

EVB9S12NE64 Demo

Quick Start Guide

Introduction and Default Settings

This kit and guide contains everything you need to get started. You will connect the board to your PC, run the pre-programmed Startup Demo, install the correct version of CodeWarrior, and load and play the demo game, called *The Connector: MC9S12NE64 Game*. Source code for both demos and the Serial Monitor are provided on the MC9S12NE64 Resource CD. Figure 1 contains diagrams of the power jack and port, the fuse (FZ1), and all default settings of the EVB9S12NE64 evaluation board. These settings are necessary for the pre-programmed Startup Demo to work properly. Please refer to the EVB9S12NE64 User's Guide on the MC9S12NE64 Resource CD provided for information on other configurations, other ports, etc. Black blocks indicate "on" positions of jumpers or switches. All diagrams in this guide are oriented with the PWR JACK, in the upper left hand corner. All other ports are open (no jumpers). The board comes with the default settings already set. You may check the settings or continue.

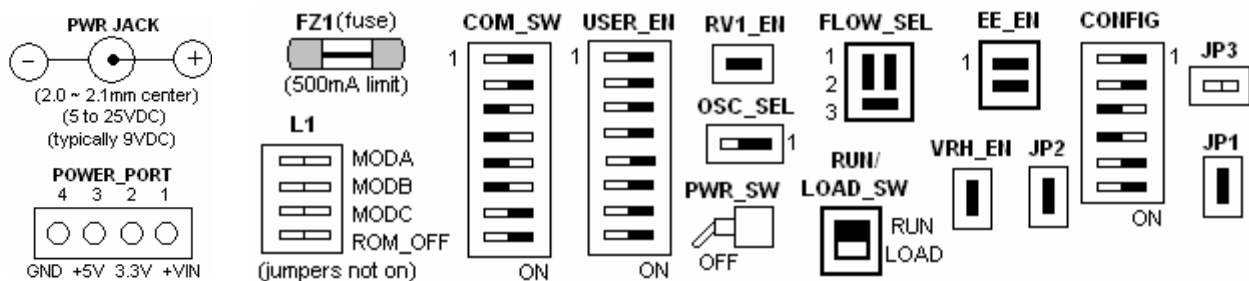


Figure 1. Default Settings for EVB9S12NE64

Connect the EVB9S12NE64 to your computer and apply power

1. Connect one end of the Crossover Ethernet cable provided to the J1 Ethernet Connector of the EVB board. Connect the other end to the Ethernet port of your host PC.
2. Connect the 9-pin serial cable provided to the COM1 port of the EVB board. Connect the other end to a COM port on your host PC.
3. There are two ways to apply power to the EVB: via the power jack or the power port. Refer to the EVB9S12NE64 User's Guide about using the power port. Otherwise, plug the wall plug power supply provided into a power outlet and install the barrel connector into the PWR JACK on the EVB board. If you are not using the original adapter supplied, please refer to the specs in the diagram above for the PWR JACK.
4. Set the EVB board RUN/LOAD switch to the RUN position.
5. Turn the PWR_SW switch ON. The +V, +3.3V, and +5V LEDs should come on. Either LED1 or LED2 (not both) should turn on as well, indicating that you are in Test1 of the Startup Demo.

Run the Startup Demo program

The EVB9S12NE64 is shipped with the Startup Demo already stored in on-chip flash memory as mentioned before. You may view the source code for this demo provided on the supplied MC9S12NE64 Resource CD as zip file, "Startup_Demo.zip." To run through this demo, follow the instructions below:

1. **Test1, Analog Input:** With default settings set and the PWR_SW in the ON position, either LED1 or LED2 should be on. You are in Test1 of the Startup Demo. Turn the RV1 user potentiometer to blink LED1 and LED2 alternately. This test uses the output of the Analog to Digital Converter (ATD) on the MC9S12NE64. By turning the RV1 user potentiometer, you are adjusting the ATD input. Press the button labeled "SW2" to move on to Test2.
2. **Test2, Switch:** Both LED1 and LED2 should light up. Press SW2 to turn off LED2, and let go to turn it back on. Press SW1 to move on to Test3.
3. **Test3, Ethernet/Ping:** Soon after, the board should obtain an Ethernet connection and turn on the LINK LED. You will now need to configure the IP address for the PC. Please follow the directions below.

Set the PC's IP address and the Ping Test

The ping test will verify that the PC is communicating with the EVB board through the Ethernet Crossover cable, provided in the kit, but you must first set the PC's IP address to one that is compatible with the board's IP address. For this demo, you will set the PC's IP address to 192.168.2.1. The board's IP address is currently set at 192.168.2.3. The mask for both should be 255.255.255.0.

1. **Board's IP address:** The board's IP address is already preset to 192.168.2.3 and mask to 255.255.255.0. They can be changed later, by changing the "prot_addr" and "netw_mask" entries respectively, in the address.c source file of the Startup Demo project, Startup_Demo.mcp.
2. **PC's IP Address:** Setting the PC's IP address using Windows XP (similar in other Windows platforms; see [Figure 2](#)):
 - a. On your PC, go to Start -> Settings -> Control Panel -> Network Connections -> Local Area Connection.
 - b. In the "Local Area Connection Status" window, click on "Properties."
 - c. In the "Local Area Connection Properties" window, click on "Internet Protocol (TCP/IP)" to highlight it, and click "Properties", or just double click it.
 - d. In the "Internet Protocol (TCP/IP) Properties" window, select "Use the following IP address" and type in 192.168.2.1 for the IP address and 255.255.255.0 for the subnet mask. Notice the PC's IP address is exactly like the board's IP address but with the fourth number slightly different. Click OK, OK, and Close.
 - e. To later return your LAN setting to normal, repeat steps 2a) -2c), select "Obtain an IP.." and click OK.

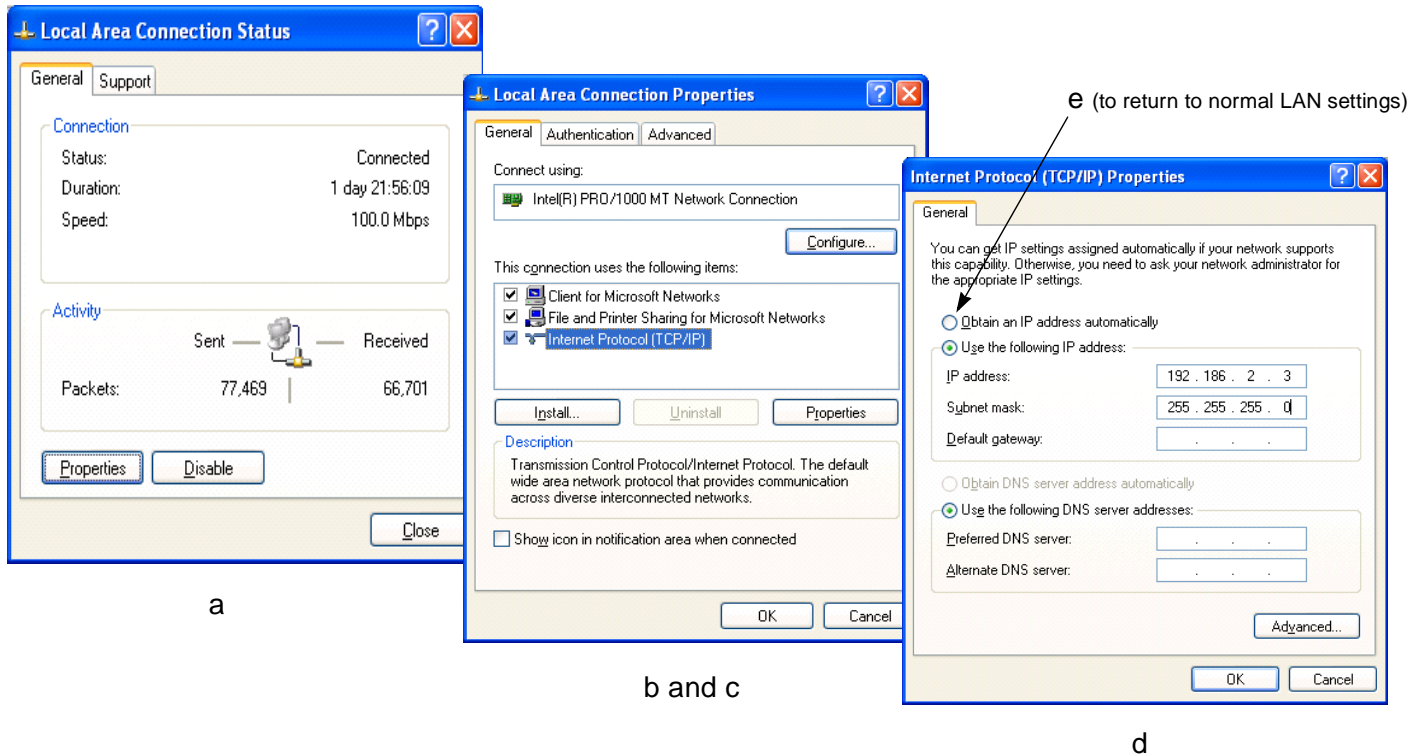


Figure 2. Setting the PC's IP Address

3. Ping Test:

- Open a DOS command window (in Windows by clicking Start -> Run, typing "cmd", and clicking OK).
- In this black window, type "ipconfig" to verify that your PC IP address and mask has changed (i.e., to 192.168.2.1 and 255.255.255.0).
- Now ping the board by typing "ping," followed by the board's IP address and the enter key, i.e., "ping 192.168.2.3" and <enter>. If the PC and board have a connection and are communicating, you will see something like:


```
Pinging 192.168.2.3 with 32 bytes of data:
Reply from 192.168. 2.3: bytes=32 time=1ms TTL=127
Reply from 192.168. 2.3: bytes=32 time=1ms TTL=127 . . .
```
- If communication could not be established, see ["Reasons Why the Ping Test Might Fail."](#)

Install CodeWarrior Development Studio Version 3.1 for HC(S)12

If you do not have Version 3.1 of CodeWarrior for HC(S)12 installed on your computer, please refer to the provided "CodeWarrior Development Studio for Motorola" CD for HC(S)12 Special Edition Version 3.1 and the included CodeWarrior Quick Start. **Important:** You must register and obtain the special edition license key, which will allow you to experience all the features of the CodeWarrior debugger (see install, register, and license key instructions in the CodeWarrior Quick Start). Be sure to select "CodeWarrior Special for HC12 Release 3.1" under "Product Name" in the registration window. To begin a new MC9S12NE64 project in CodeWarrior, please be sure to install the CodeWarrior service pack (CD is included in the kit) that includes all stationery files for the MC9S12NE64.

Use the Serial Monitor to Program *The Connector: MC9S12NE64 Game*

The Serial Monitor is a program already pre-installed into the MCU memory and is used to program the chip using only a serial cable. Its source file is included on the provided MC9S12NE64 Resource CD as zip file, HCS12SerialMon2r1.zip. After installing CodeWarrior v3.1 for HC(S)12, follow the procedure below to load The Connector software into the DEMO board using the Serial Monitor. **Note:** If you later need to re-program the Serial Monitor, you will need a BDM interface cable to program the Flash on the MCU. The BDM interface cable is not provided in this kit.

1. In the MC9S12NE64 Resource CD, copy and open the "Connector_App.zip" file to your PC, and extract the files into a working folder. **Note:** Be sure to extract, and not just copy, the files. **Note:** The Connector_App folder contains three folders: Connector_App Project, Docs, and OpenTCP. The Connector_App project uses files in the OpenTCP folder. So, unless you understand how the project links to its files, please do not move any of the folders or files in the Connector_App folder.
2. If you have not already done so, do step 2 of "[Connect the EVB9S12NE64 to your computer and apply power](#)" (connect serial cable). If you are using a different PC COM port, you will need to adjust the settings within the CodeWarrior IDE.
3. In the working folder, go to Connector_App -> Connector App Project and double click on the "Connector_App.mcp" project file. The CodeWarrior IDE will launch.
4. Open the main source file, "Main.c," by double clicking it in the list of Files on the left side.
5. Click on "Make" under Project in the menu bar or hit "F7."
6. This saves, compiles, etc. A list of errors and warnings should appear. There should be no errors. **A trick:** If the errors window does not appear, click on "Remove Object Code" under Project in the menu bar, and repeat step 5.
7. Assure the RUN/LOAD_SW is set to LOAD, and then press and release the RESET button on the EVB board.
8. Click on "Debug" under Project in the menu bar or hit "F5." The True-Time Simulator & Real-Time Debugger should initiate serial communications with the EVB board. As soon as the debugger opens, the code currently in the MC9S12NE64's Flash memory is erased and the newly compiled code is programmed in. The serial monitor code is not erased.
9. If the debugger does not open, refer to "[Reasons Why the Debugger Won't Open](#)" of this guide.
10. Once the "Connector" software has been programmed and no error messages appear, you are ready to run and debug in real time. Move the RUN/LOAD_SW switch to RUN, and click on the green arrow (Start/ Continue button) in the Debugger window to begin running/ debugging code. The LINK LED should light up.
11. Conduct another ping test (refer to "[Set the PC's IP address and the Ping Test](#)"). The board's IP address in the "Connector" demo game is set to 192.168.2.3 and the mask is 255.255.255.0.

The serial monitor can be used for much more than just programming new code. Many debug operations (memory modify, breakpoints, real-time bug traces, etc.) can also be run over the serial cable while in this mode. Refer to application note AN2548 for more information on the serial monitor.

Running *The Connector: MC9S12NE64 Game*

This completes the quick start for your EVB9S12NE64! Now that you have compiled and loaded the “Connector” game into the Flash memory of the MC9S12NE64 using the Serial Monitor, you are ready to play the game. The switches and analog input serve as controls. Click on “The_Connector_MC9S12NE64.exe” on the MC9S12NE64 Resource CD, and enjoy!

Note: To play the game without the CodeWarrior debugger, simply press and release the RESET button with the RUN/LOAD_SW switch set to RUN.

Troubleshooting

Reasons Why the Debugger Won't Open

- If a series of error notifications appear, the debugger may have launched when the board is not powered. Cancel these messages, close the debugger window, and power up the board before opening the debugger again.
- You may not have installed the special edition license key for this version (3.1) of CodeWarrior (see the CodeWarrior Quick Start Guide included with the CodeWarrior CD provided).
- If the debugger could not establish a connection, press the RESET button on the EVB board, and retry.
- The COM port on the PC may be in use by another application. If so, disconnect that application or connection.
- RUN/LOAD_SW may not be in the correct position (LOAD to Flash memory and RUN to run program). Please check your steps.

Reasons Why the Ping Test Might Fail

- Ethernet cable may not be secure.
- IP addresses or masks may not be set correctly. The mask is typically 255.255.255.0. To check the board's and the PC's IP addresses, you must install and open CodeWarrior and do the steps in [“Set the PC's IP address and the Ping Test.”](#)
- You may not have waited long enough for the PC to regain its IP settings. This shouldn't take more than a minute and takes typically 1-20 seconds.

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