



# **ML505/506/507 Overview and Setup**

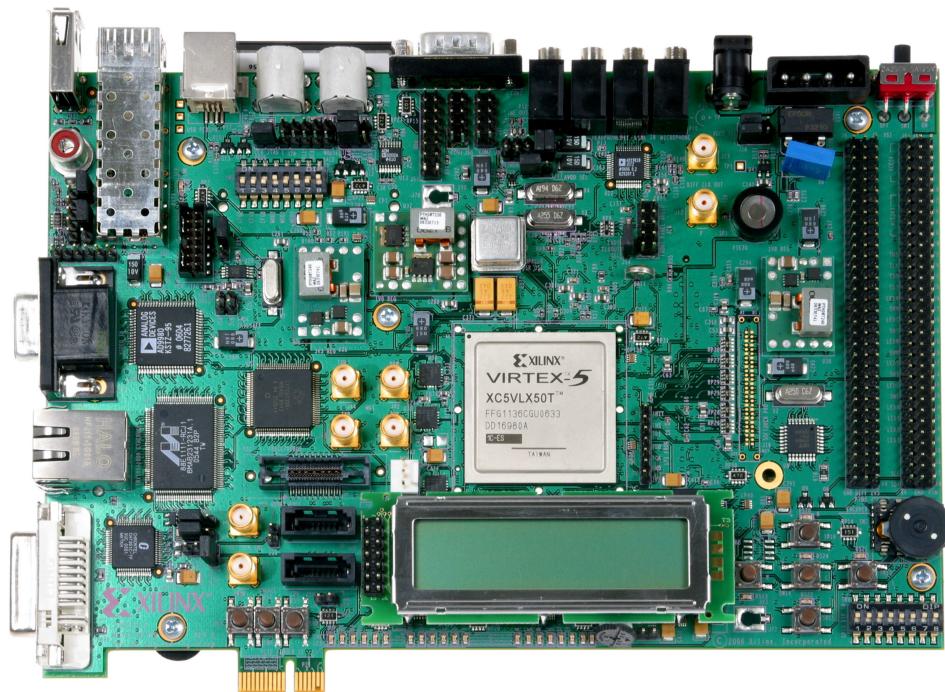
**Overview of the Hardware Designs and Software Applications**

**How to set up the equipment, software, CompactFlash, network, and terminal programs**

**May 2010**

# ML505 Overview

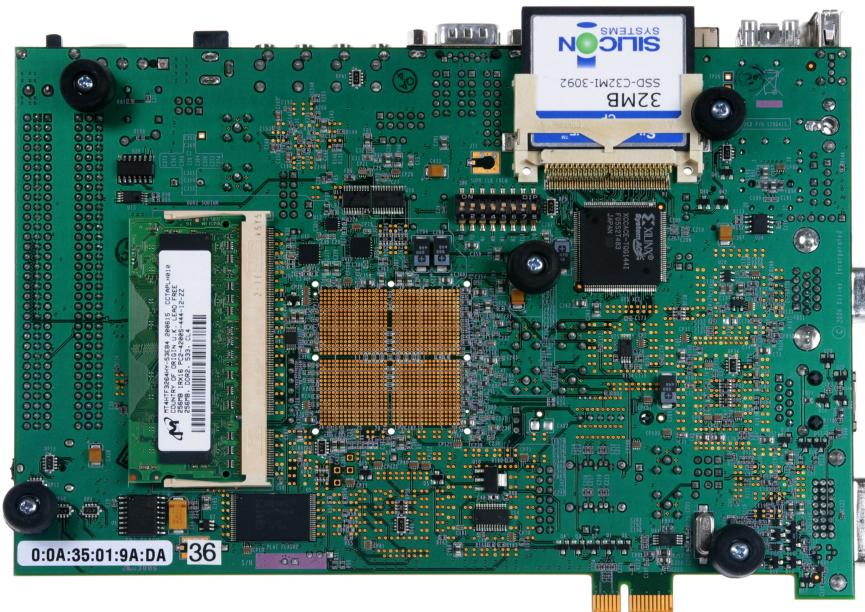
- **ML505 Overview**
- **Equipment Overview**
- **Equipment Setup**
- **Software Setup**
- **CompactFlash Setup**
- **Network Setup**
- **Appendix**



**Note:** This Presentation applies to the ML505, ML506, and ML507

# ML505 Overview

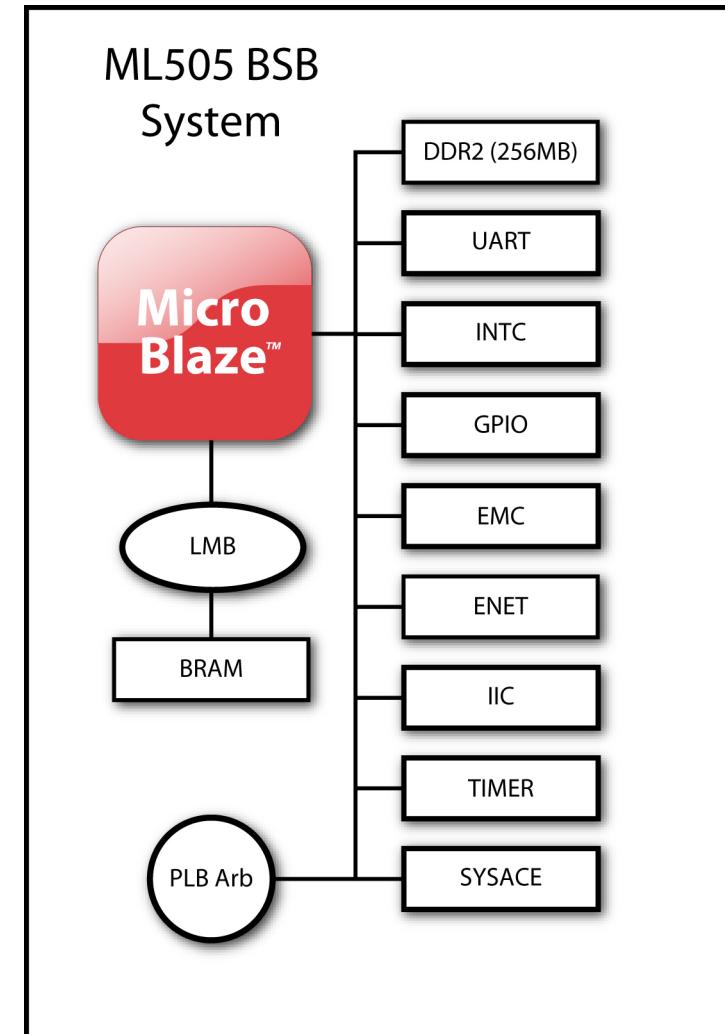
- The ML505 embedded development platform provides several reference designs and a versatile hardware platform for rapid prototyping and system verification
- Hardware Designs
  - ml505\_bsb\_design
  - ml505\_bsb\_std\_ip
  - ml505\_std\_ip\_pcores
- Software Applications
  - Standalone non-OS applications



# ML505 BSB Hardware

- **The ML505 MicroBlaze design hardware includes:**

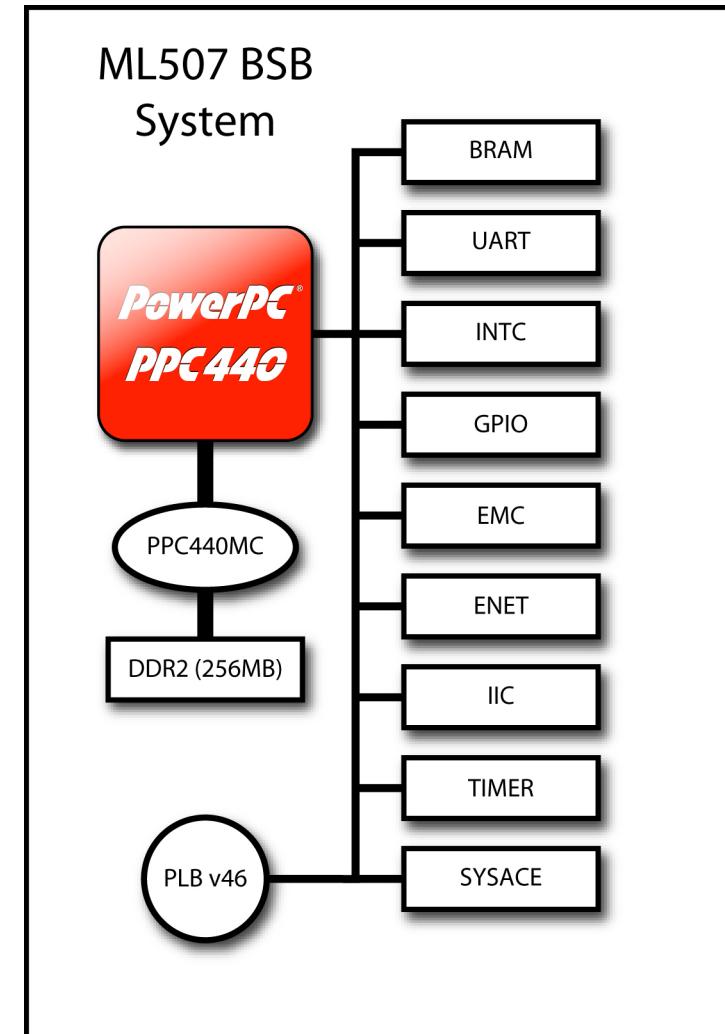
- DDR2 Interface (256 MB)
- BRAM
- External Memory Controller (EMC)
  - ZBT SRAM
- Networking
- UART
- Interrupt Controller
- System ACE CF Interface
- GPIO (IIC, LEDs and LCD)
- PLB Arbiter



# ML507 BSB Hardware

- **The ML507 PPC440 design hardware includes:**

- PPC440MC DDR2 Interface
- External Memory Controller (EMC)
  - ZBT SRAM
- BRAM
- Networking
- UART
- Interrupt Controller
- System ACE CF Interface
- GPIO (IIC, LEDs and LCD)
- PLB Arbiter



# Also Available From Xilinx

- These items are not included with the ML505, but are available for purchase from Xilinx:
  - Xilinx IDS (ISE Design Suite)
    - Includes ISE and XPS
  - Platform Cable USB
- These items are required to run the ML505 presentations



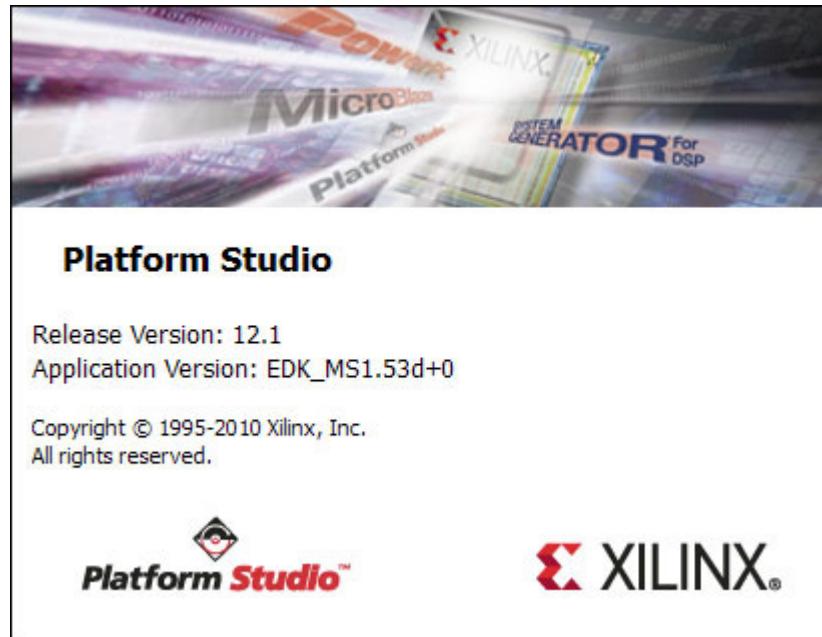
# ISE Software Requirements

- Xilinx ISE 12.1 software



# EDK Software Requirement

- Xilinx EDK 12.1 software



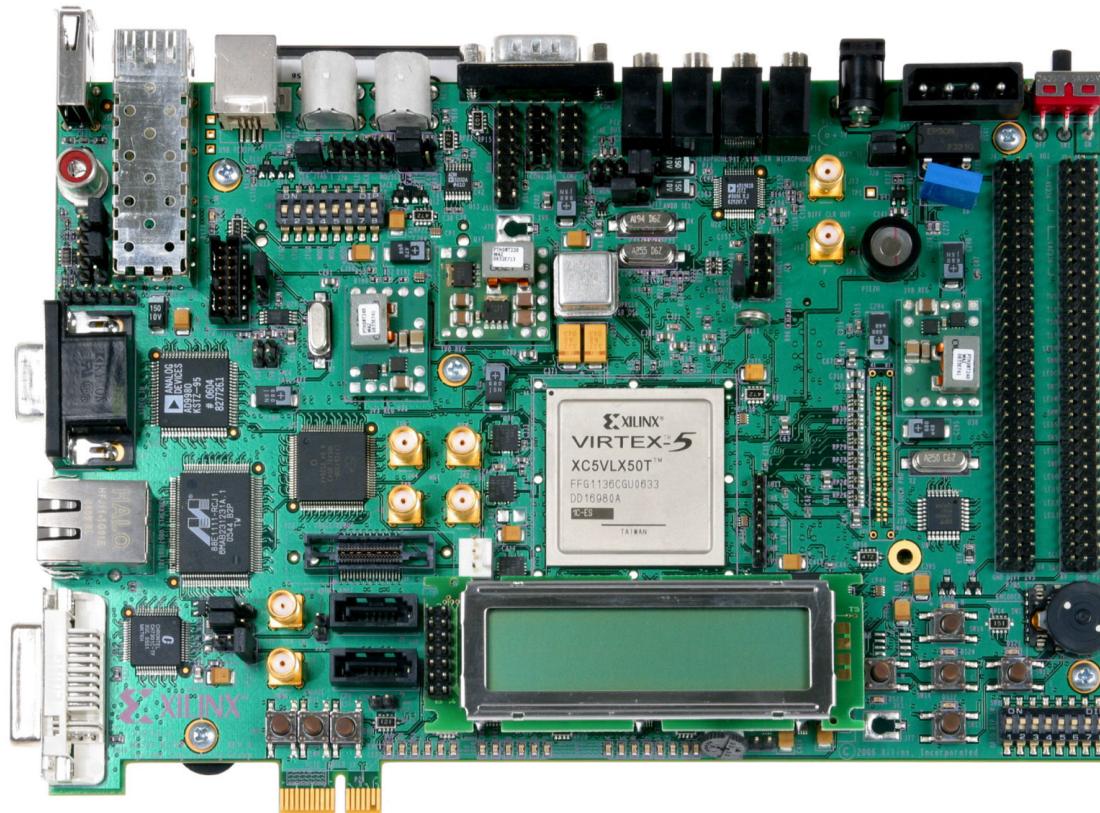
# ChipScope Pro Software Requirement

- Xilinx ChipScope Pro 12.1 software



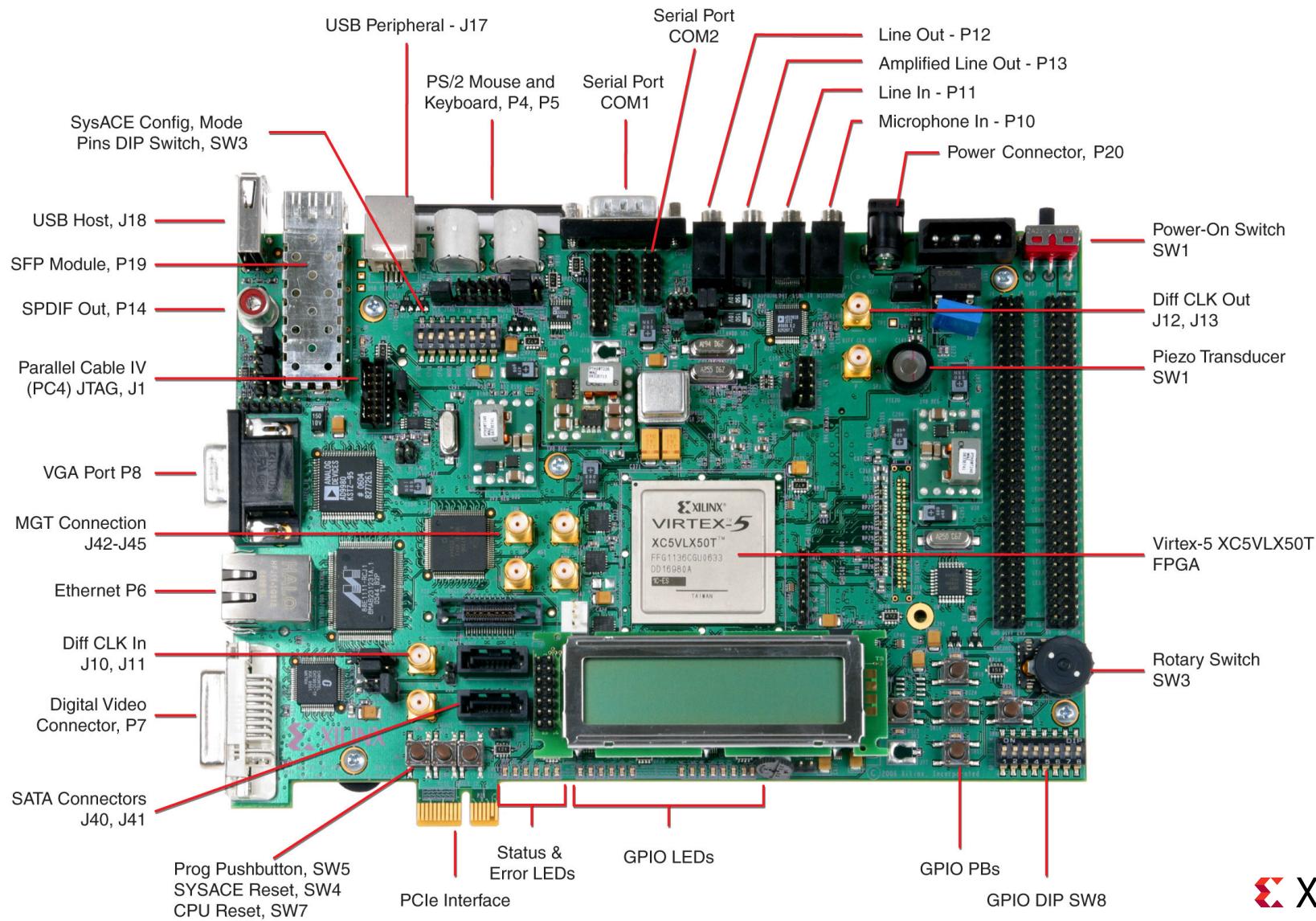
# ML505 Board

- Features the Xilinx Virtex™-5 XC5VLX50T FPGA



Note: Presentation applies to the ML505, ML506, and ML507

# ML505 Board



# Equipment Overview

- **SiliconDrive™ 128 MB CompactFlash™**
  - Comes preloaded with hardware and software demonstration systems for ML505



# Equipment Overview

- **DVI monitor**

*or*

- **DVI to VGA adapter**

- To connect from the ML505 DVI port to a standard VGA monitor
- <http://www.belkin.com>



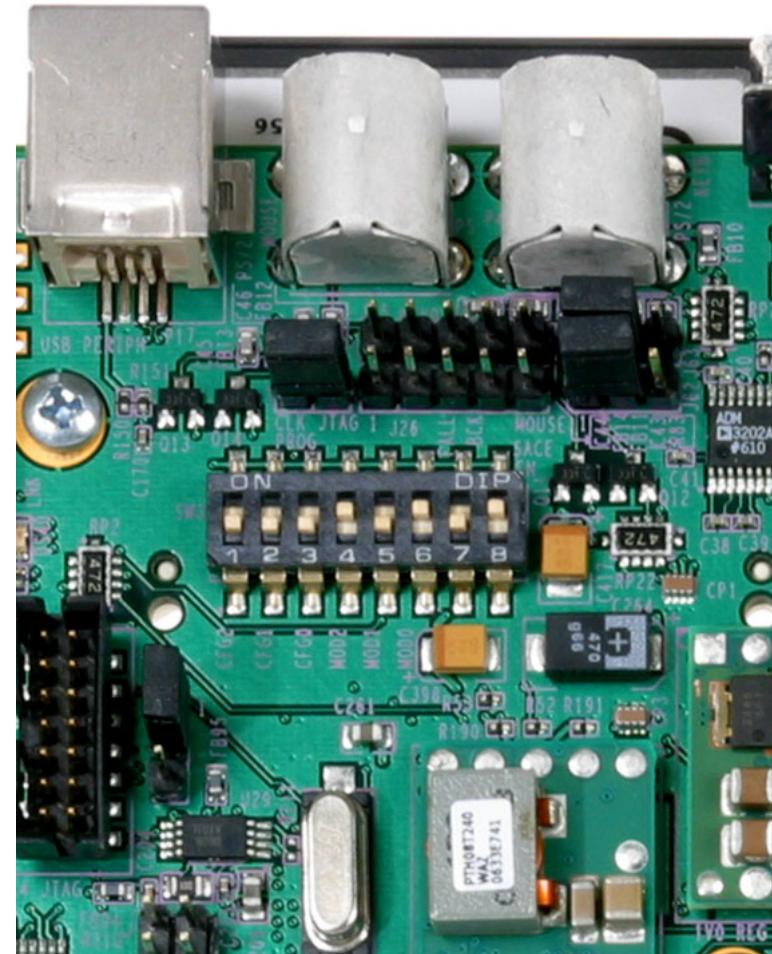
- **Pancake Fan (optional)**

- Recommended for cooling the Virtex-5 device on the ML505 board



# Equipment Setup

- Set Front DIP Switches  
to 00010101 (1 = ON)



Note: Presentation applies to the ML505, ML506, and ML507

# Equipment Setup

- Set Rear DIP switches to 11001010 (1 = ON)

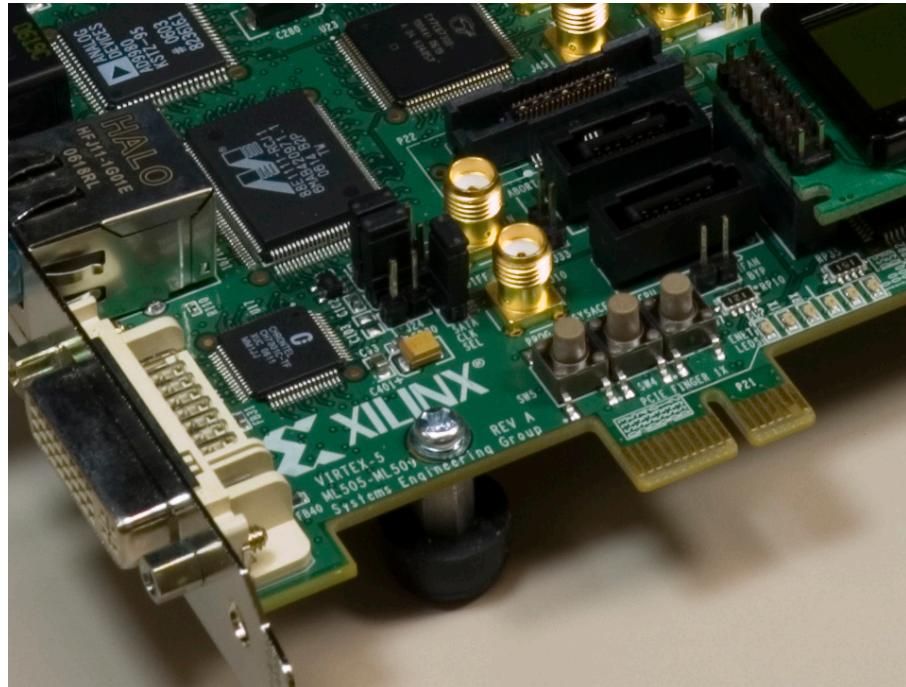


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# Equipment Setup

- **Set the Ethernet PHY jumper settings**

- For GMII/MII (factory default), set J22, J23 to positions 1-2 (as shown)
- For SGMII, set both J22 and J23 to positions 2-3
- Refer to the ML505/506/507 User Guide – UG347 for details



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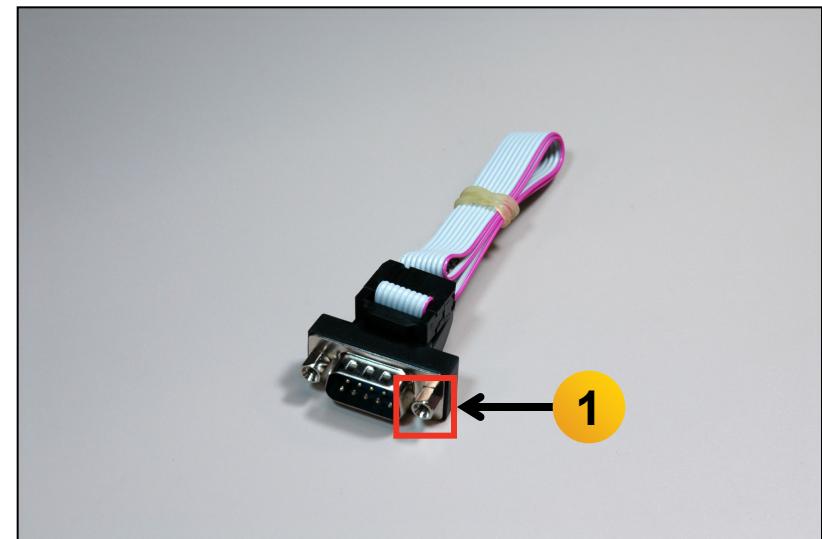
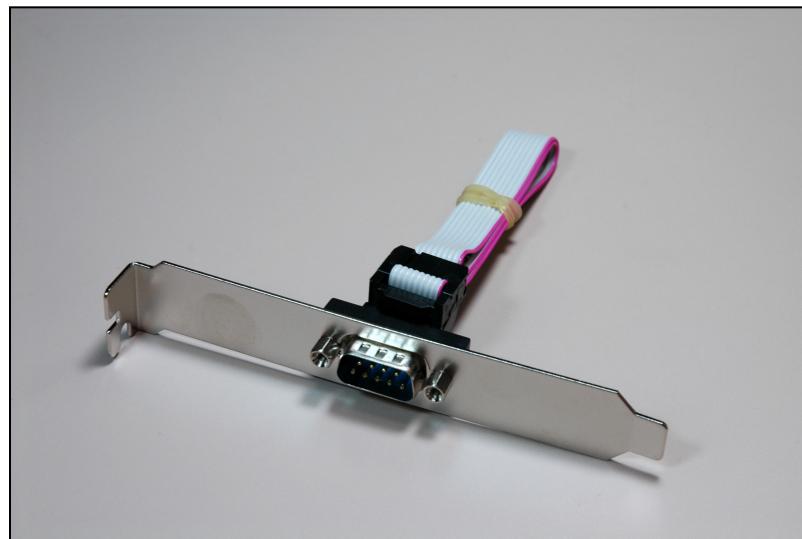
# Equipment Setup

- **Optional: Second serial port connection**
  - Connecting the serial cable to the ML505 COM2 port requires an additional serial cable and standoff:
- **Standoff**
  - Samtec part Number: SSQ-105-02-G-D,  
available from Digikey:
  - <http://www.digikey.com>



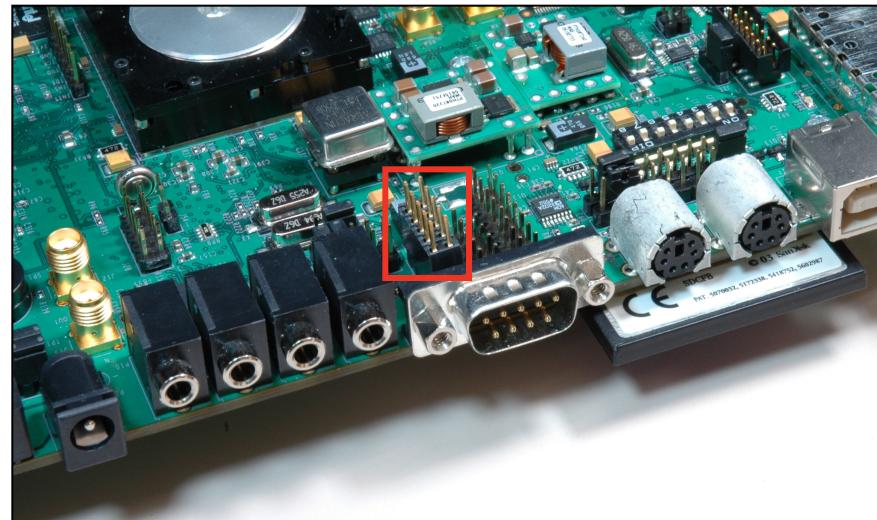
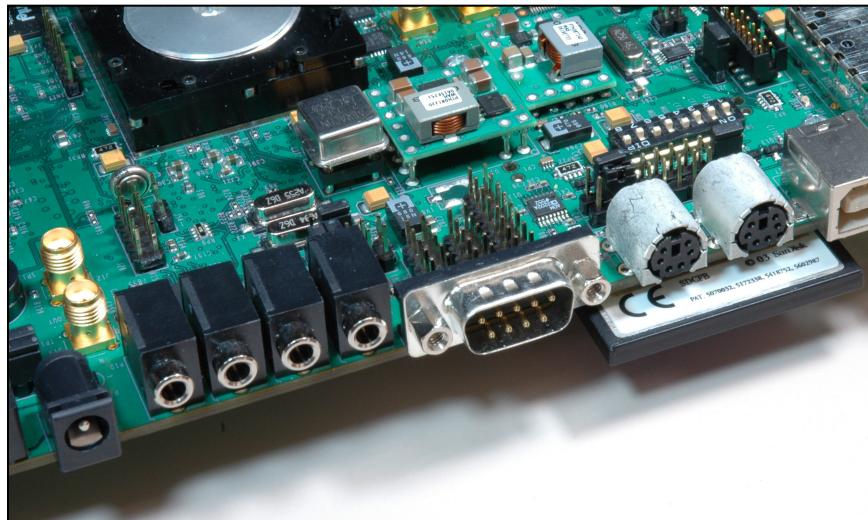
# Equipment Setup

- **Serial cable**
  - DB9M TO IDC10 SERIAL (AT-EVEREX-INTEL Version) PORT
  - <http://www.pccables.com>
- **Remove the bracket and reinstall the screws to keep the connector together (1)**



# Equipment Setup

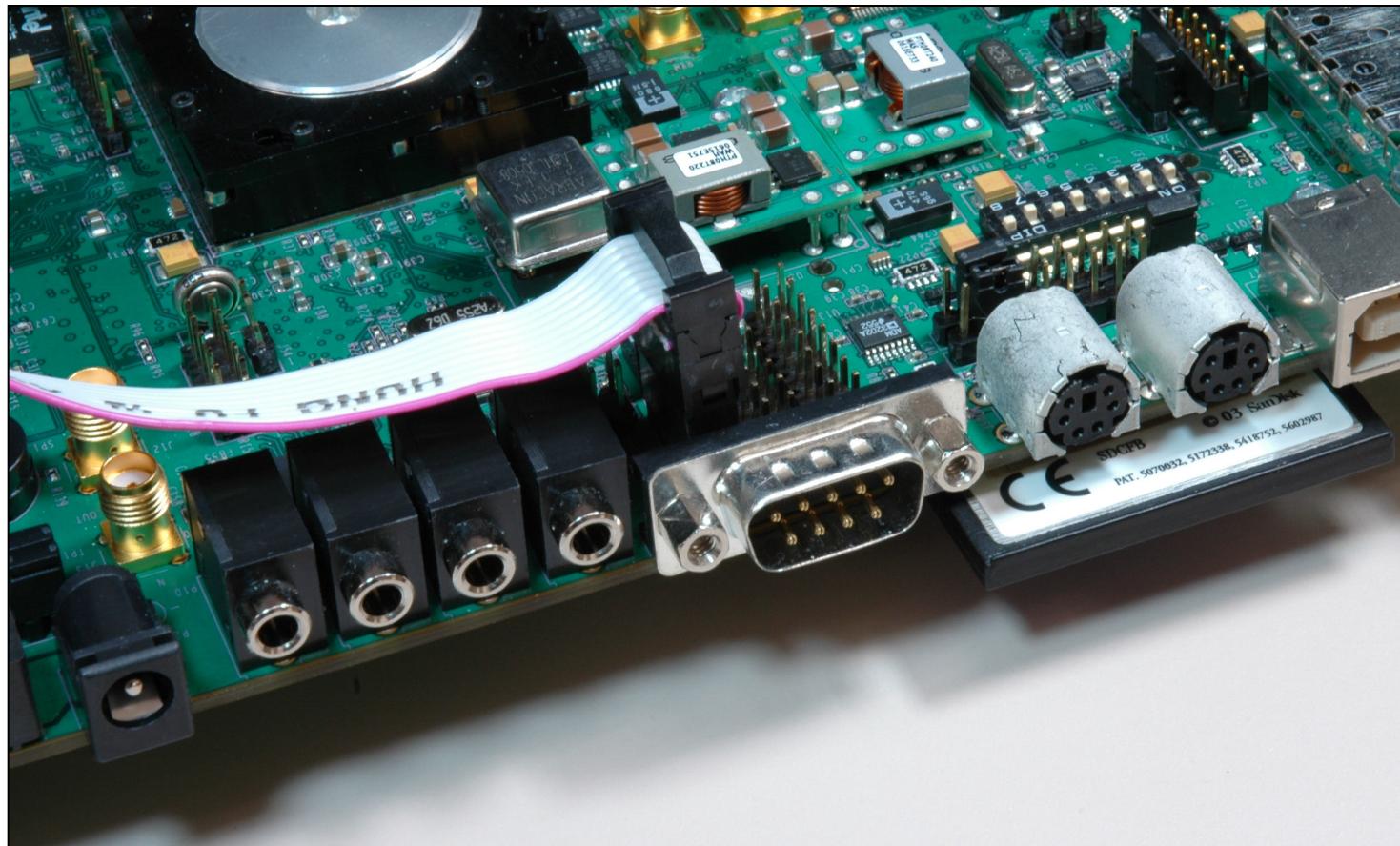
- Push the header onto the COM2 pins as seen here



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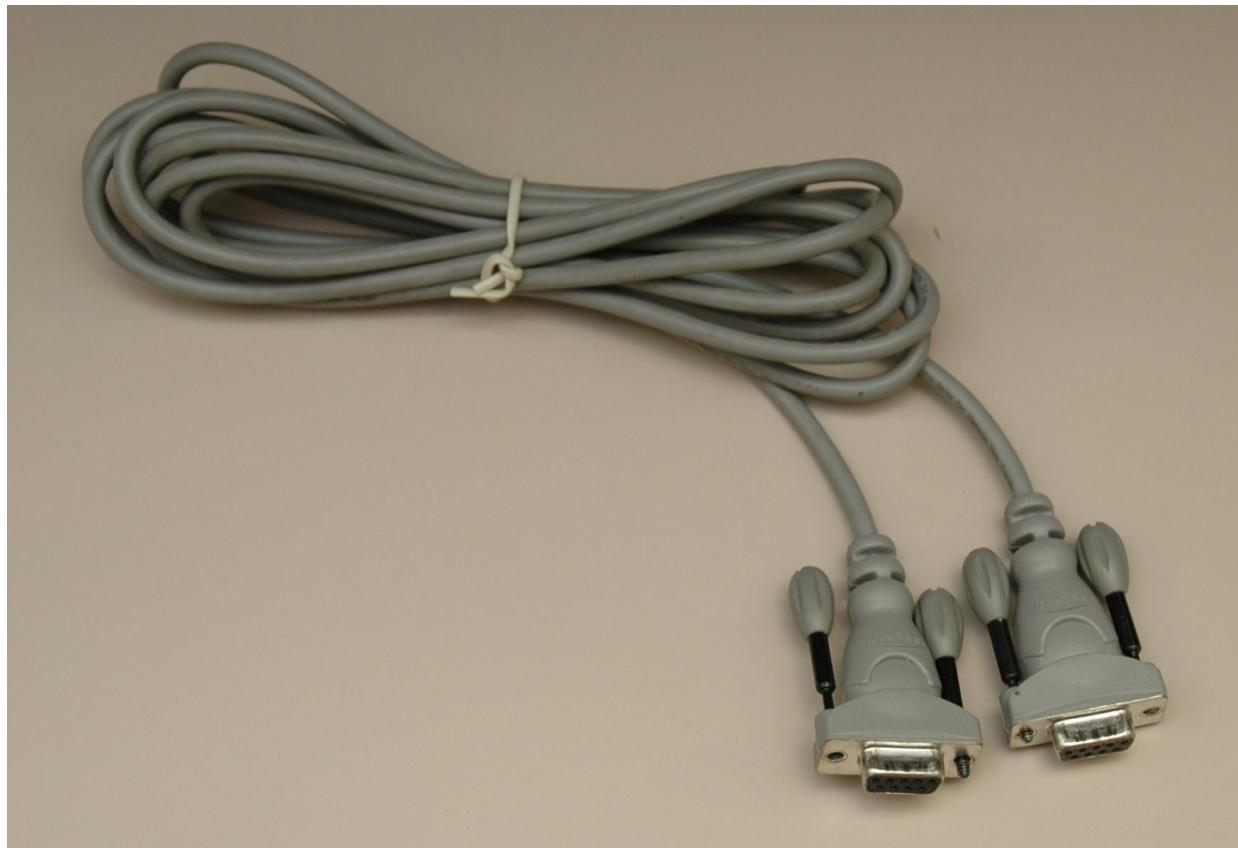
# Equipment Setup

- **Attach the DB9M to IDC10 serial cable to the header**
  - The red stripe should be closest to the edge of the board



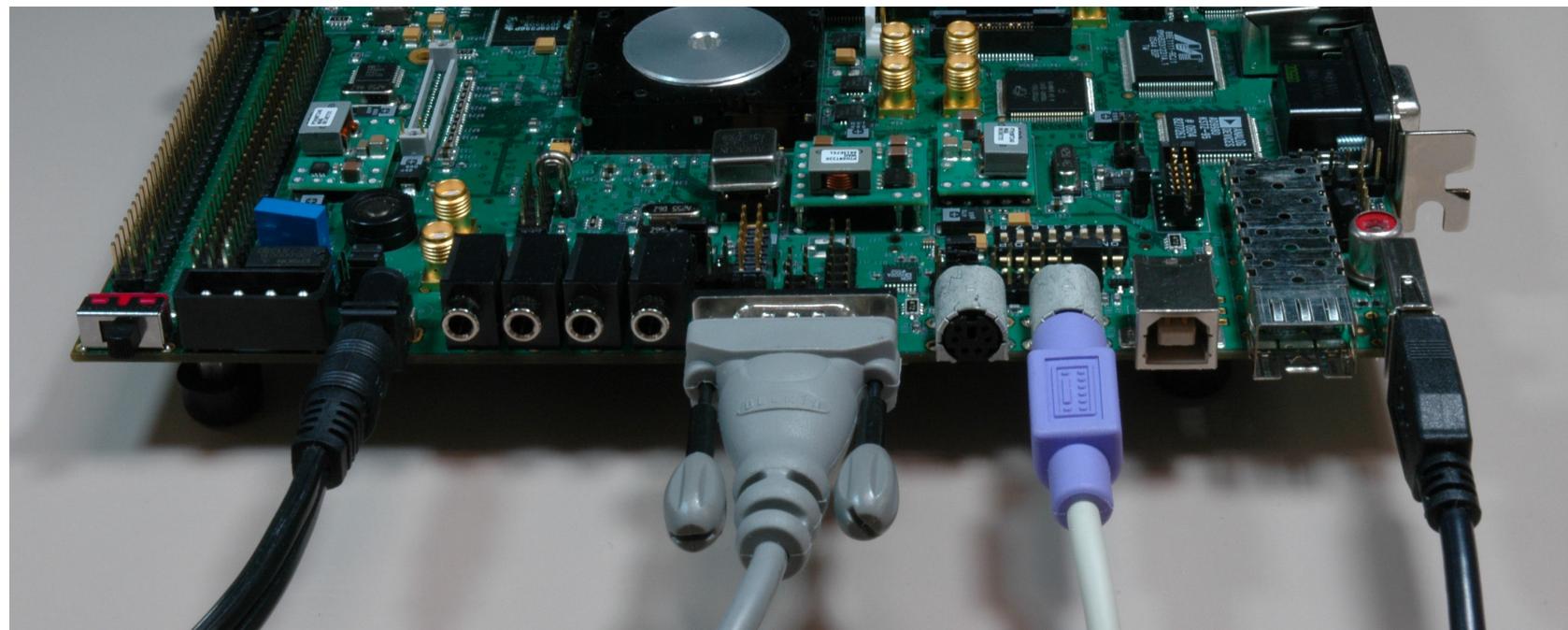
# Equipment Setup

- **User supplied – null modem serial cable**



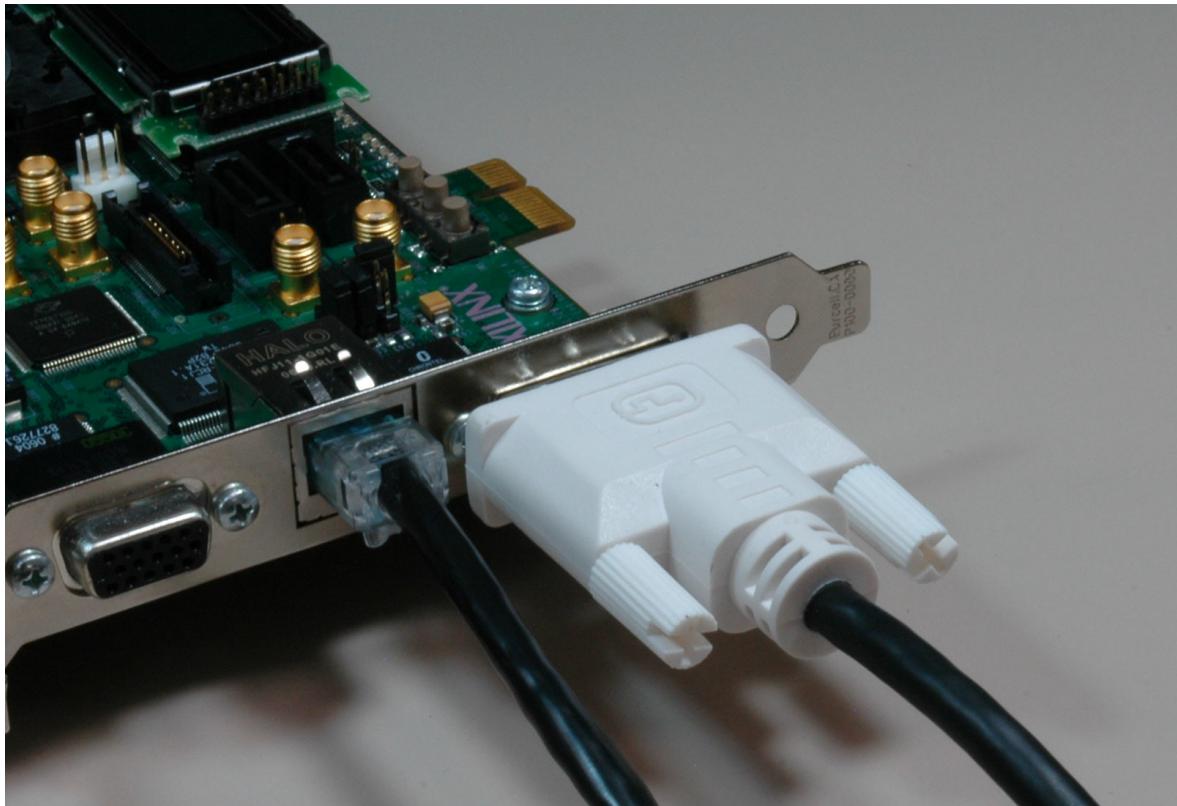
# Equipment Setup

- **Connect power, serial cable, PS2 Keyboard and a USB Keyboard to the ML505**



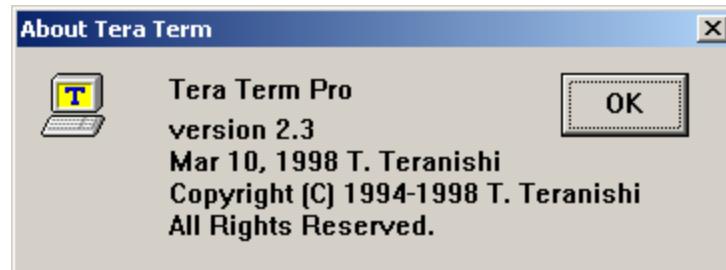
# Equipment Setup

- **Connect Ethernet and DVI to ML505**
  - Use DVI adapter if using VGA monitor



# Software Setup

- **Install a terminal program, such as Tera Term Pro**
  - Required to input the commands, and view the results
- **See the appendix for details on terminal programs and setup**



# CompactFlash Setup

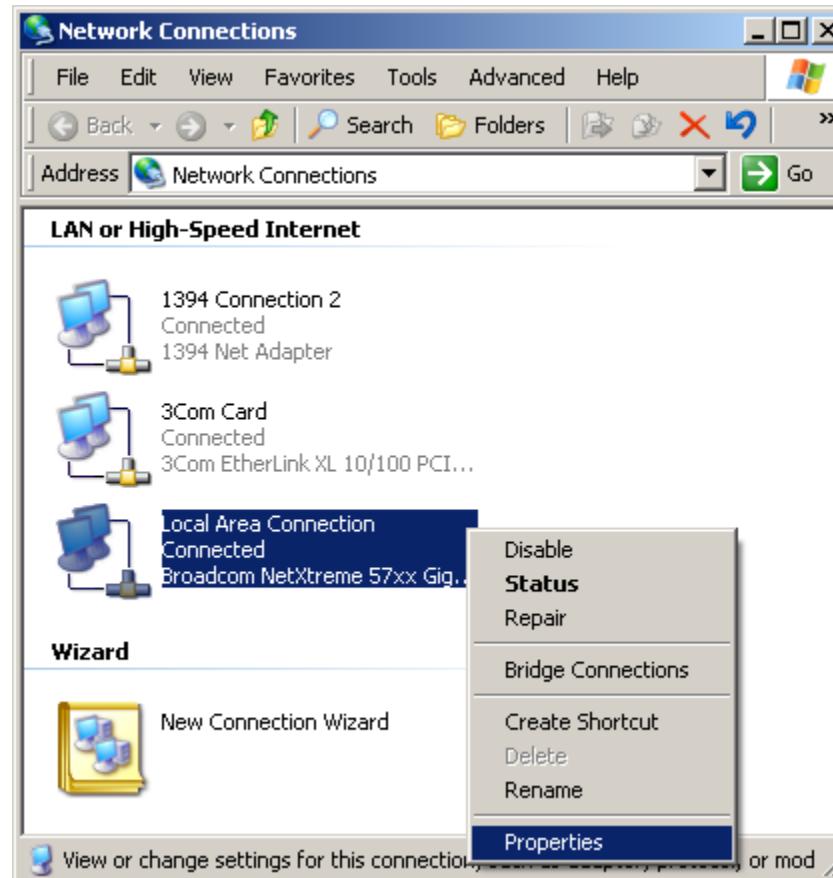
- Insert the CompactFlash provided with the ML505 fully into the CompactFlash slot on the ML505 board



Note: Presentation applies to the ML505, ML506, and ML507

# Network Setup

- From the Windows Control Panel, open Network Connections
- Right-click on the Gigabit Ethernet Adapter and select Properties

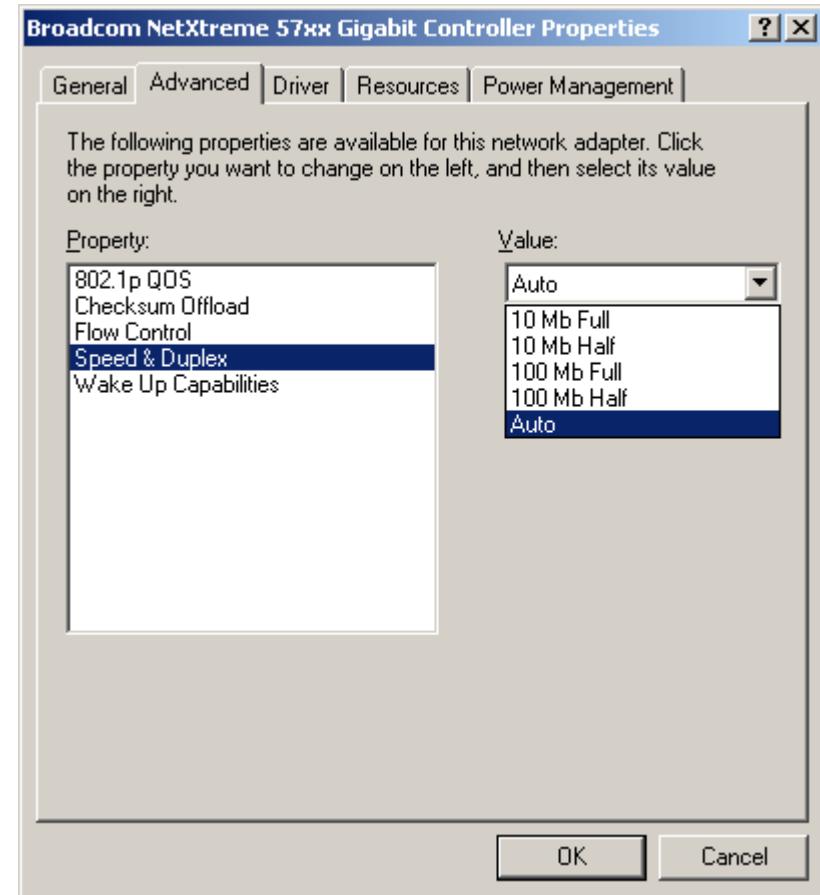
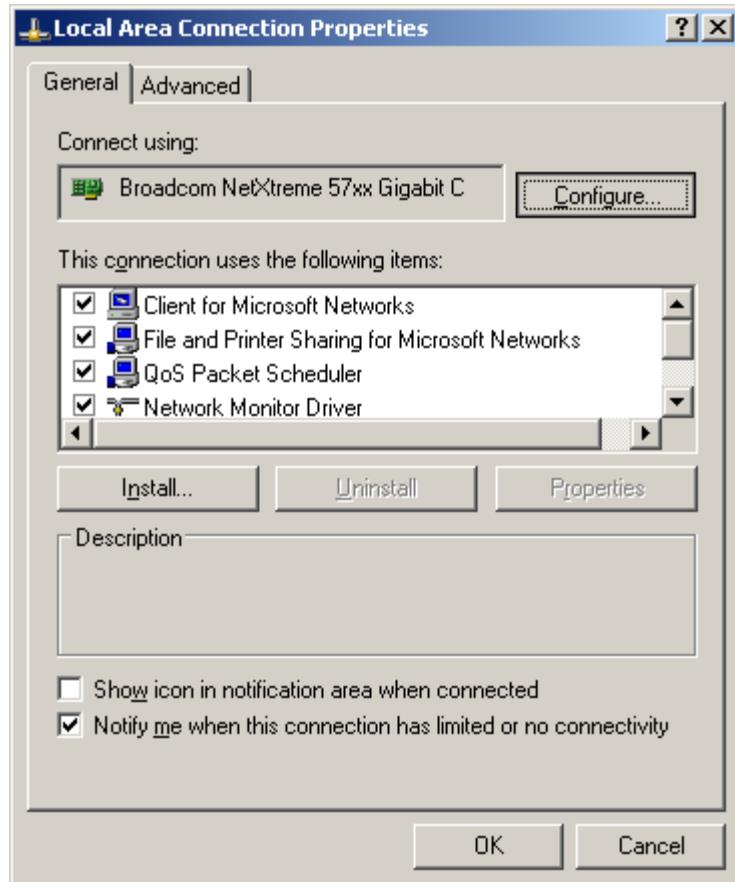


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# Network Setup

## ▪ Click Configure

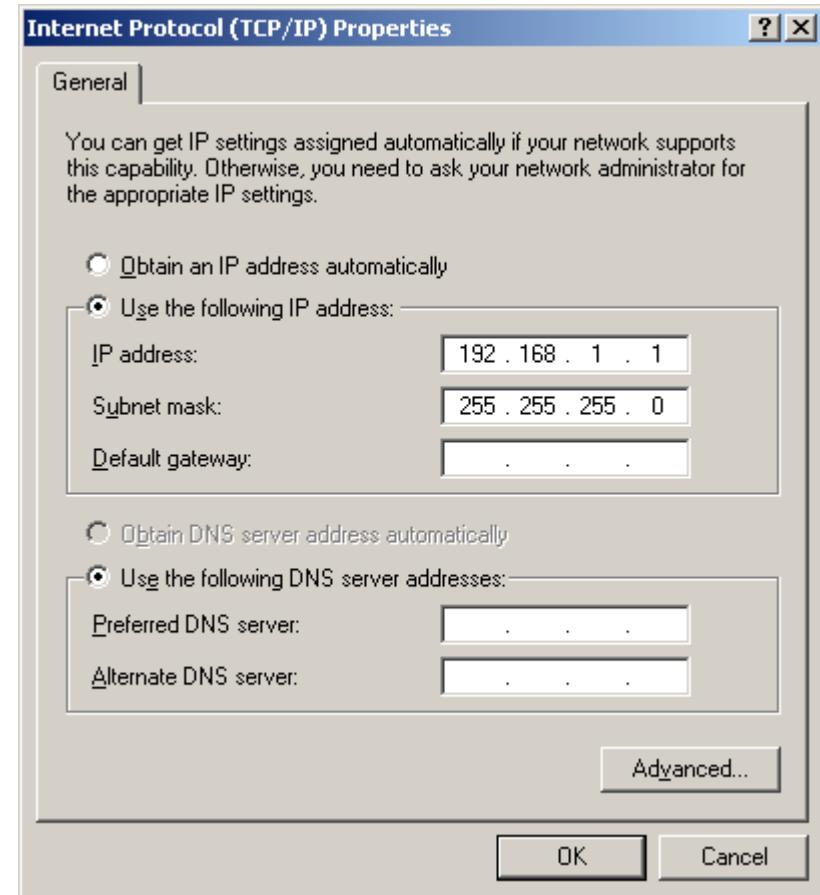
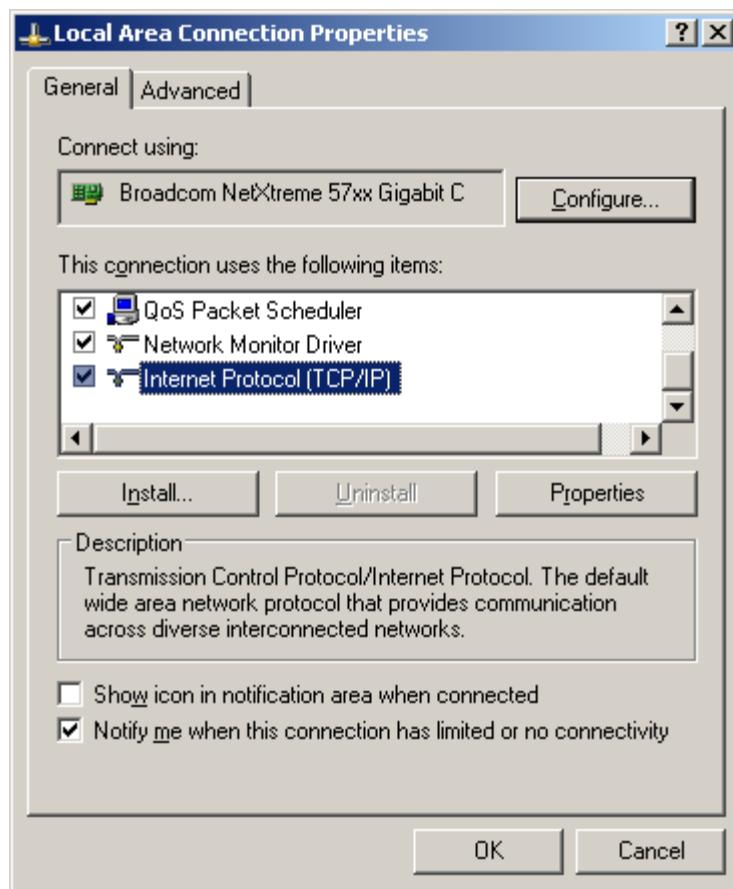
- Set the Media Type to Auto for 1 Gbps then click OK



Note: ML505/506 QuickStart uses 100Mb Full

# Network Setup

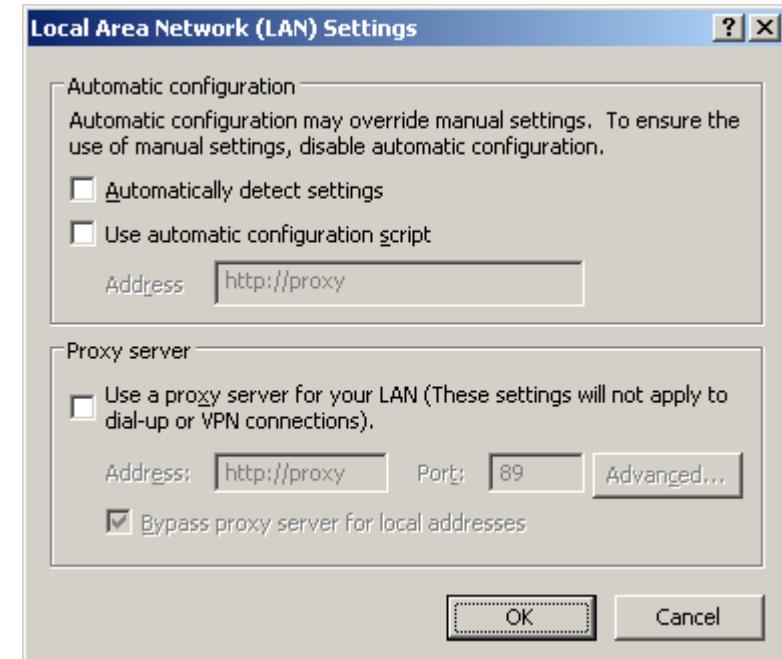
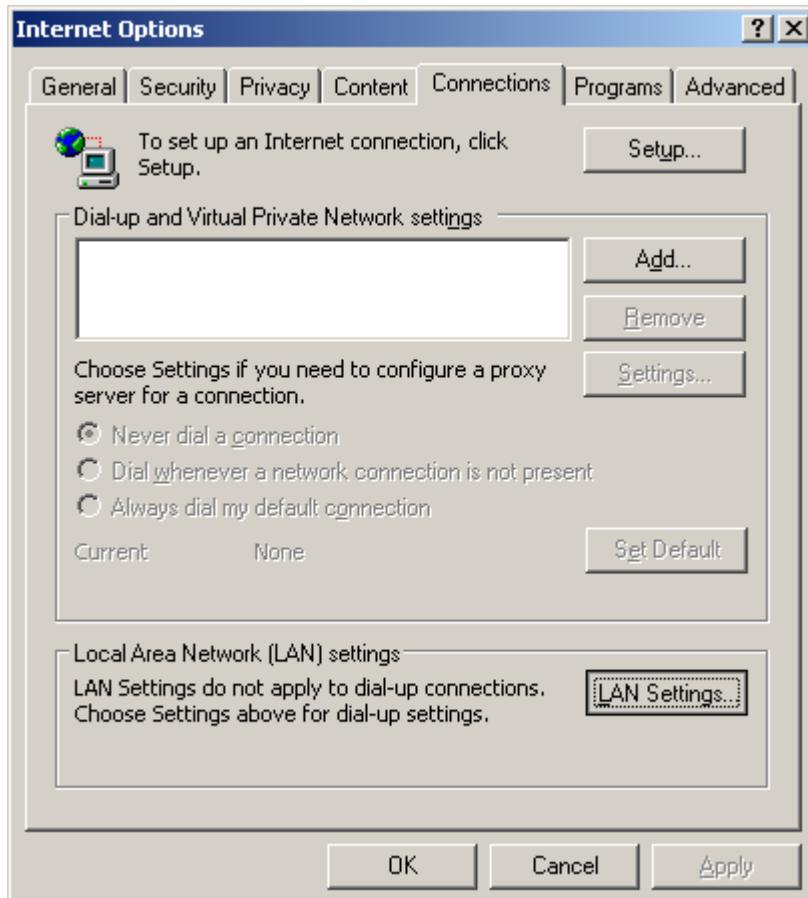
- Reopen the properties after the last step
- Set your host (PC) to this IP Address:



Note: Some presentations use other IP addresses; change as directed

# Browser Setup

- Depending on your local network, the browser used for the LwIP demo may need the proxy disabled (Internet Explorer shown)



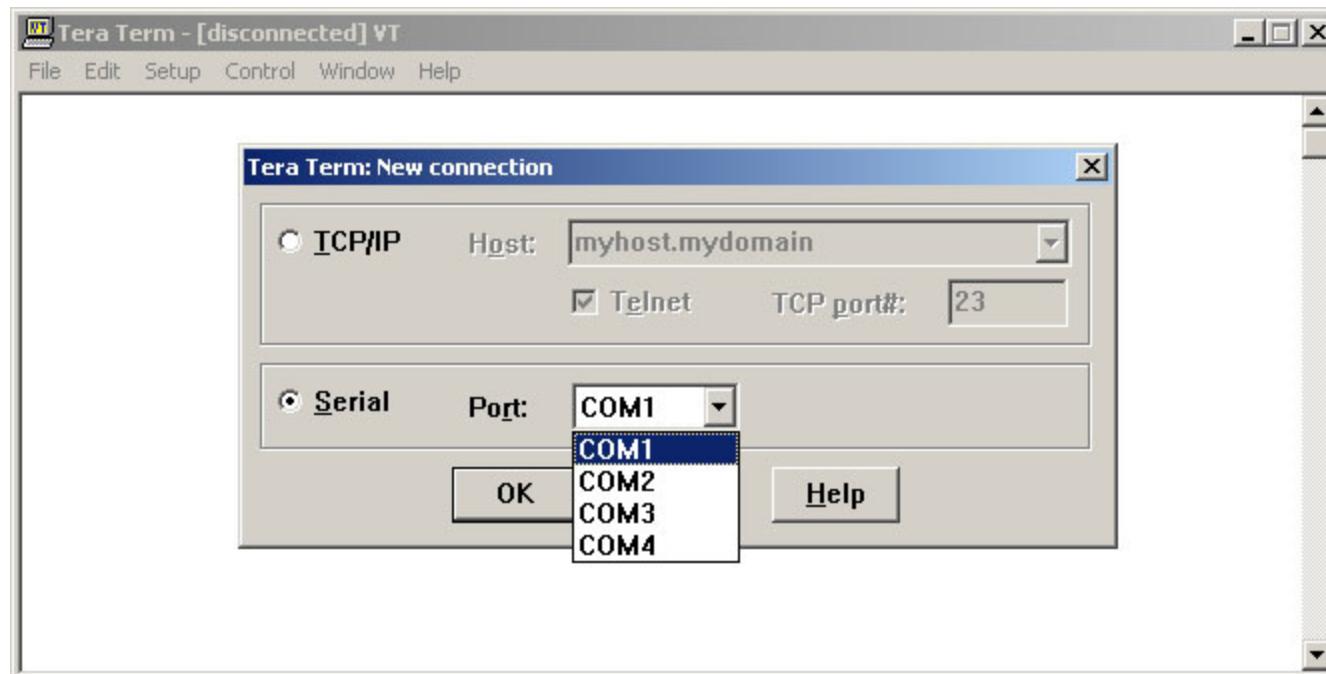
# Appendix

# Terminal Programs

- Terminal programs are used to communicate with the processor
- Terminal programs in this setup use a serial interface
- Free programs are available
  - Tera Term Pro (recommended)
    - <http://hp.vector.co.jp/authors/VA002416/teraterm.html>

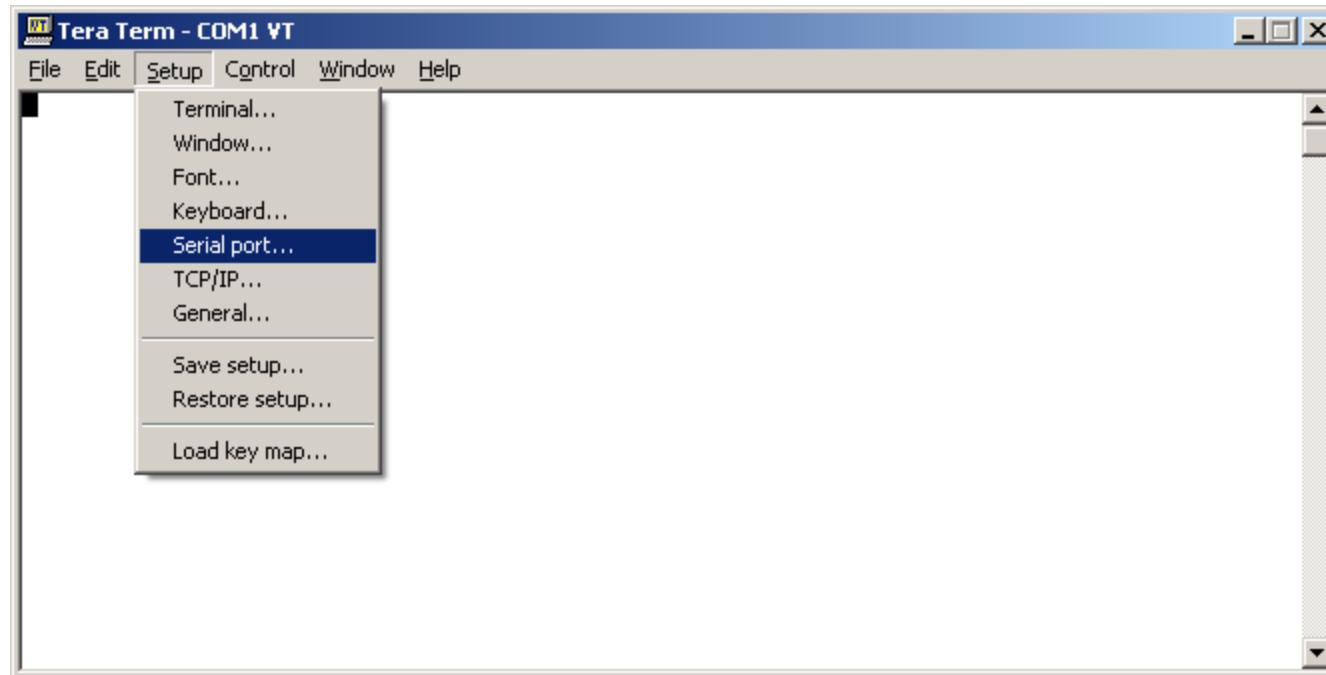
# Tera Term Pro

- After installation, open Tera Term Pro and select the serial port desired



# Tera Term Pro

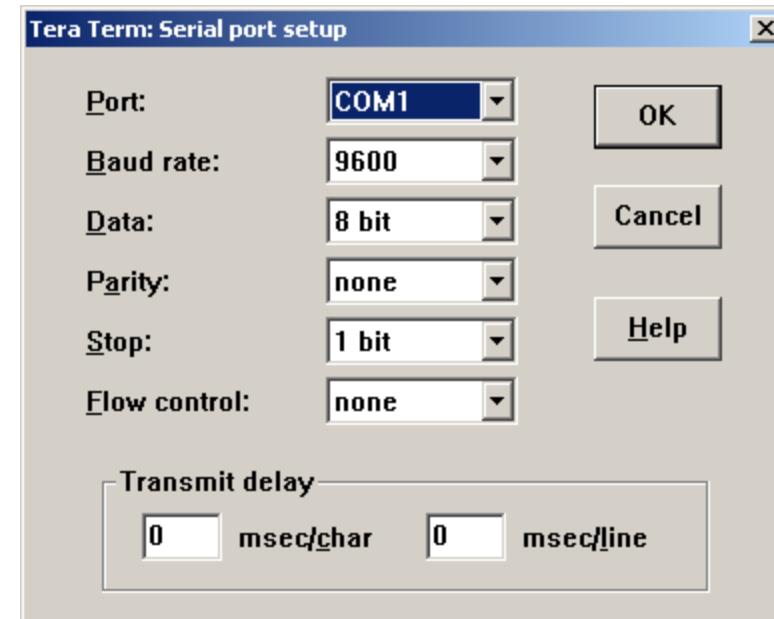
- Select Setup → Serial Port...



# Tera Term Pro

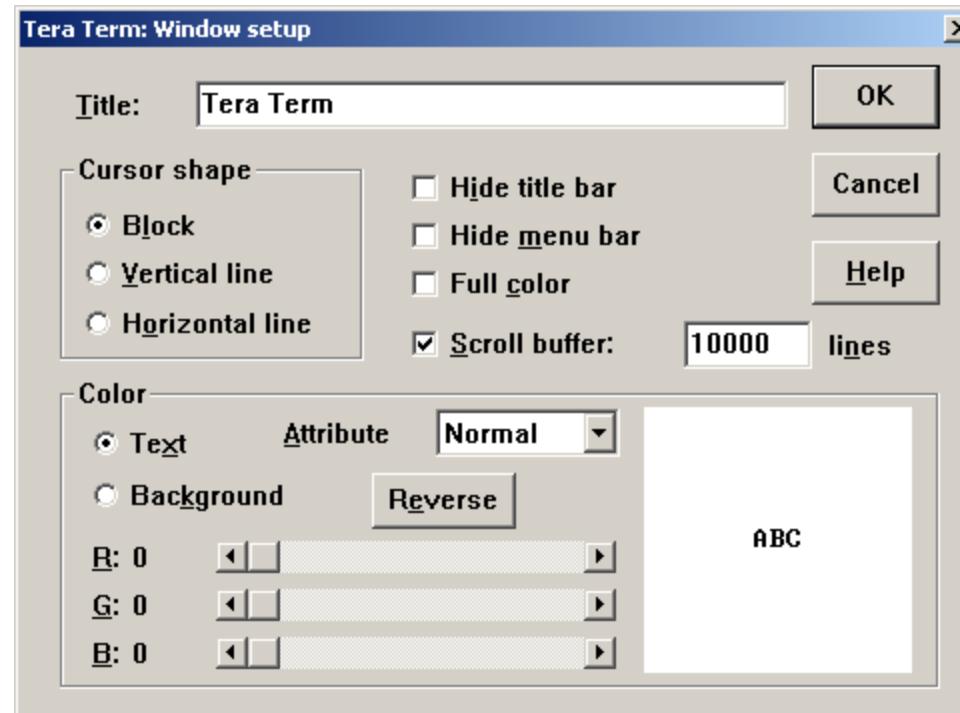
## ▪ Set the serial port parameters

- 9600 baud
- 8 Data Bits
- No Parity
- One Stop Bit
- No Flow Control



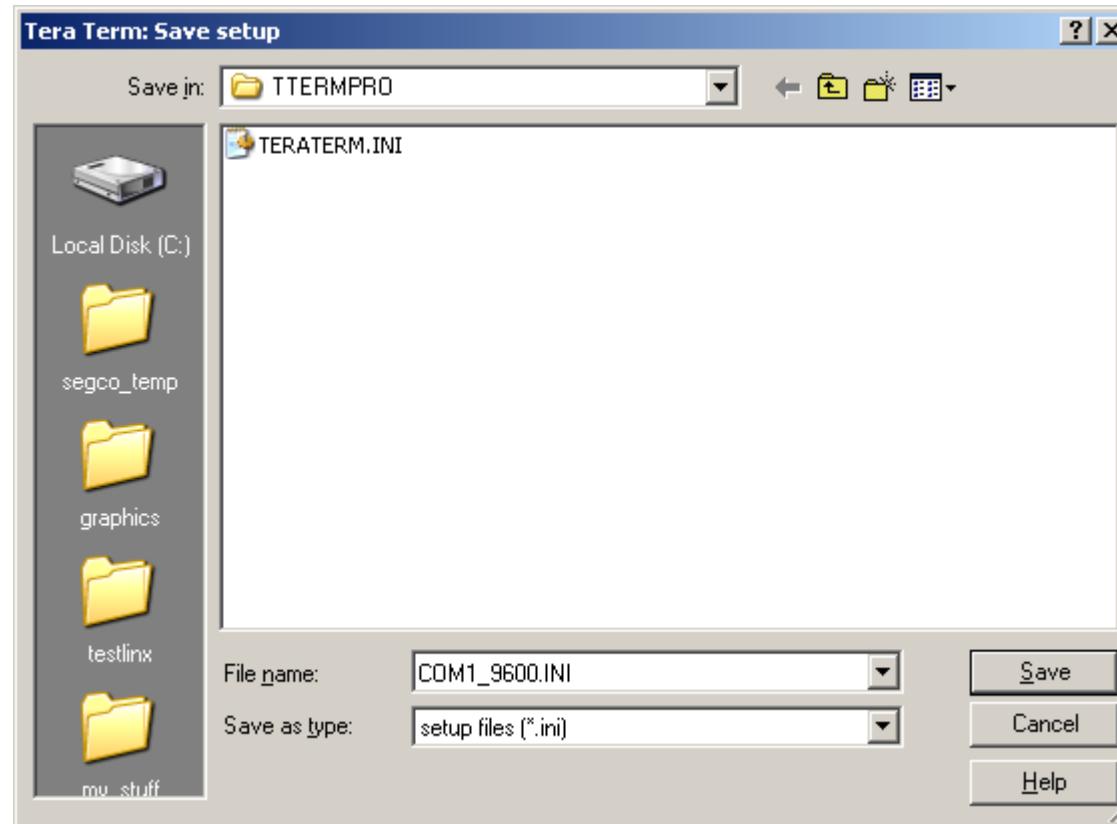
# Tera Term Pro

- **Select Setup → Window...**
  - Increase the Scroll Buffer to 10,000 lines



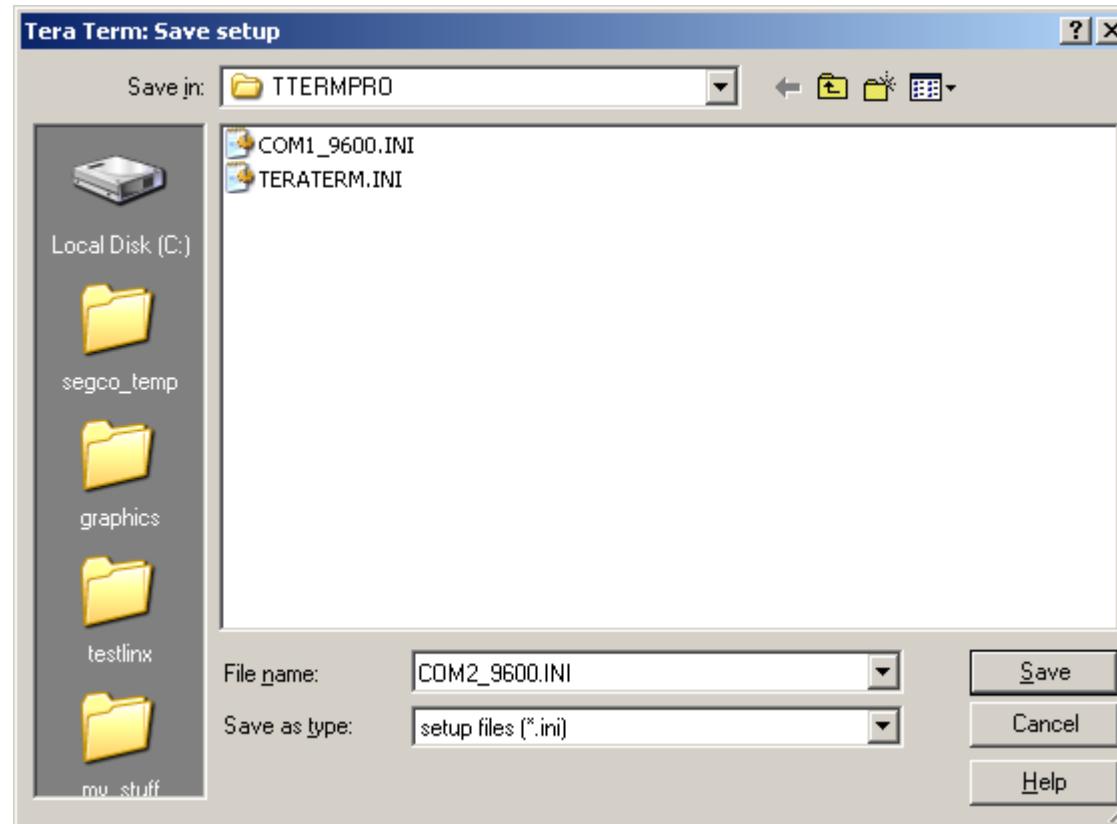
# Tera Term Pro

- **Select Setup → Save Setup...**
  - Save init file as COM1\_9600.INI



# Tera Term Pro

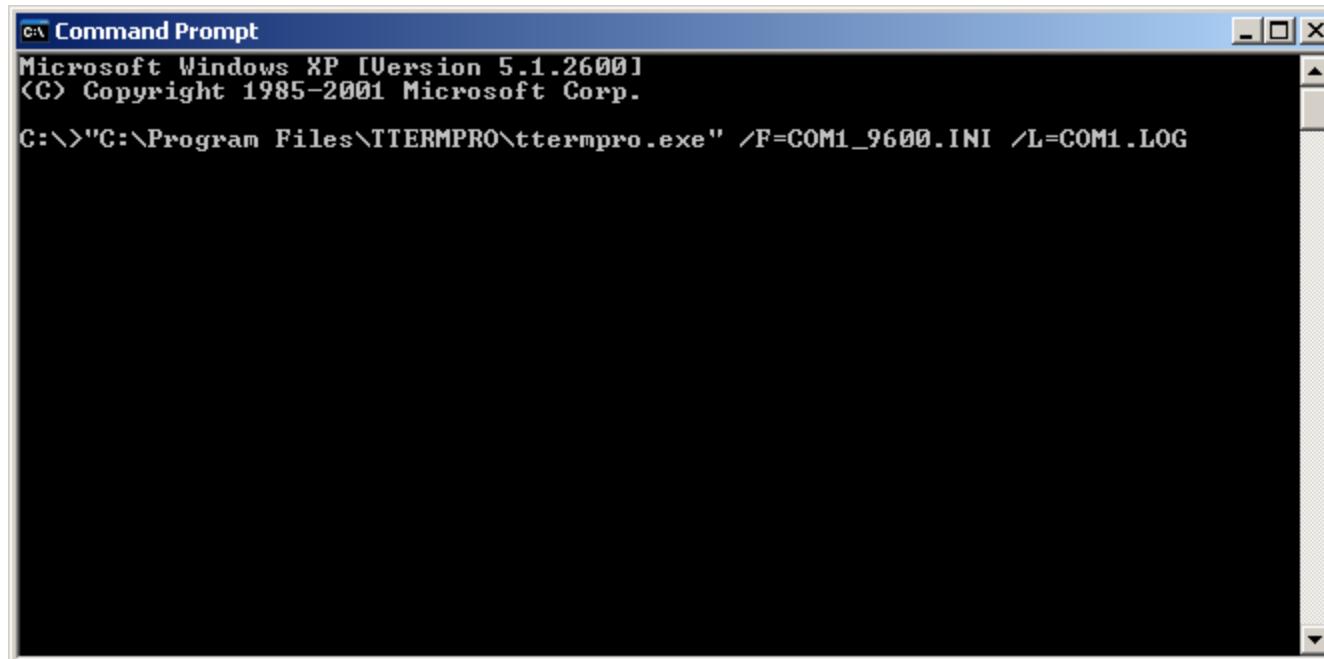
- Repeat these steps for your second COM port
  - Save init file as COM2\_9600.INI



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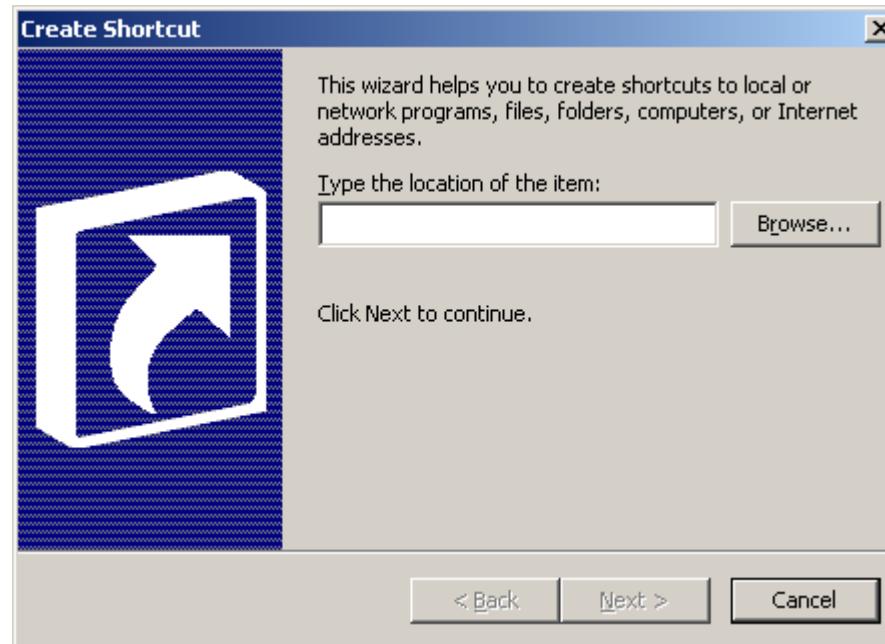
# Tera Term Pro

- **To automatically restore the command line options**
  - Use “/F=<file name>.ini”
- **To automatically open a log file**
  - Use “/L=<log file>.log”



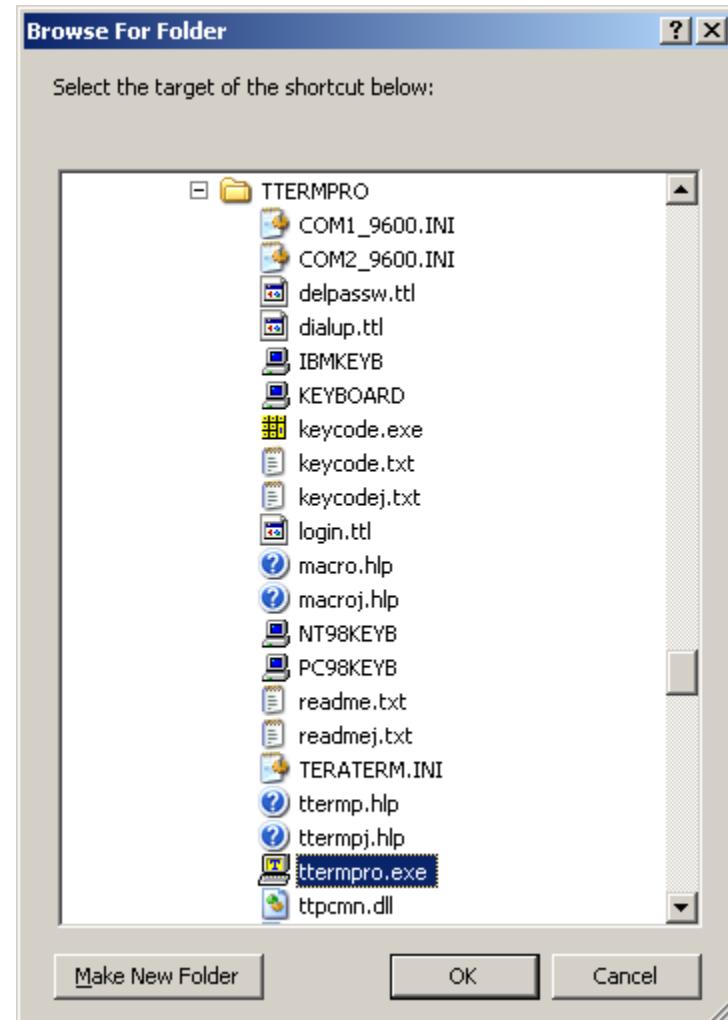
# Tera Term Pro

- You can add shortcuts to your desktop for Tera Term Pro
  - Allows the command line options to be added here
- Right-click on your desktop and select New → Shortcut
- Browse for the terminal program folder



# Tera Term Pro

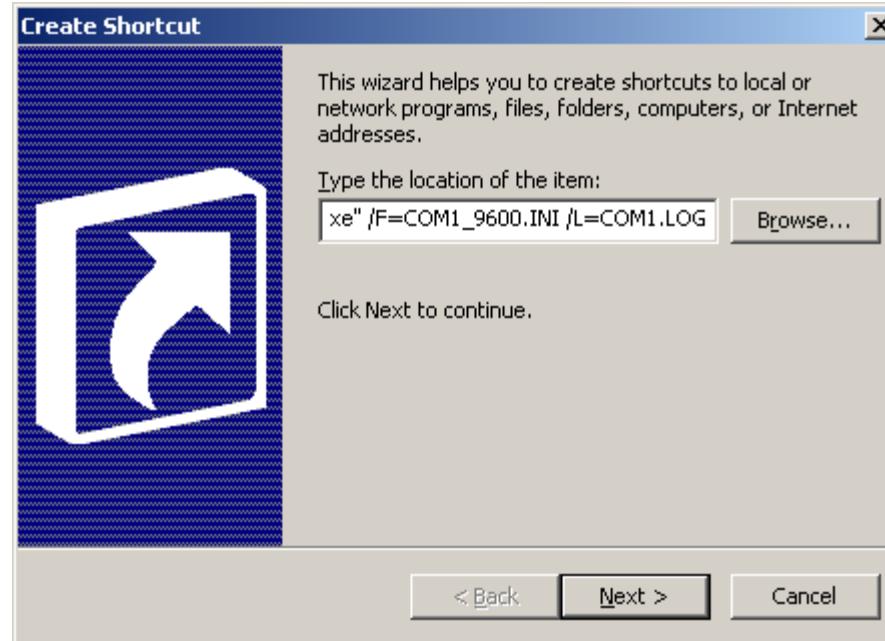
- For Tera Term Pro, link to the **ttermpro.exe** program file:
  - C:\Program Files\TTERM\TTERM\ttermpro.exe



# Tera Term Pro

- Add the command line options

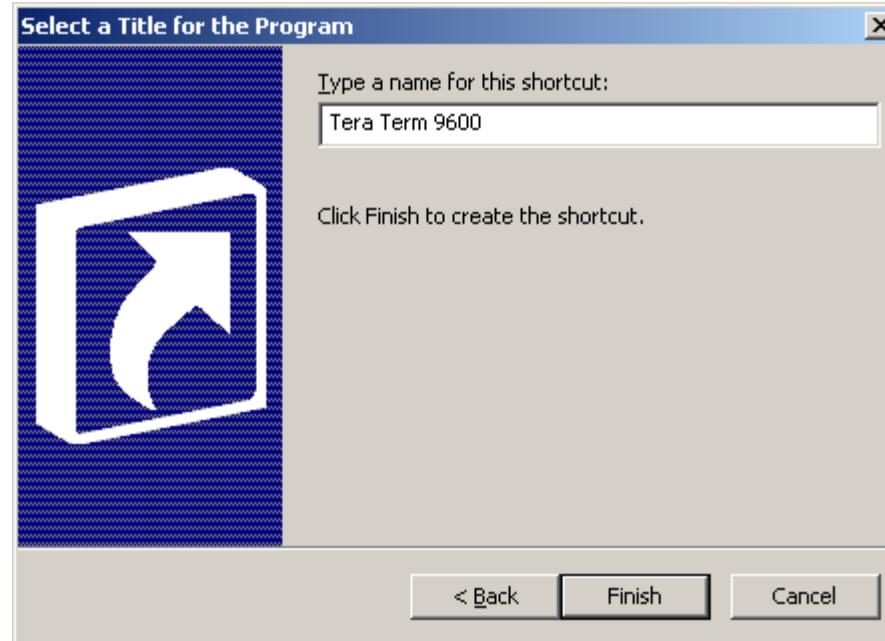
**/F=COM1\_9600.INI /L=COM1.LOG**



# Tera Term Pro

- **Finish creating the shortcut**

- Name the shortcut
- Click Finish



# Documentation

# Documentation

- **ML505/506/507 Documentation**

- ML505 Overview

- <http://www.xilinx.com/ml505>

- ML506 Overview

- <http://www.xilinx.com/ml506>

- ML507 Overview

- <http://www.xilinx.com/ml507>

- ML505/506/507 Evaluation Platform User Guide – UG347

- [http://www.xilinx.com/support/documentation/boards\\_and\\_kits/ug347.pdf](http://www.xilinx.com/support/documentation/boards_and_kits/ug347.pdf)

- ML505/506/507 Getting Started Tutorial – UG348

- [http://www.xilinx.com/support/documentation/boards\\_and\\_kits/ug348.pdf](http://www.xilinx.com/support/documentation/boards_and_kits/ug348.pdf)

- ML505/506/507 Reference Design User Guide – UG349

- [http://www.xilinx.com/support/documentation/boards\\_and\\_kits/ug349.pdf](http://www.xilinx.com/support/documentation/boards_and_kits/ug349.pdf)