Introduction to Netburner Network Development Kit (NNDK) MOD5282

Picture of Netburner Development Board:



Connections Required:

- 1) TTY Serial Cable to connect to Host PC Port 2 (or Port 1)
- Ethernet Cable: Blue – standard Ethernet cable to connect to existing Ethernet Hub Red – Cross-wired cable to connect directly to Host PC Ethernet connector
- 3) Power Cable 12 volt

NetBurner MOD5282 Network Development Kit Functionality:

- MCF 5282 Integrated ColdFire 32 bit Microcontoller
- 2 DB-9 connectors for serial I/O supports: RS-232, RS-485, CAN (Controller Area network), USB
- Ethernet
- Real-Time Clock
- 8 A/D Converters
- 4 Character Segmented LED Display
- 8 Discrete LED Bit Displays
- 8 toggle Inputs
- Reset and Interrupt Buttons
- A Small Prototype Area
- 6 Connectors for Ribbon Cables provides most controller data, address, and control signals
- Jumper switches for configuration selection
- RS-232 Cable for Host Computer, & Ethernet Cable for Network Connection

MCF 5282 Integrated ColdFire 32 Bit MicroController

- ColdFire V2 32 bit Processor with Enhanced Multiply-Accumulate Unit
- 512 KB Flash Memory
- 64 KB Static Ram
- 10/100 Ethernet MAC
- Cache for External Access Support
- Address decode and chip selects
- CAN 2.0B controller area network interface with 16 message buffers
- Three UARTS with DMA capability
- Queued serial peripheral interface with 4 peripheral chip selects
- 8-channel 10bit queued A/D converter
- 4 32 bit timers with capture, compare, and DMA capability
- 8 16 bit timer channels for capture, compare, and pulse width modulation
- 4 periodic interrupt timers
- I2 C bus controller
- Network Protocol Stack
- JTAG & BDM for virtual and background debug

Netburner Tools & Documents

Windows Startup List : Netburner NNDK:



Mtty Serial Terminal:

Multi-threaded TTY			_	
<u>File T</u> TY T <u>r</u> ansfer <u>H</u> elp				
Port Baud COM1 ▼ 115200 ▼ Font Comm Events	Parity Data Bits None 8 Flow Control Timeouts	Stop Bits 1 Connect	└ Local Echo └ Display Errors └ CR => CR/LF └ Autowrap	
				•
•				<u> </u>
Modem Status	Comm Status		THE	
	HLSD (CD) CTS Hold DSR Hold DSR Hold DSR Hold DSR Hold	L XUFF Hold L I I XOFF Sent T× d I EOF Sent R≻	Chars: 0	

IP Setup Tool:

NetBurner IP5etup ¥2.0	×
NDK Settings IP 10 . 1 . 1 . 4 Network Mask 255 . 255 . 255 . 0 GateWay 0 . 0 . 0 . 0 DNS 0 . 0 . 0 . 0 Baudrate 115200	Select a Unit MOD5282 [00-03-F4-01-89-20] at 10.1.1.4 running :F MOD5282 [00-03-F4-01-29-45] at 10.1.1.6 running :M MOD5282 [00-03-F4-01-28-5] at 10.1.1.2 running :F MOD5282 [00-03-F4-01-28-EA] at 10.1.1.5 running :a MOD5282 [00-03-F4-01-28-FA] at 10.1.1.8 running :F MOD5282 [00-03-F4-01-28-FC] at 10.1.1.9 running :C MOD5282 [00-03-F4-01-28-FC] at 10.1.1.9 running :C Search Again
	Launch Webpage Advanced Help <u>C</u> lose

Development Environment:

<pre>Ele Edit Search yew Project Build Jook Cys Window Help Ele Edit Search yew Project Build Jook Cys Window Help Total Tot</pre>	v-C++ 1.13 - [Mod5282FactoryDemo] - Mod5282FactoryDemo.dev
<pre></pre>	View Project Build Iools CVS Window Help
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Project Classes main.cpp webfuncs.cpp intps.cpp intps.cpp intps.cpp intps.cpp invaplot.cpp invaplot.cpp webfuncs.cpp webfuncs.cpp No other rights to use this program for any use as long as the result and program is only executed on NetBurner provided hardware. No other rights to use this program or it's derivatives in part or in whole are granted. NetBurner makes no representation or warranties with respect to the performance of this computer program, and specifically disclaims any responsibility for any damages, special or consequential, connected with the use of this program. NetBurner S405 Morehouse Drive San Diego Ca, 92121 information available at: http://www.netburner.com F=Rail info@netburner.com Support is available: F-Mail support@netburner.com #include "predef.h" #include <stdio.h></stdio.h>] 음음 🗱 📔 🗌 New @] Insert 😓 Toggle 🔲 Goto
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<pre>Proded Classes</pre>	
<pre>Mod5287=sctopyDemo Pacopy Pacopy</pre>	main.cpp webtuncs.cpp ttps.cpp tavapiot.cpp
<pre>* * * * * * * * * * * * * * * * * * *</pre>	<pre>aclogDemo p p Acopy construction is hereby granted to purchasers of NetBurner Hardware p P P Permission is hereby granted to purchasers of NetBurner Hardware to use or modify this computer program for any use as long as the resultant program is only executed on NetBurner provided hardware. No other rights to use this program or it's derivatives in part or in whole are granted. NetBurner makes no representation or warranties with respect to the performance of this computer program, and specifically disclaims any responsibility for any damages, special or consequential, connected with the use of this program.</pre>
<pre>#include "preder.h" #include <stdio.h></stdio.h></pre>	<pre>** * * * * * * * * * * * * * * * *</pre>
	#include "preder.n"
吕 Compiler 📶 Compile Log 🖾 Find Results] Compile Log 🖾 Find Results

Netburner Application Wizard:

NBAppWizard	×
Project/App Name: NewApp Platform: Default	
Create In Directory: C:\Nburn\examples\NewApp	Choose
Include Auto Update capability	
Include DHCP	
Include WebServer	
TaskScan and SmartTrap Include WIFI Create	Cancel

AutoUpdate Tool:

NB AutoUpda	ate ¥2.0						×
IP address:	0		0	0		0	Find
FileName:							Browse
🗖 Rebo	ot when (comp	lete	(Upd	ate	Dismiss

References:

Netburner Network Development Kit Quick Start Guide: Booklet with Kit NetBurner Website: www.netburner.com MOD5282 Kit Information: http://www.netburner.com/products/development_kits/network_development.html MCF5282 Microcontroller Overview: http://www.freescale.com/webapp/sps/site/prod_summary.jsp?code=MCF5282 ColdFire Processor Overview:

http://www.freescale.com/files/netcomm/doc/train_ref_material/MCF5307TR-CORE.pdf

NetBurner Ethernet Initialization:

Launch the MTTTY Serial Terminal Program from the Desktop\ECS Lab\Netburner NNDK folder (Communication parameters should be set to: COM2, 115200, None, 8, 1)

Start the NetBurner Monitor: Click "connect" => A prompt will appear Press the "Reset" button on the NetBurner Board => "Waiting 2sec to start 'A' to abort" will appear Enter "A" within 2 sec => "nb>" and a prompt will appear (Press reset again if you took to long)

Type Help => Lists help menu Choose Setup & check/enter IP parameters IP Address = 10.1.1.x x = number of your Host/NetBurner station (1 <= x <= 16) IP Mask = 255.255.255.0 IP Gateway = IP Address of your host is displayed on the Desktop (or open DOS window enter IPCONFIG) Save the new IP information, and exit

Load the Factory Demo Program:

Enter "FLA" => "Begin Down Load now …" will appear Choose Transfer, Send File (text), C:Nburn\MOD5282\original\Mod 5282FactoryDemo_APP.S19 ⇒ the file will transfer, and the Application will run. Don't abort the application.

Create the network routing:

Open the ECS Lab folder. Double click "set up route". The DOS window will flash by.

From the Factory Demo Application, ping your host and your NetBurner to ensure the Ethernet connection is working.

Make a folder for your applications:

The NetBurner's default folder for projects is C:\Nburn\examples. Since you don't have write privileges on C:, create a folder called examples on your H: drive. *Open a DOS window and type the command C:\Nburn\ setenv*. Then redirect project defaults from C:\Nburn\examples to H:\examples:

Note: Compiled projects will still be placed in drive C: even though your source files are on drive H:

Aborting a Netburner Application (Cormac McGaughey)

The two most common issues with netburners in a lab environment are:

- 1) incorrect IP addresses being set and
- 2) recovering from a crashing application.

Note: Both these need to be done from the mtty program.

Correcting an IP address conflict:

- 1. Press "Reset" on the netburner board and press A (Shift+a) to get to the nb> prompt
- 2. Enter the configuration menu by entering setup at the nb> prompt
- 3. Enter the menu option that shows the ip address.
- 4. Enter the correct ip address and press enter
- 5. Enter S to save the settings
- 6. Reboot the board and check the correct settings have taken effect.

Recovering from a crashing program on the netburner board:

- 1. Press reset on the board and press A (Shift+a) to get to the nb> prompt.
- 2. At the nb> prompt type reset and press A (shift+a) to get back to the nb> prompt Note: Doing this extra reset step clears any traps and memory issues that have occurred. If you skip or miss this step you will find that the following steps have no effect. You need to make sure that the crashing program didn't start after you typed reset. If that happened, just press the reset button and try again.
- 3. Enter FLA to prepare the system for an application upload
- 4. Enter the transfer window (Press F5 or select Transfer/Send file from the pull down menu)
- 5. Send a program that you know works I find that the factory demo program works best, but any program that runs properly should work.
- 6. Once the program has transferred, let the system reboot and check that the new program starts as expected.

If you get the crash again, repeat from step 1 again and check that step 2 was done.