# USB2XXX 系列转换芯片用户手册

# USB2XXX SERIES CONVERSION CHIP USER MANUAL

V0.1C

USBIO TECH.

# 目录

# 1、 DRIVER INSTALLATION

## 1、1、Download driver files

From the USBIO website "online download" column to download the latest drivers: http://www.usb-i2c-spi.com/cn/down.htm.

For USB2ISP, USB2I2C or USB2SPI, select the "development of gifts" to download. Extract to a local machine hard disk and set aside.

USB2I2C and USB2SPI is USB2ISP simplified version of the function can be considered as a subset of USB2ISP. I2C interface to USB converter to achieve USB2I2C; USB2SPI achieve SPI Interface USB conversion; USB2ISP achieve SPI and I2C interfaces USB converter, or MEM also provides EPP parallel port can also be used as a GPIO port, the specific data sheet, please refer to USB2ISP. USB2I2C (SSOP20 package), USB2SPI and USB2ISP pin compatible, so USB2I2C and USB2SPI related design also can refer to USB2ISP data sheet.

This manual USB2ISP_DEV development board to illustrate USB2XXX series conversion chips.

## 1、2、Insert USB2ISP_DEV development board

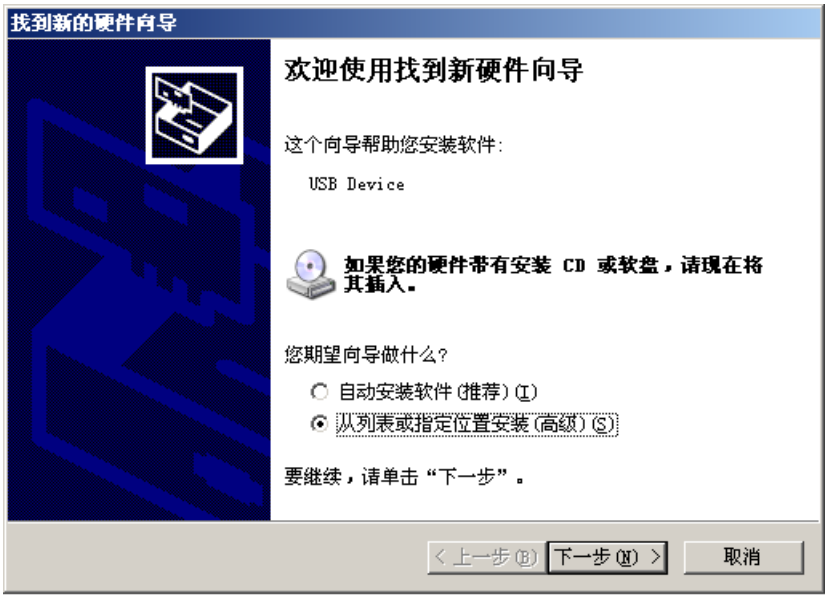
Plug USB2ISP_DEV development board into the computer motherboard USB port.

## 1、3、Windows Found New Hardware


Windows发现了新USB硬件设备

Insert the Windows prompts after USB2ISP_DEV development board found new hardware.

1、4、 Prompted to install drivers

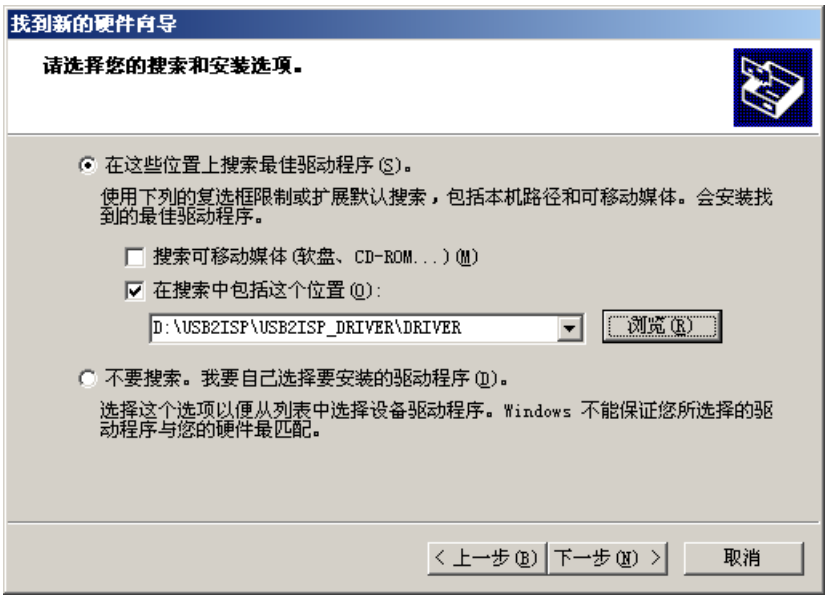



提示安装驱动

Select 【from a list or specific location (Advanced)】 options, and then click Next Steps button.

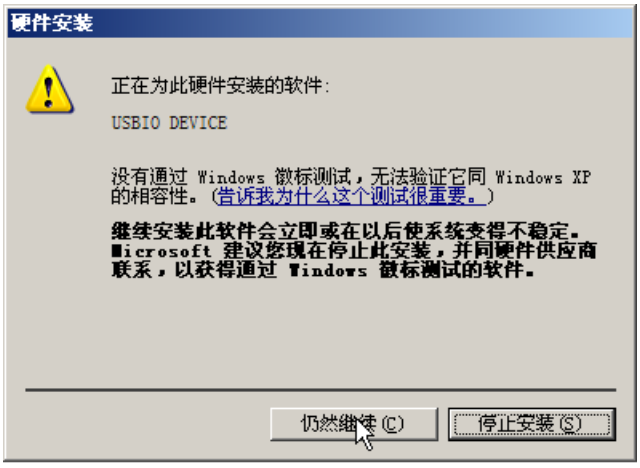
1、5、 Specify the drive path to the file

Here need to specify the drive path to the file. Driver file is downloaded from the website after extracting the file.



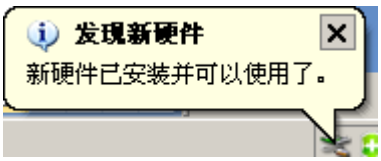

1、6、 Copy files

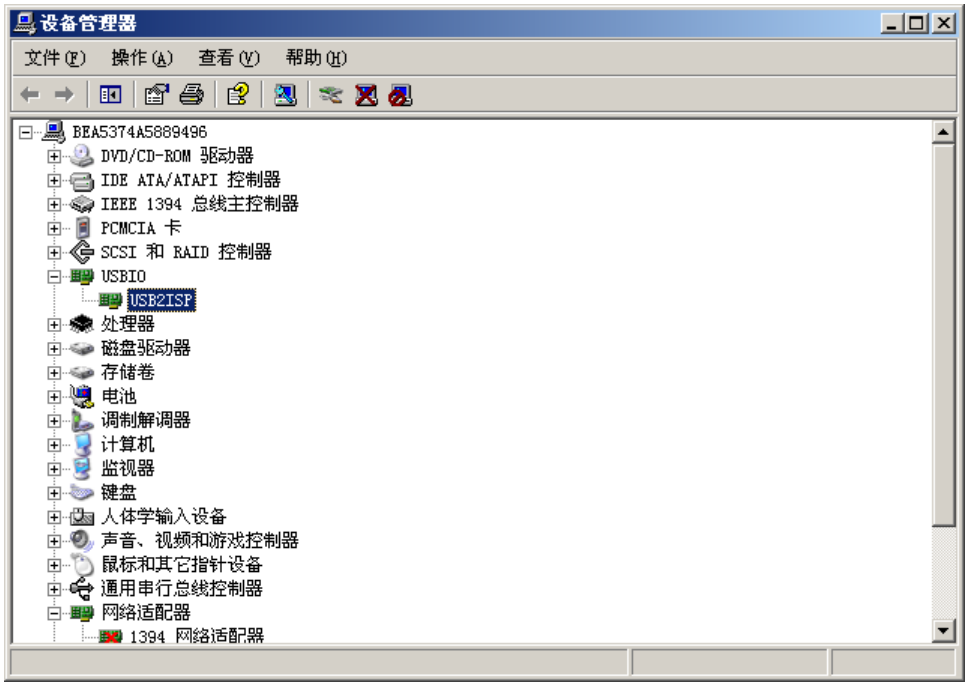

Then copy the system-driven process. May also be prompted to install the first time "has not passed Windows Logo testing", select the 【Continue】 button to continue.




微软徽标认证

1、7、Installation successful




Through【My Computer】→【Properties】→【hardware Device Manager】to see the newly installed equipment. You can also turn USB2ISP_DEMO_VBCN.exe, then state to show. Thus, the driver installation is complete, you can further test work.


设备已插上

## 2、 SOFTWARE FOR USING

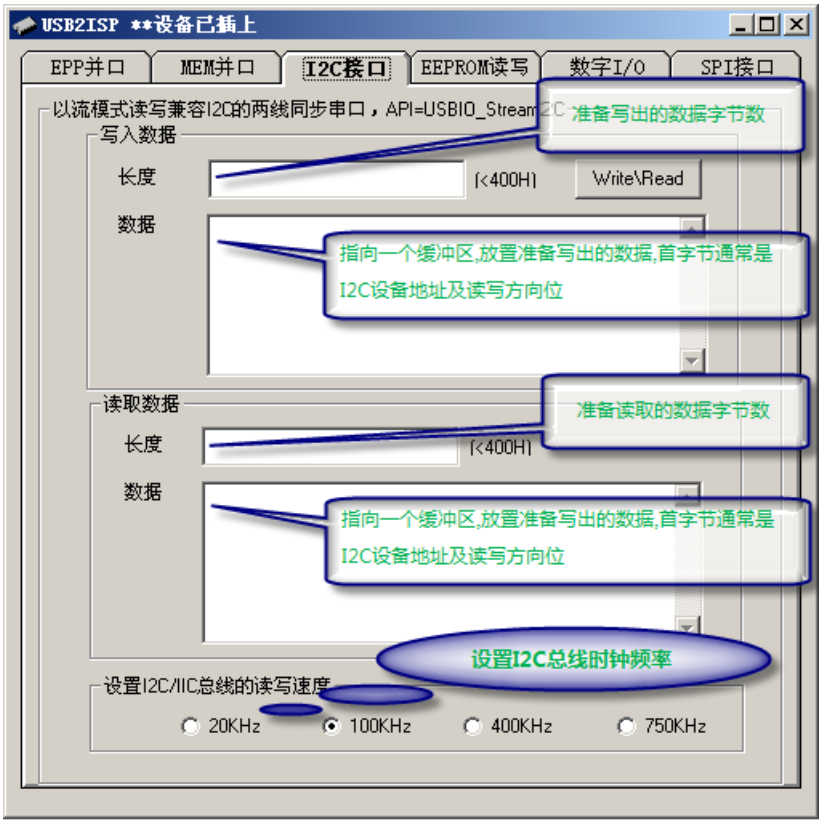
USB2I2C is a USB converter I2C bus (compatible TWI and SMbus bus) chip; USB2SPI is a USB converter SPI bus chip; USB2ISP chip USB2I2C and USB2SPI the collection, in addition to achieving I2C and SPI bus, also realized the parallel port EPP parallel port and the MEM parallel port .

Instructions below to USB2ISP USB2ISP_DEMO use of the software, related to I2C and SPI aspects are fully applicable to USB2I2C and USB2SPI.

### 2、1、I2C Bus Function

I2C Interface option card, call the USB2ISP drive USBIOX.DLL file USBIO_StreamI2C API, a detailed description of USBIO_StreamI2C see USBIOX.H file. For illustration, the following excerpt:

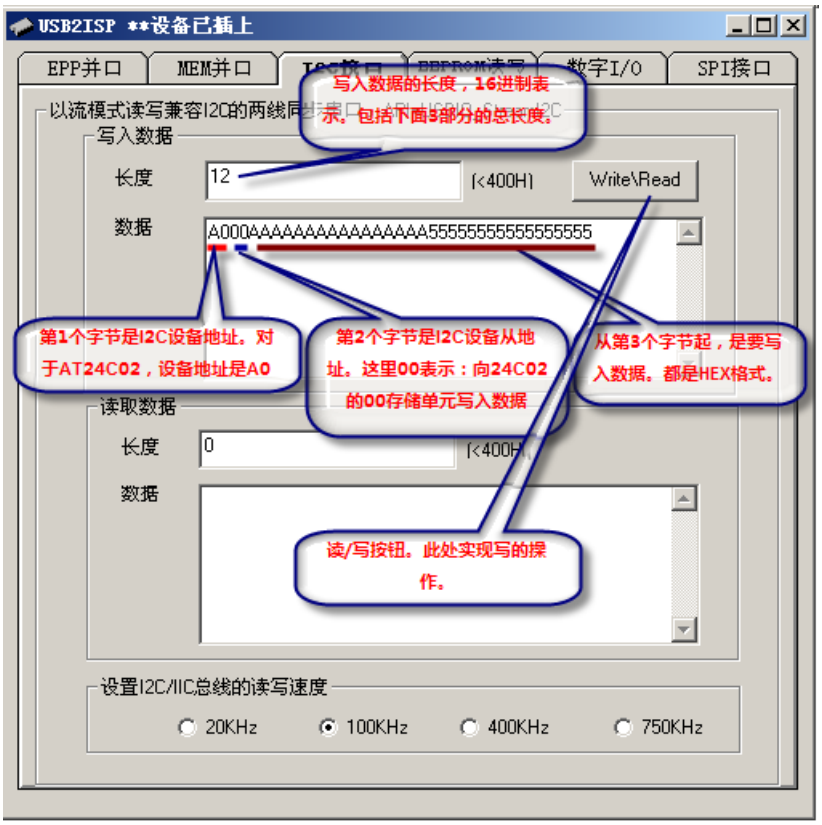
```
USBIO_StreamI2C(       // I2C data stream processing
    ULONG   iIndex,     // Appoint USB2ISP device index
    ULONG   iWriteLength,    // Ready to write the number of data bytes
    PVOID   iWriteBuffer,    // Point to a buffer, placed ready to write data
                             //1st byte is I2C device address and direction bit
    ULONG   iReadLength,    // The number of bytes ready to read data
    PVOID   oReadBuffer ); // Point to a buffer, return the data is read


USBIO_SetStream(    //Set I2C data stream model
    ULONG   iIndex,    // Appoint USB2ISP device index
    ULONG   iMode );    // Specified model, see below note
    iMOde Note:
    Bit 1 - bit 0: I2C interface to speed SCL frequencies, 00 = low (20KHz), 01 =
Standard (100KHz,default), 10 = fast(400KHz), 11 = high(750KHz).
    Bit 2: SPI to I / O pin number, 0 = Single Input Single Output (SCK/MOSI/MISO)
(default), 1 = two-out double into the (SCK/MOSI/MSOSI2/MISO/MISO2),
    bit 7: SPI bit byte order, 0 = LSB first, 1 = HSB first.
    Other reservations must be 0.
```




I2C接口选项卡

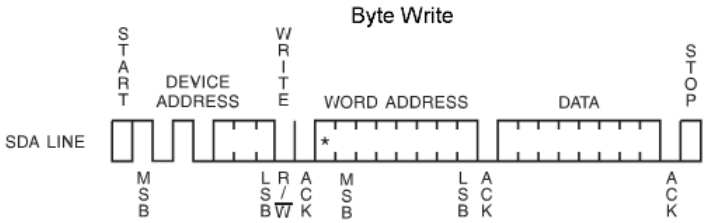
Call USBIO_StreamI2C below to read and write AT24C02 EEPROM, for example, how to use various types of flexible USBIO_StreamI2C I2C operation to achieve.

2.1.1、AT24C02 with USBIO_StreamI2C achieve the 00 address to the write data storage unit. As shown below.

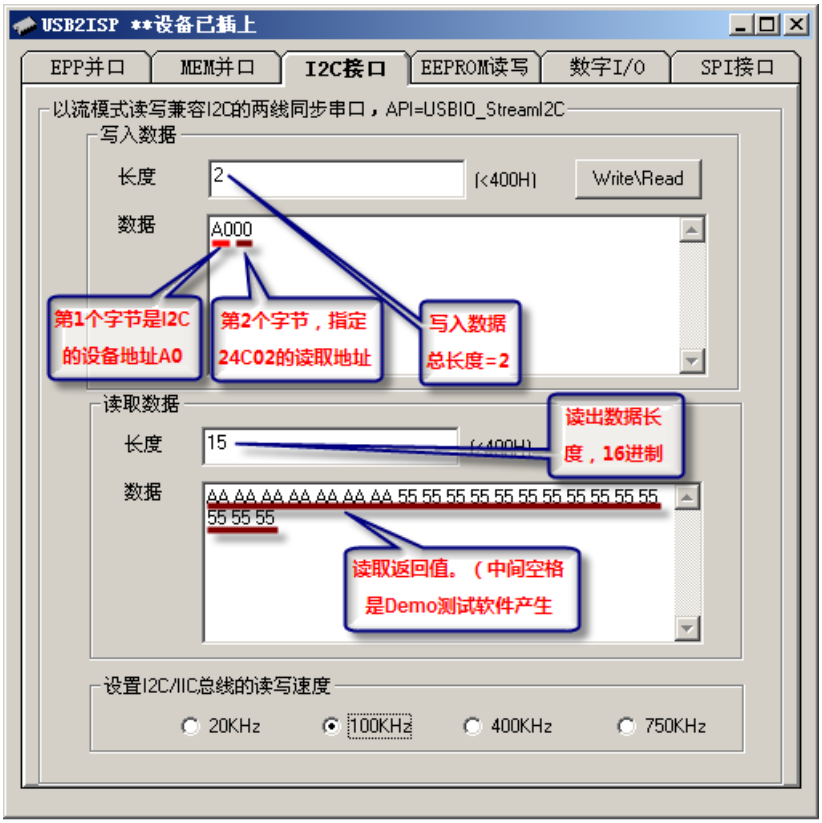



向AT24C02的00存储单元写数据

Timing Reference:

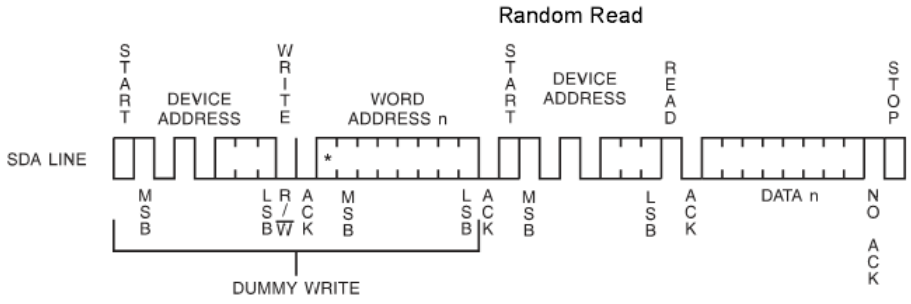



2.1.2、AT24C02 with USBIO_StreamI2C the 00 addresses from a storage unit to read data. As shown below.




从AT24C02的00位置读取数据

Timing Reference:




2、2、EEROM read and write instructions

EEROM I2C interface to read and write can also be achieved by calling dedicated API:

```
USBIO_ReadEEPROM(    // Read data from EEPROM block
    ULONG              iIndex,    // Appoint USB2ISP device index
    EEPROM_TYPE        iEepromID,    // EEPROM model designation
```

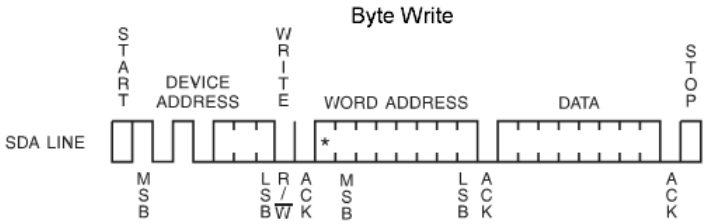
```
    ULONG           iAddr,    // The address of the specified data unit
    ULONG           iLength,    //The number of bytes ready to read data
    PUCHAR          oBuffer );    // Point to a buffer, return the data is read

USBIO_WriteEEPROM(    // Write data to the EEPROM block

    ULONG           iIndex,    // Appoint USB2ISP device index
    EEPROM_TYPE         iEepromID,    // EEPROM model
    ULONG           iAddr,    // The address of the specified data unit
    ULONG           iLength,    // Ready to write the number of data bytes
    PUCHAR          iBuffer );    // Point to a buffer, place the data ready to write
```

An example below to read and write AT24C02:

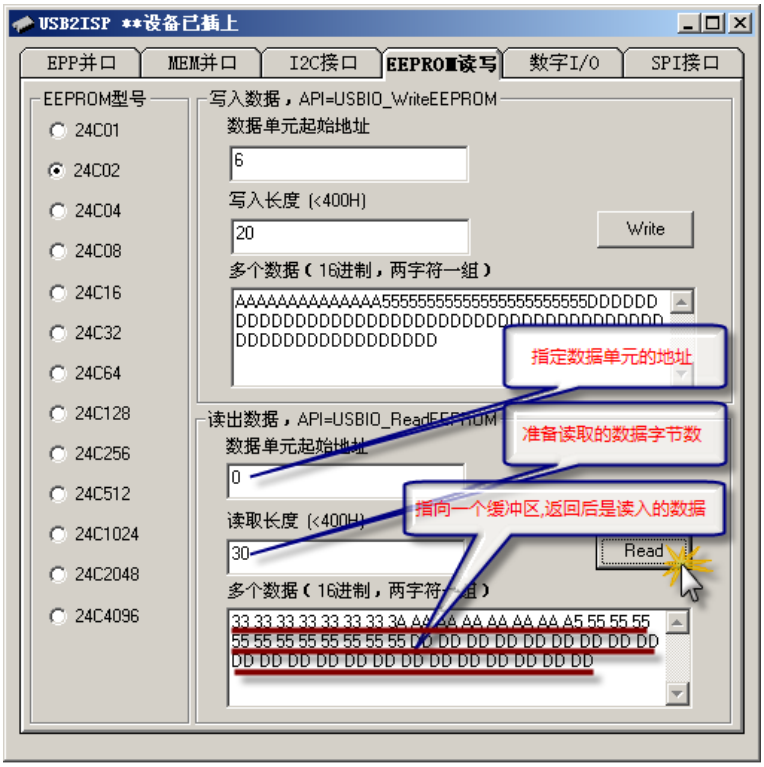
2.2.1、The 06 address to the AT24C02 memory cell write 2 0 data.


向AT24C02的06存储单元写入20个数据

Timing Reference:

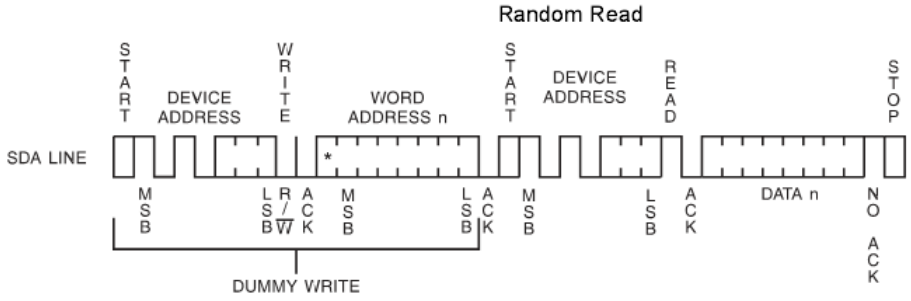



2.2.1、AT24C02 the address 00 from the 30 reading the data.




从AT24C02中地址00处读取30个数据

Timing Reference:




2、3、GPIO pin description

USB2ISP the D5-D0 as GPIO pins can be used.

```
USBIO_Set_D5_D0(    // Set USB2ISP the D5-D0 pins of I / O direction
    ULONG   iIndex,    // Appoint USB2ISP device index
    ULONG   iSetDirOut,      // D5-D0 set the pin I / O direction
                             // 0 is input, 1 is output,
                             // The default value is 0x00, all is input
    ULONG   iSetDataOut ); // D5-D0 set the pin output data
                             // If the I / O direction of the output, then 0 output low,
                             //set corresponds to pin set high
    /* ***** Careful use of the API, to prevent the changes I / O pin into the direction of
the input and output pins cause other damage to short-circuit between the output pin chip
***** */
```

# 3、 PC WINDOWS API USE

PC API instructions see USBIOX.H file description.

## 4、 PRECAUTIONS DURING USE

No description

# 5、 FAQ

## 5.1、Q： USB2I2C, USB2SPI and USB2ISP What is the difference?

A: USB2I2C is the USB converter I2C bus (compatible TWI and SMbus bus) ASIC; USB2SPI SPI bus is a dedicated USB conversion chip; USB2ISP chip USB2I2C and USB2SPI the collection, in addition to achieving I2C and SPI bus, but also realized the EPP parallel port and MEM parallel port.

## 5.2、Q: USB2I2C, USB2SPI and USB2ISP need to write your own firmware?

A: USB2I2C, USB2SPI and USB2ISP a special chip, no need to write any firmware. PC calls USBIOX.DLL dynamic link library can be a dedicated API.

## 5.3、Q: USB2I2C and USB2ISP conversion I2C bus, any I2C devices that can read and write?

A: USB2I2C and USB2ISP conversion I2C bus is a standard I2C bus, I2C protocol meet the criteria of any device can read and write.

## 5.4、Q: USB2I2C and USB2ISP conversion I2C interface to support high speed transfer?

A: USB2I2C and USB2ISP conversion support I2C clock frequency: 20KHz, 100KHz, 400KHz and 750KHz.

## 5.5、Q: USB2I2C and USB2ISP support the special protocol I2C interface device it?

A: Please refer to TEST directory EXAM_API.C file.

### 5.6、Q: USB2I2C and USB2ISP support 10bit I2C interface device address it?

A: Currently not supported.

### 5.7、Q: USB2I2C and USB2ISP as I2C slave?

A: does not support. USB2I2C and USB2ISP only as I2C master.