DEMO Board API Manual

V2.3

DSP 微控制器、SOC 系统芯片、专用逻辑 IC 的设计以及相关配套软件的开发与销售

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1. API Function Description

1.1 Error code

```
#define PS_OK                    0x00    //success
#define PS_COMM_ERR              0x01 //package error
#define PS_NO_FINGER             0x02 //There is no finger on the sensor
#define PS_GET_IMG_ERR           0x03 //fail to get image
#define PS_FP_TOO_DRY            0x04 //the finger too dry
#define PS_FP_TOO_WET            0x05 //the finger too wet
#define PS_FP_DISORDER           0x06 //Too disorderly fingerprint"
#define PS_LITTLE_FEATURE        0x07 //too little feature
#define PS_NOT_MATCH             0x08 //No matching fingerprint
#define PS_NOT_SEARCHED          0x09//No fingerprint searched
#define PS_MERGE_ERR             0x0a //Combine character error
#define PS_ADDRESS_OVER          0x0b//Address number is out of fingerprint range
#define PS_READ_ERR              0x0c//Read templet from fingerprint library error
#define PS_UP_TEMP_ERR           0x0d//Upload character failed
#define PS_RECV_ERR              0x0e//Recv package error
#define PS_UP_IMG_ERR            0x0f//Upload image failed"
#define PS_DEL_TEMP_ERR          0x10//Del Template error
#define PS_CLEAR_TEMP_ERR        0x11 //Clear Template error
#define PS_SLEEP_ERR             0x12 //Can't go into Sleep mode
#define PS_INVALID_PASSWORD      0x13//Password is not correct
#define PS_RESET_ERR             0x14//reset system error
#define PS_INVALID_IMAGE         0x15 //Invalid fingerprint image
#define PS_HANGOVER_UNREMOVE 0X17//Must move finger
```

1.2 Export from SynoAPI.dll

1. **OpenDevice;**

   BOOL WINAPI PSOpenDevice(int nDeviceType,int nPortNum,int nPortPara,int nPackageSize=2);

   Parameter**:** *nDeviceType*: 0:USB Device ;1:Serial Port Device

   nPortNum: if nDeviceType equal 1 then nPortNum is a Serail port number representation.

   nPortPara: baudRate setting

   Return: if device opened success then the function return true.

2. **CloseDevice**

BOOL WINAPI PSCloseDevice();

Return: if device closed success then the function return true.

3. Detect finger and Get Image

int WINAPI PSGetImage(int nAddr);

Parameter**:** nAddr: the address of device , generally it is 0xffffffff, the function below the address is also same.

Return: function return 0 Indicates success,others see error code

4. Generate Character file

int WINAPI PSGenChar(int nAddr,[in] int iBufferID);

Parameter**:** *iBufferID*: Indicates a character file buffer chip internal. The value is always 0 or 1.

Return: function return 0 Indicates success,others see error code

5. Match two character file on chip

int WINAPI PSMatch(int nAddr,[out] int* iScore);

Parameter**:** *iScore*: if the function return success then this variable can get a Score of one Matching.

Return: function return 0 Indicates success,others see error code reference.

6. Search a part or all of fingerprint libray

int WINAPI PSSearch(int nAddr,int iBufferID, int iStartPage, int iPageNum, [out]int *iMbAddress);

Parameter**:** iBufferID: Indicates a character file buffer chip internal. The value is always 0 or 1.

iStartPage:Indicates a Start Page of search.

iPageNum: Indicates numbers of Page to search.

iMbAddress: if find a valid character ,the variable retrieve page id

Return: function return 0 Indicates success,others see error code reference.

7. **Combine BufferA's character file with BufferB's character file and generate the templet**

int WINAPI PSRegModule(int nAddr);

Return: function return 0 Indicates success,others see error code reference.

8. Store BufferA or BufferB's character file to flash fingerprint library

int WINAPI PSStoreChar(int nAddr,int iBufferID, int iPageID);

Parameter**:** iBufferID: Indicates a character file buffer chip internal. The value is always 0 or 1.

iPageID: this Indicates character file storage page.

Return: function return 0 Indicates success,others see error code reference.

9. **Transfer a templet to BufferA or BufferB from flash fingerprint library**

int WINAPI PSLoadChar(int nAddr,int iBufferID,int iPageID);

Parameter**:** same as PSStoreChar.

Return: function return 0 Indicates success,others see error code reference.

10. **Transfer character file from BufferA or BufferB to PC**

int WINAPI PSUpChar(int nAddr,int iBufferID, [out]unsigned char* pTemplet, [out]int* iTempletLength);

Parameter**:** iBufferID :same as PSStoreChar.

* pTemplet: Receive character file data from specify buffer.

iTempletLength: serial port communicate used. Indicates received datas length.

Return: function return 0 Indicates success,others see error code reference.

11. **Download a character form form pc to BufferA or BufferB**

int WINAPI PSDownChar(int nAddr,int iBufferID,[in] unsigned char* pTemplet, [in]int iTempletLength);

Parameter**:** same as PSUpChar.

Return: function return 0 Indicates success,others see error code reference.

12. **Upload Original Image**

int WINAPI PSUpImage(int nAddr,[out]unsigned char* pImageData, [out]int* iImageLength);

Parameter**:** pImageData: image data buffer.

iImageLength: serial port communicate used. Indicates received datas length.

Return: function return 0 Indicates success,others see error code reference.

13. **Download original Image**

int WINAPI PSDownImage(int nAddr,[in]unsigned char *pImageData, [in]int iLength);

Parameter**:** same as PSUpImage

Return: same as PSUpImage

14. **Genarate a BMP file from image data buffer**

int WINAPI PSImgData2BMP(unsigned char* pImgData,const char* pImageFile);

Parameter**:** pImgData: Bmp file data buffer. It doesn't include header of bmp file.
pImageFile: path of bmp file save.

Return: function return 0 Indicates success,others see error code reference.

15. **Delete specify range of character file from flash fingerprint libaray**

int WINAPI PSDelChar(int nAddr,int iStartPageID,int nDelPageNum);

Parameter**:** iStartPageID: start of range.
nDelPageNum: numbers of character file.

Return: function return 0 Indicates success,others see error code reference.

16. **Clear flash fingerprint libaray**

int WINAPI PSEmpty(int nAddr);

Return: function return 0 Indicates success,others see error code reference.

17. **Read Parameter table**

int WINAPI PSReadParTable(int nAddr,[out]unsigned char* pParTable);

Parameter**:** pParTable: Parameter table buffer.

Return: function return 0 Indicates success,others see error code reference.

18. **Set Device Communicate Key**

int WINAPI PSSetPwd(int nAddr,unsigned char* pPassword);

19. **Verify Device Communicate Key**

int WINAPI PSVfyPwd(int nAddr,unsigned char* pPassword);

20. **Read Notepad**

int WINAPI PSReadInfo(int nAddr,int nPage,[out]unsigned char* UserContent);

Parameter**:** nPage: specify page of notepad.
UserContent: the content buffer.

Return: function return 0 Indicates success,others see error code reference.

21. **Write Notepad**

int WINAPI PSWriteInfo(int nAddr,int nPage,[in]unsigned char* UserContent);

Parameter**:** nPage: specify page of notepad.

UserContent: the content buffer.

Return: function return 0 Indicates success,others see error code reference.

22. Set baudrate

int WINAPI PSSetBaud(int nAddr,int nBaudNum);

Parameter**:** nBaudNum: set baudrate.

Return: function return 0 Indicates success,others see error code reference.

23. Set security level

int WINAPI PSSetSecurLevel(int nAddr,int nLevel);

Parameter**:** nBaudNum: set Security Level.

Return: function return 0 Indicates success,others see error code reference.

24. Set parket size

int WINAPI PSSetPacketSize(int nAddr,int nSize);

Parameter**:** nBaudNum: set packet size of serial port communication.

Return: function return 0 Indicates success,others see error code reference.

25. Upload character file to PC

int WINAPI PSUpChar2File(int nAddr,int iBufferID, const char* pFileName);

Parameter**:** iBufferID: Indicates a character file buffer chip internal. The value is always 0 or 1.

pFileName: Indicates character file path.

Return: function return 0 Indicates success,others see error code reference.

26. Download a character file to BufferA or BufferB from PC

int WINAPI PSDownCharFromFile(int nAddr,int iBufferID, const char* pFileName);

Parameter**:** same as PSUpChar2File

Return: function return 0 Indicates success,others see error code reference.

27. Get random data generate by chip

int WINAPI PSGetRandomData(int nAddr,unsigned char* pRandom);

Parameter**:** pRandom: Random data buffer.

Return: function return 0 Indicates success,others see error code reference.

28. **Set Chip address**

int WINAPI PSSetChipAddr(int nAddr,unsigned char* pChipAddr);

Parameter**:** pChipAddr: Chip address buffer.

Return: function return 0 Indicates success,others see error code reference.

29. **Get templet count**

int WINAPI PSTemplateNum(int nAddr,[out]int *iMbNum);

Parameter**:** iMbNum: numbers of templet count.

Return: function return 0 Indicates success,others see error code reference.

30. **Generate binary image**

int WINAPI PSGenBinImage(int nAddr, int nImgType);

31. **Format error information**

char* WINAPI PSErr2Str(int nErrCode);

Parameter**:** nErrCode: Error code.

Return: function return a detail information of corresponding error code

32. **Change Finger data to BMP format data**

int WINAPI PSFingerData2BMPData([in]unsigned char *pFingerData,
[out]unsigned char *pBMPData,
[out]int* nBMPDataLen)

Parameter**:** pFingerData- the finger data get from PSUpImage function.
pBMPData-the BMP format data
nBMPDataLen-the BMP data buffer size,if pFingerData==NULL or pBMPData==NULL,then the nBMPDataLen return the length of buffer.

Return: function return 0 Indicates success,others see error code reference.

33. **Show Finger Data in DC**

int WINAPI PSShowFingerData(HWND hWnd,unsigned char *pFingerData)

Parameter**:** hWnd-the handle of control,
pFingerData- the finger data get from PSUpImage function.

Return: function return 0 Indicates success,others see error code reference.

1.3 Export from ARTH_DLL.dll

1, Match two character file on PC

int WINAPI Match2Fp(unsigned char* Src,unsigned char* Dst);

Parameter**:** Src: source character file buffer.

Dst: destination character file buffer.

Return: function return a score of one matching. Basicly , Should the number be equal or above 50, that indicates successful matching. And the higher the number, the more precise the matching.

2, Generate character file on PC

int WINAPI GenChar([in]unsigned char* FingerData,[out]unsigned char* CharData);

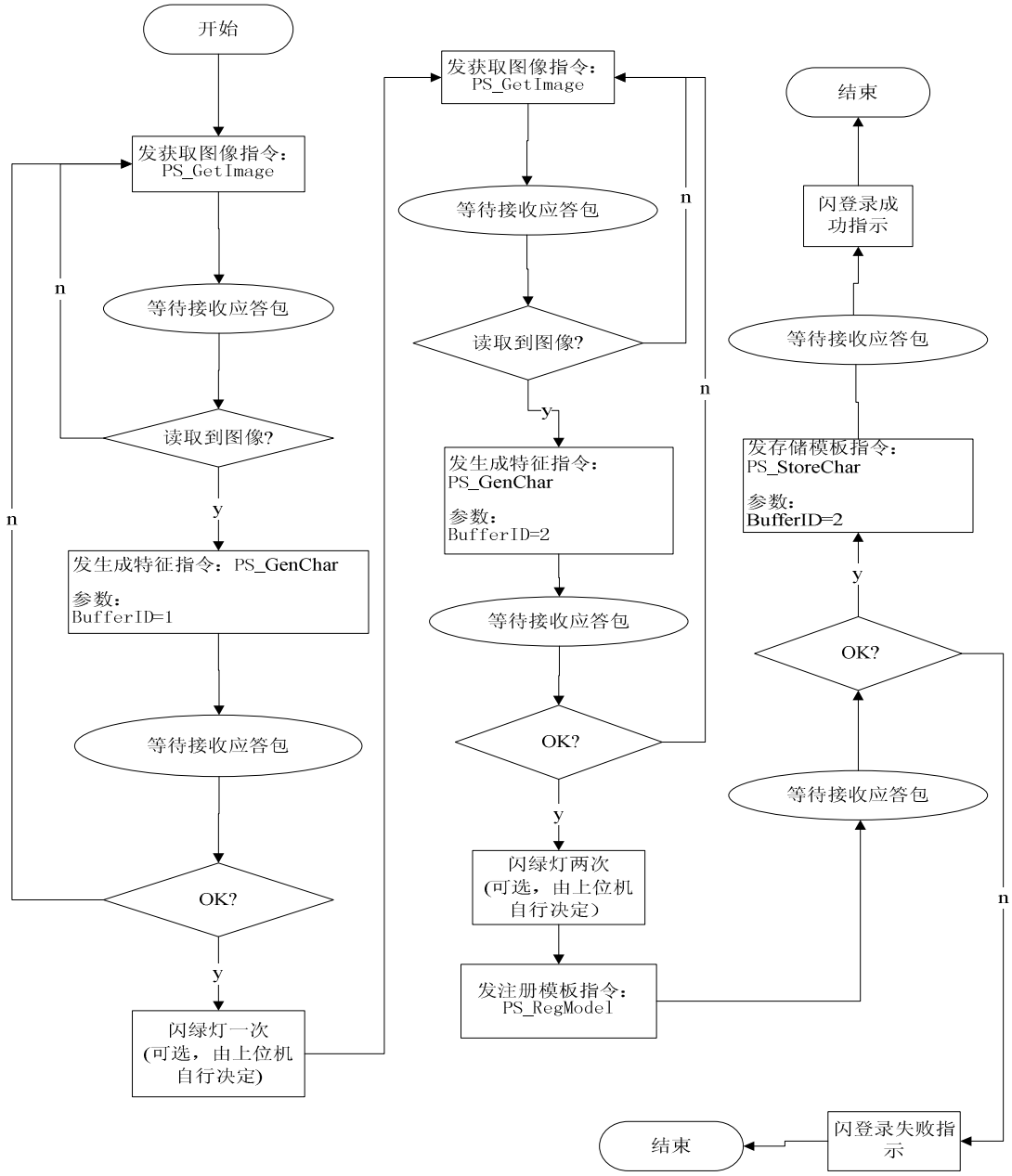
Parameter**:** FingerData: Fingerprint image file data buffer.

CharData: character file buffer

Return: function return a detail information of corresponding error code

2、Oprate flow

2.1 Enroll a finger and save to Flash



2.2 Search finger from flash