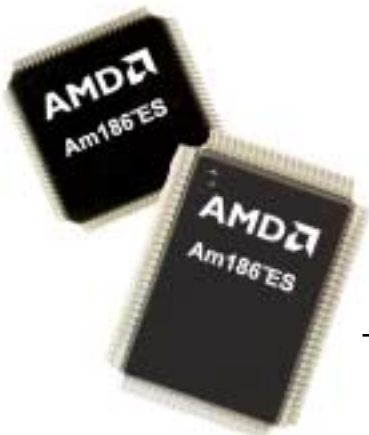




## Net186 Overview

- What is Embedded Ethernet
- Net186 hardware
- Net186 software
- Lab Setup
- Lab procedure

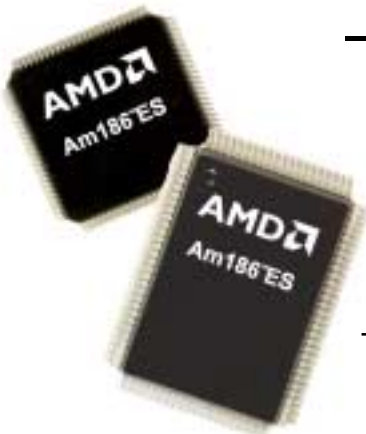




## Embedded Ethernet

Ethernet is “the Serial Port of the ‘90’s”

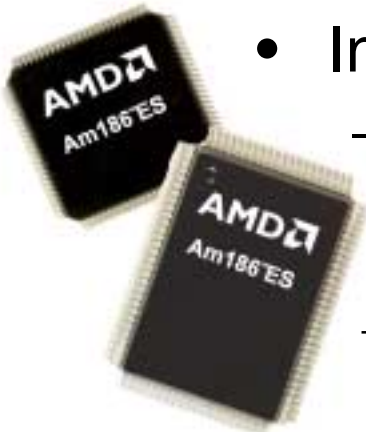
- Being used for
  - Standalone “backplane” connections (Intra-system)
  - Standalone network control applications (Inter-system)
  - Internet addressable control devices





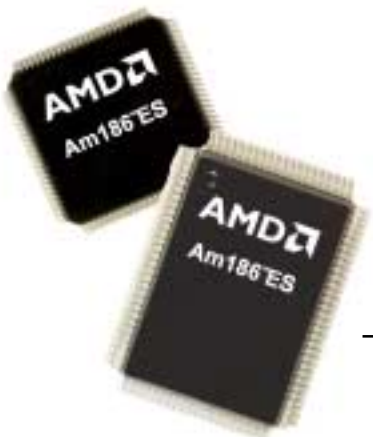
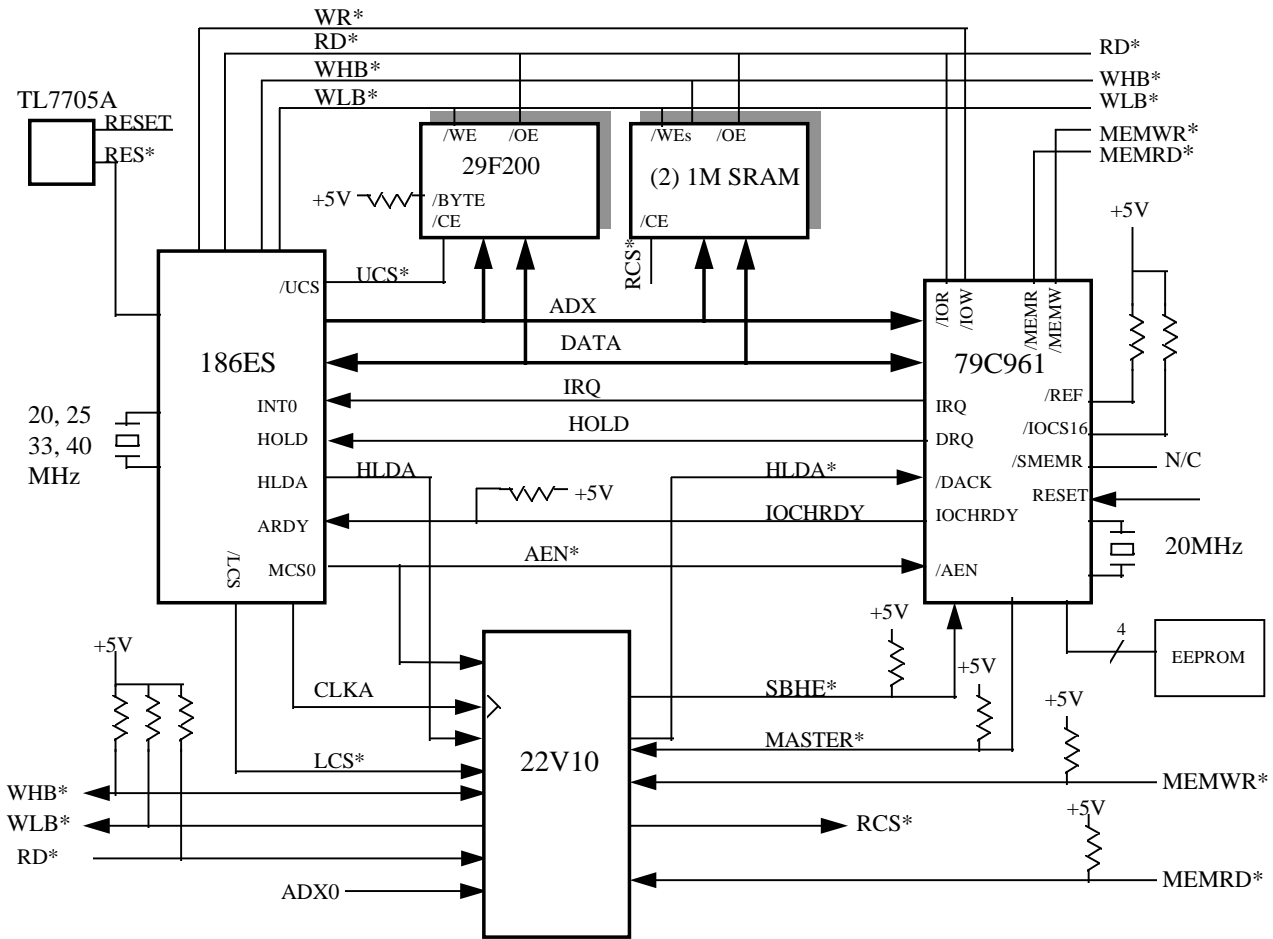
## Example Applications

- Industrial control, building control/security, Web appliances
- Many applications adding ethernet capability for control, Internet access
- Standalone “backplane” connections example app
- Standalone network control applications example
  - Factory Automation - PLC equipment with RS-232 I/F
    - Net186 with telnet server app will allow control over ethernet
- Internet example
  - Adding SNMP front end to standalone equipment
    - Several SNMP/RMON stacks available





# Net186 Hardware





# Net186 Demo Setup

*The demo features the “World’s Smallest Web Server”  
in action, sending pages to Netscape on the PC.*

Reversing Ethernet Cable

Ethernet Port

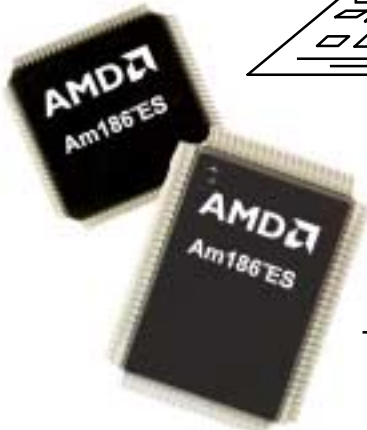
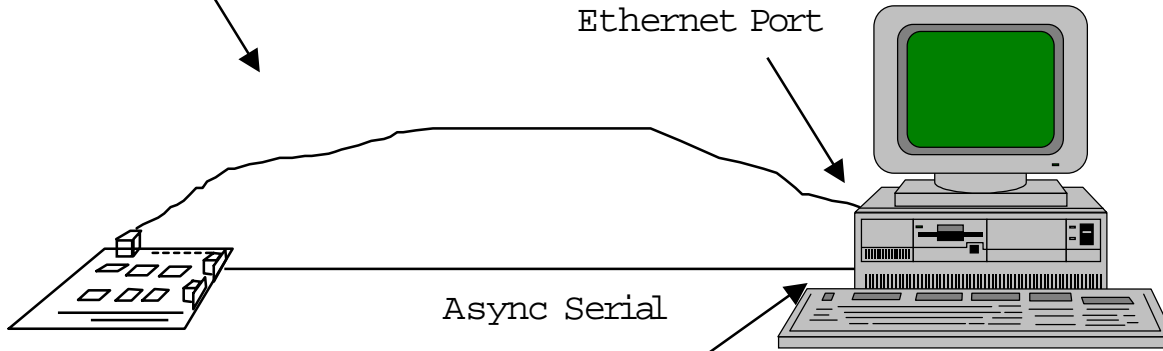
Windows

Netscape/IE

Ethernet Card

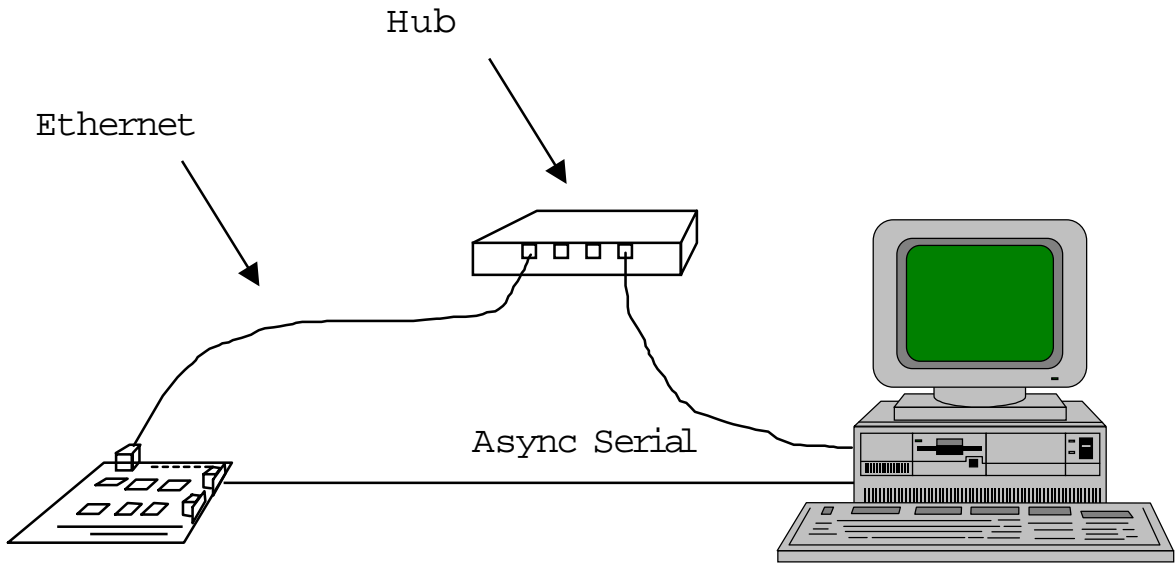
Async Serial

Com Port

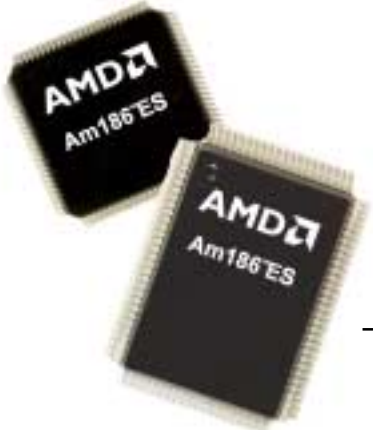




# Net186 Lab Setup



Windows  
Netscape/IE  
Ethernet Card





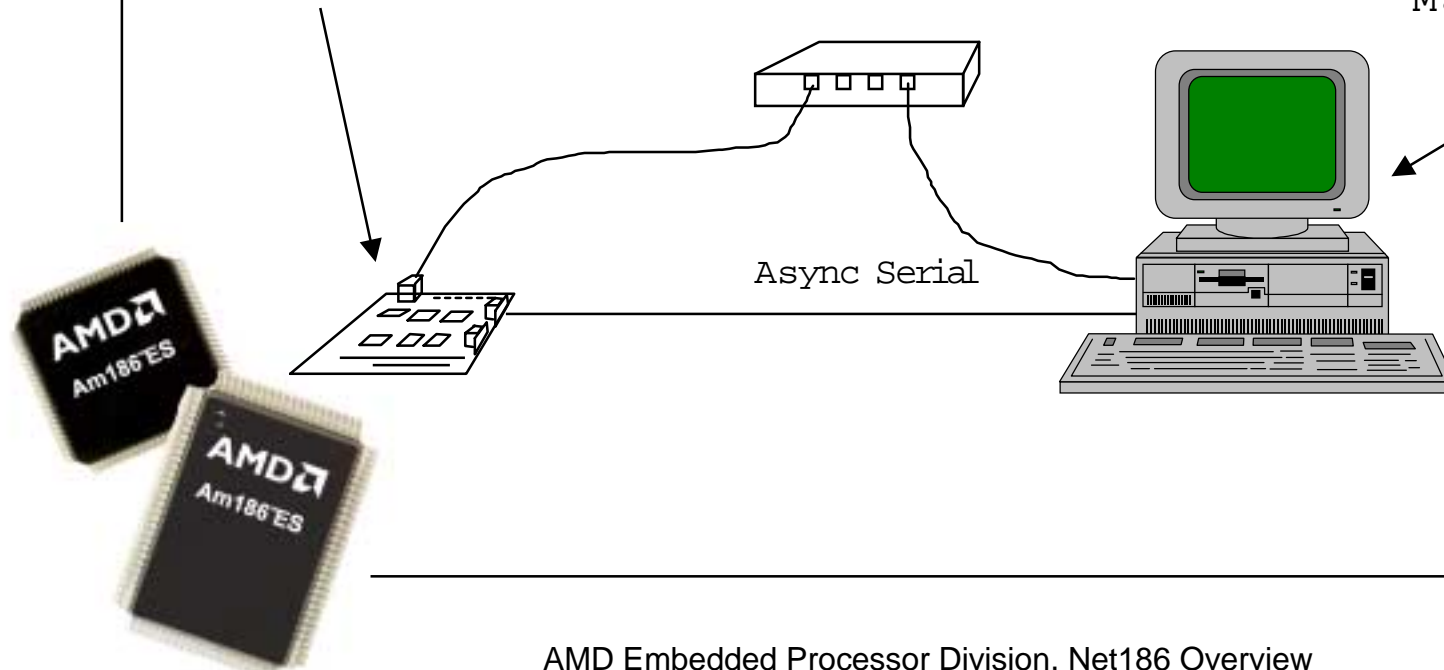
# Net186 Concepts

*The embedded Web server allows generalized microcontroller responses to HTML requests.*

## Web Server

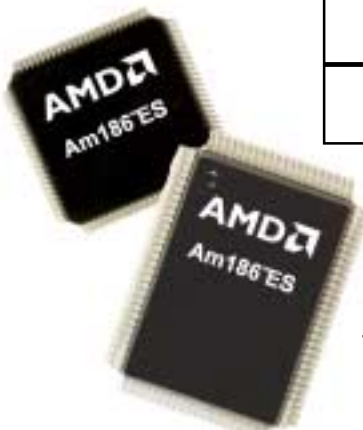
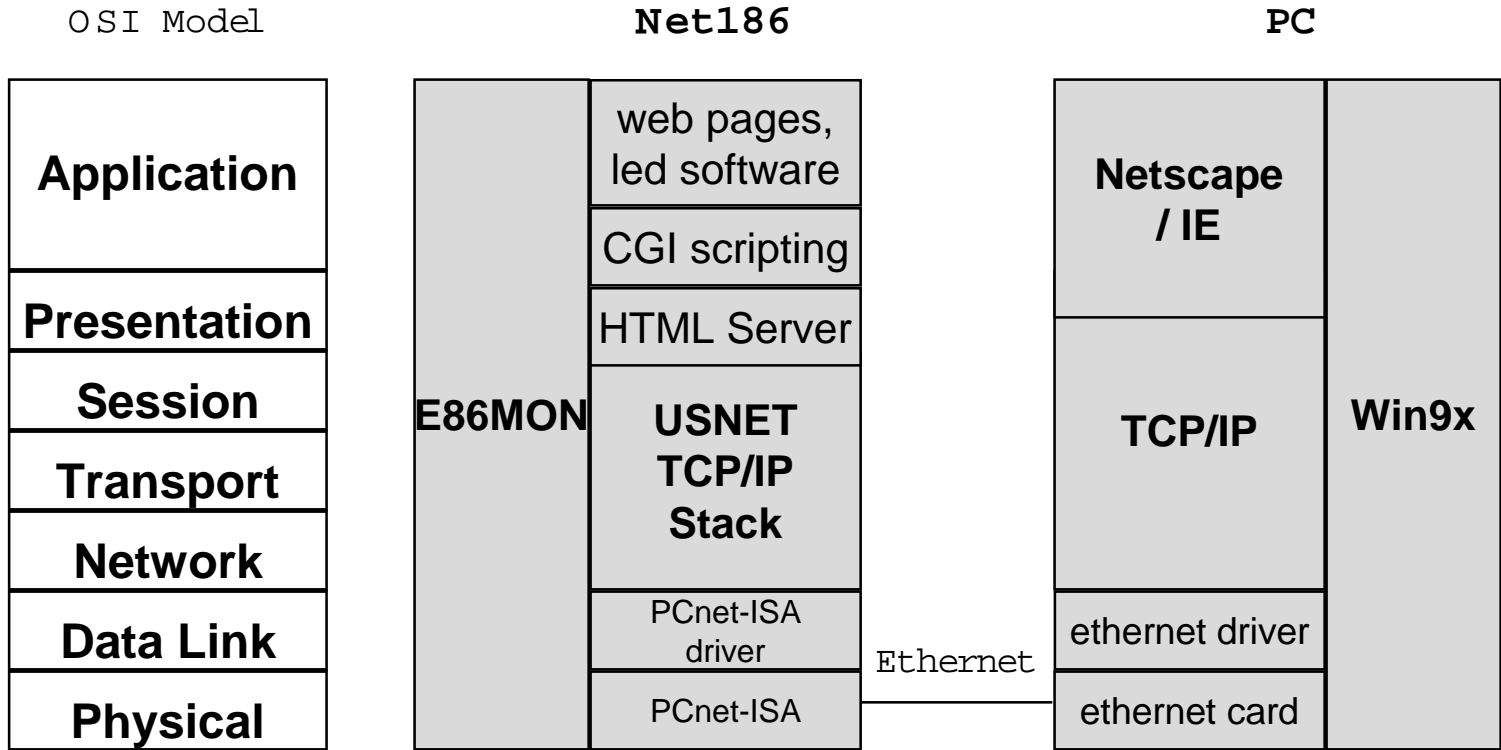
Responds to HTML requests  
Web pages in Flash  
CGI script capability

**Web Client**  
Web Browser  
Makes HTML requests





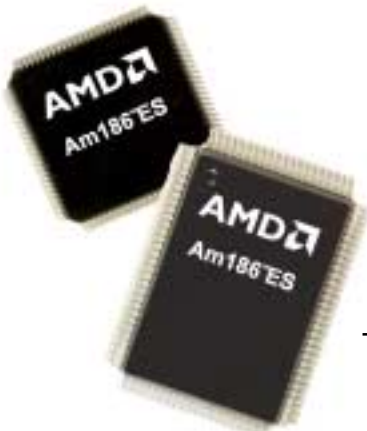
# Embedded Web Server Software





## Net186 Software

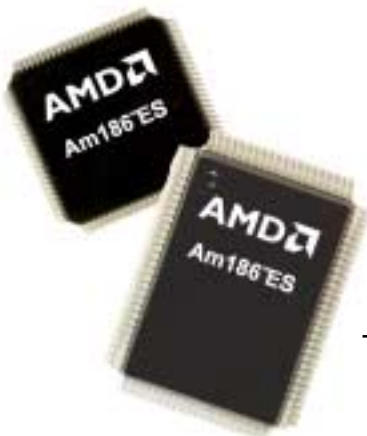
- E86MON
  - download hex files and save to Flash
  - configures PCS2/3 for Net186
- USNET
  - TCP/IP stack from US Software
  - [www.ussw.com](http://www.ussw.com) or 800-356-7097
- Embedded Web Server
  - from US Software
  - has HTML preprocessor





## Lab Procedure

- Configure PC
- Connect cables
- Upgrade Net186 software
- Set Net186 IP address
- Use Netscape to access page





## Demo Installation - PC

- Decide if standalone network needed
  - Portable customer demo
  - Hostile sys admins
  - Under NT, no admin password.
- PC Setup
  - Get PC IP address from control panel or ping
  - add Net186 to hosts file (OS dependent)
    - \windows\hosts (Win9x)
    - \winnt\system32\drivers\etc (NT - need admin privilege)
- Shouldn't have to change PC network settings if ethernet networking already installed



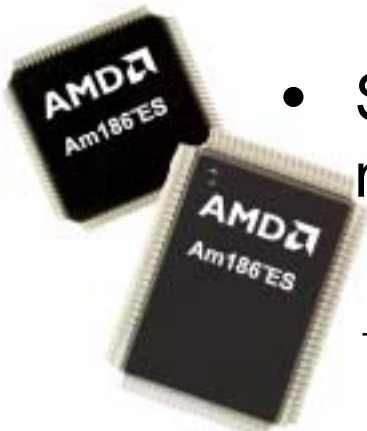


## Demo Installation - Cables

***The cable in the kit is a NON-STANDARD, reversing cable.***

***Don't use it in a live network!***

- If installing in a live network:
  - Use standard cable to network hub.
- If standalone network, connect Net186 directly to PC
  - Use standard cable if hub is available.
  - If no hub, use reversing cable.
  - If laptop has nonstandard connector, use F-F connector and reversing cable.
- Serial cable needed for Net186 setup, but then not needed anymore





## Demo Install - Upgrade Net186

- Start Hyper Terminal
  - Set Baud Rate - Net186 set at factory for 115,200
  - 8 data bits, 1 stop bit, no parity, “Xon/Xoff” flow control
- Break into E86MON
  - Press reset and type “a” within three seconds after boot up
  - adjust baudrate if necessary
- download httest.hex
  - First do “XA” to erase flash
  - Use ‘W’ E86MON command before downloading to save in flash
  - Use “send text file” or equivalent.

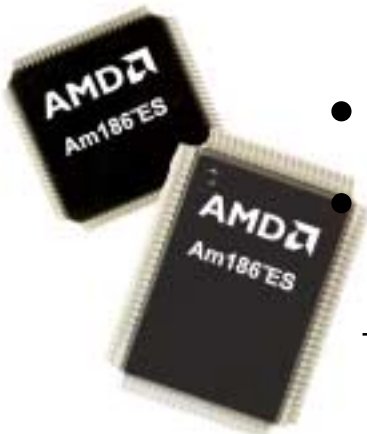
Hit reset when done to start up Web server





## Demo Install - Net186 Setup

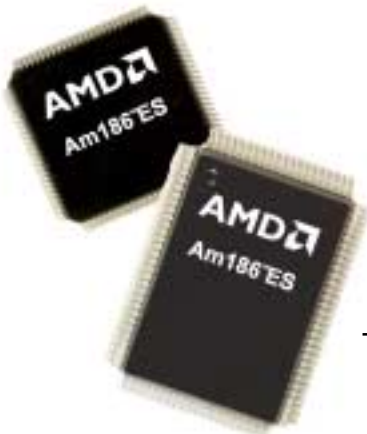
- Go into Net186 setup
  - hit reset
  - wait till lights stop flashing
  - hit any key
  - h for help
  - e for edit config record
- Must set IP address
  - Also Subnet mask
  - Set hostname for Name resolution
- w to save to EEPROM
- Exit, and Server starts up





## Netscape/IE Setup

- First, if using proxy server:
  - add IP address/name to proxy exception list
- Then type in URL
  - http://name or
  - http://IP address
- Should get a page
- Click on LEDCGI example





## What Just Happened?

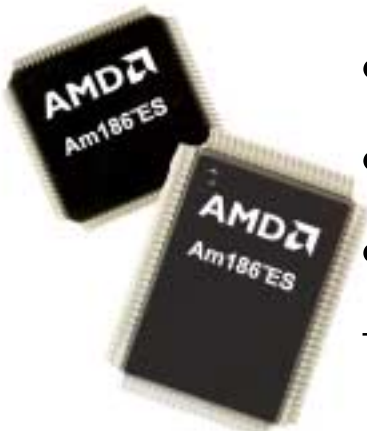
1. Netscape/IE builds http application request asking for page
2. Netscape/IE uses TCP/IP to send on the network
3. Embedded Web Server application recognizes request as CGI script request, sends data to compiled CGI script.
4. LEDCGI.C gets parameters, toggles given LED, requests state of LEDs,
5. LEDCGI.C *builds the HTML page and returns it as the response.*
6. Netscape/IE displays the returned HTML page.





## Net186 Online Information

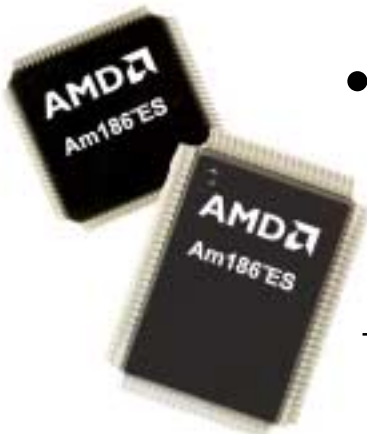
- <http://www.amd.com/embedded>
  - Demonstration, Evaluation and Reference Design Products
    - NET186-EVAL-KT
- Kit bill of materials
- Related documentation
- Related codekits
- Utility software
- 3<sup>rd</sup> party demo software
- Included 3<sup>rd</sup> party products
- Design archives





## Net186 HW Features

- 40 MHz Am186ES
  - Two RS-232 connectors
- PCnet-ISA II Ethernet controller
  - Bus mastering configuration
  - 10BASE-T
  - Standard 93C56 EEPROM
- 29F400 Flash, can accept 29F800
- 256K x 16 SRAM
- Am186 Expansion Interface





# The Net186 Demo Board

