PA962 Programming Manual

V 1.3 April 13, 2005

1. Introduction

This manual will refer to a wide variety of development kits and tools available for Window CE and will provide overviews of the various programming interfaces. The Windows CE application program can be developed on standard Microsoft integrated development environment IDEs -- Embedded Visual Tools(EVT). EVT include Embedded Visaul C++ and Enbedded Visual Basic for user to develop, emulate and remote debugging tailored for Windows CE devices. The tools support Win32, COM, ActiveX, MFC, ATL.

The Win32 API set includes some redundancy of functions in the sense that multiple functions can accomplish the same task. A small amount of redundant operating system code does not usually concern developers of desktop PC software, but small code size is crucial for Windows CE developers. The release of Windows CE offered a selected subset of Win32 APIs. (For details supporting APIs, please refer to on-line help of Embedded Visual Tools).

Microsoft's Component Object Model, or COM, offers a standard for creating robust components that can be queried at run time. Each COM object exposes interfaces, or collections of logically related methods. The base interface *IUnknown* allows COM objects to query a particular object about its supported interfaces. The COM model is language-independent, allowing components to be updated independently without requiring any changes to its caller.

An ActiveX control is a specific type of COM object. It represents the latest in a line of specifications for extensible controls, a line that started with Visual Basic extensions (VBX) and was followed by OLE controls (OCX). An ActiveX control usually presents a user interface and exposes properties, method, and events. The control interacts with *control container*, such as Visual Basic, through a specified set of COM interfaces. By exposing its properties, method, and events, the ActiveX control can be driven by scripts.

The Microsoft Foundation Classes (MFC) is a class library for developing Windows application in C++. It exposes much of the same functionality as the Win32 API set but within a complete object-oriented application framework. The Active Template Library (ATL) is a C++ template library specially designed to create ActiveX controls and other COM components. By using template classes, ATL produces more efficient software than MFC, which uses only inheritance.

The key communication interface is Windows Sockets, or Winsock, which uses TCP/IP to communicate over a serial connection, Ethernet, RF, or infrared port. Windows CE also supports several other communication-related Win32 API sets: the Serial API, the Telephony API (TAPI), Remote Access Service (RAS), the WinINet API, which provides FTP and HTTP services, and the Windows networking API, which enumerates network resources and manages connections.

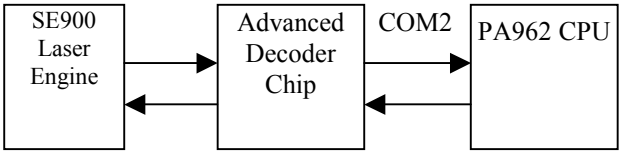
2. *Why SDK?*

Microsoft had provided 3 SDKs for different WinCE platform (Pocket PC, Palm PC and H/PC Pro) because there are different supporting modules, GUIs and components in each platform. There are un-predictable problem if user use improper SDK to compile your application. User should select proper SDK which match to target platform to develop application program. For Unitech terminal, we also provide SDK for each platform, you can get it from Technical Binder, or get the latest version from below URL

http://adc.unitech.com.tw/pub/cs/software/SDK/PA962SDK/PA962SDK.zip

3. *How to download data from scanner*

The major difference between the PA962 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 PA962. Inside the PA962 there is an advanced decoding chip to control SE900 laser engine and to handle barcode decoding. Below is system diagram for the PA962 barcode:



According to the above diagram, the PA962 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 PA962.

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 PA962'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, PA962 provide USI.DLL to let user control scanner input, symbologies setting and profile controlling. Please refer to 4 for detail API lists.

   USI.DLL is Unitech's new scanner function library on PA962. For backward compatible issue, Unitech still provide Scanner3.DLL and ScanKey3.DLL for existing PT930/PT930SA user to port their software into PA962, but several APIs on Scanner3.DLL and ScanKey3.DLL have already been removed on PA962. User can refer to 6and 7 for detail supporting API.

4. USI.DLL – Unitech Scanner Interface DLL

4.1. 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 msg 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"
```

4.2. *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

4.3. *Reset Scanner*

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

Function call: BOOL USI_Reset();

Return: Always TRUE

4.4. *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.

4.5. *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.

4.6. 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

4.7. 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

4.8. 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 4.6 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

4.9. 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();
```

4.10. 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.

4.11. 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.

4.12. 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.

4.13. 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

4.14. 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

4.15. 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.

4.16. Stop auto scanning function

Function Description:

Stop auto scanning

Function call:

void USI_StopAutoScan();

4.17. 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.

4.18. 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.

4.19. 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

4.20. 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.

4.21. 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

4.22. 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 5

```
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.

4.23. 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.

4.24. 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.

5. 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.

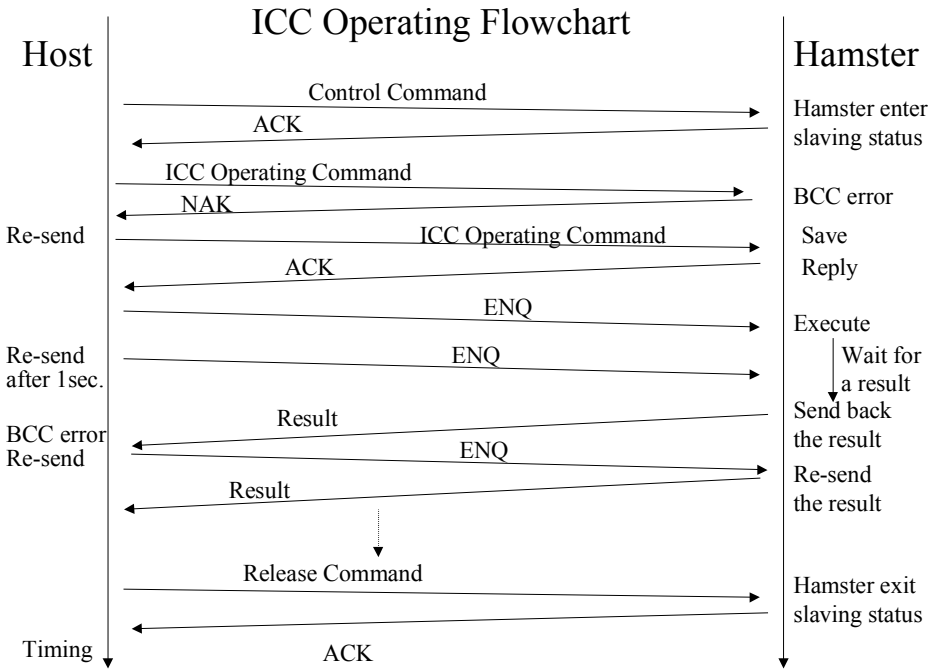
Beep	Esc,0,4,3,m,S1,BCC	S1 0 none,1 low,2_medium,3 high,4 low/high,5high/low
block_delay	Esc,0,4,4,m,S1,BCC	S1 is 0 10ms,1 50ms,2 100ms,3 500ms,4 1s,5 3s
char_delay	Esc,0,4,5,m,S1,BCC	S1 is 0 none,1 1ms,2 5ms,3 10ms,4 20ms,5 50ms
Function_code	Esc,0,4,6,m,S1,BCC No meaning for you	S1 is 0 off,1_on
Capslock	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"
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



Notice: Host will re-send any command after one second it have not received a ACK or the Result reply.

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

"Scanner3.lib" and "scanner3.h" are necessary files for VC programming to compile application. You can find it from standard LIB and INCLUDE folder after installed SDK.

6.1. 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

6.2. 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);

6.3. 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.

6.4. 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

6.5. Get DLL version no

Function description:
This function is used to get DLL version no.
Function call:
INT PT_DllVersion(void);
Return :
Integer

6.6. 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

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

In Technical Binder CD, you can get this file from folder \Programming\scankey. In this folder can also find extra 3 files.

"Scankey3.lib" Used for VC programming
"Scankey3.h" Used for VC programming

7.1. 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

7.2. 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)

7.3. 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

7.4. 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)

7.5. 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)

7.6. 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

8. UnitechAPI.DLL

In PA962, Unitech create UnitechAPI.DLL to provide some special function call which are different from standard Microsoft API. For example, RS232 is defined as host communication port with PC via ActiveSync, so it will automatically envoke ActiveSync program to do communication with PC when RS232 cable is plugged into PA962. However, it will make RS232 port useless if user want to connect PA962 with any device with RS232 interface. RS232Event.DLL provides function call for user to disable ActiveSync function over RS232 port to let user directly control RS232 port.

Unitech also provide several function to enable/disable several system icon and task bar. For WinCE system, it just like Windows OS platform, user can directly tap "Start" button from task bar to setup terminal or execute any application on WinCE terminal, so it mean that operator can change, modify or delete any setting. If system developer don't want operator to do any extra operation beside application, Unitech provide function call to provides ability to disable/enable task bar, keyboard and etc.

You can get demo program from PA962 technical binder zip files from \programming\UnitechAPI

8.1. Disable ActiveSync

Function Description:

After called this function, PA962 will not automatically execute ActiveSync program("repllog.exe") when user plug RS232 cable into PA962.

Function call:

BOOL RS232EventEnable (VOID);

Return code:

=TRUE	OK
=FALSE	Fail

8.2. Enable ActiveSync

Function Description:

After called this function, PA962 will automatically execute ActiveSync program ("repllog.exe") again when user plug RS232 cable into PA962.

Function call:

BOOL RS232EventEnable (LPTSTR);

Parameter (Input):

String buffer and content should be "REPLLOG.EXE". If user assign other program, it will invoke user defined program rather than "REPLLOG.EXE"

Return code:

=1	OK
=2	File not found

8.3. Suspend

Function Description:

After called this function, PA962 will automatically suspend itself.

Function call:

void Suspend (void);

8.4. Disable TaskBar

Function Description:

This function will hide “TaskBar” and it doesn’t like “Auto Hide” function which is set from **Start → Settings → TaskBar**. “TaskBar” can not be show again when tap button of LCD screen. It need to execute “Enable_TaskBar()” to enable it again

Function call:

BOOL DisableTaskbar (VOID);

Return code:

=TRUE OK
=FALSE Fail

8.5. Enable TaskBar

Function Description:

This function will show “TaskBar” again after ”Disable_TaskBar()” was executed to hide taskbar.

Function call:

BOOL EnableTaskbar (VOID);

Return code:

=TRUE OK
=FALSE Fail

8.6. Disable Desktop

Function Description:

This function will hide all icons on desktop, it mean that any short-cut or files cannot be accessed or executed.

Function call:

BOOL DisableDesktop (VOID);

Return code:

=TRUE OK
=FALSE Fail

8.7. Enable Desktop

Function Description:

This function will show all icons which had already showed on desktop before executed DisableDesktop().

Function call:

BOOL EnsableDesktop (VOID);

Return code:

=TRUE OK
=FALSE Fail

8.8. Disable toolbar on windows explorer

Function Description: This function will hide windows explorer’s toolbar
Function call: BOOL DisableExploreToolbar (VOID);
Return code: =TRUE OK
=FALSE Fail

8.9. Enable toolbar on windows explorer

Function Description:

This function will enable windows explorer's toolbar again

Function call:

BOOL EnsableExploreToolbar (VOID);

Return code:

=TRUE	OK
=FALSE	Fail

9. 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 PA962. Two files are essential and provided in SDK, SysIOAPI.LIB and SysIOAPI.H.

9.1. Keypad Related Functions

9.1.1. 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

9.1.2. 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

9.1.3. Get keypad type

Function Description:

PA962 will have two keypad type, 22 keys and 36 keys. The following function returns current keypad type.

Function call:

int GetKeypadType (void)

Return code:

0 = no keypad
1 = 22-key keypad
2 = 36-kwy keypad

9.1.4. 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

9.1.5. Set keypad utility input mode

Function Description:

On 22-key keypad, there is a utility to emulate full alpha key input, called GetVK. The input mode can be switched by pressing “alpha” key, or by following function.

Function call:

void SetGetVKWorkingMode(int)

Parameter (input)

0 = hide the selection window.
1 = show lower case selection window.
2 = show upper case selection window.

Return code:

None

9.2. 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.

9.2.1. 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:

9.2.2. 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

9.2.3. 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.

9.2.4. 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.

9.2.5. Control trigger key's key event.

Function Description:

This function is used to inform system if necessary to generate key event for trigger key.

Function call:

Void EnableTriggerKeyEvent (BOOL fON)

Parameter(Input)

fON: BOOL: TRUE = Enable key event.
False= Don't generate key event.

Return code: none

Note:
Trigger key activity will generate an event named EXT("KeybdTriggerChangeEvent"). Fast, repeated event generation may cause some trouble for AP By passing FALSE to this function can prevent upcoming event generation

9.2.6. Check Trigger key is pressing

Function Description:

This function is used to check if left or right 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.

9.3. LED related function

Function Description:

There are two LEDs above the screen of PA962, 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.

9.4. Backlight related function

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

9.4.1. 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:

9.4.2. 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.

9.4.3. Keypad Backlight Control

Function Description:

This function turns keyoad backlight on or off.

Function call:

void KeypadLightOn(BOOL fON)

Parameter(Input)

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

Return code:

9.4.4. Get Keypad Backlight Status

Function Description:

This function returns the status of keyoad backlight.

Function call:

BOOL GetKeypadLightStatus(void)

Return code:

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

9.4.5. 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:

9.5. PCMCIA/CF slot related functions

There are two slots on PA962 for IO cards, one PCMCIA slot at the back and one Compact Flash slot inside. Both slots can be enabled/disabled the following functions for power sensitive applications.

9.5.1. Get physical slot ID

Function Description:

PA962 has two PC card slots, slot 0 and slot 1, for PCMCIA and CF. this function return which slot for PCMCIA or CF

Function call:

UINT GetPCMCIASlotID(UINT)

Parameters(Input)

0 = PCMCIA.
1 = CF.

Return code:

Physical slot ID.

9.5.2. Enable/Disable PCMCIA or CF slot

Function Description:

This function enables/disables PCMCIA or CF slot. PA962 assigns physical slot 0 to CF and slot1 to PCMCIA, which is reversed compared with previous products. The following function is kept for compatible reason. It takes the same uSocket value as previous products, but reversed internally.

Function call:

void EnablePCMCIASlot(UINT uSocket, BOOL bEnable)

Parameters(Input)

uSocket:	UINT:	0 = PCMCIA slot. 1 = Compact flash slot.
bEnable :	BOOL:	TRUE = enable specified slot. FALSE = disable specified slot.

9.5.3. Enable/Disable IO slots

Function Description:

This function enables/disables IO slots. It is recommended to use with function GetPCMCIASlotID() for platform independent reason.

Function call:

void EnablePCMCIASlot1(UINT uSocket, BOOL bEnable)

Parameters(Input)

uSocket:	UINT:	slot to be applied.
bEnable :	BOOL:	TRUE = enable specified slot. FALSE = disable specified slot.

Example

To disable PCMCIA slot and enable CF slot,

```
#define PCMCIA_SOCKET   0
#define CF_SOCKET       1
EnablePCMCIASlot1(GetPCMCIASlotID(PCMCIA_SLOT),FALSE);
EnablePCMCIASlot1(GetPCMCIASlotID(CF_SLOT),TRUE);
```

9.5.4. Inquire PCMCIA/CF slot status

Function Description:

This function returns PCMCIA/CF slot enable/disable status. PA962 assigns physical slot 0 to CF and slot1 to PCMCIA, which is reversed compared with previous products. The following function is kept for compatible reason. It takes the same uSocket value as previous products, but reversed internally.

Function call:

BOOL GetPCMCIAStatus(UINT uSocket)

Parameters(Input)

uSocket:	UINT:	0 = PCMCIA slot. 1 = Compact flash slot.

Return

bEnable :	BOOL:	TRUE = Slot is enabled. FALSE = Slot is disable.

9.5.5. Inquire IO slot status

Function Description:

This function returns slot enable/disable status. It is recommended to use with function GetPCMCIASlotID() for platform independent reason.

Function call:

BOOL GetPCMCIAStatus1(UINT uSocket)

Parameters(Input)

uSocket:	UINT:	slot to be applied.

Return

bEnable :	BOOL:	TRUE = specified slot is enabled. FALSE = specified slot is disable.

Example

To check PCMCIA slot status,

```
#define PCMCIA_SOCKET   0
#define CF_SOCKET       1

if (GetPCMCIAStatus1(GetPCMCIASlotID(PCMCIA_SLOT))) {
}
```

9.5.6. Disable PCMCIA/CF slot when resume

Function Description:

This function will disable the specified slot after resume even though that slot is enabled before suspend..

Function call:

void DisablePCMCIAUponResume(UINT uSocket, BOOL bDisable);

Parameters(Input)

uSocket:	UINT:	1 = physical socket 1 0 = for physical socket 0
bDisable:	BOOL:	TRUE disable on resume FALSE enable on resume

Return none

9.6. Check battery type

Function Description:

Check if PA962 is installed smart battery and battery ID.

Function call:

BYTE GetSmartBatteryID(void);

Return

0	: Not Smart Battery
Other	: Smart battery it

9.7. Enable/Disable LCD screen

Function Description:

Turn on / off LCD screen

Function call:

void PowerOnColorLCD(BOOL fON)

Parameters(Input)

fON:	BOOL:	TRUE	= Power on LCD screen
		FALSE	= Power off LCD screen

Return

None

10. Useful function call - without include SysIOAPI.DLL

Below API maybe useful for you to control PA962

10.1. 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 );
}
```

11. Get Device ID

In PA962, 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], deviceID[200];
    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
        memcpy((PBYTE)deviceID, (PBYTE)pDeviceID + pDeviceID->dwPresetIDOffset, pDeviceID->dwPresetIDBytes);
    }
//////////////////////////////////////////////////////////////
```

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

12. Update notes

V1.1

- Format define error on Section 10 Get Device ID
- Minor spelling correction.

V1.2

- Add important notes on beginning of chapter 5
- Remove ICC command from Hamster command on chapter 5, because it is useless on PA962.

V1.3

- New API on Section 9.2.5, 9.2.6, 9.6 , 9.7

V1.4

- New API on Section 9.5.6