



Embedded Networking Building Blocks

SSV SOFTWARE SYSTEMS GMBH

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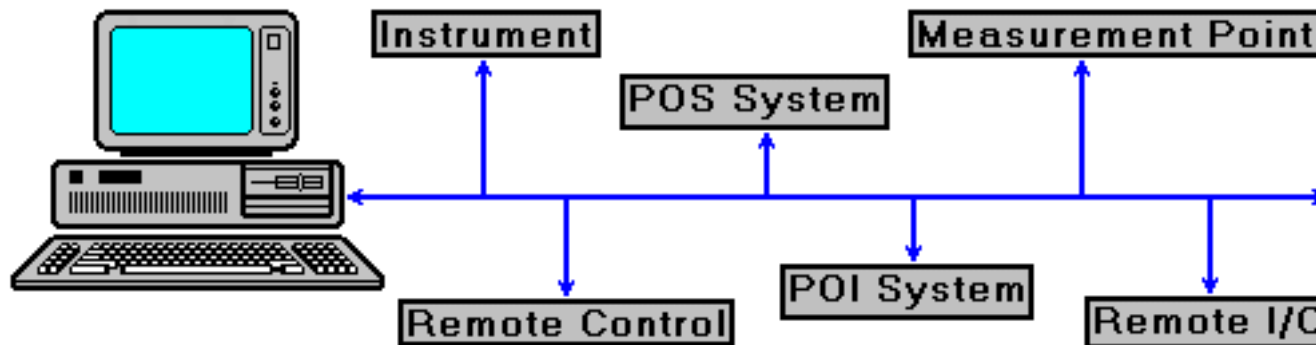
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Embedded Networking - Introduction

- * In the next years, anything to do with information, control or measurement, such as instruments, printers, process control systems, building control equipment, point-of-sale terminals and medical devices will be connected with the Internet or Ethernet-based corporate intranets.



- * SSV offers *Embedded Networking Building Blocks* for any kind of industrial Ethernet and embedded Internet applications. There are different single board computers with 10BASE-T Ethernet, *Embedded TCP/IP* stacks and I/O boards for “network enabling” OEM products.



Embedded Networking Hardware - Overview

* SSV offers 4 single board computers (SBCs) for embedded networking applications. Each SBC comes with 10BASE-T Ethernet interface and *Embedded TCP/IP* stack in FLASH memory.

- 1.) The *CP/386LN* with 25 MHz Intel 386EX, 10BASE-T Ethernet interface and PC/104 form factor.
- 2.) *The CP/486DX2* with 66 or 133 MHz AMD low power processor, 10BASE-T interface and PC/104 size.
- 3.) The *SBC/486DX3* with 66 or 133 MHz AMD low power processor, 10BASE-T interface and Half Size ISA size.
- 4.) The *EmNet SIB/1* with AMD SC400 microcontroller and 10BASE-T interface for OEM system integration.



Embedded Networking Hardware - Overview

* Each SBC offers two standard RS232C serial ports and one parallel port with different operating modes. One serial port of the *SBC/486DX3* can be used for RS422 or RS485 serial links.

| SBC | Processor | DRAM | FLASH | Ports | Size |
|-------------|----------------|----------|---------|--------------------|-------------|
| CP/386LN | Intel 386EX-25 | 16 Mbyte | 2 Mbyte | COM1/COM2/Parallel | 90 * 96mm |
| CP/486DX2 | AMD 486DX5 | 32 Mbyte | 4 Mbyte | COM1/COM2/Parallel | 90 * 96mm |
| SBC/486DX3 | AMD 486DX5 | 32 Mbyte | 4 Mbyte | COM1/COM2/Parallel | 185 * 122mm |
| EmNet SIB/1 | AMD SC410 | 8 Mbyte | 4 Mbyte | COM1/COM2/Parallel | 100 * 160mm |

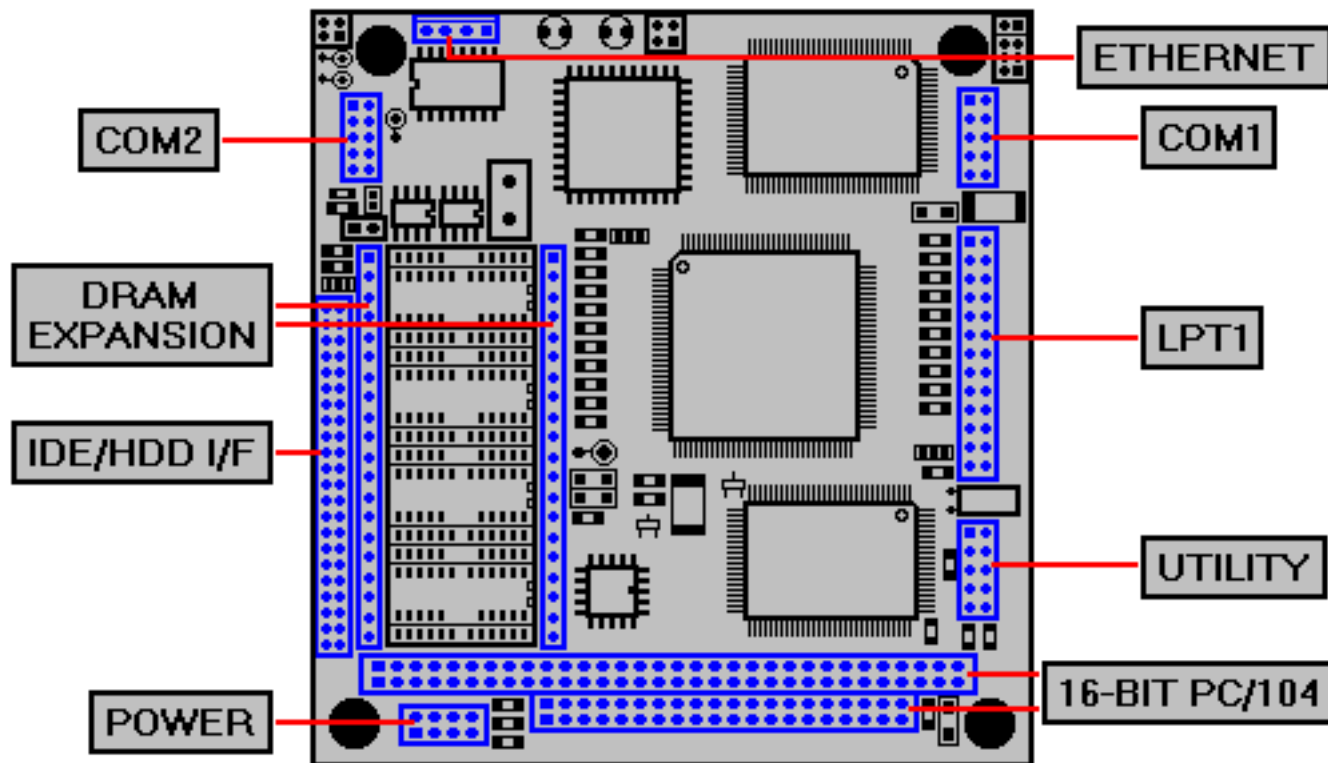
* The *EmNet SIB/1* is a Embedded Networking Evaluation Board for system integrators. The components of this board are the base of the SC400/SC410 Embedded Networking *Intellectual-Property-Block* (IP-Block).



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Embedded Networking Hardware - CP/386LN

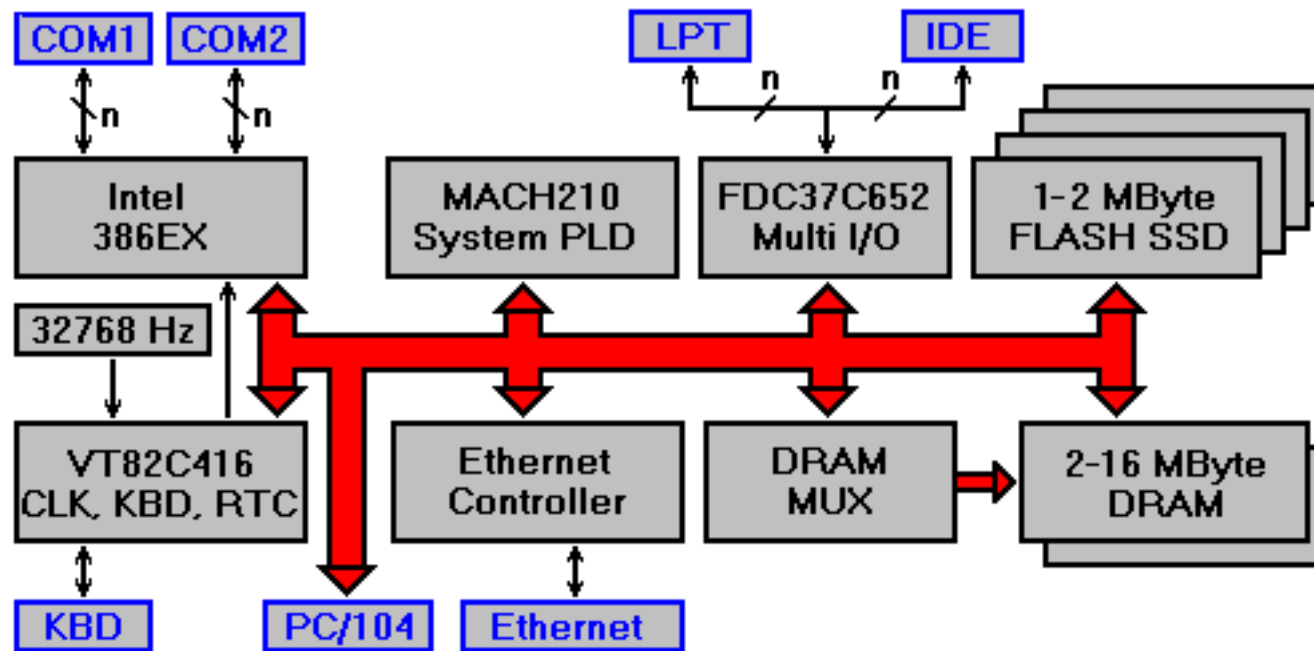
* The *CP/386LN* Single Board Computer with PC/104 form factor is based on the Intel 386EX microcontroller.



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Embedded Networking Hardware - CP/386LN

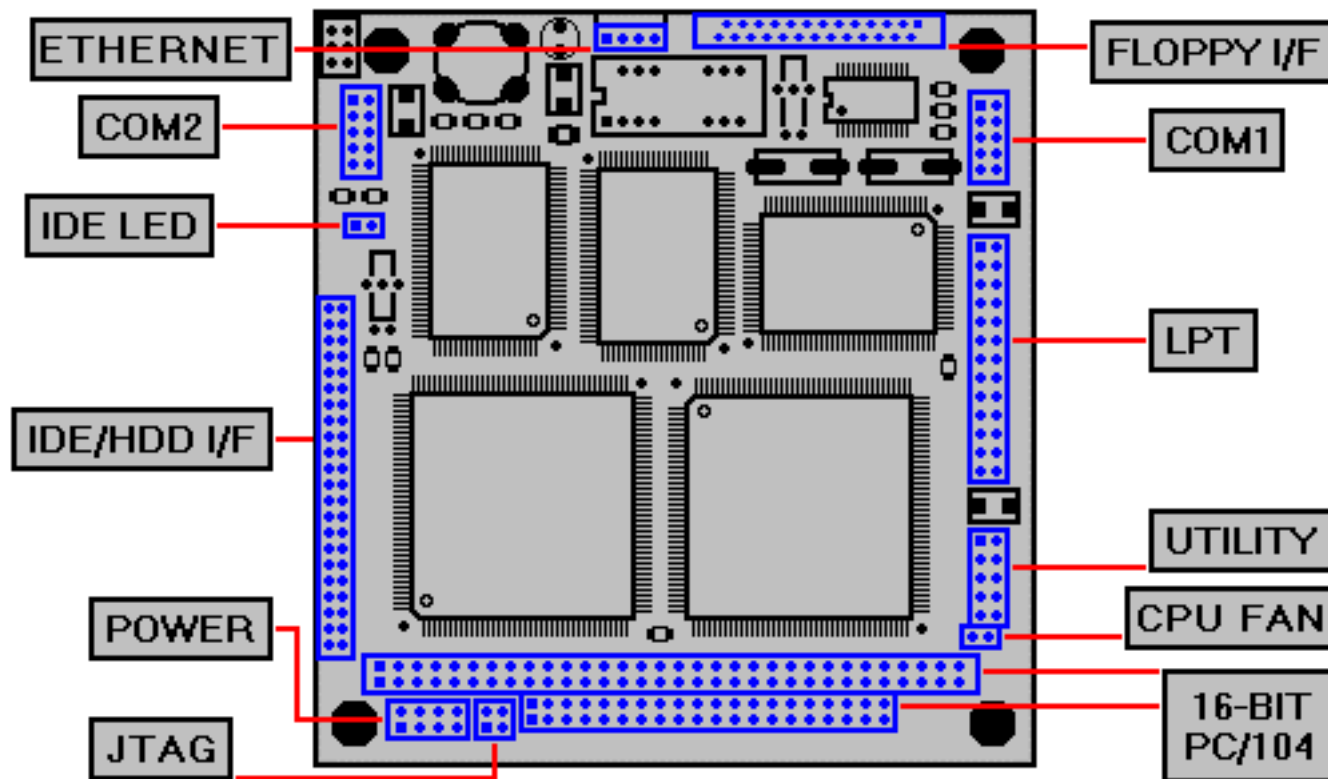
* The *CP/386LN* offers a 25 MHz Intel 386EX microcontroller with up to 16 Mbyte DRAM and up to 2 Mbyte FLASH memory.



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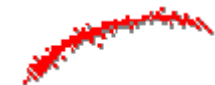
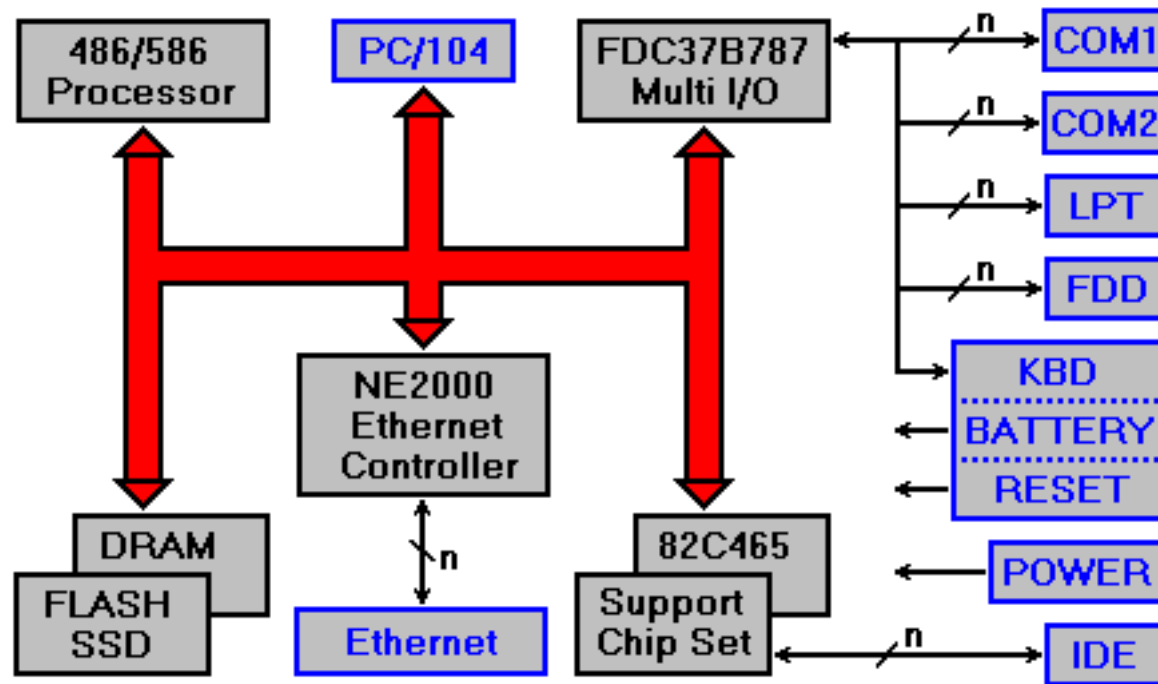
Embedded Networking Hardware - CP/486DX2

* The *CP/486DX2* Single Board Computer with PC/104 form factor is based on the AMD low power microprocessors 486DX2 or 486DX5.



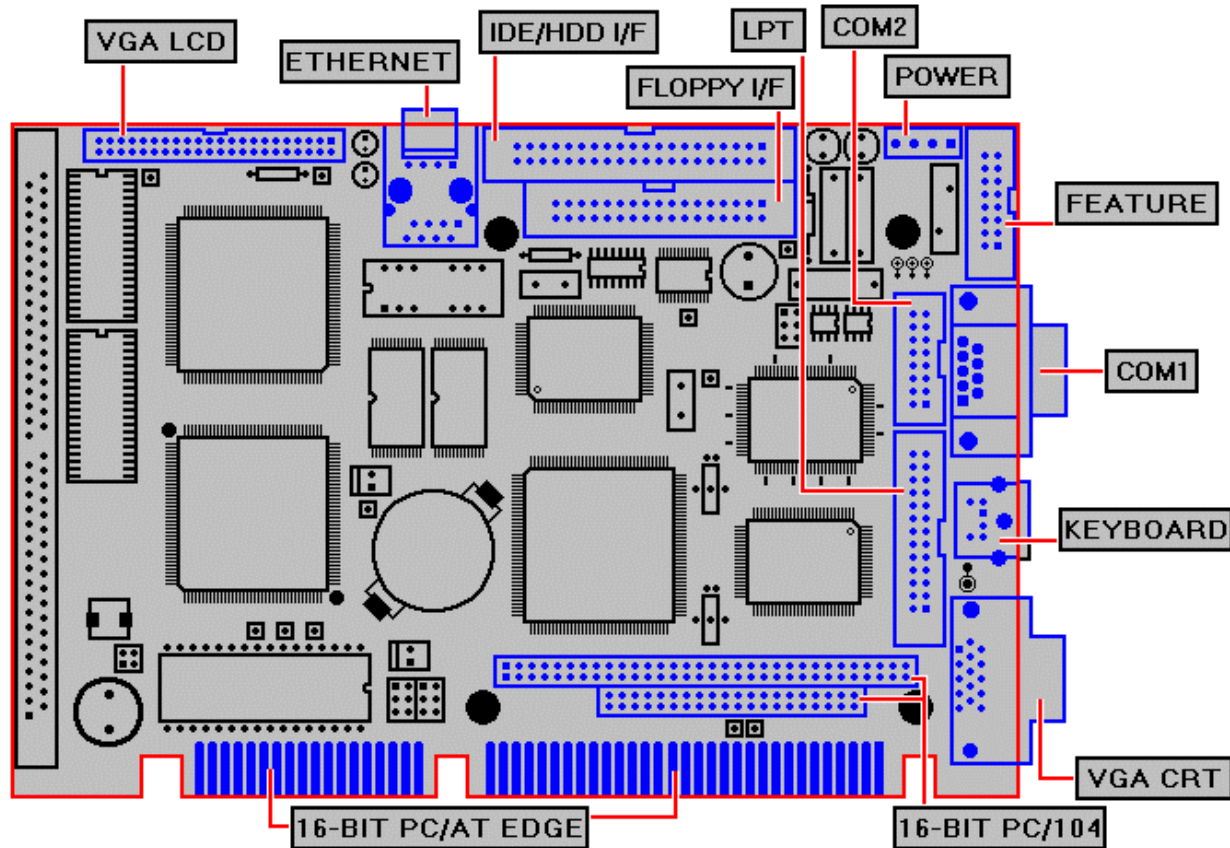
Embedded Networking Hardware - CP/486DX2

* The *CP/486DX2* offers a 66 MHz or 133 MHz low power processor with 16 or 32 Mbyte DRAM and up to 4 Mbyte FLASH memory.



Embedded Networking Hardware - SBC/486DX3

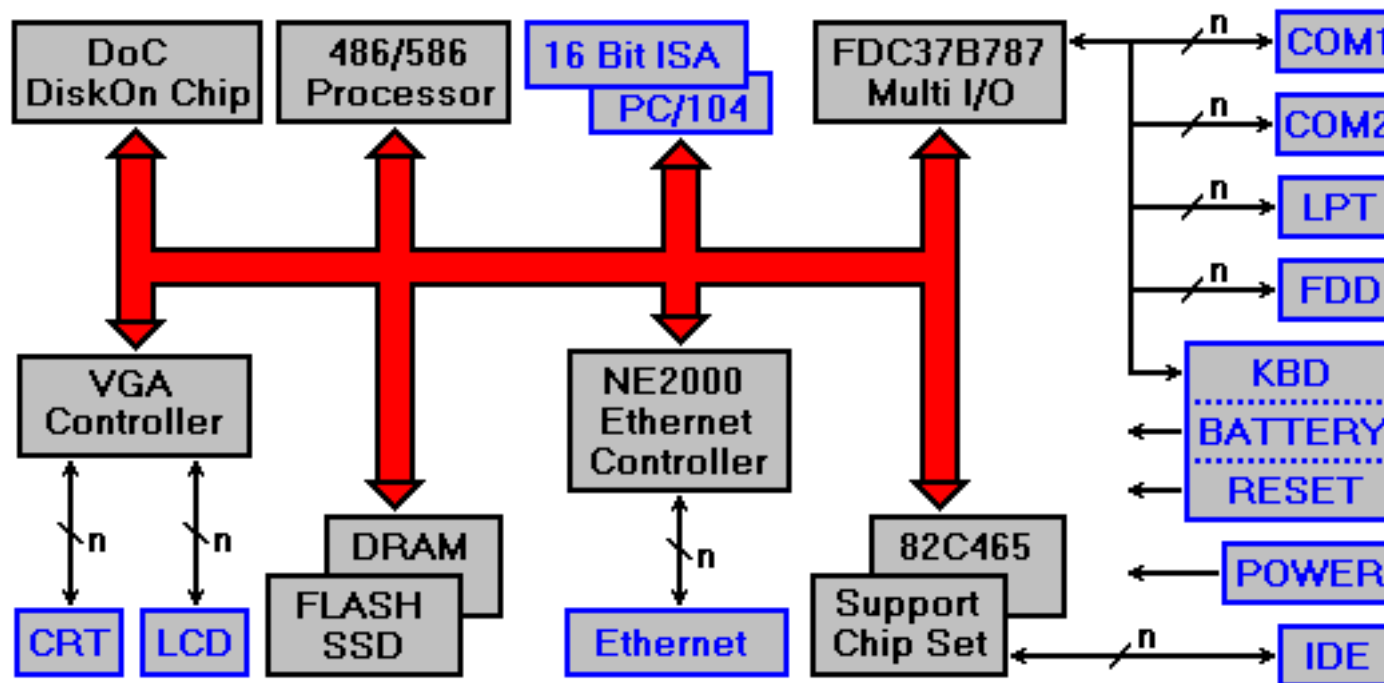
* The *SBC/486DX3* Single Board Computer with Half Size ISA form factor is based on the AMD low power 486DX2 or 486DX5 μ P.



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Embedded Networking Hardware - SBC/486DX3

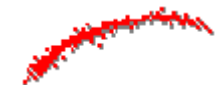
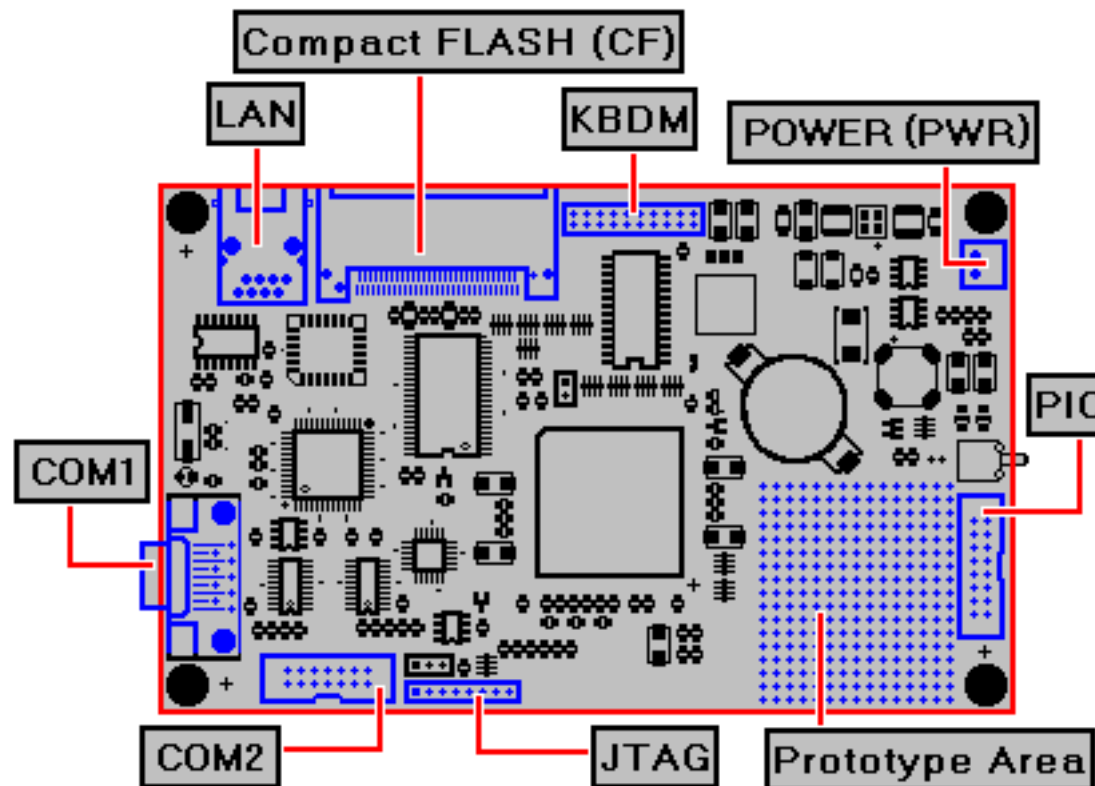
* The *SBC/486DX3* offers a 66 Mhz or 133 MHz processor with 16 or 32 Mbyte DRAM, up to 4 Mbyte FLASH and one DoC SSD socket.



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Embedded Networking Hardware - SC400 EmNet SIB/1

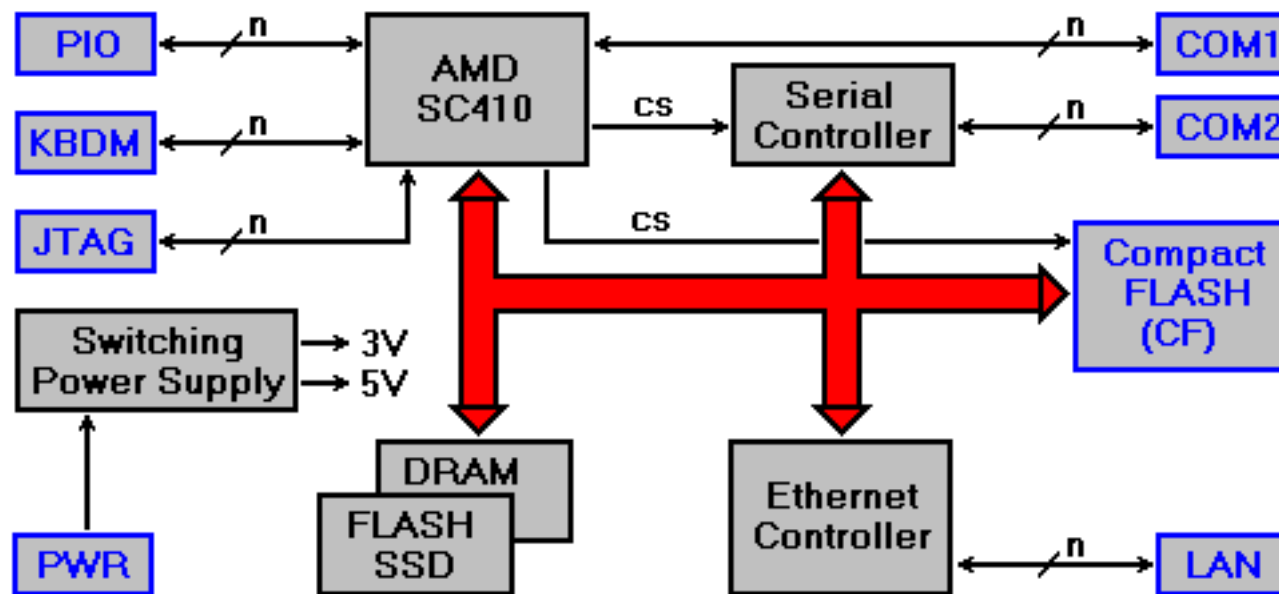
- * The *SC400 EmNet SIB/1* OEM Embedded Networking Systems Integrator Board is based on the AMD SC410 Élan microcontroller with 33 MHz clock.



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Embedded Networking Hardware - SC400 EmNet SIB/1

- * The *SC400 EmNet SIB* offers a AMD SC410 Élan microcontroller with 8 Mbyte DRAM, 4 Mbyte FLASH and one Compact FLASH socket.



Embedded Networking Hardware - I/O Expansion

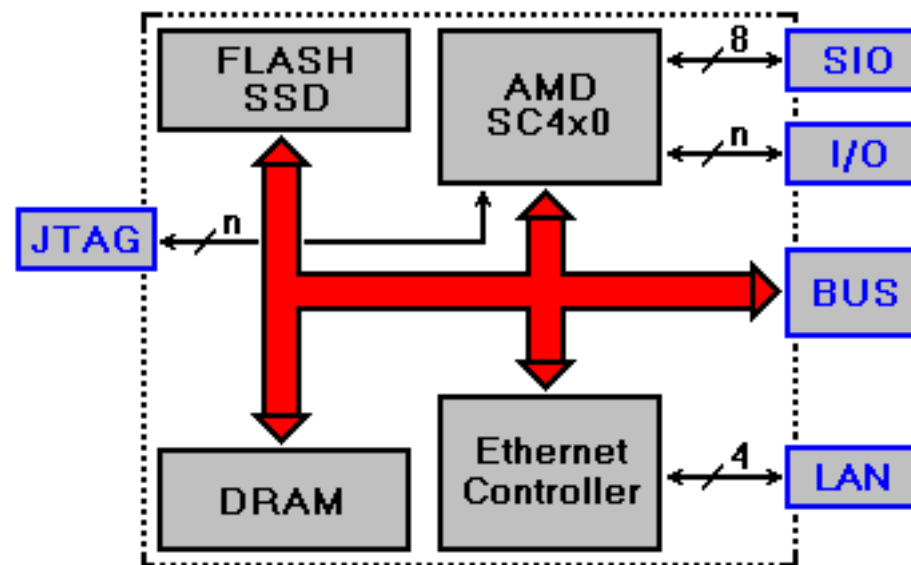
* The *CP/386LN*, *CP/486DX2* and *SBC/486DX3* comes with a 16-bit stackthrough PC/104 interface and connector. For system expansion, we offer some PC/104 I/O modules.

- 1.) The *AIO1* Analog I/O Board with 8 or 16 analog inputs and 2 analog outputs.
- 2.) The *CAN2* Dual CAN Field Bus Interface with 1 or 2 i82C527-based CAN channels.
- 3.) The *DIO1* Digital I/O Board with 8 or 16 opto-isolated inputs and 8 or 16 relay outputs.
- 4.) The *EIO2* Multi I/O Board with 2 RS232/RS422/RS485 serial channels and 1 parallel port.

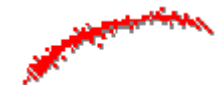


Embedded Networking IP Blocks - AMD SC400/SC410

* Based on the *SC400 EmNet SIB/1* design and the AMD SC400/SC410 microcontrollers, we offer an *Intellectual-Property-Block* (IP-Block).



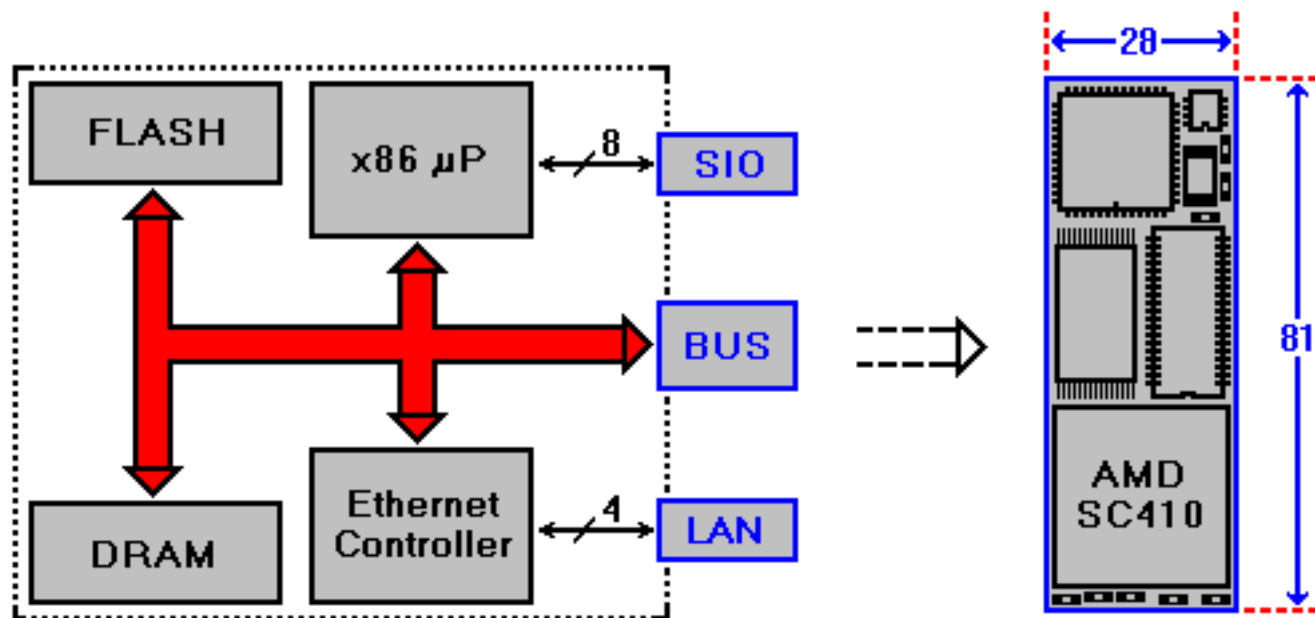
* This IP-Block can be the base for a OEM Embedded Networking full-custom design.



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Embedded Networking IP Blocks - AMD SC400/SC410

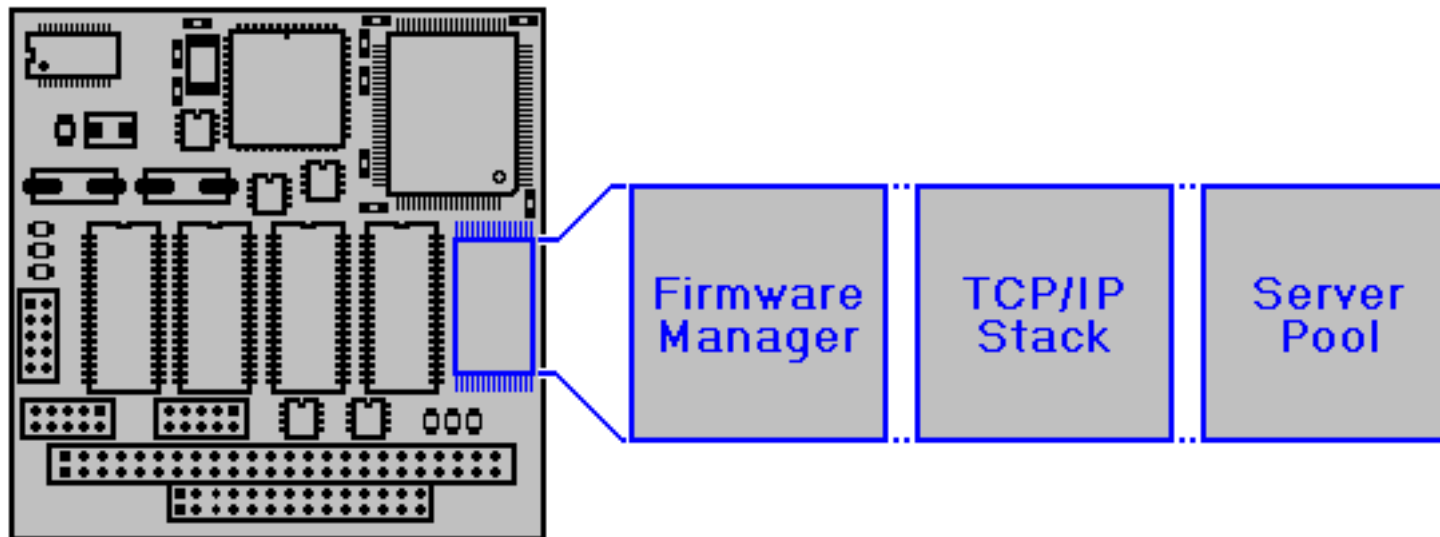
* With this *Intellectual-Property-Block* we build a very compact module, called *DIL/NetPC*. The size of this module is only 28 * 81mm.



* For the integration to OEM hardware, the *DIL/NetPC* offers two rows of 32 pins on 2.54mm centers for using a standard 64-pin DIL socket.

Embedded Networking Software - Overview

- * Every SSV single board computer (SBC) for Embedded Networking has on-board FLASH memory.

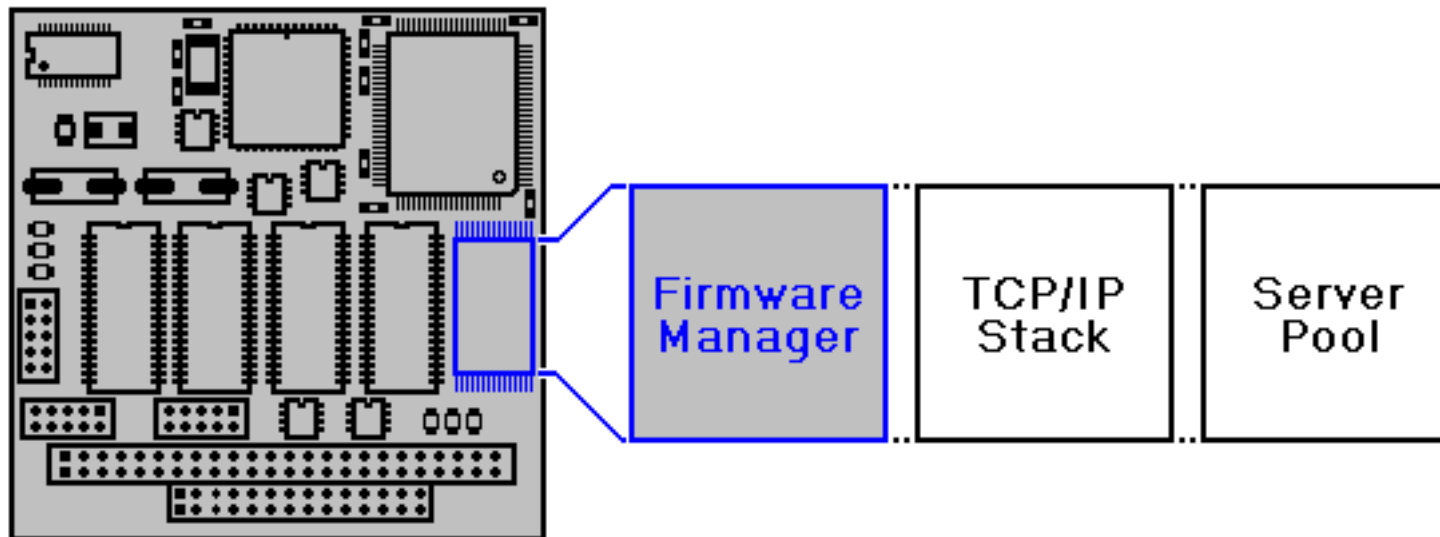


- * Within this FLASH memory, each SBC offers three main software components: 1.) the **Firmware Manager**, 2.) the **TCP/IP Stack** and 3.) the **Server Pool**.

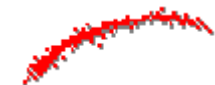


Embedded Networking Software - Overview

- * The **Firmware Manager** offers FLASH content management, firmware configuration and basis down- and upload features.

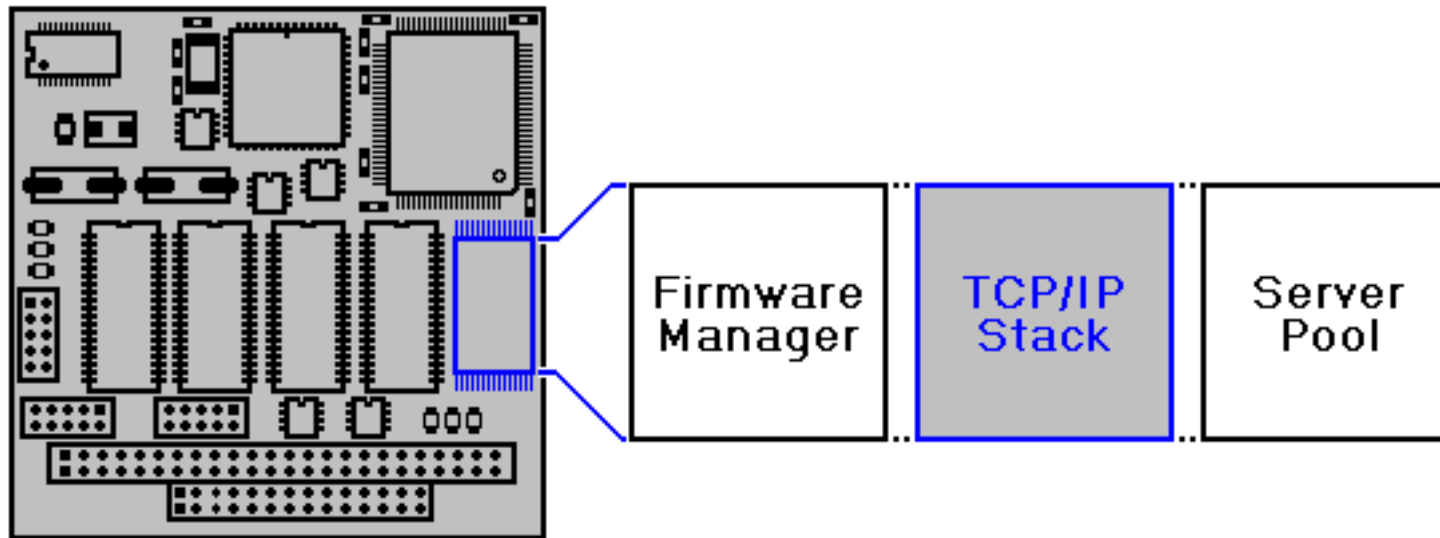


- * The Firmware Manager also includes a remote terminal service called **Remote Console Mode (RCM)**. This service supports the Microsoft Windows 95/98/NT HyperTerminal program.



Embedded Networking Software - Overview

- * The **TCP/IP Stack** includes in the OSI Transport and Network layers protocols **IP** (Internet Protocol), **TCP** (Transmission Control Protocol) and **UDP** (User Datagram Protocol) for Ethernet and serial links.

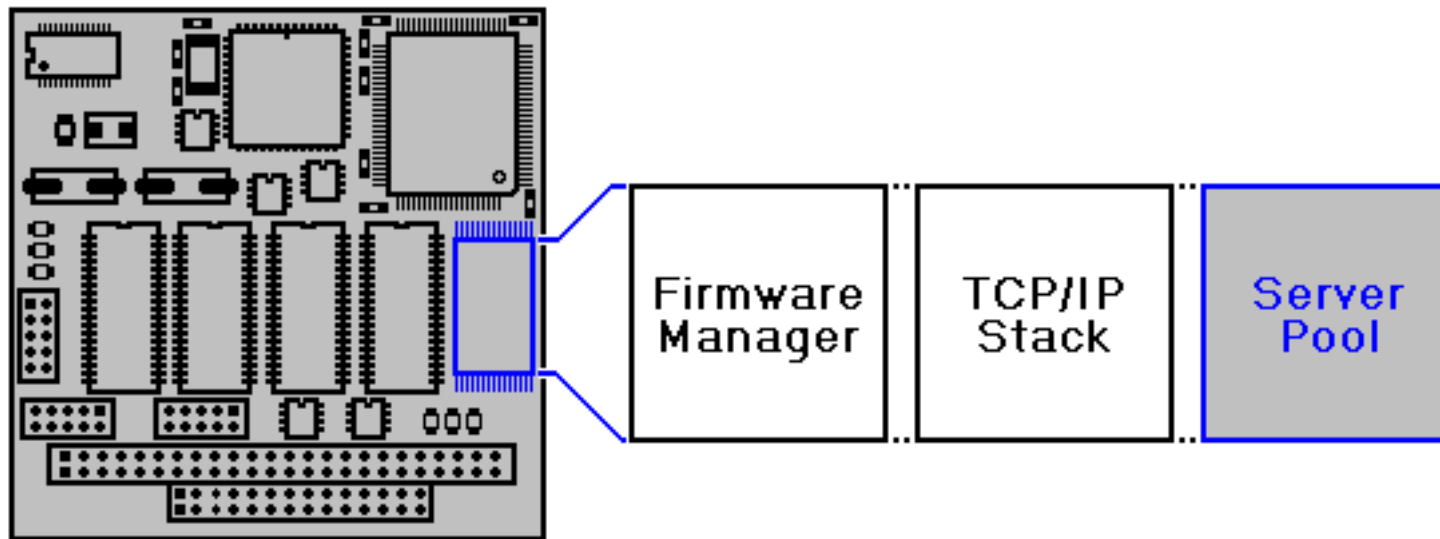


- * The protocol stack also includes **(T)FTP** (file transfer), **HTTP** (Web server), **POP3** (Email) and **DHCP** (automatic configuration).

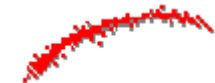


Embedded Networking Software - Overview

- * The **Server Pool** includes a HTTP-based **Embedded Web Server**, one POP3-based **Email Alerter** and a (T)FTP **Server**.



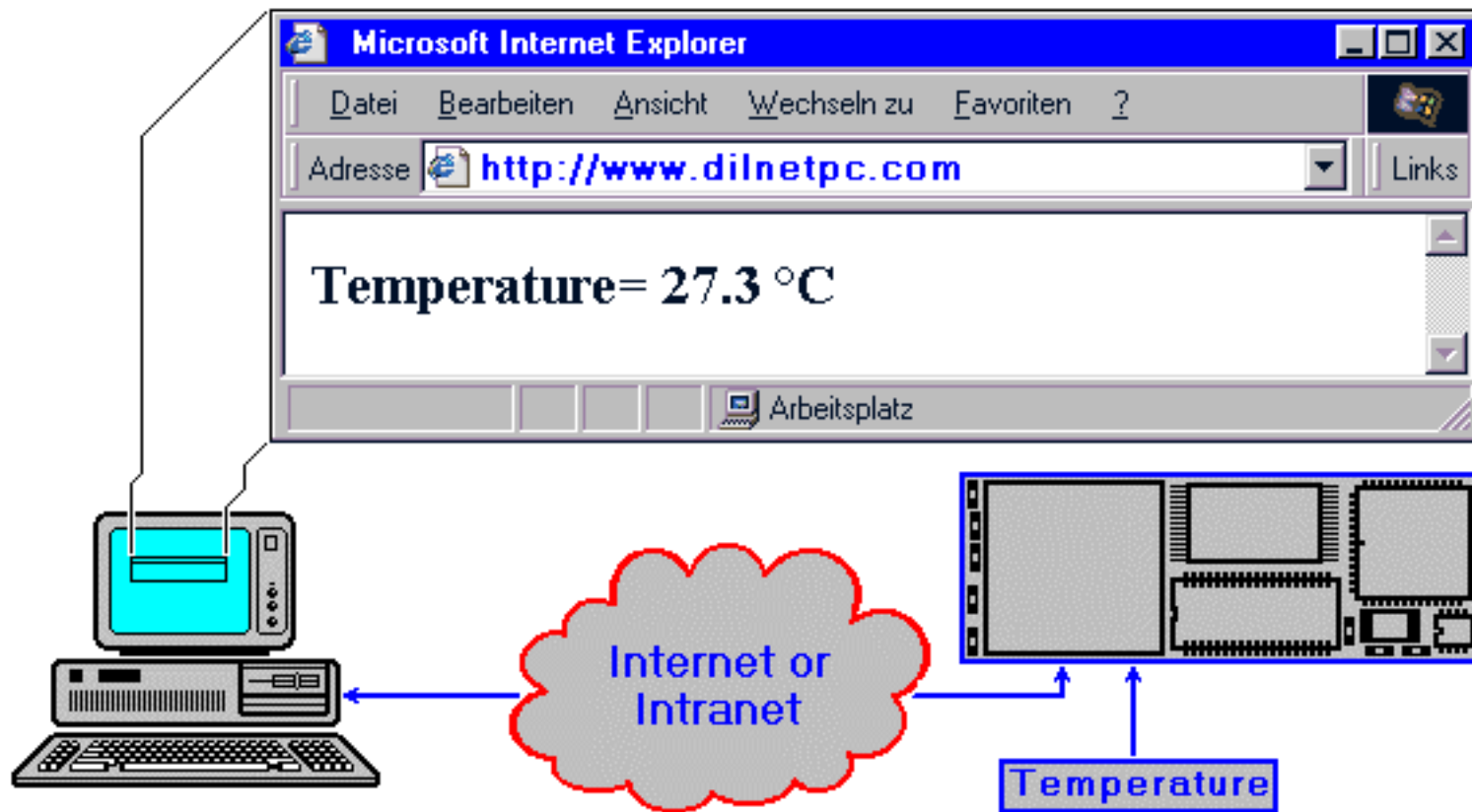
- * There is also a **Remote I/O Server** with OPC interface and IEEE 1451.2 option for distributed measurement and control within the Server Pool.



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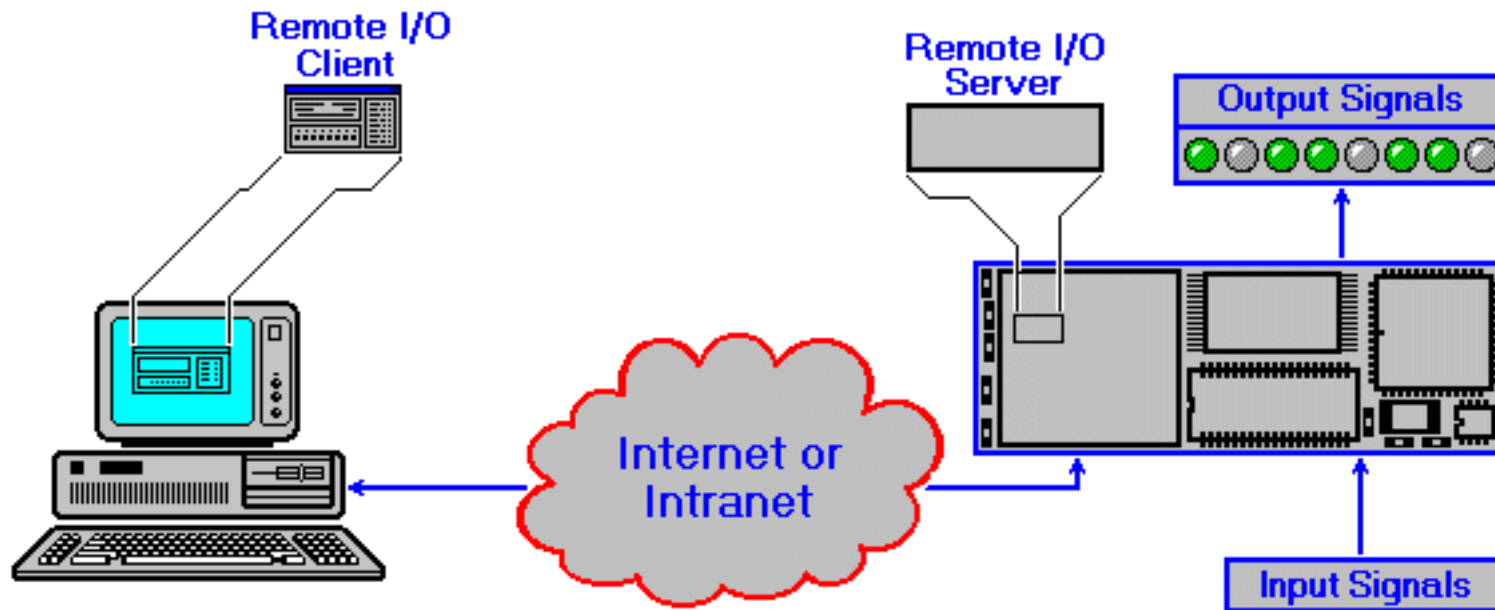
Embedded Networking Software - Web Server

- * With a **Embedded Web Server**, you can build a user interface based on (D)HTML, XML or Java for any embedded system.



Embedded Networking Software - Remote I/O

- * Remote I/O offers remote control and distributed measurement for any kind of process control.



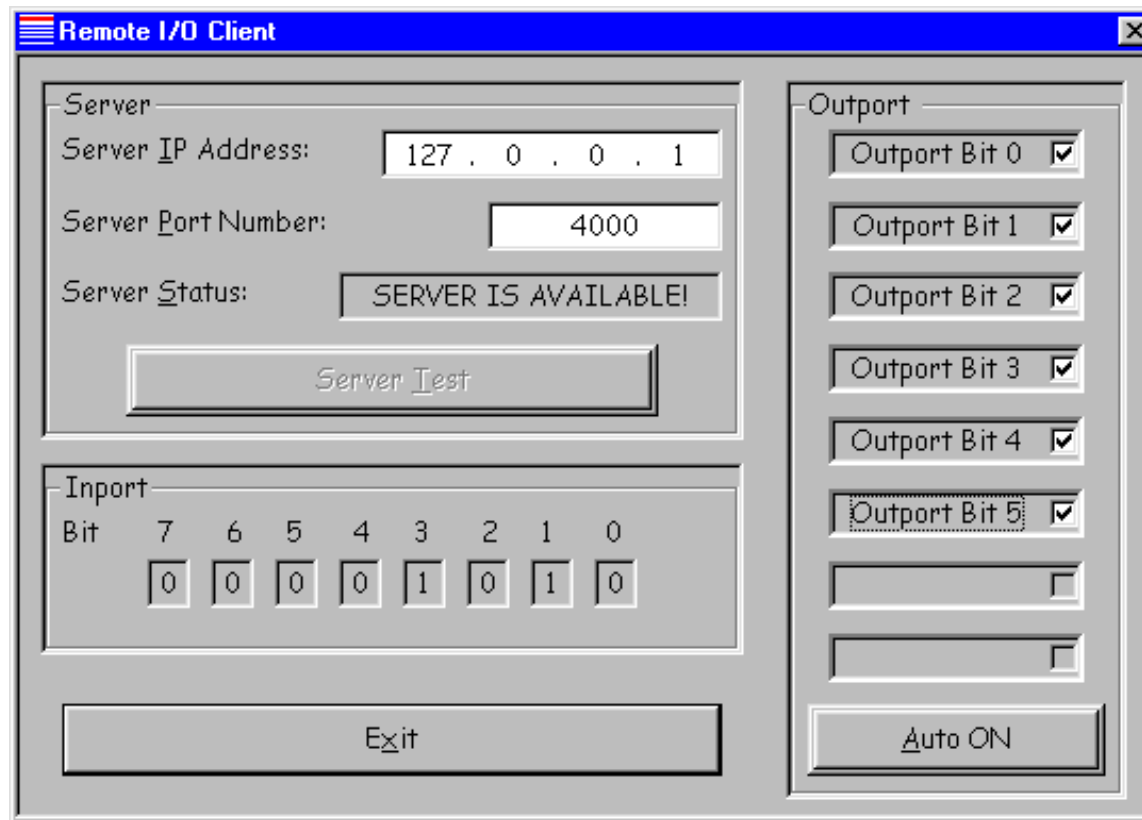
- * Remote I/O applications consists of two software components: 1.) the **Remote I/O Server** and 2.) the **Remote I/O Client**.



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Embedded Networking Software - Remote I/O

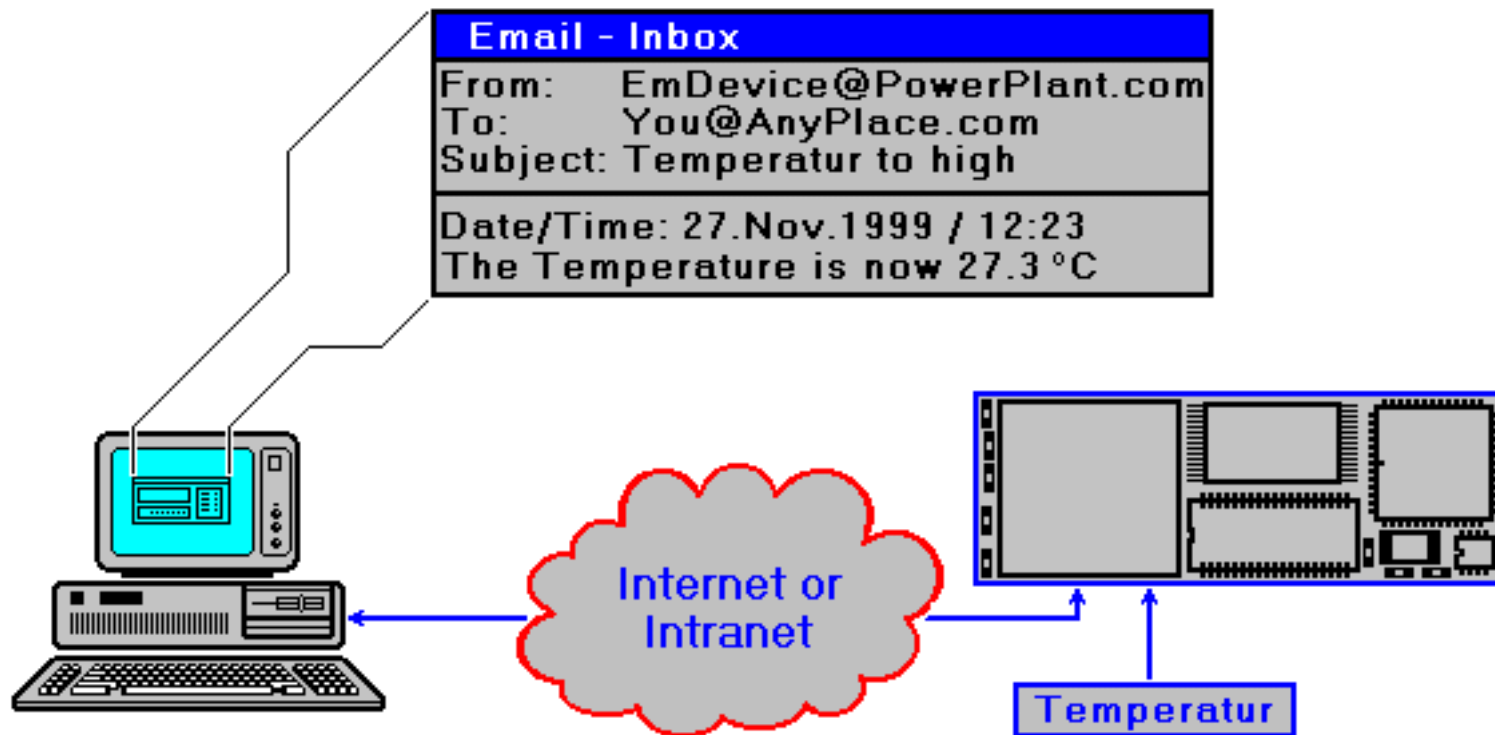
- * The Remote I/O Client sends requests for remote I/O port read or write operations to the Remote I/O Server.



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Embedded Networking Software - Email Alerter

- * The **Email Alerter** is a POP3-based email agent for embedded systems. With the help of this software component, the embedded system sends mail to Internet mail servers.



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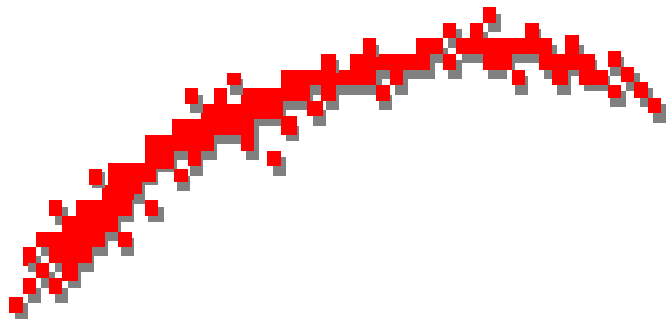
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