
Basic USB - Using Microchip Stack and C#.Net

Posted by Mat - 2006/03/13 16:39

This thread discusses the Content article: Basic USB - Using Microchip Stack and C#.Net

So any comments? improvements? Questions?

Mat

Re:Basic USB - Using Microchip Stack and C#.Net

Posted by cledic - 2006/03/13 16:41

Many Thanks Mat.

Re:Basic USB - Using Microchip Stack and C#.Net

Posted by alma - 2006/03/13 16:42

How much time takes the USB transmission of the command-data packet to PIC and back to PC with help of the function SendReceivePacket? Thank you.

Re:Basic USB - Using Microchip Stack and C#.Net

Posted by Mat - 2006/03/13 16:43

Hey, Firstly Welcome to the site, I havnt had time to check the speed yet (i will do tonight when I get the time), but it will depend on a few things. One the pic polls the usb service, so wont respond with a regular rate, and also on the size of the packet to be sent in each direction will change the transmission time,as well as any processing you do to the data, to produce a response, so any figures might not be relavent to your application.

PICDEM FS USB Code

Posted by Fauzan - 2006/03/14 13:06

I just got a PICDEM FS USB board... I was just trying the code in your article...I got a build error

```
"Executing: "C:\MCC18\bin\mcc18.exe" -p=18F4550 /i"C:\picusbdemo" "main.c" -fo="C:\PICUSB~2\main.o" -Ou- -Ot- -Ob- -Op- -Or- -Od- -Opa- C:\picusbdemo\main.c:38:Error unable to locate 'p18cxxx.h'
```

Where can i find this p18cxxx.h?

Is it important, because the board comes with P18F4550?

Thanks

Fauzan

Re:PICDEM FS USB Code

Posted by Mat - 2006/03/14 13:18

Hey, it most likely you project build options are setup wrong, I'd recommend rechecking them.

http://www.piccoder.co.uk/components/com_joomlaboard/uploaded/images/config_settings.jpg

There should look like this, (you'll have to change the library path to point to your appropriate directory),
Let me know how you get on.

Mat

Post edited by: mat, at: 2006/03/14 13:18

=====

Re:PICDEM FS USB Code

Posted by apauaie - 2006/03/14 13:37

Thanks for your reply....My build option does look like that, only the Library Path is set to C:\MCC18\lib which is where i
install the student version MCC18 Compiler....Any more ideas?

=====

Re:PICDEM FS USB Code

Posted by lan - 2006/03/14 13:39

Check you have included the correct linker script and that you have selected the corrected chip in the "select device"
menu

=====

Re:PICDEM FS USB Code

Posted by apauaie - 2006/03/14 13:51

I don't think it's the script problem... i tried to build the DEMO2 program included with PICDEM FS USB.. The same
problem occurs...Now i'm reinstalling MPLAB IDE see what happens....

=====

Re:PICDEM FS USB Code

Posted by Mat - 2006/03/14 14:02

Sounds about right, give a reinstall of MCC18 and MPLAB a go and see what happens. Let us know how it goes :) . Mat

=====

Re:PICDEM FS USB Code

Posted by apauaie - 2006/03/14 14:20

Solved the problem...I need to add another path to the include path... My include path now looks like this
C:\MCC18\h;C:\picusbdemo.....Found this in
http://ww1.microchip.com/downloads/en/devicedoc/mplab_c18_getting_started_51295f.pdf
By the way, how can i put pictures onto the forum..Like Mat did....Thanks

=====

Re:PICDEM FS USB Code

Posted by Mat - 2006/03/14 14:53

Hey, well done!

To insert pictures (and files for that matter) into the forum, you have to be a registered user and logged in. Then you will
see an attach image section when posting, select the image using the browse button, and then place an tag where you

would like the image to appear in the post.

Re:PICDEM FS USB Code

Posted by neiwert - 2006/03/14 23:22

Hello

When compile in C18 i discovered the folwing warning
usbds.c:238:Warning suspicious pointer conversion

typcast the lines in usbds.c

```
rom const unsigned char *rom USB_CD_Ptr={&cfg01,&cfg01};  
rom const unsigned char *rom USB_SD_Ptr={&sd000,&sd001,&sd002};
```

to

```
rom const unsigned char *rom USB_CD_Ptr={{(rom char*)&cfg01,(rom char*)&cfg01};  
rom const unsigned char *rom USB_SD_Ptr={{(rom char*)&sd000,(rom char*)&sd001,(rom char*)&sd002};
```

and the warning now disapears

Re:PICDEM FS USB Code

Posted by Mat - 2006/03/14 23:35

Thanks, Looks like a good fix to me! Wasn't one which I was worried about, but it appears to compile fine, and also run as expected.

Thanks, Mat

Re:Basic USB - Using Microchip Stack and C#.Net

Posted by Petr Tomicek - 2006/04/04 09:21

Thank you very much for this article. It was very helpful for me in understanding PIC firmware and PC programming. I'm just want to ask how can recognize type of transfer (control, bulk, isochronous...). thanks for answer, Petr

Re:Basic USB - Using Microchip Stack and C#.Net

Posted by Mat - 2006/04/04 09:55

If you look at usbds.c lines 223 and 224 you should see

```
sizeof(USB_EP_DSC),DSC_EP,_EP01_OUT,_INT,USBGEN_EP_SIZE,32,  
sizeof(USB_EP_DSC),DSC_EP,_EP01_IN,_INT,USBGEN_EP_SIZE,32
```

Notice the _INT, this defines that the End Points are setup in Interupt mode for transfer.

Mat

Re:Basic USB - Using Microchip Stack and C#.Net

Posted by Petr Tomicek - 2006/04/04 16:12

Hi guys again,

one more question: does MC firmware use USB interrupts somehow? I can't find any vector address definition so I guess that no, so probably it use just INT flags... I need to set some interrupts in my application but don't know how it influence USB firmware.

Thanks, Petr

=====

Re:Basic USB - Using Microchip Stack and C#.Net

Posted by Mat - 2006/04/04 16:24

Hey,

I havnt got the code with me to check, (in a library) however I'm almost certain the firmware doesnt use interrupts, or at least I cant remember any references to them or why it would need them. It simply polls a service routine, so you should be fine to write your own program using them, just be careful not to get caught up in your interupts and leave the usb unserviced!

Mat

=====

Re:Basic USB - Using Microchip Stack and C#.Net

Posted by jf - 2006/04/05 13:19

Hi all, great project, thanks very much.

I'm just wondering whether or not it is possible to change this project to work with an 18f2455, I know the hardware should be the same. But I was wondering if anyone knows how to change the firmware, I've tried changing the .lkr and the pic in mplab but to no avail.

Thanks very much

john

=====

Re:Basic USB - Using Microchip Stack and C#.Net

Posted by Mat - 2006/04/05 13:26

have you changed the io_cfg file , the 18f3450 is unlikely to have the same ports as the 18f4550,particularly portd i think.

Mat

=====

Re:Basic USB - Using Microchip Stack and C#.Net

Posted by Nick - 2006/04/13 12:45

hello

i've got a question about the board itself, why do i need to put a 4k7 resistor between RA1 and VDD, because i got the bootup issues myself, but don't understand why to put a resistor on that pin.

Greetz Nick

=====

Re:PICDEM FS USB Code

Posted by dimple - 2006/04/13 13:22

All include, library etc paths are set perfectly but still I am getting the following error

"Failed to load c:\picusbdemo\MCHPUSB.cof"

what would be the reason?

=====

Re:PICDEM FS USB Code

Posted by Mat - 2006/04/13 13:48

hey, update to the latest version of mplab and C18, there is a compatability issue with older versions with the cof files, that should sort it out.

Mat

=====

Re:Basic USB - Using Microchip Stack and C#.Net

Posted by Mat - 2006/04/13 13:53

The firmware checks the voltage level of the pin to detect if the pic is connected to the Vusb, and therefore the USB. Your issue is most likely related to the connection between the pic and usb conector, ensure that the wire is as short as possible between the two to prevent interference.

Mat

=====

Re:Basic USB - Using Microchip Stack and C#.Net

Posted by hope - 2006/04/14 09:52

hi guys

i've seen your article and its very helpful .

but i hope you answer my question

- does the mpusbapi.dll communicate with stand_alone usb what ever the circuit that is attached to or usb that interface PIC microcontroller ?

-and another question . and please consider that i'am novice in all of this. in the code for PC there is....>

```
string vid_pid_boot= "vid_04d8&pid_000b"; // Bootloader vid_pid ID
```

```
string vid_pid_norm= "vid_04d8&pid_000c";
```

```
string out_pipe= "\\MCHP_EP1"; // Define End Points
```

```
string in_pipe= "\\MCHP_EP1";
```

what i understand that those strings represent the address of the usb buffer !!!!???? i do not know if that correct or not but if it. can you tell me how can i get the address (i know that usb port have no fixed address like other ports)

i'am not sure how much logically is my question but that maybe it my first time dealing with api

//hope

=====

Re:Basic USB - Using Microchip Stack and C#.Net

Posted by Mat - 2006/04/14 10:44

Hi,

The mpusbapi.dll as far as i know can only be used to communicate with PIC's running the microchip usb firmware, at least i havnt heard of it being used to communicate with anything else.

Essentially the strings represent the usb device, the vid_pid represent the device ID, and the ///MCHP_EP1 represents the endpoint (or buffer) you want to talk to on the device. They will not change from machine to machine and the driver will deal with all the necessary low level device address changes.

Hope this helps. Mat

Re:Basic USB - Using Microchip Stack and C#.Net

Posted by hope - 2006/04/14 11:50

thanks for reply

ya it help it important to realise that the address is not change from machine to another . and there is another question please

what i need this usb example and code is to drive a stepper motor by a laptop usb do you think that it works? maybe with changing the c# code and PIC code to fit the motor ??

Re:Basic USB - Using Microchip Stack and C#.Net

Posted by Mat - 2006/04/14 12:48

It should work :) Your only likely problem is that you might not be able to switch the motor fast enough, at what rate are you likely to want to change the motor? You should be fine upto a few tens of hertz with the code as it stands, im working on a much fast version now though B). Mat

Re:Basic USB - Using Microchip Stack and C#.Net

Posted by hope - 2006/04/16 08:42

hi mat

iam not sure i understand . B) it look as iam stupid but the truth that i'am new and need to be sure that i get it correctly does that mean that i have to minimum the delay time in the code or its need some enhance hardware for transfer rate increasing

and sorry for being noisy

//hope

Re:Basic USB - Using Microchip Stack and C#.Net

Posted by Mat - 2006/04/16 10:09

It means two things, you have to make you code fairly quick, however to benefit from any speed gain this may give you, the transfer mode of the usb will also have to be adapted and new buffering techniques used. It can all be done in software.

Mat

Re:Basic USB - Using Microchip Stack and C#.Net

Posted by Cortez - 2006/04/26 21:21

Hi im new at this i only know what is nedded to make this circuit but whit the pic18f2455 like jf post some days ago.
Need some change of pin connections or someting?
Thanks

Re:Basic USB - Using Microchip Stack and C#.Net

Posted by recursos - 2006/06/24 18:08

Mat wrote:

The firmware checks the voltage level of the pin to detect if the pic is connected to the Vusb, and therefore the USB.
Mat

In response to:

b]Greetz Nick wrote:

i've got a question about the board itself, why do i need to put a 4k7 resistor between RA1 and VDD, because i got the bootup issues myself, but don't understand why to put a resistor on that pin.

Now I am confused - can's see any connection to RA1 on the schematic.
Am I missing something?

Rec

Re:Basic USB - Using Microchip Stack and C#.Net

Posted by Mat - 2006/06/24 18:59

Sorry I need to update the schematic, it is mentioned in bold just below the image. Mat

Re:Basic USB - Using Microchip Stack and C#.Net

Posted by recursos - 2006/06/24 18:59

Oops!

No reply needed... RA1, 4K7 are not on the schematic, but in the text; I just read it to fast B)
.Rec

Re:Basic USB - Using Microchip Stack and C#.Net

Posted by recursos - 2006/06/24 19:48

I just programmed the 4550.

Upon power up, LED1, 2 flash very fast, after a few seconds flash alternated, later they switch off.:(
Meanwhile Windows pops a yellow warning, USB Device Not Recognized
What could it be?

Rec

Re:Basic USB - Using Microchip Stack and C#.Net

Posted by recursos - 2006/06/25 10:22

It is working now.

I was not sure about the USB cable connections, and put small resistors in series, just in case.
(I have no PIC DEMO, I'm using a breadboard; the cable is from a digital camera, one plug had been damaged, and I cut it away).
Now I tried 10R each, and it worked - hence I know that the cable is well wired, and no resistors needed any more.)
Next - the PC side program.
Rec

Re:Basic USB - Using Microchip Stack and C#.Net

Posted by ´recursos - 2006/06/25 16:35

With the hardware working, and XP asking for the drivers, I installed them, run the demo software, and everything worked: the LEDs toggled, the "Add" added.)
Next I unzipped the sources, launched Visual C# 2005 Express, and double clicked "PICusbdemo.sln".
Visual C# opened a "Conversion Wizard", and converted...
Tried to build the solution, Visual C# complained that "unsafe code appears in compilation without /unsafe etc."
Back to Project\Properties - General, and checked "allow unsafe code".
Rebuild program, but when running, and clicking any button, I got an exception - the "mpusbapi.dll" could not be used.
Added reference to "mpusbapi.dll", or rather tried to add, because Visual C# wouldn't allow me, always asking me to make sure the file was accessible or a valid COM.
Any sugestion?

Rec

Re:Basic USB - Using Microchip Stack and C#.Net

Posted by Mat - 2006/06/26 14:19

You shouldnt need to add a reference in the project. A copy of mpusbapi.dll needs to be in the same directory as the main exe, and it will find it at runtime. Let me know if that helps. Mat

Re:Basic USB - Using Microchip Stack and C#.Net

Posted by recursos - 2006/06/26 14:46

Thanks Mat, it helped:) .
My application was going to the \Release folder, and mpusbapi.dll was in \Debug folder.
I copied it there, everything is working now.
Rec

Re:Basic USB - Using Microchip Stack and C#.Net

Posted by HeartRate - 2006/07/11 20:43

Hi,
I'm having the same problem that Rec was having, the " USB Device Not Recognized" error. I cannot install the USB driver in Windows.

I've checked my USB physical connection and there are short packets coming over on the + and - for a short time after power-up. Using an ICD2 debugger, I see that the PIC is going into USB suspend mode (UCONbits.SUSPND = 1).

I think the next step will be to watch the USB receive and transmit registers to see if the data I'm seeing on the scope is actually making it into the registers.

Any other suggestions?

PS - I'm not using the USB supplied 5V. I'm using external 5V and 3.3V (Vusb) supplies. Also I added a pull-up on RA1 to force USB present in the firmware, but this didn't help.

PPS - Great article! It has been very helpful to me, just need to get it to work! :)

=====

Re:Basic USB - Using Microchip Stack and C#.Net

Posted by Mat - 2006/07/11 21:53

Give this a go, if you go into the properties of the device, via device manager, and there is an option to allow windows to put the device into suspend mode, disable this. This should stop it from happening hopefully, let me know how it goes.

Mat

=====

Re:Basic USB - Using Microchip Stack and C#.Net

Posted by HeartRate - 2006/07/13 16:35

Hi Mat,

Thanks for the quick reply. I can't find any property that allows me to disable suspend. Windows is just giving me a USB Device Malfunction error, and when I attempt to install the windows driver either automatically or manually, it tells me the driver is not compatible with the device. Here are some screen shots from windows:

http://www.skifreakz.com/images/USB_DNR.jpg

http://www.skifreakz.com/images/USB_DNR.jpg

http://www.skifreakz.com/images/USB_Help.jpg

http://www.skifreakz.com/images/USB_Help.jpg

http://www.skifreakz.com/images/Device_Prop.jpg

http://www.skifreakz.com/images/Device_Prop.jpg

More information for you. I'm using a PIC18FL4455 instead of the 4550. The main difference appears to be memory size. I've tried a fresh PIC. I've made a new USB cable and eliminated a connector pair. I've varied supply voltages. All with the same result. I'll spend more time with the ICD2 debugger today. Yesterday I tracked down some Error Interrupts were being flag. I need to better understand when they are being asserted

=====

Re:Basic USB - Using Microchip Stack and C#.Net

Posted by Mat - 2006/07/13 16:49

Hi,

Thanks for the screenshots. I would normally expect the device to appear under other devices in device manager. Regretably these issues are hard to locate. One thing which is worth checking is the config bits, if you could give me a screen shot of the configuration settings I might be able to help further.

There are normally two reasons, either it is a hardware fault, or the oscillator is setup wrong.

Mat

=====

Re:Basic USB - Using Microchip Stack and C#.Net

Posted by HeartRate - 2006/07/13 18:24

Hi Mat,

Thanks again for your time! I think you may be right about the config bits. I did notice that when I loaded your project into MPLAB, some of them seem incorrect (meaning that for some reason MPLAB didn't read in the config bits correctly).

I didn't touch the PLL/clock config bits, so they could be wrong. So you know, I am using a 20MHz clock oscillator

connected to OSC1, not the crystal you are using in your schematic.

Here are the config bits from MPLAB:
http://www.skifreakz.com/images/CFG_BITS.JPG
http://www.skifreakz.com/images/CFG_BITS.JPG

Thanks!

Post edited by: HeartRate, at: 2006/07/13 18:25

=====

Re:Basic USB - Using Microchip Stack and C#.Net

Posted by Mat - 2006/07/13 18:44

I dont have time to check now, just heading out. But have a play around with the oscillator settings, and try a crystal. Mat

=====

Re:Basic USB - Using Microchip Stack and C#.Net

Posted by HeartRate - 2006/07/13 18:46

Good news! It was the oscillator settings. It now works. My settings:
http://www.skifreakz.com/images/NEW_CFG_BITS.JPG
http://www.skifreakz.com/images/NEW_CFG_BITS.JPG

Thanks for your help Mat. You wrote a very helpful article and nice to see you on here supporting it.

=====

Re:Basic USB - Using Microchip Stack and C#.Net

Posted by Mat - 2006/07/13 23:37

Great! Well done!

Mat

=====

Re:Basic USB - Using Microchip Stack and C#.Net

Posted by Martin - 2006/07/18 22:36

Hi,

I am having the same problem with "USB Device not recognised"

My circuit is the same except i have not connected the LED's and i have connected MCLR & RA1 directly to Vdd

Do you think this could cause the problem?

Thanks

Martin.

=====

Re:Basic USB - Using Microchip Stack and C#.Net

Posted by Mat - 2006/07/18 23:18

Hi Martin the first thing to check is the config bits,
try fiddling with the oscillator settings.

Let me know how it goes,Mat

Re:Basic USB - Using Microchip Stack and C#.Net

Posted by Martin - 2006/07/19 00:20

Hi,

Well i'm using a 20mhz Crystal on a 18F4550 with usb bus power, i've tried both sets of settings mentioned here and no luck, any other ideas?

Thanks

Martin.

Re:Basic USB - Using Microchip Stack and C#.Net

Posted by Mat - 2006/07/19 09:01

Have a look in the usb forum, there are one or two other suggestions there if you have not found them already.
Mat

Re:Basic USB - Using Microchip Stack and C#.Net

Posted by Martin - 2006/07/19 15:03

Hi Mat,

Great i got it working!!!!

Thanks for help, i can see myself using this site a lot, i am doing a great deal of USB development over the coming months, so hopefully i can help contribute a lot, i am also going to be using SPI so once i've got to grips with that it will be great :-)

Thanks again.

Great articles :-)

Re:Basic USB - Using Microchip Stack and C#.Net

Posted by Mat - 2006/07/19 16:06

What was wrong in the end? Yeah stick around the site, anything you can contribute would be very welcome. If you need a have with SPI just shout, Mat

Works in #develop too :)

Posted by Dave - 2006/07/31 12:45

Matt,

Very helpful article. Thanks. Note that #develop (www.sharpdevelop.com) makes for a free open source development environment for C#. I found it made a good environment for your code.

Dave

=====

Re:Works in #develop too :)

Posted by Mat - 2006/08/01 13:01

Dave,
I've heard about sharpdevelop before but never had a need to use it, due to having access to C#.NET, glad to know it works though. If you want another alternative free dev enviroment try C#.NET express from microsoft, works a treat with the code also.

Mat

=====

Re:Basic USB - Using Microchip Stack and C#.Net

Posted by Polaris - 2006/08/04 09:59

Fantastic work. Straight-forward with results and I didn't even bother reading up on the USB standard. Even so, I do have one problem. The Add function in the C# program doesn't work. It always returns zero. I put a breakpoint in my code at the top of the ServiceRequests function in the users.c file and it does get hit when the Add button is pressed but the code never actually makes it to the line of code for adding when I attempt to single step any further. You posted in your documentation:

>> (If the application returns an incorrect value for the Add function, this is most likely due to the total lack of overflow code present in the pic, this is to maintain simplicity!)

I'm not sure what you mean by "the total lack of overflow code". Can you explain this and possibly give me some clue as to what I need to do to get the Add function to work?

Thanks again for the great work!
Polaris

=====

Re:Basic USB - Using Microchip Stack and C#.Net

Posted by Polaris - 2006/08/04 11:06

Did a re-compile using extended mode with an updated .lkr file and the problem disappeared. I tend to use extended mode for most applications using the PIC18F4550.

=====

Re:Basic USB - Using Microchip Stack and C#.Net

Posted by Mat - 2006/08/04 11:20

Well done,

I like this, people solve their own problems before I even get there!!

Mat

=====

Re:Basic USB - Using Microchip Stack and C#.Net

Posted by dariog - 2006/08/07 00:25

I got interested by your sentence

"I tend to use extended mode for most applications using the PIC18F4550."

So, did anybody try to use extended mode for USB (or other projects)? Successfully? Any drawbacks?

I did read a little about extended mode, but it was not mentioned very deply (in my mind) so I needed more info. I suppose the code will be more efficient and the CPU itself may be leveraged a bit more, isn't it?

Thank you for any info.

=====

Re:Basic USB - Using Microchip Stack and C#.Net

Posted by majestrix - 2006/08/09 20:26

Hi guys,

here is probably a dumb qn.. but something i really couldnt figure out.. :(

in the user.c

```
if(USBGenRead((byte*)&dataPacket,sizeof(dataPacket)))
```

how does this line work with respect to the dataPacket "object"?

when i looked at the usbgen.c the declaration of USBGenRead (..) its as byte USBGenRead(byte *buffer, byte len).

so where is this *buffer and where is len in the typedef union DATA_PACKET (user.h)?

in the user.c, i see its CMD as the main switch operators (so i'm gussing first byte is related to this) and things like (dataPacket.led_num == 3) used as a condition, so i'm gussing the data received (the second byte) is stored in led_num.. am i right..? so does that mean i have to have a different struct{} for every additional byte i send..?? OR i have to add another variable as..

```
struct
{
    unsigned :8;
    byte led_num;
    byte led_status;
    byte new_variable;
};
```

one more thing.. how does the lead_status get a value..??

sorry abut these basic qns.. i just wanted to really understand this program, so that i can develop this further.. thanks a lot.

=====

Re:Basic USB - Using Microchip Stack and C#.Net

Posted by majestrix - 2006/08/09 20:26

Hi guys,

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```
byte led_num;
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```

sorry about these basic qns.. i just wanted to really understand this program, so that i can develop this further.. thanks a lot.

Re:Basic USB - Using Microchip Stack and C#.Net

Posted by majestrix - 2006/08/12 20:00

Hello guys,
well, i did more digging and more comparing with the windows program and the datapacket object.. so here is what I THOUGHT is happening... (guys; those of you who are looking for an answer about this datapacket's real format, pls dont get confused.. this may not be true)
yeah..
the send_buf corresponds to CMD
the send_buf corresponds to the byte led_num;
the send_buf corresponds to byte led_status; <-this i'm not sure

but from these deductions i seem to have gotten a little bit more confused.. :S

whats the use of "byte len" and "byte ID".?? even if they are not really used for the PIC program, why doesnt the received data correspond to them. i mean from windows the send_buf goes as 0, 1 and 2. but how come the value of send_buf corresponds to led_num, which is in the 3rd struct, but not to the ID (which is the second)..?

and how does len gets its value..?

sorry to be noisy like this..

but i hope someone can clear some of these for me. B)

thanks a lot. this forum has be just great to be honest. :)

Re:Basic USB - Using Microchip Stack and C#.Net

Posted by majestrix - 2006/08/12 20:00

Hello guys,
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Re:Basic USB - Using Microchip Stack and C#.Net

Posted by majestrix - 2006/08/12 20:03

oops, it got posted twice.. sorry..

Re:Basic USB - Using Microchip Stack and C#.Net

Posted by dariog - 2006/08/13 17:57

Hi,
well, usually the first byte in the PIC array is the ID (0, 1... in the case of a Report sent FROM PC TO PIC it should be 2 (and "1" in the PIC sends to PC;
the second is CMD (that is, in a WriteFile from PC you must set the byte at index 0 of the array to "2", then the second can be a "CMD", then come the remaining part of the packet.

"len" should always be the lenght defined in your descriptor.

All that I'm stating is for a HID device, using WriteFile/ReadFile on the PC side.
I know that there can be several more ways to receive bytes on the PIC side (in 16C745 I knew of a different "message" which did not show you the ID... but it still had to be there!

Re:Basic USB - Using Microchip Stack and C#.Net

Posted by majestrix - 2006/08/13 20:23

Hi,
thanks for the ans. i think i have got some insight now. when i read this with the USB Complete by Jan Axelson, things become much clear. (an excellent book on USB design btw, although i feel like the book goes very much deep into USB which is good in a way but not that easy for USB beginners)
:side:

thanks. :)

Re:Basic USB - Using Microchip Stack and C#.Net

Posted by Marco - 2006/08/22 10:05

Since this is my first post, congratulations for this very best USB article Mat. For me, that started USB, 2 days ago, with this article referenced in the microchip forum this is excellent.

My question:
I've done everything correctly in the firmware. Compiled and make it programm just fine. I just have a little question - when I got the pcb mounted i assumed that the pin 1 (Vdd) comming from the USB port is the Vdd of the project right?I don't need to supply with 5V correct? I plugged in and the PC never displays anything, like it never have been plugged in...lol I checked the Vdd voltage and there are 5V, so I think that the supply come from the USB port (since it can give 100mA max for low power circuit). Or the problem is that I should supply with 5V?

Re:Basic USB - Using Microchip Stack and C#.Net

Posted by Mat - 2006/08/22 10:25

Glad you like the article,

You dont need to supply the 5v, it will use the power from the USB. I would recommend checking the configuration settings, in particular the oscillator settings. Also check you have made the required alterations to the circuit, which are mentioned below the diagram.

Mat

Re:Basic USB - Using Microchip Stack and C#.Net

Posted by Marco - 2006/08/22 10:30

Seems more like configuration bits problem. I've tried some things. Now the oscillator is "XT:-USB-XT" since I'm using the 20MHz crystal like the post.

Re:Basic USB - Using Microchip Stack and C#.Net

Posted by Marco - 2006/08/22 10:48

I had very carefully because I am using the PDIP of 40 pin, so I was awarness that all pins were in different positions, but everything was done like the 4k7 at the RA1 pin to Vdd.

In the configuration bits now I have the oscilator in XT: USB-XT and the FULL SPEED USB clock source selection with "clock src from OSC1/Osc2" since the other option also not works.

CPU System clock Prescaler "[96MHz PLL Src: /2"

and

96MHz PLL Prescaler "Divide by 5 (20MHz input)" also disable USB voltage regulator like our colleague that used a external clock in OSC1.

Re:Basic USB - Using Microchip Stack and C#.Net

Posted by Mat - 2006/08/22 10:53

That looks like your problem, change the oscillator to HS: HS+PLL, USB-HS, and see how that goes.

Mat

Re:Basic USB - Using Microchip Stack and C#.Net

Posted by Marco - 2006/08/22 11:19

That's the only option where pin RD0/SPP0 and RD1/SPP1 are always high. And RD2/spp2 and RD3/SPP3 always low. What this means?

Thanks,

Marco

Re:Basic USB - Using Microchip Stack and C#.Net

Posted by Marco - 2006/08/22 11:48

I've debbuged some code and notice that when te code is in InitializeSystem(void) in the main.c file, the command
mInitializeUSBDriver(); // See usbdrv.h

never get in. Notice also that the usbdrv.h isn't in the header files, but since I don't get any error while compiling, I don't believe that could be in code (and no one else had similar problem). The only warning I get is:
Clean Warning: File "C:\picusbdemo\MCHPUSB.lst" doesn't exist.
Is there any problem with this one?

Thanks,
Marco

Re:Basic USB - Using Microchip Stack and C#.Net

Posted by Mat - 2006/08/22 11:50

I wouldn't worry about that, the fact that both LED's are lit means that the device is attached. Try using device manager to force the drivers to install.

Mat

Re:Basic USB - Using Microchip Stack and C#.Net

Posted by Marco - 2006/08/22 11:59

But the PC never detects the plugin...how can I force them?

Re:Basic USB - Using Microchip Stack and C#.Net

Posted by Mat - 2006/08/22 12:17

Does nothing appear in device manager? not even a faulty or unknown device?
Mat

Re:Basic USB - Using Microchip Stack and C#.Net

Posted by Marco - 2006/08/22 12:37

Absolutely nothing. I've been using the connector type B with 4 pin wich (as you mentioned) I connected pin 4 to GND. I'm now switching to match your case with a miniAB connector
OTG(http://www.molex.com/pdm_docs/sd/565790519_sd.pdf)

I will give some news soon...:p

Best Regards

Re:Basic USB - Using Microchip Stack and C#.Net

Posted by Marco - 2006/08/22 13:39

No news...I'm running out of ideas.

The PIC programming goes right, only that warning I mentioned above missing that file. The configuration bits are right and the connections seems right too.
When I plugin the USB connector who contacts who?The PC ask the pic "who your are" or when PIC is plugged and powered, is the one who identifies himself? This is because no one of the lines D+/D- changes value, like the pic was death...

Thanks.

=====

Re:Basic USB - Using Microchip Stack and C#.Net

Posted by Marco - 2006/08/22 16:29

Two questions about the schematic in TQFP:

Pin 29(Vss) is also connected to gnd as pin 6 right?

And the Vusb(pin 37) isn't connected elsewhere but the cap to gnd?Should this be connected to Vdd?

Thanks

=====

Re:Basic USB - Using Microchip Stack and C#.Net

Posted by Mat - 2006/08/22 16:33

Thats correct, have to say im running out of ideas too.

For the communication, the pic initially signals to the PC its presense by the use of pull up resistors (internal) , then the PC talks to the PIC. Sounds like your H/W isnt an issue, probably best to recheck all the config settings. These are usually the problem!

Mat

=====

Re:Basic USB - Using Microchip Stack and C#.Net

Posted by Marco - 2006/08/22 16:43

Sorry Mat, you mean "That's correct" that pin 29 is also connected to gnd? And the Vusb (37) it's connected to Vdd?

Sorry but I couldn't undestand to what you were reply.

=====

Re:Basic USB - Using Microchip Stack and C#.Net

Posted by Mat - 2006/08/22 16:45

Vusb, should just be connected to the capacitor (which in turn is connected to ground), NO Vdd there. It is a capacitor for the internal charge pump, needed for the USB transciever.

=====

Re:Basic USB - Using Microchip Stack and C#.Net

Posted by Marco - 2006/08/22 17:07

Ok. So hardware seems no to be the problem.

In the code why can't I find the "USBcheckBusStatus()"? There is no method.Just the call in the main.c file.

Well, for today is enough...One more question, have you tested the code after the change of the pointer conversion suggested by neiwier? (page 2)

Tomorrow will try the code exacly as it is in the zip...:p

Best regards

=====

Re:Basic USB - Using Microchip Stack and C#.Net

Posted by majestrix - 2006/08/23 04:03

one quick question.. arent u using all the driver files that are in the zip file..?? as far as i know u gotta use em or write most of it on ur own...
well u can find USBcheckBusStatus() in usbdrv.c.
as to test what i did was compiled the full PIC program from the article and then once thats working, i wrote the user.c file... may not be the best method, but i guess it will confirm that ur harware is working...

=====

Re:Basic USB - Using Microchip Stack and C#.Net

Posted by Marco - 2006/08/23 10:52

Well some good news. The problem were in the configuration bits. The "USB Voltage Regulator" must be "enabled". then it asked for the drivers and I brownsed the drivers folder and it was fine. But in the device manager it is in "other devices" with a yellow "?". Any suggestion? Thanks

=====

Re:Basic USB - Using Microchip Stack and C#.Net

Posted by Marco - 2006/08/23 10:54

It is with a yellow "?" but is identified as PIC4550. The device manager looks like:
-Other devices
 ? PIC18F4550 Family Device
Is this a issue?

=====

Re:Basic USB - Using Microchip Stack and C#.Net

Posted by Mat - 2006/08/23 11:07

Sounds correct to me, been a while since i used it though :)

Mat

=====

Re:Basic USB - Using Microchip Stack and C#.Net

Posted by Marco - 2006/08/23 16:38

Everything works fine...:woohoo: Only that in the device manager stills the yellow '?'.

Mat, can you tell me where can I find information about the .dll file. What I want to know is what is generically is done in each method.wich are input, wich are to write. Do I make me understood? This is because in the _MPUSBRead what is read in the USB buffer is written into the pData parameter right? This is what I understand from the SendReceivePacket(...). Because when it returns from that method to the method usb_int.Add(..) it brings another result that isn't wrote elsewhere.

By the way, can you help me where can I understand better the firmware in the pic?Besides the "USB Complete" book :whistle:
I've been read the USB in the shell from the beyondlogic site, but this is more about the protocol.I'd like more about the firmware itself.

Thanks very much for everything.

=====

Re:Basic USB - Using Microchip Stack and C#.Net

Posted by Mat - 2006/08/23 17:40

Congrats :laugh:, btw its meant to be yellow!

There is very little information around on the PIC firmware, and the best source for this is the files themselves, read the headers!

As for the DLL dont worry about it, treat it as a black box, with inputs and outputs, your life will be much simpler!!

Mat

=====

Re:Basic USB - Using Microchip Stack and C#.Net

Posted by Marco - 2006/08/24 16:57

Hi.

I've been modifying the code in both sides. In PIC, in the ServiceRequest I was only doing something like this (and made /* */ in all other present code):

```
dataPacket.CMD=0xEE;
```

```
dataPacket._byte='A';
```

```
dataPacket._byte='B';
```

```
counter=0x03;
```

```
if(!mUSBGenTxIsBusy())
```

```
    USBGenWrite((byte*)&dataPacket,counter);
```

So, I expected that time to time (since there is a loop in the main) the PIC sent those bytes as a format of update_LED to the PC.

In the PC side my intention was looking into the read buffer, second to second, if there was something. Something like: if (_MPUSBRead(myInPipe, (void*)receive_buf, ExpectedReceiveLength, (uint*)RecvLength, 1000) == 1). I didn't want to write, just read. And everytime I run this code I get "Attempted to read or write protected memory. This is often an indication that other memory is corrupt.". My question is: is there any treatment to this kind of exception in the _MPUSBWrite? Since the only thing that I'm not doing is writing to PIC.

Thanks.

=====

Re:Basic USB - Using Microchip Stack and C#.Net

Posted by Marco - 2006/08/24 23:43

Other question is about the dataPacket enum in the service request (user.h). In the third page of the article you refer that there is available an id of 256. So, my only concerns are making my own command to avoid matching the others CMD defined and the "address" must be between 0x00-0xFF right?

Thanks for all help.

Marco

=====

Re:Basic USB - Using Microchip Stack and C#.Net

Posted by Marco - 2006/08/31 10:29

Hi Mat. I figured it out with the last 2 posts.

I would like to make a question about this code. There are application notes from microchip for USB use as a rs232

replacement. Is this the intention of PICDEM board with this code is based? If so, that should mean that we were limited to rs232 max baudrate? But from our configuration bits we are at 12Mbps with USB right? I might be confusing what they mean with rs232 replacemen...

Best Regards, and thanks.

Re:Basic USB - Using Microchip Stack and C#.Net

Posted by nobody - 2006/08/31 19:26

well yes, you CAN make the PIC act as a virtual RS232 COM port, but that's not what is being done in this project, nor is it the only thing the PICDEM board is meant for.

This demonstration is setting it up as a custom USB device with the microchip driver, that uses interrupt transfers(of the format described in the article) containing whatever you want.

Re:Basic USB - Using Microchip Stack and C#.Net

Posted by belzebuth974 - 2006/09/09 01:23

Hi,
I'm a total newbie to usb, found this fundamental article that make things more clear for me...
i've a question, when i read the *c#* code, i can see the following :

```
DWORD RecvLength=3;
send_buf = 0x32; //Command for LED Status
send_buf = (byte)led;
send_buf = (byte)(State?1:0);
if (SendReceivePacket(send_buf,3,receive_buf,&RecvLength) == 1)
```

it seems that the pic should return 3 bytes but you said that in the case of a led status modification, only one byte should be returned (i.e. the 0x32 value) and here it said that 3 bytes must be returned ???? did i missed something ?
i understand that the content of RecvLength is modified during the call to SendReceivePacket and this should not induce an error but for my mind peace can you explain ?

```
The same strange thing is in
DWORD RecvLength=(byte)2;
send_buf = 0xEE; //Command for DO_SUM
send_buf = (byte)num1;
send_buf = (byte)num2;
if (SendReceivePacket(send_buf,4,receive_buf,&RecvLength) == 1)
{
    Temp = receive_buf;
}
```

it looks like 4 byte should be sent but only 3 are initialized, so isn't the size of the sended packet is 3 ?? if i refer to your article RecvLength is part of the sended packet and then the number 4 is correct, but in this case the above lines are false because in the updated case the length of the packet is also 4.

what did i don't understand ???

thanks

Re:Basic USB - Using Microchip Stack and C#.Net

Posted by je_aleph - 2006/09/18 21:45

Hi!

I've been using the Matt's API in C# for a school's project, and it works excellent. I've working in a data adquisition system (well, a oscilloscope) based on your's project and Jim's project. I've working hard specially in the code for the PIC. If you want to know more about my project you can send an email to : je_aleph@yahoo.com.mx

I have a some doubts:

-Where did you (Matt) find information about the functions in the mpusbapi.dll to program your C# API? And who writes the file "funciones.txt"? The both dll's form the project are from Microchip or did you program someone?

-Did you have a problem if a use for my project?

-Why Jim use a 12MHz Crystal and you use a 20MHz??

Thanks for your time!!

Re:Basic USB - Using Microchip Stack and C#.Net

Posted by evandude - 2006/09/28 16:44

if you download the MCHPFSUSB software package from microchip (admittedly, actually locating the file on their website is a hassle), the source code for mpusbapi.dll is given, in borland C++, and in there you can easily see all the available functions.

you can use a number of different oscillator speeds (multiples of 4MHz), you just need to make sure to select the right divider value in the configuration when you actually program the device. internally, the PIC takes the external clock, divides it down to 4MHz, then uses the PLL to generate 96MHz from there, then divided to 48MHz, for the USB hardware. The program then runs at 48MHz as well, at least the way things are set up in this case. As long as the divider is set right for 12 or 20 MHz, (divider of 3 or 5, respectively) the internal result is 4MHz and everything else is the same.

Re:Basic USB - Using Microchip Stack and C#.Net

Posted by Henrik - 2007/02/01 12:38

Help needed :)

I use the picdem FS USB - with visualstudio.net...

anyways, everything starts ok, I can update a LED or use the ADD - but after this first command, the board goes into a state, where D1 and D2 flashes rapidly in sync - and I have to reprogram, can't even reset.

any ideas?

Henrik

Re:Basic USB - Using Microchip Stack and C#.Net

Posted by Henrik - 2007/02/01 12:44

Henrik wrote:

Help needed :)

I use the picdem FS USB - with visualstudio.net...

anyways, everything starts ok, I can update a LED or use the ADD - but after this first command, the board goes into a state, where D1 and D2 flashes rapidly in sync - and I have to reprogram, can't even reset.

any ideas?

Henrik

No need... I'm stupid... Suspend....

Re:Basic USB - Using Microchip Stack and C#.Net

Posted by Mat - 2007/02/02 09:41

Glad you got it all sorted...

Mat

Re:Basic USB - Using Microchip Stack and C#.Net

Posted by jon - 2007/04/04 04:09

have anyone successfully converted the code for a P18F2450,

i cahnged the device selection, configuration bits, lkr file, io_cfg.h but still the PC cant seem to detect the PIC...

Re:Basic USB - Using Microchip Stack and C#.Net

Posted by Jon - 2007/04/05 04:22

Can someone help, Please i have no idea y this is not working, since its almost the same thing, i am trying to use this code on a PIC18F2450 and this is what i did so far,

First I change the linker files to this

LIBPATH .

FILES c018i.o
FILES clib.lib
FILES p18f2450.lib

CODEPAGE	NAME=boot	START=0x0	END=0x7FF	
CODEPAGE	NAME=vectors	START=0x800	END=0x829	PROTECTED
CODEPAGE	NAME=page	START=0x82A	END=0x3FFF	
CODEPAGE	NAME=idlocs	START=0x200000	END=0x200007	PROTECTED
CODEPAGE	NAME=config	START=0x300000	END=0x30000D	PROTECTED
CODEPAGE	NAME=devid	START=0x3FFFFE	END=0x3FFFFF	PROTECTED

ACCESSBANK	NAME=accessram	START=0x0	END=0x5F	
DATABANK	NAME=gpr0	START=0x60	END=0xFF	
DATABANK	NAME=gpr1	START=0x100	END=0x1FF	
DATABANK	NAME=usb4	START=0x400	END=0x4FF	PROTECTED
ACCESSBANK	NAME=accesssfr	START=0xF60	END=0xFFF	PROTECTED

SECTION NAME=CONFIG ROM=config

STACK SIZE=0x100 RAM=gpr1

then i change the IO_Cfg.c, all portD to A, the bits tat i've changed is as below

```
#define tris_usb_bus_sense TRISAbits.TRISA1 // Input  
#define usb_bus_sense PORTAbits.RA1
```

```
#define tris_self_power TRISAbits.TRISA0 // Input
#define self_power PORTAbits.RA0
```

```
#define mInitAllLEDs() LATA &= 0xC3; TRISA &= 0xC3;
#define mLED_1 LATAbits.LATA2
#define mLED_2 LATAbits.LATA3
#define mLED_3 LATAbits.LATA4
#define mLED_4 LATAbits.LATA5
```

I also change the device selection to P18F2450 and the configuration bits to

<http://uploadimages.com/view.php?type=thumb3&p=2007/0020/11757430806625.jpg>

Re:Basic USB - Using Microchip Stack and C#.Net

Posted by Jon - 2007/04/05 04:27

Ok, i solved it, the core of the program is using polling thus ut must be fast enough, and a 8Mhz xtal that i'm using is not fast enough so i pump it thru the PLL and use that as the system clock

Re:Basic USB - Using Microchip Stack and C#.Net

Posted by dariog - 2007/04/06 11:16

Hmmm, actually I don't think that your problem could have been the "speed of software which is doing polling" but it may be.

Sure, CONFIG bits in USB application often do create troubles especially at beginning.

An advice: do use CONFIG #pragmas inside your code, rather than applying CONFIG into MPLAB ... it makes life easier.

Re:Basic USB - Using Microchip Stack and C#.Net

Posted by Capn - 2007/04/19 23:45

I am working on a project involving transferring data from a PIC18F4550 to a PC via USB. My board has been set up exactly as the schematic describes (including RA1) and I've done every little tweak I could find while poring over the forums.

So here's the problem:

Upon power-up (plugging in the USB cable), the two lights flash for a little, the "USB Device Not Recognized" message appears, and the board goes into Suspend mode (denoted by simultaneous flashing of LEDs, right?). I've tried to force Windows to install the mchpusb.inf driver, but it tells me "The specified location does not contain information about your hardware." Secondly, the device doesn't seem totally stable; meaning it disappears briefly from the device manager then reappears.

Device Info:

I have a 20MHz external oscillator, so settings are as follows:

Full Speed USB CLock Source Selection: Clock src from 96MHz PLL/2

CPU System Clock Postscaler:

96MHz PLL Prescaler: Divide by 5 (20MHz input)

I'm using Microchip's PICkit 2 programmer (is that going to change how I configure my bits?)

My D+ and D- wires are about 3cm long and wrapped in an anti-static shield, just in case.

Anyhoo, I appreciate any advice you can give me.

Post edited by: Capn, at: 2007/04/19 23:46

Post edited by: Capn, at: 2007/04/20 01:26

Re:Basic USB - Using Microchip Stack and C#.Net

Posted by dariog - 2007/05/01 15:28

Can only try helping, posting my (working) CONFIG:

```
#pragma config WDT = ON, WDTPS = 1024, MCLRE=ON, STVREN=ON, LVP=OFF
#pragma config PLLDIV=5, CPUDIV=OSC1_PLL2, USBDIV=2, FOSC=HSPLL_HS, IESO=OFF, PWRT=OFF, BOR=ON,
BORV=2
#ifndef __EXTENDED18__
#pragma config VREGEN=ON, LPT1OSC=OFF, PBADEN=OFF, CCP2MX=ON, XINST=OFF, DEBUG=OFF
#else
#pragma config VREGEN=ON, LPT1OSC=OFF, PBADEN=OFF, CCP2MX=ON, XINST=ON, DEBUG=OFF
#endif
```

HTH

Re:Basic USB - Using Microchip Stack and C#.Net

Posted by duchungjava - 2007/06/26 10:47

This is the best article I have ever read.
Thanks Mat so much.

Re:Basic USB - Using Microchip Stack and C#.Net

Posted by Axel - 2007/08/08 10:41

Hi

I try to use this project for making my first PIC USB project and I have some issues:

- First I don't really understand why I need to add the resistor on RA1?
- Everything work well on XP computer but on my VISTA laptop the pic answer just one time and after I have to reset the PIC board. Is it coming from the pic software or the C# software?.
- I don't know why I cant use my IDC2 in debug mode with this project? I have change in MPLAB the configuration bit for enable it but it doesn't work.

I am using exactly the same software and hardware given on the article.

Thanks for your help

sorry for my English, I am french

Re:Basic USB - Using Microchip Stack and C#.Net

Posted by Axel - 2007/08/08 12:19

I tried to find the configuration bit in the code but I can't find it!
Did someone know where it is?

=====

Re:Basic USB - Using Microchip Stack and C#.Net

Posted by Axel - 2007/08/08 13:13

My debugger issue is fixed
I just need help for VISTA now

=====

Re:Basic USB - Using Microchip Stack and C#.Net

Posted by Axel - 2007/08/09 22:27

Hi
every thing work very well on XP for me, now if someone have fixed the issue of vista live me a message.

=====

Re:Basic USB - Using Microchip Stack and C#.Net

Posted by loyd - 2007/08/10 01:40

Hi,

I am having the same problem as dariog, does anyone have any suggestions.

Thanks for your help

=====

Re:Basic USB - Using Microchip Stack and C#.Net

Posted by Axel - 2007/08/10 10:43

That running on vista in XP compatibility mode and fixing the power down check box in the USB driver works. Thanks.

=====

Re:Basic USB - Using Microchip Stack and C#.Net

Posted by Axel - 2007/08/15 19:02

Hi
Is someone succed to convert this project on 2455 because I want to try but if you have already find what could be the issues it could hlep me a lot.

Thanks

=====

Re:Basic USB - Using Microchip Stack and C#.Net

Posted by curly - 2007/08/29 12:18

Hi,

I am having trouble with the USB device detection. Presently when I connect the PIC to the USB LED2 lights up for a few seconds and then Led1 lights up and stays light. Windows gives me the unkown device possible malfunction message and when i try to point windows in the right direction for the drivers it doesn't install them.

I don't have RA1 connected to anything, but i have tried setting "#define usb_bus_sense" to 1 in the code to simulate it, but this also doesn't help.

I've defined the configuration settings in main.c file using #pragma config, I implemented it just after the #include section, Is this the right place for it?

I am using a 20Mhz crystal and my oscillator settings are

HS Oscillator, PLL enabled, HS Used by USB
96MHZ PLL div 2
Oscillator Divide by 5, 20Mhz

I've been stumped on this for a ages now any help would be greatly appreciated, Thanks

=====

Re:Basic USB - Using Microchip Stack and C#.Net

Posted by dariog - 2007/08/30 15:04

loyd wrote:
Hi,

I am having the same problem as dariog, does anyone have any suggestions.

Hi, what were you referring to?

=====

Re:Basic USB - Using Microchip Stack and C#.Net

Posted by Axel - 2007/09/04 12:10

hi

With the actual pic software, is it possible to send a data to the pc without start the comunication from the pc?

thanks

=====

Re:PICDEM FS USB Code

Posted by jonte - 2007/09/05 13:36

Fauzan wrote:

I just got a PICDEM FS USB board... I was just trying the code in your article...I got a build error

"Executing: "C:\MCC18\bin\mcc18.exe" -p=18F4550 /i"C:\picusbdemo" "main.c" -fo="C:\PICUSB~2\main.o" -Ou- -Ot- -Ob- -Op- -Or- -Od- -Opa- C:\picusbdemo\main.c:38:Error unable to locate 'p18cxxx.h'

Where can i find this p18cxxx.h?

Is it important, because the board comes with P18F4550?

Thanks
Fauzan

=====

Re:PICDEM FS USB Code

Posted by Maui - 2007/10/05 09:42

Hi,

I'm doing this project and face same problem with the configuration bits.

Can Mat or somebody else show me your configuration bits which is working? I'm using the zip file provided at the beginning of the article without anythings change.

THanks

=====

Re:PICDEM FS USB Code

Posted by Maui - 2007/10/09 10:11

Good news, me had successfully built the project. But why the LED only light on for 1-3 seconds after i updated?

THanks

=====

Re:Basic USB - Using Microchip Stack and C#.Net

Posted by Tam - 2007/11/13 13:50

Capn wrote:

I am working on a project involving transferring data from a PIC18F4550 to a PC via USB. My board has been set up exactly as the schematic describes (including RA1) and I've done every little tweak I could find while poring over the forums.

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Post edited by: Capn, at: 2007/04/19 23:46

Post edited by: Capn, at: 2007/04/20 01:26

=====

Re:Basic USB - Using Microchip Stack and C#.Net

Posted by Tam - 2007/11/13 13:53

Verify that a capacitor is attached to your VUSB pin (try a 470nF) also make sure that the bootloader memory is write protected. When unplugging and plugging in the USB cable, voltage fluctuations can occur which send the PIC into write

mode corrupting the bootloader. Let me know if this helps!

=====

Re:Basic USB - Using Microchip Stack and C#.Net

Posted by dariog - 2007/11/23 11:33

Sure you can. You can have a HID device sending its own data to the PC, without waiting for any "start" from that side. But, if the USB Pipe is not ready to receive (i.e. USB not enumerated/installed correctly), at some point your PIC will stop and wait for data to go through.

=====

Re:Basic USB - Using Microchip Stack and C#.Net

Posted by Ma - 2008/02/13 08:14

Need some help....

I'm using a 18f2550 for this project.
Change .lkr files and io_cfg.h to the respectable ports (port d to b)
I'm using a 4Mhz crystal.

The PC keep giving me "USB device not recognized..." msg...

What configuration bits should i set on the oscillator setup??

Ma

=====

Re:Basic USB - Using Microchip Stack and C#.Net

Posted by DLChambers - 2008/02/13 16:44

How important is it that the cap be 470nf?
I used a 1uf (~2x 470nf), and my Vusb is 3.3v, but i'm getting the "device not recognized" message and my PIC's USB node is in the SUSPEND state (both LEDs flashing in unison).

=====

Re:Basic USB - Using Microchip Stack and C#.Net

Posted by Nevalon - 2008/02/28 15:09

Hi.

First of all - thanks for Your work ;]

I'm trying to implement Your code on PIC18F87J50.
For now I'm thinking about conception how to do it, may You tell me what You think about it?

The board and PIC will have their own power, I need PIC circuit running no matter it is connected to the PC or not. PC application will collect informations from PIC only.

I looked at Your code and I don't really know (maybe I only don't understand - I'm not an electronic, i'm programmer, and in addition my English is not very good - I'm from Poland) do I need USE_SELF_POWER_SENSE_IO defined? I know I need USE_USB_BUS_SENSE_IO defined because of USB protocol and I understand (or am I wrong?) that when signal on Vusb from PC-host arrives (it should be connected to Vusb pin and RA1 pin, shouldn't it?) the resistor 4.7k delays it before it arrives to RA1 and after it arrives to RA1 (not to Vusb, on which the signal will be earlier) the USB procedures on PIC will start.

If I understand OK tell it, if not - correct me please.

And some questions:

1. "Self power" means internal (just from USB) or external power source?
2. Why do I need RA2 input when it is self powered? Neither on schematics nor in text below we have no connection to this pin.
3. May I have USB connection with PC and USART connection with other PIC?
4. Do I need any changes in code for migrate from 4550 to 87J50? I just changed Device in MPLAB and linker for proper...

Re:Basic USB - Using Microchip Stack and C#.Net

Posted by AlexD - 2008/04/06 15:14

Hi to all!

Thank you Mat for your excellent Article!

I have no clue why the PIC does not respond to changes in USER.C:

If I comment out the Line

```
mLED_3_On();mLED_4_On();
```

within the switch block of ServiceRequests I can still switch on both LEDs.

(attach to USB, start Program, initially both LEDs off and the two boxes unchecked, now check both boxes and hit Update - both LEDs light up)

What did I mis - I am sure there must be something I've missed?

I realized it when I connected a LCD and initialized it in UserInit it worked fine, even it string output worked well inside UserInit.

Adding code inside the switch block of ServiceRequests shows no response, just the LEDs respond like they are supposed to by Mats original code.

I am looking forward to your answers.

Alex

@Nevalon: I will answer some of your questions to my best knowledge which is very limited concerning USB.

Self power senses presence of an external power source (not USB supplied). It does not look to be of any use to me... just comment it out.

The Vusb Pin on the PIC needs a capacitor (470nF I think) attached to GND which is necessary for the internal USB voltage regulator.

Since I assume your PIC needs a Vdd of 3.3V I do not know whether it requires something different (compared to 18F4550 with Vdd of 5V).

Re:Basic USB - Using Microchip Stack and C#.Net

Posted by David - 2008/04/13 02:20

bugger lost message

but hey I was just saying Hello

and I need some help with the pc side of the usb program :-)

David

Re:Basic USB - Using Microchip Stack and C#.Net

Posted by David - 2008/04/13 02:21

bugger lost message

but hey I was just saying Hello

and I need some help with the pc side of the usb program :-)

David

Re:Basic USB - Using Microchip Stack and C#.Net

Posted by Gerardo - 2008/04/17 19:07

Hello everybody:

I am programming a PIC18F4550 with USB interface. I am also viewing the information it exchanges with the PC using a USB Tracer.

What I really can not understand is why the host (PC) transmit two packets instead of only one (I am sure that the program only sends one), and then there is the answer of the PIC, but with some IDLE packets in between... is the PIC slow, and for that reason the communications has these IDLE packets?

I attach here a little USB Log I have obtained. You will see that Request #1 and #2 are the same. Then there are two answer from the PIC (Request #3 and #4). But, #5 is an IDLE packet (maybe because the host couldn't recognize on time the first packet --see request #3) and finally #6 is another new packet from the next sequence. This sequence repeats every time I try to send only one packet and receive its corresponding answer. It is, I want to see only 2 packets instead of 5.

Thanks in advance,
Gerardo.

----- Request # 1 -----

URB_FUNCTION_BULK_OR_INTERRUPT_TRANSFER

IRP: 0x87304228
Status: STATUS_SUCCESS (0x0)
Device Object: 0x86419D50

Length: 0x48
USB Status: USBD_STATUS_SUCCESS (0x0)
EndpointAddress: 0x1
PipeHandle: 0x81E65044
TransferFlags: 0x0 (USBD_TRANSFER_DIRECTION_OUT)
TransferBufferLength: 0x40
TransferBuffer: 0x0
TransferBufferMDL: 0x85F9ABC8
UrbLink: 0x0

** Data **

00 02 0C 00 4E 01 02 0D 00 4E 02 02 0E 00 4E 03 03 11 64 00 00 04 03 11 E4 00 00 05 03 11 E4 00 00 06 03 11 64 00
00 07 03 11 E4 00 00 08 03 11 E4 00 00 09 02 0C 00 4E 0A 00 F0 00 00 00 00 00

----- Request # 2 -----

URB_FUNCTION_BULK_OR_INTERRUPT_TRANSFER

IRP: 0x87304228
Status: STATUS_SUCCESS (0x0)
Device Object: 0x828E2200

Length: 0x48
USB Status: USBD_STATUS_SUCCESS (0x0)
EndpointAddress: 0x1
PipeHandle: 0x81E65044
TransferFlags: 0x0 (USBD_TRANSFER_DIRECTION_OUT)
TransferBufferLength: 0x40
TransferBuffer: 0x0
TransferBufferMDL: 0x85F9ABC8
UrbLink: 0x0

** Data **

00 02 0C 00 4E 01 02 0D 00 4E 02 02 0E 00 4E 03 03 11 64 00 00 04 03 11 E4 00 00 05 03 11 E4 00 00 06 03 11 64 00
00 07 03 11 E4 00 00 08 03 11 E4 00 00 09 02 0C 00 4E 0A 00 F0 00 00 00 00 00

----- Request # 3 -----

URB_FUNCTION_BULK_OR_INTERRUPT_TRANSFER

IRP: 0x87304228
Status: STATUS_PENDING (0x103)
Device Object: 0x828E2200

Length: 0x48
USB Status: USBD_STATUS_PENDING (0x40000000)
EndpointAddress: 0x1
PipeHandle: 0x81E65044
TransferFlags: 0x0 (USBD_TRANSFER_DIRECTION_OUT)
TransferBufferLength: 0x0
TransferBuffer: 0x0
TransferBufferMDL: 0x85F9ABC8
UrbLink: 0x0

----- Request # 4 -----

URB_FUNCTION_BULK_OR_INTERRUPT_TRANSFER

IRP: 0x87304228
Status: STATUS_SUCCESS (0x0)
Device Object: 0x828E2200

Length: 0x48
USB Status: USBD_STATUS_SUCCESS (0x0)
EndpointAddress: 0x1
PipeHandle: 0x81E65044
TransferFlags: 0x0 (USBD_TRANSFER_DIRECTION_OUT)
TransferBufferLength: 0x40
TransferBuffer: 0x0
TransferBufferMDL: 0x85F9ABC8
UrbLink: 0x0

----- Request # 5 -----

IOCTL_INTERNAL_USB_SUBMIT_IDLE_NOTIFICATION

IRP: 0x8702C008
Status: STATUS_SUCCESS (0x0)
Device Object: 0x86419D50

----- Request # 6 -----

URB_FUNCTION_BULK_OR_INTERRUPT_TRANSFER

IRP: 0x87212DF8
Status: STATUS_SUCCESS (0x0)
Device Object: 0x86419D50

Length: 0x48
USBD Status: USBD_STATUS_SUCCESS (0x0)
EndpointAddress: 0x81
PipeHandle: 0x81E65024
TransferFlags: 0x3 (USBD_TRANSFER_DIRECTION_IN USBD_SHORT_TRANSFER_OK)
TransferBufferLength: 0x40
TransferBuffer: 0x0
TransferBufferMDL: 0x875829A8
UrbLink: 0x0

Re:Basic USB - Using Microchip Stack and C#.Net

Posted by Balkar - 2008/05/21 08:52

Hi to everyone,

Very nice work first of all. I was wondering if we could reach faster transfer rates in PC-PIC communication. I am trying to send for example 64Kbyte of data in one second assuming that the pic transmits packets in every one ms. But i can only send 4Kbyte of data in one sec. By the way I am using CDC type, not generic class. I hope it does not differ much, but I thought CDC might be faster. Anyway, what I would like to do is to use as fast as it can, and does anybody know how.

Regards,
Balkar

Re:PICDEM FS USB Code

Posted by Terry - 2008/06/11 18:32

Fauzan wrote:

I just got a PICDEM FS USB board... I was just trying the code in your article...I got a build error

```
"Executing: "C:\MCC18\bin\mcc18.exe" -p=18F4550 /i"C:\picusbdemo" "main.c" -fo="C:\PICUSB~2\main.o" -Ou- -Ot- -Ob- -Op- -Or- -Od- -Opa- C:\picusbdemo\main.c:38:Error unable to locate 'p18cxxx.h'
```

Where can i find this p18cxxx.h?

Is it important, because the board comes with P18F4550?

Thanks
Fauzan

Re:PICDEM FS USB Code

Posted by slobo - 2008/06/11 19:59

Fauzan wrote:

I just got a PICDEM FS USB board... I was just trying the code in your article...I got a build error

"Executing: "C:\MCC18\bin\mcc18.exe" -p=18F4550 /i"C:\picusbdemo" "main.c" -fo="C:\PICUSB~2\main.o" -Ou- -Ot- -Ob- -Op- -Or- -Od- -Opa- C:\picusbdemo\main.c:38:Error unable to locate 'p18cxxx.h'

Where can i find this p18cxxx.h?

Is it important, because the board comes with P18F4550?

Thanks
Fauzan

Re:Basic USB - Using Microchip Stack and C#.Net

Posted by Garg - 2008/07/03 11:48

thanks mat for issuing this article. The system was working absolutely fine until i tried making some changes. Now the PC application shows ADDITION always equal to Zero(hatever i input). although i'm able to control Led3 & LED4. I have removed the changes made by me. even I tried with a fresh copy downloaded from this site. What can be the problem?

Re:PICDEM FS USB Code

Posted by vishal patil - 2008/07/08 05:39

Mat wrote:

Hey, it most likely you project build options are setup wrong, I'd recommend rechecking them.

http://www.piccoder.co.uk/components/com_joomlaboard/uploaded/images/config_settings.jpg

There should look like this, (you'll have to change the library path to point to your appropriate directory),
Let me know how you get on.

Mat

Post edited by: mat, at: 2006/03/14 13:18

Re:Basic USB - Using Microchip Stack and C#.Net

Posted by Jaime - 2008/08/07 23:53

Jon, Can you post your pic18f2450 code?

Re:Basic USB - Using Microchip Stack and C#.Net

Posted by Jo - 2008/08/15 13:54

Hi.. I need some help please..

I constructed the circuit as per the one shown in the diagram.

Compiling and programming was succesful.

When I tried to send command from C# either to add the numbers or to update the LED, the PIC is able to process the instruction only 1 time. After 1 time of processing the instruction, D2 and D3 (LED) will blink faster and faster alternately for few seconds and then both LEDs will go off.

I measure the Vusb and in normal condition, it will be 3.33V but after receiving the command from C# and processing it, it will go down to 0V.. I'm not sure whats the problem as I have followed the schematic.

Can somebody please advice.. Thanks.

Re:Basic USB - Using Microchip Stack and C#.Net

Posted by Arend - 2008/09/29 09:35

I am new to MPLab, so having some difficulties in setting all the paths.

I get the following error when building, all paths are set as stated in the start of this thread.

```
Debug build of project 'C:\picusbdemo\MCHPUSB.mcp' started.
Preprocessor symbol '__DEBUG' is defined.
Mon Sep 29 01:27:58 2008
```

```
-----
Clean: Deleting intermediary and output files.
Clean: Done.
Couldn't locate build tool. Check tool locations.
```

```
-----
Debug build of project 'C:\picusbdemo\MCHPUSB.mcp' failed.
Preprocessor symbol '__DEBUG' is defined.
Mon Sep 29 01:27:58 2008
```

```
-----
BUILD FAILED
=====
```

Re:Basic USB - Using Microchip Stack and C#.Net

Posted by USB Speed - 2008/10/21 01:41

I understand Microchip provides a CDC usb driver that emulates a serial port and can go up to 115kbps (or 1mbps if really pushing it)...

You can also design with an HID driver, which is only about 64kbps.

Finally, if you write a custom driver, then I assume, you can do the full speed of USB1 or USB2.

What driver does this article use?

Re:Basic USB - Using Microchip Stack and C#.Net

Posted by Cristhian - 2008/11/17 16:12

I've been trying to implement a Timer1 interrupt, but when I activate the interrupt the USB port has problems, can anyone help me?

The problem occurs in the USBTasks() function when the timer1 goes off, and the interrupt is activated

```
void UserInit(void)
{
.....
T1CON = 0b01000100;
PIR1bits.TMR1IF = 0; // Clear flag
TMR1H = TIMER1H_VAL;
TMR1L = TIMER1L_VAL; // Reinit timer value;
T1Cont=0;
PORTDbits.RD4=1;
INTCONbits.GIE=0;
INTCONbits.PEIE=1;
PIE1bits.TMR1IE=1; //Habilito interrupcion Timer1
T1CONbits.TMR1ON=1;
PIE2=0x00;
.....}
-----
```


Thanks..

We will be waiting for your inputs!!!

4455 usb comm

Posted by nogood - 2009/04/13 14:32

hello, this is my first post here , i have some questions about this usb communication article, hope i'll get the answers ;)

i would like to let you know i am relatively new to this type of programming so please be patient.

i don't have the 4550 pic you used here, instead i have a 4455 one. the "board" it's on is pretty close to the schematics you use here, i bought it from someone so i'm not really sure how it works. all i know is that i used it before and it works. the schematics are here.

i used before by programming it via usb, using MPLAB 8.3 and mcc18 demo. the way i used mplab was i wrote the program (debugged/built it with mplab SIM) and then i use some other app (pdfsub - from microchip, screenshot here) to load the *.hex file and program it to the 4455. as far as i know on the 4455 that i have there is a bootloader and i have to write my programs from 0x800, that's why i need to use a linker file, right ? so i opened the lkr file that i have for the 4455 and opened the lkr from this project and i see that there are some differences. (screenshot here). i am also required to use a c018i.o file that is required to be next to the lkr file, but not included in the project.

i opened this usb project, changed the respective paths, changed to the mplab sim debugger and all compiles correctly except i get this error :

```
Executing: "C:\MCC18\bin\mplink.exe" /I"C:\MCC18\lib" /k"C:\_pic\PIC USB\PIC USB demo - PIC Code\picusbdemo"
"18f4455.lkr" "main.o" "usbmmap.o" "usbdrv.o" "usb9.o" "usbdisc.o" "usbctrlrf.o" "user.o" "usbgen.o"
/z__MPLAB_BUILD=1 /z__MPLAB_DEBUG=1 /m"MCHPUSB.map" /o"MCHPUSB.cof"MPLINK 4.11,
LinkerCopyright (c) 2007 Microchip Technology Inc.Error - section '_entry_scn' can not fit the absolute section.
Section '_entry_scn' start=0x00000800, length=0x00000006
Errors : 1
Link step failed.
```

i see 0x800 and i think it has something to do with the linker file ?
i didn't change anything in the code, i was just trying to make it work

at first, after i downloaded the code, i tried to make it work using the (default) programmer (the one that is configured in the project i.e. the ICD) but i got an error (0x2 if i recall correctly) and i think it means that the usb is not ready (?) so i changed to debugging.

my questions are:

- doing what i did (changing into debugging) change anything about the way the project should work?
- is it possible to program the device the way i was doing?
- does this code change the way my pic works ? is the bootload being affected in any way? i need to be sure that i can use the pic if i fail somewhere because i have a bigger project into which i need to use USB communication (i don't really understand how this bootloader works)
- am i doing it wrong ? :D
- do i need any other software or hardware ?

thank you very much ;)

Re:4455 usb comm

Posted by nogood - 2009/04/13 14:58

sorry i forgot to pload the screenshots
here they are:

linker scripts and pdfsub

<http://www.urcaok.net/download3.php?file=388465>
<http://www.urcaok.net/download3.php?file=974244>

sorry i couldn't upload them anywhere else

Re:4455 usb comm

Posted by ngd - 2009/04/16 19:10

problem fixed. i had an extra c18i.o somewhere in the project's folder. loading two c18's generates Section '_entry_scn' start=0x00000800, length=0x00000006 error.

Re:4455 usb comm

Posted by Skalarki - 2009/04/19 00:10

Hi everybody

Has anyone implemented button reading function already? I am playing from some time with it and I can't figure it out. Any help will be appreciated.

Thanks Marcin

Re:PICDEM FS USB Code

Posted by bilal - 2009/04/23 12:31

Fauzan wrote:

I just got a PICDEM FS USB board... I was just trying the code in your article...I got a build error

```
"Executing: "C:\MCC18\bin\mcc18.exe" -p=18F4550 /i"C:\picusbdemo" "main.c" -fo="C:\PICUSB~2\main.o" -Ou- -Ot- -Ob- -Op- -Or- -Od- -Opa- C:\picusbdemo\main.c:38:Error unable to locate 'p18cxxx.h'
```

Where can i find this p18cxxx.h?

Is it important, because the board comes with P18F4550?

Thanks
Fauzan

Re:Basic USB - Using Microchip Stack and C#.Net

Posted by Kiran - 2009/05/27 07:42

Good Afternoon Sir,

It was an amazing article.....worth appreciating...:)

God Bless u.....It is a very good start for the beginners...I shall be contacting u if I face any other difficulty in future...Although it seems rare since u explained each n everything very well...Thanks Aloooooot

Re:Basic USB - Using Microchip Stack and C#.Net

Posted by Biker - 2009/12/14 17:31

Hi all, I have some problem. I am programming a PIC18F4550 in PIC assembler and I haven't found any PIC code examples or information about how to program the USB interfase in assembler. Can anyone help me.

Thanks.

Re:Basic USB - Using Microchip Stack and C#.Net

Posted by MEMS - 2009/12/22 04:08

Hi all,

That article is amazing!! But I have some problems with the project, I have the hardware ready but when I try to install the driver I can't. I'm using Windows Vista and I think that could be the problem but when I tried in other computer with Windows XP the LEDs didn't flashing well and look like with low power. When I conected the hardware in Vista the driver didn't work but the LEDs flashed adequately.

Someone can help me please?

Thanks

MEMS

Re:PICDEM FS USB Code

Posted by jessica - 2010/01/21 16:32

Tanx a lot!!!

I'm using 7 ultimate. i thought this is due to incompatibility of windows.

it's quite funny coz the solution is very simple !

Re:Basic USB - Using Microchip Stack and C#.Net

Posted by Mike - 2010/04/24 13:44

Hi. Thanks alot for this! couldnt grasp the examples from microchip but this is much simpler...I've adapted and extended the program and software for my project in final year.

Can i ask what USB transfer has been used? (bulk, interrupt etc)
and also, where can i find the PID and VID settings in MPLAB code? or is this not necassary when not using HID drivers?

Many thanks again! :)

Re:Basic USB - Using Microchip Stack and C#.Net

Posted by ajmotley - 2010/08/24 19:04

Hello Mat,

Do you have plans for converting this project over to the PIC32. I am starting a new project, and this would be a big help.