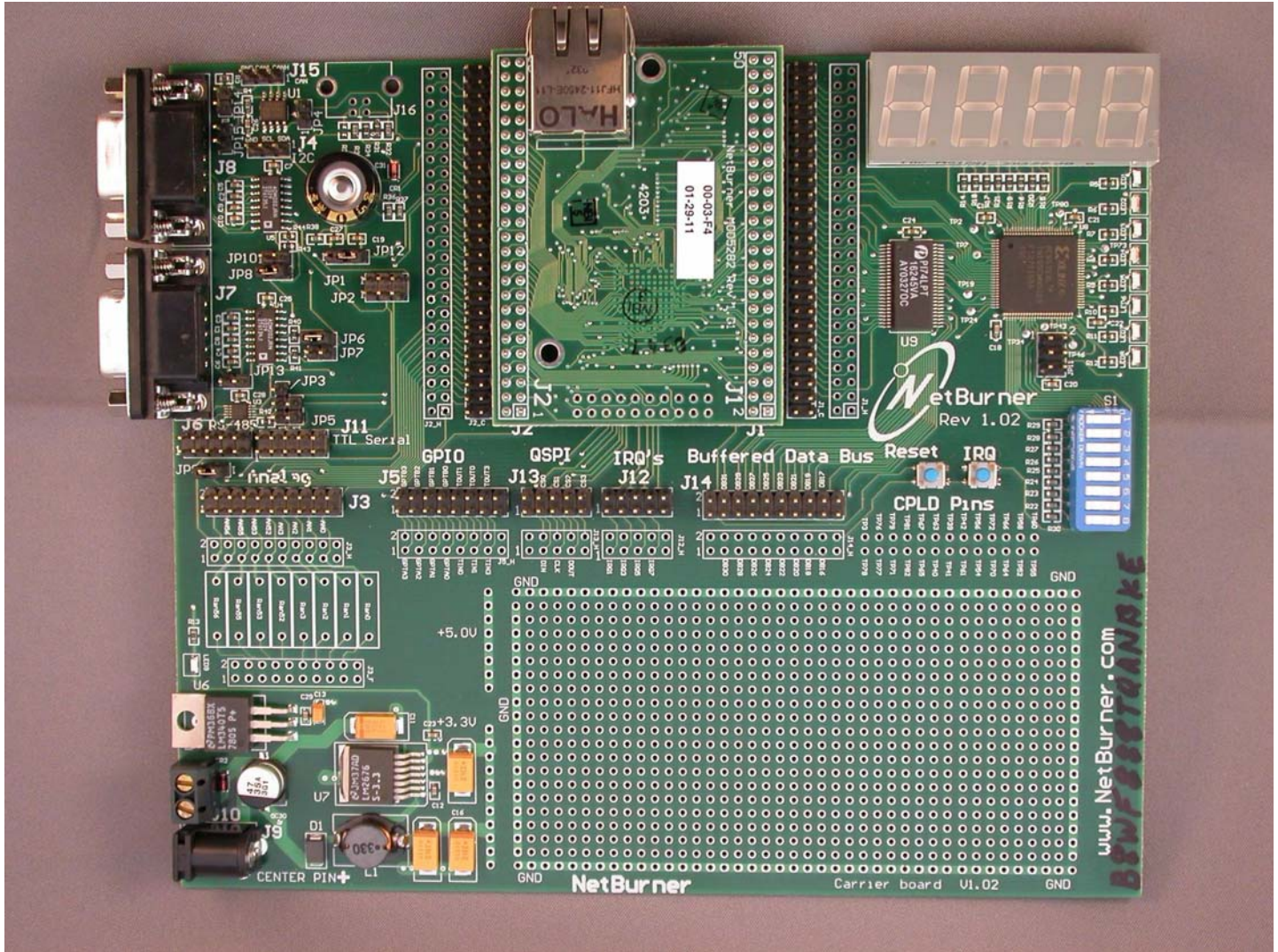# Introduction to
Netburner Network Development Kit (NNDK) MOD5282

Picture of Netburner Development Board:

Connections Required:

1) TTY Serial Cable to connect to Host PC Port 2 (or Port 1)

2) 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

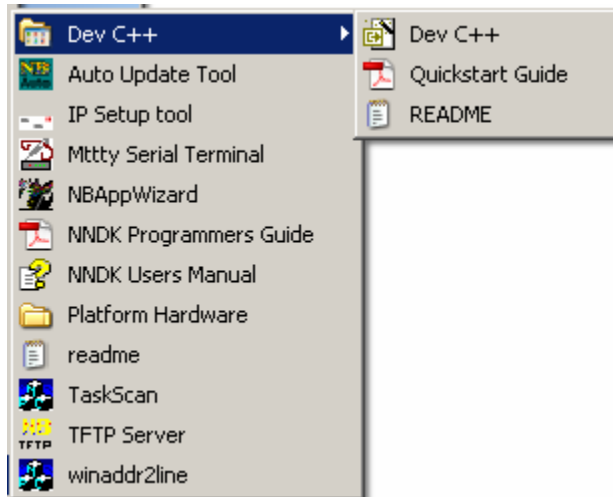# NetBurner MOD5282 Network Development Kit Functionality:

- 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

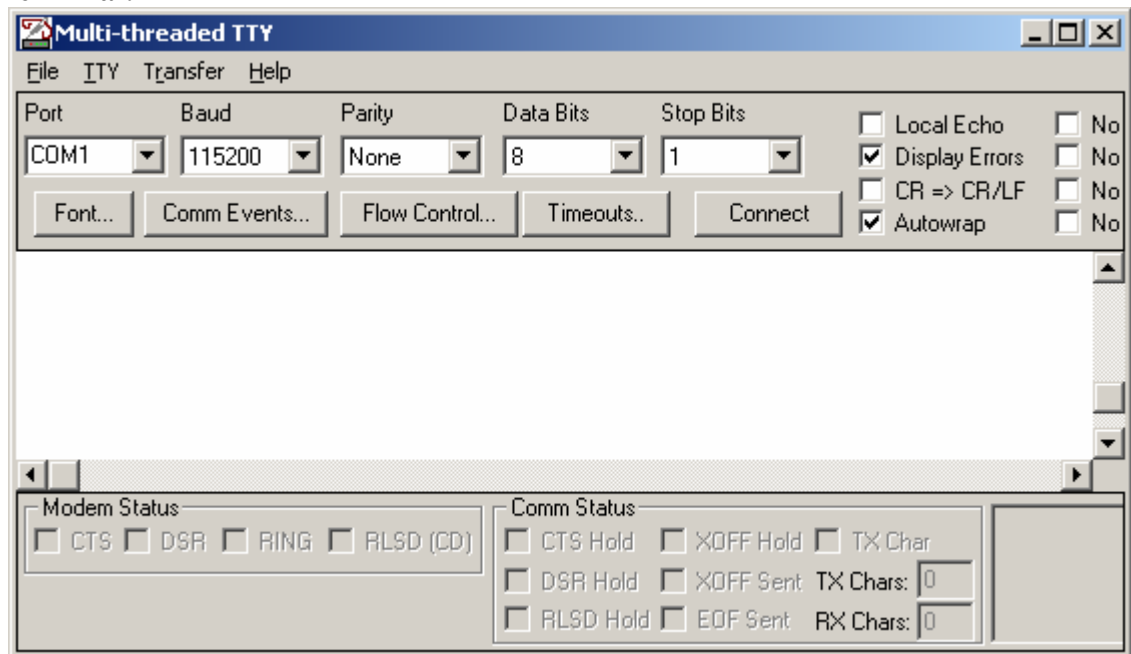## MCF 5282 Integrated ColdFire 32 Bit MicroController

- 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
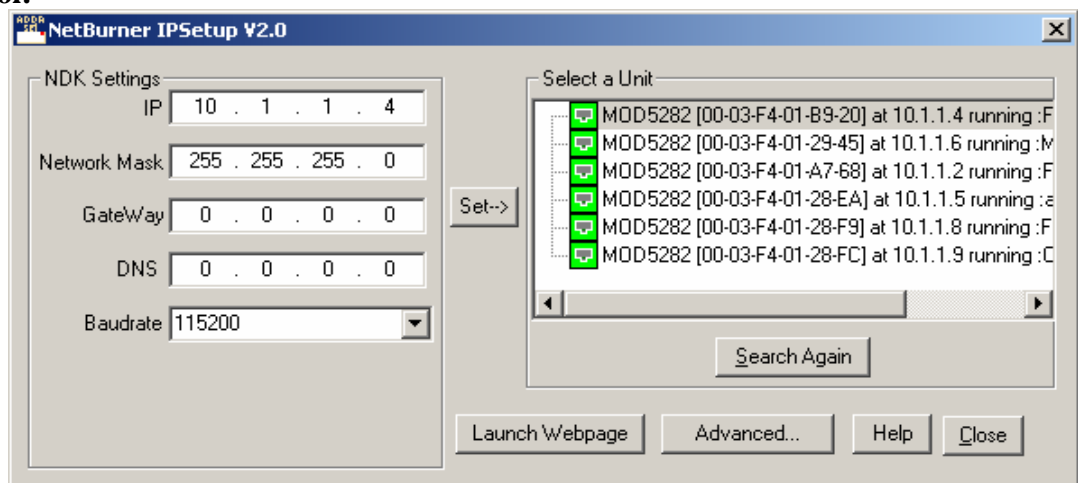
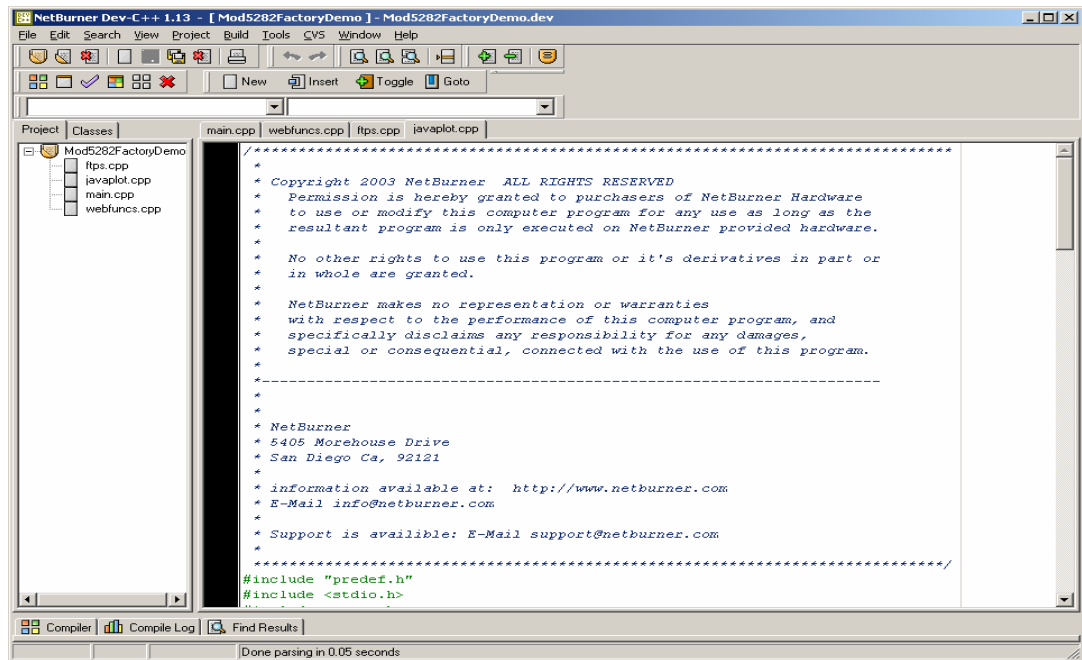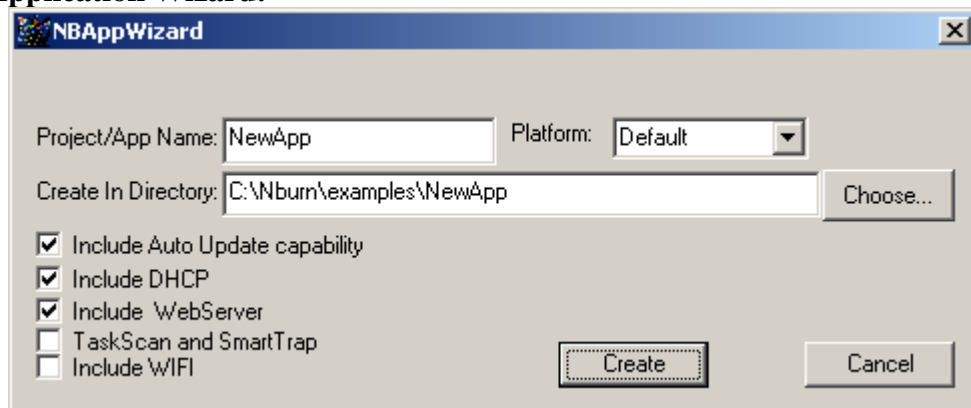# Netburner Tools & Documents

Windows Startup List : Netburner NNDK:

Dev C++ ▶	Dev C++
Auto Update Tool	Quickstart Guide
IP Setup tool	README
Mttty Serial Terminal	
NBAppWizard	
NNDK Programmers Guide	
NNDK Users Manual	
Platform Hardware	
readme	
TaskScan	
TFTP Server	
winaddr2line	

Mtty Serial Terminal:

Multi-threaded TTY

File   TTY   Transfer   Help

Port	Baud	Parity	Data Bits	Stop Bits	
COM1	115200	None	8	1	☐ Local Echo ☐ No
					☑ Display Errors ☐ No
Font...	Comm Events...	Flow Control...	Timeouts..	Connect	☐ CR => CR/LF ☐ No
					☑ Autowrap ☐ No

Modem Status
☐ CTS ☐ DSR ☐ RING ☐ RLSD (CD)

Comm Status
☐ CTS Hold ☐ XOFF Hold ☐ TX Char
☐ DSR Hold ☐ XOFF Sent TX Chars: 0
☐ RLSD Hold ☐ EOF Sent RX Chars: 0

IP Setup Tool:

NetBurner IPSetup V2.0

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

Set-->

Select a Unit

MOD5282 [00-03-F4-01-B9-20] 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-A7-68] 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-F9] at 10.1.1.8 running :F
MOD5282 [00-03-F4-01-28-FC] at 10.1.1.9 running :C

Search Again

Launch Webpage   Advanced...   Help   Close
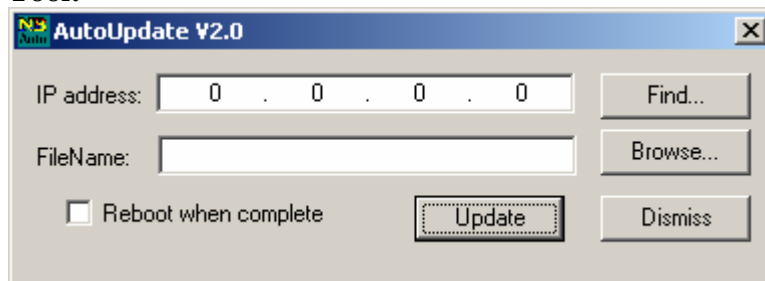
Development Environment:

Netburner Application Wizard:

AutoUpdate Tool:

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" <u>within 2 sec</u> => *"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.
   <u>Don't abort the application.</u>

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.