned data

type : UINT : barcode type which is defined on USI.H. Please refer to below list

BCT_CODE_39	// Code 39
BCT_CODABAR	// CodaBar
BCT_CODE_128	// Code 128
BCT_INTERLEAVED_2OF5	// Interleaves 2 of 5
BCT_CODE_93	// Code 93
BCT_UPC_A	// UPC A
BCT_UPC_A_2SUPPS	// UPC A with 2 Supps
BCT_UPC_A_5SUPPS	// UPC A with 5 Supps
BCT_UPC_E0	// UPC E
BCT_UPC_E0_2SUPPS	// UPC E with 2 Supps
BCT_UPC_E0_5SUPPS	// UPC E with 5 Supps
BCT_EAN_8	// EAN 8
BCT_EAN_8_2SUPPS	// EAN 8 with 2 Supps
BCT_EAN_8_5SUPPS	// EAN 8 with 5 Supps
BCT_EAN_13	// EAN 13
BCT_EAN_13_2SUPPS	// EAN 13 with 2 Supps
BCT_EAN_13_5SUPPS	// EAN 13 with 5 Supps
BCT_MSI_PLESSEY	// MSI Plessey
BCT_EAN_128	// EAN 128
BCT_UPC_E1	// UPC E1
BCT_UPC_E1_2SUPPS	// UPC E1 with 2 Supps
BCT_UPC_E1_5SUPPS	// UPC E1 with 5 Supps
BCT_TRIOPTIC_CODE_39	// TRIOPTIC CODE 39
BCT_BOOKLAND_EAN	// Bookland EAN
BCT_COUPON_CODE	// Coupon Code
BCT_STANDARD_2OF5	// Standard 2 of 5
BCT_CODE_11_TELPEN	// Code 11 Telpen
BCT_CODE_32	// Code 32
BCT_DELTA_CODE	// Delta Code
BCT_LABEL_CODE	// Label Code IV & V
BCT_PLESSEY_CODE	// Plessey Code
BCT_TOSHIBA_CODE	// Toshiba Code China Postal Code

UINT : Data length

2.8. ***Get length of scanned data***

Function Description:

Returns the data length of the scan data. When allocate the memory to hold the scan data, add at least one additional byte for string terminator.

Function call:

```
UINT USI_GetDataLength();
```

Return: UNIT : data length

2.9. ***Get Symbology name***

Function Description:

Returns the barcode name of the type.

Function call:

```
LPCTSTR USI_GetBarcodeName(UINT type, LPBYTE buffer, UINT len);
```

Parameter: (input)

type	: UINT	: barcode type. (refer to 0 for type definition
buffer	: LPBYTE	: Please refer to below table

Type	**Buffer**
BCT_CODE_39	Code 39
BCT_CODABAR	Codabar
BCT_CODE_128	Code 128
BCT_INTERLEAVED_2OF5	Interleaved 2 of 5
BCT_CODE_93	Code 93
BCT_UPC_A	UPC A
BCT_UPC_A_2SUPPS	UPC A with 2 Supps.
BCT_UPC_A_5SUPPS	UPC A with 5 Supps.
BCT_UPC_E0	UPC E
BCT_UPC_E0_2SUPPS	UPC E with 2 Supps.
BCT_UPC_E0_5SUPPS	UPC E with 5 Supps.
BCT_EAN_8	EAN 8
BCT_EAN_8_2SUPPS	EAN 8 with 2 Supps.
BCT_EAN_8_5SUPPS	EAN 8 with 5 Supps.
BCT_EAN_13	EAN 13
BCT_EAN_13_2SUPPS	EAN 13 with 2 Supps.
BCT_EAN_13_5SUPPS	EAN 13 with 5 Supps.
BCT_MSI_PLESSEY	MSI Plessey
BCT_EAN_128	EAN 128
BCT_TRIOPTIC_CODE_39	Trioptic Code 39
BCT_BOOKLAND_EAN	Bookland EAN
BCT_COUPON_CODE	Coupon Code
BCT_STANDARD_2OF5	Standard 2 of 5
BCT_CODE_11_TELPEN	Code 11 or Telpen
BCT_CODE_32	Code 32 (Pharmacy Code)
BCT_DELTA_CODE	Delta Code
BCT_LABEL_CODE	Label Code IV & V
BCT_PLESSEY_CODE	Plessey Code
BCT_TOSHIBA_CODE	Toshiba Code (China Postal Code)

len	: UINT	: length of string on the 2nd parameter buffer

Return: TRUE : if it found name for the barcode type,
FALSE : if not (type may be wrong

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2.10. *Clear scan data system buffer*

Function Description:

Reset the data buffer so that next new scan data can come in.

Function call:

```
void USI_ResetData();
```

2.11. *Good read indicator*

Function Description:

Inform a good receiving of scan data, this will play a sound (wave file scanok.wav) and light the LED lasting for 1 second.

Function call:

```
void USI_ReadOK();
```

Note:

USI will call the function GoodReadLEDOn function exported by the DLL defined in the registry described below (UPI300.DLL is an example) to turn on and off the LED. If the DLL is not defined or the function is not found, USI will bypass the call of GoodReadLEDOn.

```
[HKEY_LOCAL_MACHINE\SOFTWARE\Unitech America Inc.\Scanner\Settings]
"DLLLEDCONTROL"="UPI300.DLL"
```

The function prototype of GoodReadLEDOn is:
VOID WINAPI GoodReadLEDOn(BOOL fon);
Turn on when fon is TRUE, and turn off when fon is FALSE.

2.12. *Wait for acknowledgement of the last sent command*

Function Description:

Wait for acknowledgement of the last sent command until timeout. It is useful when a serial of commands needs to be sent at a time. Before call USI_SendCommand, call USI_WaitForSendEchoTO to make sure that the previous command is done.

Function call:

```
BOOL USI_WaitForSendEchoTO(DWORD timeout);
```

Parameter: (input)

timeout: DWORD : Specifies the timeout in millisecond.

Return:

Returns FALSE if timeout.

2.13. *Save setting to profiles*

Function Description:

Save current settings of scanner so that the settings will be persistent when the unit get power off and on again.

Function call:

```
BOOL USI_SaveCurrentSettings();
```

Return : TRUE if success,
otherwise FALSE.

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2.14. Save scanner setting into specified file

Function Description:

Save the current settings to file. The file takes “*.USI” as extension name.

Function call:

```
BOOL USI_SaveSettingsToFile(LPCTSTR filename)
```

Parameter: (input)

filename :   LPCTSTR: file name for setting profile

Return: TRUE = success
FALSE = error

2.15. Change scanner setting from specified setting profile

Function Description:

Load and activate the settings from file.

Function call:

```
BOOL USI_LoadSettingsFromFile(LPCTSTR filename, BOOL formulaOnly);
```

Parameter: (input)

filename:	LPCTSTR :	name of scanner setting profile (*.USI)
formulaOnly:	BOOL:	if TRUE, only data editing formulas are load. The other settings remain unchanged

Return: TRUE = success
FALSE = error

2.16. Automatically enable scanner beam with pressing trigger key

Function Description:

Start auto scanning. Scan engine will be automatically triggerrd on.

Function call:

```
BOOL USI_StartAutoScan(DWORD interval);
```

Parameter: (input)

interval :   DWORD: Specifies the interval in milli-second

Parameter: (output)

Return:

Note: USI will call the function SetScannerOn function exported by the DLL defined in the registry described below (UPI300.DLL is an example) to start and stop the scanner. If the DLL is not defined or the function is not found, then auto scanning is not available.

```
[HKEY_LOCAL_MACHINE\SOFTWARE\Unitech America Inc.\Scanner\Settings]
"DLLSCANNERCONTROL"="UPI300.DLL"
```

The function prototype of SetScannerOn is:
VOID WINAPI SetScannerOn(BOOL fon);
Start when fon is TRUE, and stop when fon is FALSE.

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2.17. Stop auto scanning function

Function Description:

Stop auto scanning

Function call:

`void USI_StopAutoScan();`

2.18. Check if auto scanning is enable

Function Description:

Check if auto scanning function is enabled or not

Function call: `BOOL USI_IsAutoScanning()`

Return: BOOL: TRUE : auto-scanning is running
FALSE : auto-scanning is disabled.

2.19. Check if Scan2Key.exe program is running or not

Function Description:

Test whether Scan2Key application is running at background. (It doesn't mean Scan2Key is routing scanner input to keyboard, please call S2K_IsEnabled() to check if routing function is enable or not)

Function call:

`HWND S2K_IsLoaded();`

Return: NULL : Scan2Key is not running
Non-NULL : indicates scan2key is running. It actually returns window handle for scan2key, but it is for internal use – send messages.

2.20. Test if Scan2Key is enabled

Function Description:

Test whether Scan2Key is enabled. Scan2Key routes scanning input from scanner to keypad buffer, so that barcode data can be input as like from keystrokes on keypad.

Function call:

`BOOL S2K_IsEnabled();`

Return: TRUE = enabled.
FALSE = disable

2.21. Load/Unload Scan2Key.exe

Function Description:

Load or unload Scan2Key

Function call:

`BOOL S2K_Load(BOOL load, DWORD timeout);`

Parameter: (input)

load:	BOOL:	TRUE	= load Scan2Key
		FALSE	= unload Scan2Key
timeout:		DWORD:	when unload Scan2Key, it will wait until Scan2Key has been removed from memory or timeout specified by this parameter.

Parameter: (output)

Return: TRUE = successfully loaded.

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2.22. *Enable/Disable Scan2Key*

Function Description:

Enable or disable Scan2Key to put scanned data to standard keyboard input buffer. Scan2Key is enabled by default.

Function call:

```
BOOL S2K_Enable(BOOL enable, DWORD timeout);
```

Parameter: (input)

enable:	BOOL:	TRUE = Enable scanned data to keyboard buffer FALSE = Disable scanned data to keyboard
timeout:	DWORD:	when enable or disable Scan2Key, it will wait until Scan2Key has been removed from memory or timeout specified by this parameter.

Parameter: (output)

Return: TRUE : if successfully enabled Scan2Key, otherwise FALSE

2.23. *Send scanner command to decoding chip*

Function Description:

Send scanner command to decoder chip. This command will send a serial of bytes to decoder chip as following: (Esc and BCC will be calculated and added automatically)

Esc, high-length, low-length, command-ID, operation, set, BCC

Please refer to complete command reference on section 4

```
BOOL HAM_SendCommand(BYTE highlen, BYTE lowlen, BYTE cmdID, BYTE op,
BYTE set);
```

Parameter: (input)

highlen:	BYTE:	high byte of command length
lowlen:	BYTE:	low byte of command length
cmdID:	BYTE:	command ID
op:	BYTE:	operation mode for this command
set:	BYTE:	operand for this command

Return:

TRUE = Indicates the command has been successfully sent to queue to output.

2.24. *Only send single command decoding chip*

Function Description:

Send command to decoder chip. This is a variation of command HAM_SendCommand. It sends following command to Hamster: (note, only two bytes without BCC)

Esc, 0x80+cmd

Function call:

```
BOOL HAM_SendCommand1(BYTE cmd);
```

Parameter: (input)

cmd:	BYTE:	command

Return:

TRUE = indicates the command has been successfully sent to queue to output.

-

2.25. Send command to decoding chip

Function Description:

Send command to decoder chip. This is a variation of command HAM_SendCommand. It will read a number of parameters and packet them as in following format and send it to decoder chip.

Esc, parameter1, parameter2, …, BCC

The total number of parameters is specified by first parameter num.

Function call:

```
BOOL HAM_SendCommand2(BYTE num, BYTE parameter1, …);
```

Parameter: (input)

num:	BYTE:	number of total parameters
parameter***x***	BYTE:	Parameter

Parameter: (output)

Return:

TRUE = indicates the command has been successfully sent to queue to output.

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3. Control command for decoder chip

Important: This chapter describes low level command for scanner control function. If you already USI to do scanner programming, you don't need to care about this chapter. In general, it is not suggested to use level command to control scanner, because there are timing issue on serial communication programming , and it is always need communication expert to do that and it is hard to explain it on document.

When Host prepare to send a command to hamster, it must first check CTS, if CTS is high, then Host must set the RTS to high then clear RTS to low to wake up the Hamster.

Special Command for control		
command	Format	Comment
Control	Esc,80H+SOH(01H)	Let Hamster enter slaving status. At this status Hamster just receives commands and executes it until it receives Release command or timeout (about 10s). Otherwise, the timeout is about 1s as the interval of commands.
Release	Esc,80H+EOT(04H)	Let Hamster exit from slaving status.
Execute/ Enquiry	Esc,80H+ENQ(05H)	Let Hamster execute the previous saved command and check hamster if there is a result of previous executed command to send to Host. If previous saved command have already executed and no result to send, hamster do not reply until there is a result. If Host receive a result but the BCC is wrong, it can re-send ENQ to re-send result again.
ACK	Esc,80H+ACK(06H)	It is from Hamster to Host. If Hamster receive a command and this command do not need send message back, Hamster reply the ACK.
NAK	Esc,80H+NAK(15H)	It is from Hamster to Host. Hamster require the Host to re-send command again, normally when received a wrong BCC, it can send the NAK. The Hamster sends back NAK whenever it receives a no sense command.

COMMAND FROM HOST TO HMASTER

Command format:Esc,Lh,Ll,n,m,S1,...,Si,BCC

Here: Esc is Escape code(H'1B)

Lh/Ll is command's length when the Lh.b7 is 0, Lh is high byte, Ll is low byte, count from n to BCC. When Lh.b7=1 it is a two bytes special command.

n is command ID

m is operation: Normally for setting commands the 0 means setting, 1 default, 2 read current setting, 3 special operation. When m=1 or 2, the S1 should be 0 for bits or one character setting. If the setting is a string, like pre_amble, the read or default command should not contain any Si byte. The special meaning in a command please refers the command definition.

Si is setting/read data.

BCC: it equals to XOR of all the bytes before the BCC.

Conventions: S1.bj means the number j bit of byte S1.

The expression 1~64:2 means that the number is between 1 and 64, the default is 2.

Notice: Any interval in a command transmit can not exceed 1 second.

Command	Format	Comment
Initial/ Warm start	Esc,0,2,0,BCC	Hamster initializes the ports and flags according to the setting in RAM.
Default	Esc,0,2,1,BCC	Reset setting in RAM and initialize
Mpu_idle	Esc,0,4,2,m,S1,BCC	S1 is 0~3:0 is sleep mode,1 is watch mode,

-

		2_is standby mode.
Beep	Esc,0,4,3,m,S1,BCC	S1 0 none,1 low,2_medium,3 high,4 low/high,5high/low
block_delay	Esc,0,4,4,m,S1,BCC	S1 is 0_10ms,1 50ms,2 100ms,3 500ms,4 1s,5 3s
char_delay	Esc,0,4,5,m,S1,BCC	S1 is 0_none,1 1ms,2 5ms,3 10ms,4 20ms,5 50ms
Function_code	Esc,0,4,6,m,S1,BCC No meaning for you	S1 is 0 off,1_on
Capslock	Esc,0,4,7,m,S1,BCC No meaning for you	S1 is 0_auto trace,1 lower case,2 upper case
Language	Esc,0,4,8,m,S1,BCC No meaning for you	S1 is 0_U.S.,1 U.K.,2 Swiss,3 Swedish, 4 Spanish,5 Norwegian,6 Italian,7 German,8 French,9 Alt Key Mode,A Danish
Baud_rate	Esc,0,4,0D,m,S1,BCC No meaning for you	S1 is 0 300,1 600,2 1200,3 2400,4 4800, 5 9600,6 19200,7_38400
Parity	Esc,0,4,0E,m,S1,BCC No meaning for you	S1 is 0 EVEN,1 ODD,2 MARK,3 SPACE,4_NONE
Data_bits	Esc,0,4,0F,m,S1,BCC No meaning for you	S1 is 0 7,1_8BIT
Handshake	Esc,0,4,10,m,S1,BCC No meaning for you	S1 is 0_IGNORE,1 RTS ENABLE AT POWERUP,2 RTS ENABLE IN COMMUNICATION
Ack_nak	Esc,0,4,11,m,S1,BCC No meaning for you	S1 is 0_OFF,1 ON
BCC_char	Esc,0,4,12,m,S1,BCC No meaning for you	S1 is 0_OFF,1 ON
Data_direction	Esc,0,4,13,m,S1,BCC No meaning for you	S1 is =0_SEND TO HOST,1 SEND TO HOST AND TERMINAL,2 SEND TO TERMINAL
Time_out	Esc,0,4,14,m,S1,BCC No meaning for you	S1 is 0_1S,1 3S,2 10S,3 UNLIMITED
Terminator	Esc,0,4,15,m,S1,BCC	S1 is B1B0=0_ENTER(CR/LF),1 FIELD EXIT(CR),2 RETURN(LF),3 NONE
Code_id	Esc,0,4,16,m,S1,BCC	S1 is 0_OFF,1 ON
Verification	Esc,0,4,17,m,S1,BCC	S1 is 0_OFF,1~7 1 to 7 times verification
Scan_mode	Esc,0,4,18,m,S1,BCC	S1 is 0_TRIGGER MODE,1 FLASH_MODE,2 MULTISCAN MODE,3 ONE PRESS ONE SCAN,4~7 reserved
Label_type	Esc,0,4,19,m,S1,BCC	S1 is 0_POSITIVE,1 POSITIVE AND NEGATIVE
Aim_fuction	Esc,0,4,1a,m,S1,BCC	S1 is 0_DISABLE,1 ENABLE
Scan_pre_data	Esc,0,L,1b,m,S1,…Si,BCC	Si can be 1 to 8 CHARACTERS
Scan_post_data	Esc,0,L,1c,m,S1,…Si,BCC	Si can be 1 to 8 CHARACTERS
Define_code39f	Esc,0,4,1d,m,S1,BCC	define Code 39 full ASCII ID:Here S1 is 1 CHARACTER
Define_code39s	Esc,0,4,1e,m,S1,BCC	define Code 39 standard ID:Here S1 is 1 CHARACTER
Define_EAN13	Esc,0,4,1f,m,S1,BCC	define EAN13 ID:Here S1 is 1 CHARACTER
Define_UPCA	Esc,0,4,20,m,S1,BCC	define UPC A ID: Here S1 is 1 CHARACTER
Define_EAN8	Esc,0,4,21,m,S1,BCC	define EAN8 ID:Here S1 is 1 CHARACTER
Define_UPCE	Esc,0,4,22,m,S1,BCC	define UPC E ID:Here S1 is 1 CHARACTER
Define_I25	Esc,0,4,23,m,S1,BCC	define I25 ID:Here S1 is 1 CHARACTER
Define_CDB	Esc,0,4,24,m,S1,BCC	define Codabar ID:Here S1 is 1 CHARACTER
Define_C128	Esc,0,4,25,m,S1,BCC	define Code128 ID:Here S1 is 1 CHARACTER
Define_C93	Esc,0,4,26,m,S1,BCC	define Code93 ID:Here S1 is 1 CHARACTER
Define_S25	Esc,0,4,27,m,S1,BCC	define S25 ID:Here S1 is 1 CHARACTER
Define_MSI	Esc,0,4,28,m,S1,BCC	define MSI ID:Here S1 is 1 CHARACTER
Define_C11	Esc,0,4,29,m,S1,BCC	define Code11 ID:Here S1 is 1 CHARACTER
Define_C32	Esc,0,4,2a,m,S1,BCC	define Code32 ID:Here S1 is 1 CHARACTER
Define_DELTA	Esc,0,4,2b,m,S1,BCC	define Delta ID:Here S1 is 1 CHARACTER
Define_LABEL	Esc,0,4,2c,m,S1,BCC	define Label code ID:Here S1 is 1 CHARACTER
Define_PLESSEY	Esc,0,4,2d,m,S1,BCC	define Plessey ID:Here S1 is 1 CHARACTER
Define_TELEPEN	Esc,0,4,2e,m,S1,BCC	define Telepen ID:Here S1 is 1 CHARACTER
Define_TOSHIBA	Esc,0,4,2f,m,S1,BCC	define Toshiba ID:Here S1 is 1 CHARACTER
Define_EAN128	Esc,0,4,30,m,S1,BCC	define EAN128 ID:Here S1 is 1 CHARACTER;IF H'FF, THEN USE "]C1"

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Mterminator	Esc,0,4,31,m,S1,BCC No meaning for you	Here S1 is 0_ENTER,1 NONE
Sentinal	Esc,0,4,32,m,S1,BCC No meaning for you	S1 is 0 not send,1 send
Track_selection	Esc,0,4,33,m,S1,BCC No meaning for you	Here S1 is =0_ALL TRACKS,1 TRACK1 AND TRACK2,2 TRACK1 AND TRACK3,3 TRACK2 AND TRACK3,4 TRACK1,5 TRACK2,6 TRACK3
T2_account_only	Esc,0,4,34,m,S1,BCC No meaning for you	S1 is 0_NO,1 YES
Separator	Esc,0,4,35,m,S1,BCC No meaning for you	S1 is 1 CHARACTER
Must_have_data	Esc,0,4,36,m,S1,BCC No meaning for you	S1 is 0 YES,1_NO
Track1_sequence	Esc,0,L,37,m,S1,…Si,BCC No meaning for you	Si can be 1 to 16 CHARACTERS
Track2_sequence	Esc,0,L,38,m,S1,…Si,BCC No meaning for you	Si can be 1 to 8 CHARACTERS
Code39_set	Esc,0,4,39,m,S1,BCC	S1.B0 is for Code39_enable,S1.B1 is for Code39_standard,S1.B3B2 for Code39_cd,S1.B4 Code39_ss
Code39_enable	Esc,0,4,3a,m,S1,BCC	S1 is 0 disable,1_enable
Code39_sandard	Esc,0,4,3b,m,S1,BCC	S1 is 0_full ASCII,1 standard
Code39_cd:	Esc,0,4,3c,m,S1,BCC	S1 is 0 calculate&send,1 calculate&not send,2_not calculate
Code39_ss	Esc,0,4,3d,m,S1,BCC	Here S1 is 0 SS send,1_SS not send
Code39_min	Esc,0,4,3e,m,S1,BCC	S1 is 0~48:0 (min<=data len)
Code39_max	Esc,0,4,3f,m,S1,BCC	S1 is 0~48:48 (data len<=max)
I2of5_set	Esc,0,4,40,m,S1,BCC	S1 is S1.B0 is for I2of5_enable,S1.B1 is for I2of5_fixlength,S1.B3B2 is for I2of5_cd,S1.B5B4 is for I2of5_ss
I2of5_enable	Esc,0,4,41,m,S1,BCC	S1 is =0 disable,1_enable
I2of5_fixlength	Esc,0,4,42,m,S1,BCC	S1 is =0 on,1_off (record first 3 record len)
I2of5_cd	Esc,0,4,43,m,S1,BCC	S1 is =0 calculate&send,1 calculate&not send,2_no calculation
I2of5_ss	Esc,0,4,44,m,S1,BCC	S1 is 0 first digit suppressed,1 last digit suppressed,2_not supressed
I25_min	Esc,0,4,45,m,S1,BCC	S1 is 2~64:10 (min<=data len)
I25_max	Esc,0,4,46,m,S1,BCC	S1 is 2~64:64 (data len<=max)
S2of5_set	Esc,0,4,47,m,S1,BCC	S1 is S1.b0 is for S2of5_enable,S1.b1 is for S2of5_fixlength,S1.b3b2 is for S2of5_cd
S2of5_enable	Esc,0,4,48,m,S1,BCC	S1 is 0_disable,1 enable
S2of5_fixlength	Esc,0,4,49,m,S1,BCC	S1 is 0_on,1 off (record first 3 record len)
S2of5_cd	Esc,0,4,4a,m,S1,BCC	S1 is 0 calculate&send,1 calculate&not send, 2_not calculate
S25_min	Esc,0,4,4b,m,S1,BCC	S1 is 1~48:4 (min<=data len)
S25_max	Esc,0,4,4c,m,S1,BCC	S1 is 1~48:48 (data len<=max)
Code32_set	Esc,0,4,4d,m,S1,BCC	S1 is S1.b0 is for Code32_enable,S1.b1 is for Code32_sc,S1.b2 is for Code32_lc
Code32_enable	Esc,0,4,4e,m,S1,BCC	S1 is 0_disable,1 enable
Code32_sc	Esc,0,4,4f,m,S1,BCC	S1 is 0_leading char send,1 not send
Code32_lc	Esc,0,4,50,m,S1,BCC	S1 is 0_tailing char send,1 not send
Telepen	Esc,0,4,51,m,S1,BCC	S1 is S1.b0 is for Telepen_enable,S1.b1 is for Telepen_charset
Telepen_enable	Esc,0,4,52,m,S1,BCC	S1 is 0_disable,1 enable
Telepen_charset	Esc,0,4,53,m,S1,BCC	S1 is 0_standard,1 numeric
Ean128	Esc,0,4,54,m,S1,BCC	S1 is S1.b0 is for Ean128_id, S1.b1 is for Ean128_id
Ean128_enable	Esc,0,4,55,m,S1,BCC	S1 is 0 disable,1_enable
Ean128_id	Esc,0,4,56,m,S1,BCC	S1 is 0 ID disable,1_ID enable
Ean128_func1	Esc,0,4,57,m,S1,BCC	S1 is 1 char
Code128	Esc,0,4,58,m,S1,BCC	S1 is 0 disable,1_enable
Code128_min	Esc,0,4,59,m,S1,BCC	S1 is 1~64:1 (min<=data len)
Code128_max	Esc,0,4,5a,m,S1,BCC	S1 is 1~64:64 (data len<=max)

-

Msi_pleasey	Esc,0,4,5b,m,S1,BCC	S1 is S1.b0 is for Msi_p_enable,S1.b1 is for Msi_pleasey_cd, S1.b3b2 is for Msi_p_cdmode
Msi_p_enable	Esc,0,4,5c,m,S1,BCC	S1 is 0_disable,1 enable
Msi_pleasey_cd	Esc,0,4,5d,m,S1,BCC	S1 is 0 check digit send,1_not send
Msi_p_cdmode	Esc,0,4,5e,m,S1,BCC	S1 is 0 check digit double module 10,1 check digit module 11 plus 10,2 check digit single module 10
Msi_pleasey_min	Esc,0,4,5f,m,S1,BCC	S1 is 1~64:1 (min<=data len)
Msi_pleasey_max	Esc,0,4,60,m,S1,BCC	S1 is 1~64:64 (data len<=max)
Code93	Esc,0,4,61,m,S1,BCC	S1 is 0 disable,1_enable
Code93_min	Esc,0,4,62,m,S1,BCC	S1 is 1~48:1 (min<=data len)
Code93_max	Esc,0,4,63,m,S1,BCC	S1 is 1~48:48 (data len<=max)
Code11	Esc,0,4,64,m,S1,BCC	S1 is S1.b0 is for Code11_enable,S1.b1 is for Code11_cdnumber,S1.b2 Code11_cdsend
Code11_enable	Esc,0,4,65,m,S1,BCC	S1 is 0_disable, 1 enable
Code11_cdnumber	Esc,0,4,66,m,S1,BCC	S1 is 0 one check digit,1_two check digits
Code11_cdsend	Esc,0,4,67,m,S1,BCC	S1 is 0 check digit send,1_not send
Code11_min	Esc,0,4,68,m,S1,BCC	S1 is 1~48:1 (min<=data len)
Code11_max	Esc,0,4,69,m,S1,BCC	S1 is 1~48:48 (data len<=max)
Codabar_set	Esc,0,4,6a,m,S1,BCC	S1 is S1.b0 is for Codabar_enable, S1.b1 is for Codabar_ss, S1.b3b2 is for Codabar_cd, S1.b4 is for Codabar_CLSI
Codabar_enable	Esc,0,4,6b,m,S1,BCC	S1 is 0_disable,1 enable
Codabar_ss	Esc,0,4,6c,m,S1,BCC	S1 is 0 start&stop char send,1_not send
Codabar_cd	Esc,0,4,6d,m,S1,BCC	S1 is 0 check digit calculate&send,1 check digit calculate but not send,2_check digit not calculate
Codabar_CLSI	Esc,0,4,6e,m,S1,BCC	S1 is 0 CLSI format on,1_off
Codabar_min	Esc,0,4,6f,m,S1,BCC	S1 is 3~48:3 (min<=data len)
Codabar_max	Esc,0,4,70,m,S1,BCC	S1 is 3~48:48
Label_code	Esc,0,4,71,m,S1,BCC	S1 is S1.b0 is for Label_c_enable,S1.b1 is for Label_code_cd
Label_c_enable	Esc,0,4,72,m,S1,BCC	S1 is 0_disable,1 enable
Label_code_cd	Esc,0,4,73,m,S1,BCC	S1 is 0 check digit send,1 not send
Upc_a_set	Esc,0,4,74,m,S1,BCC	S1 is S1.b0 is for Upc_a_enable,S1.b1 is for Upc_a_ld,S1.b2 is for Upc_a_cd
Upc_a_enable	Esc,0,4,75,m,S1,BCC	S1 is 0 disable,1_enable
Upc_a_ld	Esc,0,4,76,m,S1,BCC	S1 is 0_leading digit send,1 not send
Upc_a_cd	Esc,0,4,77,m,S1,BCC	S1 is 0_check digit send,1 not send
Upc_e_set	Esc,0,4,78,m,S1,BCC	S1 is S1.b1 is for Upc_e_enable,S1.b2 is for Upc_e_ld,S1.b3 is for Upc_e_cd,S1.b4 is for Upc_e_expand,S1.b0 is for Upc_e_nsc
Upc_e_enable	Esc,0,4,79,m,S1,BCC	S1 is 0 disable,1_enable
Upc_e_ld	Esc,0,4,7a,m,S1,BCC	S1 is 0_leading digit send,1 not send
Upc_e_cd	Esc,0,4,7b,m,S1,BCC	S1 is 0 check digit send,1_not send
Upc_e_expand	Esc,0,4,7c,m,S1,BCC	S1 is 0 zero expansion on,1_off
Upc_e_nsc	Esc,0,4,7d,m,S1,BCC	S1 is 0_disable,1 enable
Ean_13_set	Esc,0,4,7e,m,S1,BCC	S1 is S1.b0 is for Ean_13_enable,S1.b1 is for Ean_13_ld,S1.b2 is for Ean_13_cd,S1.b3 is for Ean_13_bookland
Ean_13_enable	Esc,0,4,7f,m,S1,BCC	S1 is 0 disable,1_enable
Ean_13_ld	Esc,0,4,80,m,S1,BCC	S1 is 0_leading digit send,1 not send
Ean_13_cd	Esc,0,4,81,m,S1,BCC	S1 is 0_check digit send,1 not send
Ean_13_bookland	Esc,0,4,82,m,S1,BCC	S1 is 0 bookland EAN enable,1_ disable
Ean_8_set	Esc,0,4,83,m,S1,BCC	S1 is S1.b0 is for Ean_8_enable,S1.b1 is for Ean_8_ld,S1.b2 is for Ean_8_cd
Ean_8_enable	Esc,0,4,84,m,S1,BCC	S1 is 0 disable,1_enable
Ean_8_ld	Esc,0,4,85,m,S1,BCC	S1 is 0_leading digit send,1 not send
Ean_8_cd	Esc,0,4,86,m,S1,BCC	S1 is 0_check digit send,1 not send
Supplement_set	Esc,0,4,87,m,S1,BCC	S1 is S1.b0 is for Supplement_two, s1.b1 is for

-

		Supplement_five,S1.b2 is for Supplement_mh, S1.b3 is for Supplement_ssi.
Supplement_two	Esc,0,4,88,m,S1,BCC	S1 is 0_off,1 on
Supplement_five	Esc,0,4,89,m,S1,BCC	S1 is 0_off,1 on
Supplement_mh	Esc,0,4,8a,m,S1,BCC	S1 is 0_transmit if present,1 must present
Supplement_ssi	Esc,0,4,8b,m,S1,BCC	S1 is 0 Space been inserted, 1_Space not been inserted
Delta_code_set	Esc,0,4,8c,m,S1,BCC	S1 is S1.b0 is for Delta_c_enable,S1.b1 is for Delta_code_cdc,S1.b2 is for Delta_code_cds
Delta_c_enable	Esc,0,4,8d,m,S1,BCC	S1 is 0_disable,1 enable
Delta_code_cdc	Esc,0,4,8e,m,S1,BCC	S1 is 0_check digit calculate,1 not calculate
Delta_code_cds	Esc,0,4,8f,m,S1,BCC	S1 is =0 check digit send,1_not send
Get_version	Esc,0,3,90,2,BCC	Get firmware version.
DumpSetting	Esc,Lh,Ll,91,m,S1...Si,BCC	Lh/Ll is command length. Si is in the range of s1 to S255.m=0 is download setting, m=1 is reset the setting area into FF. m=2 is upload setting. Actually you just need the format as bellow: Download: Esc,1,02,91,0,s1,...,s255,BCC Upload: Esc,0,3,91,2,BCC
EAN128Brace Remove	Esc,0,4,92,m,S1,BCC	S1 is =0_disable,1 enable(Remove the brace)
AimingTime	Esc,0,4,93,m,S1,BCC	S1 is =0 0.5s,1_1s,2 1.5s 3 2s
Exchange data	Esc,Lh,Ll,a3,S1,S2,....,Sn, BCC	• Expect Acknowledge (Esc,80H+ACK(06H)) • Exchange the data between the host and the ICC. • Expected return after issuing Execute/Enquiry command are: Esc,Lh,Ll,0xa3,AH,data,BCC Here: AH=0 Success =1 Timeout =2 No card present data: Response data and status word
Note: Hamster save these commands to buffer and do not execute until it receives an Execute command (Esc,ENQ). Hamster execute the command after receive an "Esc,ENQ" then send back a reply. The Max. Length of data is 264. The m and the reply define as following:		

DATA TO HOST FROM HAMSTER					
Data format: Code_number,Lh,Ll,string Here: The Lh/Ll is string length, Lh is high byte, Ll is low byte, The string length is excluded the Code_number and Lh/Ll. The string contains the Code ID, pre_amble, scanned data,post_amble, and terminator. Code_number is equal to following number plus H'80.					
0 Code 39 full ASCII	1 Code 39 standard or EDP Code			2 EAN 13	3 UPC A
4 EAN 8	5 UPC E	6 I25	7 Codabar	8 Code 128	9 Code 93
10 S25	11 MSI	12 EAN 128	13 Code 32	14 Delta	15 Label
16 Plessey	17 Code 11	18 Toshiba	19 reserved	20 Track 1	21 Track 2
22 Track 3	23 More than 1 track	24 reserved	25 RS232	26 reserved	27 reserved
28 reserved	29 reserved	30 reserved	31 reserved	32 reserved	33 reserved

-

4. Scanner3.DLL – Backward compatible API for PT930/PT930S's Scanner3.dll

Note : For PA500, it need to dynamically load DLL for using Unitech built-in DLL (Unitech will not provide *.H and *.LIB for compiler), please refer to Chapter 7 for programming guide.

4.1. Enable Decoder

Function Description: This function will open COM2 port, create a thread to get any barcode input from Decoder Chip, and then store input data in the system buffer. Application can use function call **PT_GetBarcode()** to get input data from the system buffer.

Function call:

```
INT PT_EnableBarcode(VOID);
```

Return code:

=1	Create new thread fail
=2	Cannot re-enable
=3	Cannot open COM2
=4	Upload parameter from Hamster fail
=0	OK

4.2. Disable Decoder

Function Description:

This function will close COM2 port and then remove thread which is created by **PT_EnableBarcode()**

Function call:

```
VOID PT_DisableBarcode( VOID );
```

4.3. Check barcode input

Function Description:

This function is used to check whether there is available barcode data on system buffer which is successfully decoded by decoder chip.

Function call:

```
BOOL PT_CheckBarcode( VOID );
```

Return code:

TRUE = There is input data on system buffer.
FALSE = There is no data on system buffer.

-

4.4. Read barcode data

Function Description: Get input barcode data and its type from system buffer.

Function call: BOOL PT_GetBarcode(TCHAR *szBarcodeBuffer,TCHAR *cType);

Parameter: (output)

szBarcodeBuffer : string buffer for storing input data

cType : Type of Input data

=00H	Full Code 39
=01H	STD Code 39
=02H	EAN-13
=03H	UPC-A
=04H	EAN-8
=05H	UPC-E
=06H	I-25
=07H	CODABAR
=08H	Code 128
=09H	Code 93
=0Ah	STD 25
=0BH	MSI
=0CH	EAN-128
=0DH	Code 32
=0EH	DELTA
=0FH	LABEL
=10H	PLESSEY
=11H	Code 11
=12H	TOSHIBA

Return code: TRUE = There is barcode input

FALSE = No Barcode Input

4.5. Get DLL version no

Function description:

This function is used to get DLL version no.

Function call:

INT PT_DllVersion(void);

Return :

Integer

4.6. Reset all symbologies to default

Function Description:

This function call will reset decoder chip's symbologies setting to system default value

Function call for VC:

int PT_ SetToDefault (VOID)

Function call for VB:

PT_ SetToDefault

-

5. ScanKey3.DLL – Backward compatible API for PT930/PT930S's ScanKey3.dll

Note : For PA500, it need to dynamically load DLL for using Unitech built-in DLL (Unitech will not provide "USI.H" and "USI.LIB" for compiler), please refer to Chapter 7 for programming guide.

5.1. Enable Decoder

Function Description: This function will open COM2 port, create a thread to get any barcode input from Decoder Chip, and then send scanner data to keyboard buffer. User application can get input data just like standard keyboard input.

Function call for VC: int PT_EnableBarToKey(VOID)

Return code:		
	=1	Create new thread fail
	=2	Can not re-enable
	=3	Can not open COM2
	=4	Upload parameter from Hamster fail
	=0	OK

5.2. Disable Decoder

Function Description: This function will close COM2 port and then remove thread which is created by **PT_EnableBarToKey()**

Function call for VC: VOID PT_DisableBarToKey (VOID)

5.3. Get DLL version no

Function description: This function is used to get DLL version number.

Function call for VC: INT PT_Version(void);

Return : Integer

5.4. Disable laser trigger key

Function Description:

This function only stop trigger key to activate laser beam, so COM2 port is still open. This function call is useful when some fields is only allow keyboard input..

Function call for VC:

int PT_StopScan (VOID)

5.5. Enable laser trigger key

Function Description: This function only stop trigger key to activate laser beam, so COM2 port is still open. This function call is useful when some fields is only allow keyboard input..

Function call for VC: int PT_StartScan (VOID)

5.6. Reset all symbologies to default

Function Description: This function call will reset decoder chip's symbologies setting to system default value

Function call for VC: int PT_ SetToDefault (VOID)

Function call for VB: PT_ SetToDefault

-

6. SysIOAPI.DLL

This DLL provide hardware relative API for user to control scanner, LED, back-light and PC card slot. API functions are provided through DLL to assist programmer to write application for PA500.
Note : For PA500 programming, it need to dynamically load DLL for using Unitech built-in DLL (Unitech will not provide *.H and *.LIB for compiler), please refer to Chapter 7 for programming guide.

6.1. Keypad Related Functions

6.1.1. Disable/enable power button

Function Description:
To enable / disable power button
Function call:
VOID DisablePowerButton (BOOL)
Parameter (Input)
TRUE = Disable power button.
FALSE = Enable power button.
Return code:
None

6.1.2. Get CAPS lock status

Function Description:
To check if CAPS is lock or unlock
Function call:
BOOL GetCapsLock (void)
Return code:
BOOL: TRUE : CAPS lock
FALSE : CAPS unlock

6.1.3. Get SHIFT status

Function Description:
To check if SHIFT key is lock or not
Function call:
BOOL GetShift (void)
Return code:
TRUE : Shift lock
FALSE : Shift unlock

-

6.2. Scanner Related Functions

To save power, the decoder IC is disabled when scanner is not in use. It can be enabled through USI functions. Following functions are meaningful only if decode IC is enabled.

6.2.1. Enable/Disable Scanner trigger key

Function Description:

This function enables/disables trigger keys.

Function call:

void EnableScannerTrigger(BOOL fOn)

Parameter (Input)

fON:	BOOL:	TRUE = enable trigger keys.
		FALSE = disable trigger keys.

Return code:

6.2.2. Turn on/off Scan Engine

Function Description:

This function emulates trigger keys to turn scan engine on or off. It functions even if trigger keys are disabled.

Function call:

void SetScannerOn(BOOL fON)

Parameter(Input)

fON:	BOOL:	TRUE = turn scan engine on.
		False= turn scan engine off.

Return code: **none**

6.2.3. Get Trigger keys Status

Function Description:

This function returns enable/disable status of trigger keys.

Function call:

BOOL GetScannerTrigger(void)

Return code:

TRUE = trigger keys are enabled.
FALSE = trigger keys are disabled.

6.2.4. Get Scanner Status

Function Description:

This function returns the status of scan engine, or trigger key.

Function call:

BOOL GetScannerStatus(void)

Return code:

TRUE = scan engine is on, or trigger key is pressed.
FALSE = scan engine is off, or trigger key is released.

-

6.2.5. Check Trigger key is pressing

Function Description:

This function is used to check if left or right trigger key is pressed or not.

Function call:

BOOL TriggerKeyStatus(int key);

Parameter(Input)

key:	int:	LEFT_TRIGGER_KEY	: left trigger key
		RIGHT_TRIGGER_KEY	: right trigger key.

Return code:

TRUE = trigger is pressed.

FALSE = trigger is released.

Example:

```
#define kKeybdTriggerEventName                TEXT("KeybdTriggerChangeEvent")
#define kKeybdAlphaKeyEventName               TEXT("KBDAlphaKeyChangeEvent")
#define LEFT_TRIGGER_KEY    1
#define RIGHT_TRIGGER_KEY 2
gKeyEvents[0] = CreateEvent(NULL, TRUE, FALSE, kKeybdTriggerEventName);
gKeyEvents[1] = CreateEvent(NULL, TRUE, FALSE, kKeybdAlphaKeyEventName);

while (1)
{
        WaitForMultipleObjects(2, gKeyEvents, FALSE, INFINITE);

        TriggerKeyStatus(LEFT_TRIGGER_KEY);
        TriggerKeyStatus(RIGHT_TRIGGER_KEY);
}
```

6.3. LED related function

Function Description:

There are two LEDs above the screen of PA500, red and green LEDs. Only the green LED can be controlled by programmer.

Function call:

void GoodReadLEDOn(BOOL fON)

Parameter(Input)

fON:	BOOL:	TRUE = turn on LED.
		FALSE = turn off green LED.

6.4. <u>LCD/Backlight related function</u>

There are two backlight controls, screen backlight and keypad backlight. They are controlled separately. For screen backlight, you can adjust brightness of backlight also.

6.4.1. Screen Backlight Control

Function Description:

This function turns screen backlight on or off.

Function call:

void BacklightOn(BOOL fON)

Parameter(Input)

fON:	BOOL:	TRUE = turn on screen backlight.
		FALSE= turn off backlight.

Return code:

6.4.2. Get Screen Backlight Status

Function Description:

This function returns the status of screen backlight.

Function call:

BOOL GetBacklightStatus(void)

Return code:

TRUE = screen backlight is on.
FALSE = screen backlight is off.

6.4.3. Screen Backlight Brightness Control

Function Description:

This function adjusts screen backlight brightness.

Function call:

void BrightnessUp(BOOL fup)

Parameters(Input)

Fup:	BOOL:	TRUE = adjust one step up.
		FALSE = adjust one step down.

Return code:

-

7. *Dynamic Load DLL*

Compiler would not load the DLL while use dynamic load DLL, it help user to load the DLL if it exists while the application executed. The follow is the example.

Note: Even user does not need include the header and lib file but need to know the function definition.

```
/////////////////////////////////////////////////////////////////////////////////////////
HINSTANCE g_hUSIDLL;
typedef BOOL (*lpfnUSI_GetScannerVersion)(LPTSTR model, LPTSTR firmware, LPTSTR sdk, int blen);
lpfnUSI_GetScannerVersion USI_GetScannerVersion;

g_hUSIDLL = LoadLibrary(L"\\Windows\\USI.dll");

if (g_hUSIDLL != NULL)
{
    USI_GetScannerVersion = (lpfnUSI_GetScannerVersion)GetProcAddress(g_hUSIDLL,
                                        TEXT("USI_GetScannerVersion"));
}
else
{
    MessageBox(_T("Load library USI.dll fail"), NULL, MB_OK);
    return;
}

TCHAR lstrmodel[50], lstrfirmware[50], lstrsdk[50];

if (USI_GetScannerVersion != NULL)
    rc = USI_GetScannerVersion(lstrmodel, lstrfirmware, lstrsdk, sizeof(lstrmodel) + sizeof(lstrfirmware) +
                              sizeof(lstrsdk));
else
    MessageBox(_T("USI_GetScanerVersion does not find"), NULL, MB_OK);

if (g_hUSIDLL != NULL)
    FreeLibrary(g_hUSIDLL);

/////////////////////////////////////////////////////////////////////////////////////////
```

-

8. *Useful function call - without include SysIOAPI.DLL*

8.1. *Warm-boot, Cold-boot and power off*

```
#include            <pkfuncs.h>
         #include            "oemioctl.h"

          //          Warn boot
         KernelIoControl(IOCTL_HAL_REBOOT, NULL, 0, NULL, 0, NULL);

         // Cold boot
         KernelIoControl(IOCTL_COLD_BOOT, NULL, 0, NULL, 0, NULL);

         // Power off
         {
         DWORD dwExtraInfo=0;
         BYTE bScan=0;
         keybd_event( VK_OFF, bScan, KEYEVENTF_SILENT, dwExtraInfo );
         keybd_event( VK_OFF, bScan, KEYEVENTF_KEYUP, dwExtraInfo );
         }
```

8.2. *Get Device ID*

In PA500, an unique ID had been burnt into terminal, user can check it by pressing "Func"+"9".

The sample code for read device ID as follow,

```
////////////////////////////////////////////////////////////////////
        HWND hDeviceId = GetDlgItem(hWnd, IDC_DEVICEID);

        PDEVICE_ID pDeviceID = NULL;
        TCHAR outBuf[512], szProductID[100], stringBuffer[100];
        BYTE szBuff[255];
        DWORD bytesReturned;
        char platformID[64];

        pDeviceID = (PDEVICE_ID)outBuf;
        pDeviceID->dwSize = sizeof(outBuf);
        if (KernelIoControl(IOCTL_HAL_GET_DEVICEID, NULL, 0, outBuf, sizeof(outBuf), &bytesReturned))
        {
            // Platform ID
            memcpy((PBYTE)platformID, (PBYTE)pDeviceID + pDeviceID->dwPlatformIDOffset, pDeviceID->dwPlatformIDBytes);

            // Device ID for WinCE version
            memcpy((PBYTE)stringBuffer, (PBYTE)pDeviceID + pDeviceID->dwPresetIDOffset, pDeviceID->dwPresetIDBytes);
            swprintf(szProductID, _T("%s"), stringBuffer);


            // Device ID for Mobile version
            memcpy((PBYTE) szBuff, (PBYTE)pDeviceID + pDeviceID->dwPresetIDOffset, pDeviceID->dwPresetIDBytes);
            swprintf(szProductID, TEXT("%X%X%X%X%X%X%X%X"),
                            szBuff [0], szBuff [1], szBuff [2], szBuff [3], szBuff [4], szBuff [5], szBuff [6], szBuff [7]);

        }
//////////////////////////////////////////////////////////////
```

The code will have platformID holds Platform ID, and deviceID holds Device ID.

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9. Update notes

V1.0	The first version
V1.1	COM port error correction on section 1.2
V1.2	Change logo