SYSTEMS

16/32 bit UNIX industry computer

■ DS90-11

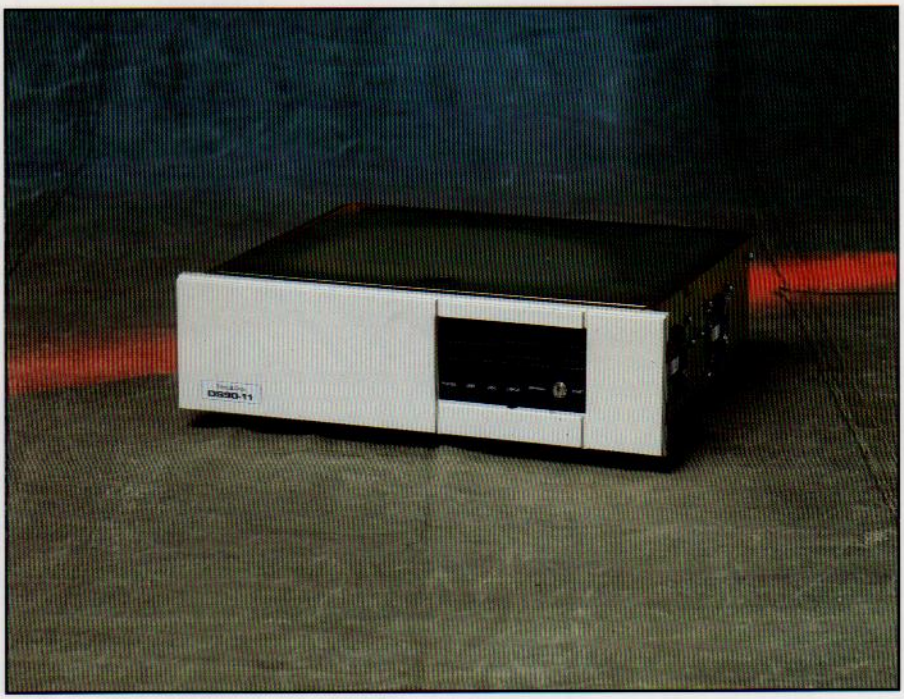
The DS90-11 is the industry computer in the DS90 UNIX computer family and has been designed to work in the heavy environment at the factory floor. The computer has extensive expansion facilities through the DataBoard industry concept. Combined with the communication capabilities provided, this makes the DS90-11 a perfect computer as a central unit in industry systems, process control systems, data acquisition and other industrial applications.

The computer is housed in a heavy-duty 19" metal cabinet. The mass storage units are housed in separat cabinets.

Thanks to the realtime characteristics of the D-NIX operating system, production and administration can now be linked togheter in one, single computer.

The D-NIX operating system allows you to use and develop true multi-user software, as a base or as complement to the wide range of existing D-NIX/UNIX software. And thanks to the portability of software using the D-NIX operating system, the DS90-11 offers an easy growth path to larger systems in the future.

- **M68010 processor**
- **10 MHz clock frequency**
- **2 - 4 MByte primary memory**
- **up to 12 serial ports**



The processing power is based upon a Motorola 68010 processor with a powerful NS numeric co-processor. These are matched with a high speed memory system which allows the processor to operate at full rate without any wait-states. The 68010 processor operates with a virtual memory management system which is fully supported by the D-NIX operating system.

A prioritized interrupt system, the large main memory and a 10 MHz clock all contribute to support high performance multi-user, multi-tasking software.

High capacity storage

The computer can be extended with one or more separate mass storage devices with capacity ranging up to several hundreds MBytes. Data transfer to peripherals is handled by a four-channel DMA chip.

The DS90-11 incorporates two independent internal high-speed peripheral buses conforming to the SCSI (Small Computer System Interface) standard, over which data is transferred to the separate mass storage devices. The SCSI bus supports arbitration and contention logic and can be controlled via programmed access or DMA, enabling parallel and processor independent operation with device-to-device or device-to-memory transfer speeds at up to 1.2 megabyte per second.

The permanent storage is a high capacity hard disk in the range of up to 600 Mbytes. The drives have an average access times of 16 milliseconds. Interfacing to the SCSI bus is done via a high performance controller performing high speed multi-sector I/O as well as error check, drive formatting and alternate sector allocation.

A mix of up to 7 drives can be connected giving a total mass storage of several gigabytes.

The floppy interface runs a 5.25" floppy disk with several software selectable compatibility modes, such as IBM XT and IBM AT. File structured PC/AT diskettes can be read and written with the optional MS-DOS file handler.

An advanced 1/4" streaming tape drive (located in the disk unit) provides high-speed backup of hard disks.

Terminals and printers

Up to four terminals or printers can be connected to the quad RS232 ports on the main PCB. Two more boards can be added giving a total of 12 direct communication RS232 ports.

DIAB DATA

Diab Data AB. Box 2029, S-183 02 Täby, Sweden. Telephone +46 8 768 06 60. Telefax +46 8 792 05 61.
Diab Data Inc., 323 Vintage Park Drive, Foster City, CA 94404, USA. Telephone +1 415 571-1700. Telefax +1 415 571-9068.
Diab Data AS. Maridalsveien 9, N-0178 Oslo 1, Norway. Telephone +47 2 36 37 75. Telefax +47 2 36 11 79.

DataBoard expansion

The computer is equipped with a system expansion backplane having three slots for DataBoard cards. These slots are used for expansion as regards communication, color graphics, networks, etc. The DataBoard expansion facility also makes it easy to integrate the DS90-11 in industry applications.

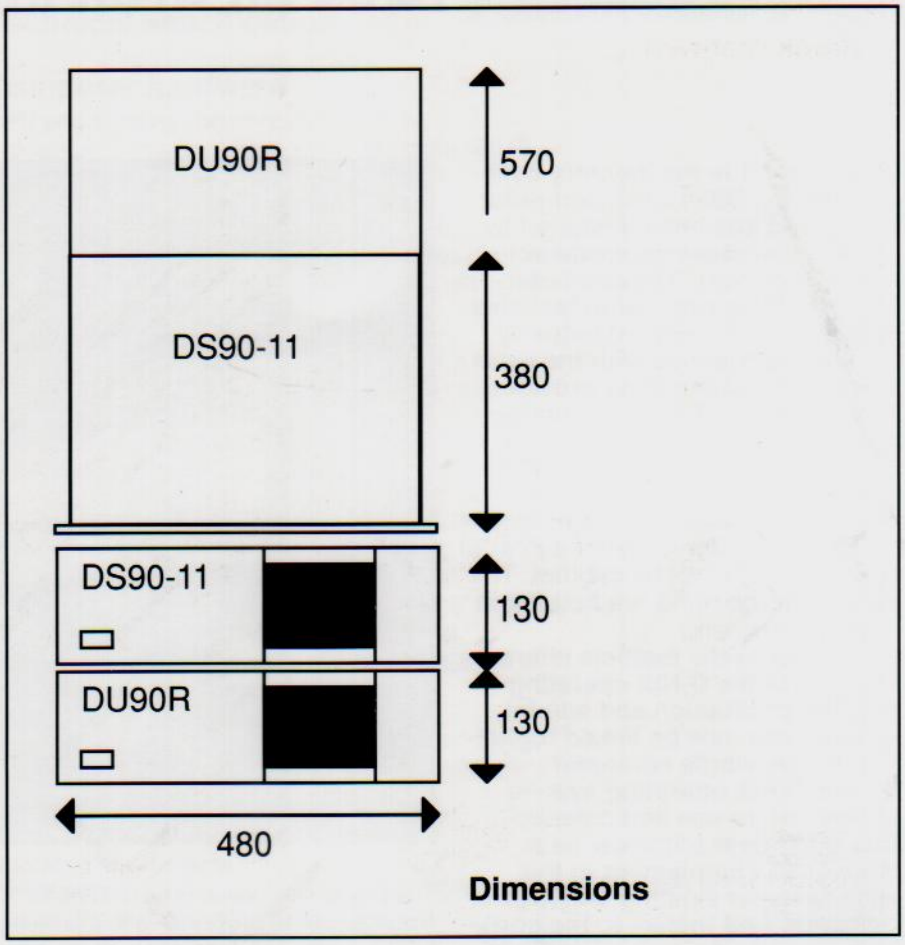
Communication

The DS90-11 system offers extensive facilities for communication with other local or remote systems.

Thanks to the DS90-11 real time performance, the system is uniquely suited to applications involving on-line communication with other computers. Local Area Networks, Wide Area Networks, asynchronous and synchronous communication protocols are fully supported through advanced communication hardware and software.

Communication in the DS90-11 system employs a 'gateway' technique, utilizing auxiliary processors which results in very little overhead to the main processor.

All types of networking function in the system in exactly the same way. The users will not even be aware that they are communicating with another computer.



Dimensions

D-NIX – the operating system

The D-NIX operating system and the DS90-11 have been created for each other as an optimized pair. D-NIX fully conforms to the UNIX System V interface definition (SVID) while providing the execution speed, real time performance and robustness necessary for demanding technical applications. D-NIX is a multi-tasking, time-sharing operating system where each user can invoke any number of tasks during an interactive session. Memory is efficiently utilized since only the small non-swappable kernel resides in memory to provide the most essential services. Guaranteed response time to interrupts assures timely servicing of external requests, making the DS90-11 particularly well suited to data communication, data logging and office automation.

D-NIX runs with 'no-wait' system calls and event queues are employed to further speed up response times.

Bit mapped disk structure is used to improve speed of disk access and reduce the vulnerability of file systems to occasional "bad spots". Furthermore, this structure permits the creation of contiguous files and copes with variable block sizes.

Handlers

A concept of handlers has been implemented to increase efficiency of D-NIX and to provide programmers with a new dimension in software development. Normally, handlers are employed to perform different system functions, such as handling files or databases, networks, communication protocols, etc. Several different file handlers can be used simultaneously. The D-NIX file handler can be used in parallel with, for instance, an MS-DOS file handler.

A complete development environment

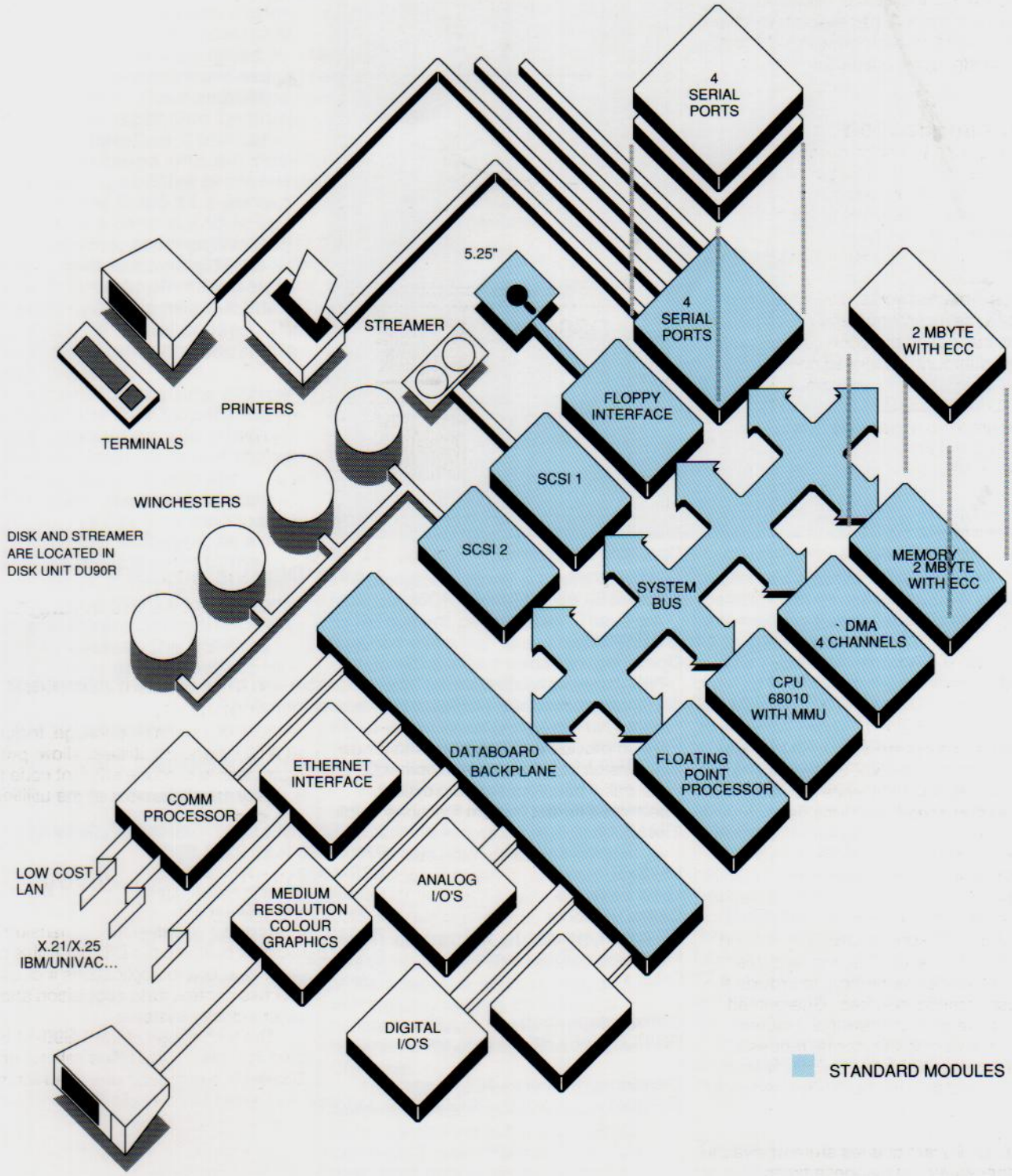
The D-NIX extension package, including all AT&T standard utilities, allow programmers to produce efficient code that is easily maintainable with the utilities included.

DS90-11 – an industry workhorse...

Thanks to the DataBoard expansion facilities built into the DS90-11, this computer is suited to applications including process control, data acquisition and other industry systems.

The technology of the DS90-11 is also available in the office cabinet unit DS90-10, a computer designed for medium sized office applications.

Block diagram



Ordering information

The DS90-11 can be tailored to fit a customer's needs in terms of performance and capacity.

Diab Data has prepared a special guide called "DS90-11 - Configuration" as an aid in configuring the system. This guide also includes ordering information for all basic and expansion units.

Technical specification

Computer hardware

CPU and primary memory

Processor	Motorola 68010
Clock speed	10 MHz
Wait-states	None
Co-Processor (floating point)	NS32081
Memory	2 Mbytes (2 more Mbytes optional)
DMA capacity	4 channels at 10 Mbits each

Mass memory

Diskette drive	5.25", 1.2 MByte
Disk channels	2 SCSI channels

Mass memory (optional)

Disks, SCSI	DU90R, 110-600 MByte WU90R, 400+400 MByte (optical disk)
Backup, SCSI	BU90R, 2 GByte tape DU90R, 150 MByte streamer

Ports

Standard	4 RS232
Max	12 off RS232

DataBoard Expansion

Standard	3
Expansion	20

Miscellaneous

Operating environment	10 - 35°C
Power supply	115/230 VAC, 47 - 63 Hz , 220 W

Fan cooling with low-noise fans.

Software

Operating system

D-NIX operating system kernel fully compatible with UNIX System V. Utilities and development package are licensed products from AT&T.

Programming languages

ASSEMBLER, BASIC, C, COBOL, FORTRAN 77, PASCAL

Communication

IBM	3270 SNA/SDLC, 3770 SNA/RJE, 3270 API 2780/3780 RJE, 3270 BSC
UNISYS	UTS-4000
Local networks	Ethernet 802.3 (TCP/IP, NFS)
Global networks	X.21, X.25, X.25PAD
PC communication	TCP/IP, PC-NFS, D-LINE/PC
Macintosh communication	D-SHARE
Other	Telex, Teletex, Videotex

Office information

UNIPLEX, LEX-68, Q-Calc, etc.

Development tools - 4GL

INFORMIX, ORACLE, PROGRESS, MIMER

Diab Data/002/1500/Promotive