# Special Systems Group

Where the DEC standard solutions may not meet all of a customer's Application requirements Digital provides a group which is distributed world wide. This is the special systems group and in Sydney is comprised of engineers and programmers who are skilled in design and manufacturing of complex communications, multiprocessor and industrial systems.

The group also provides services and products to meet local needs. If your applications need special services or products, special systems is here to get involved, from concept to completion. Discuss your application with your Digital Sales Office.
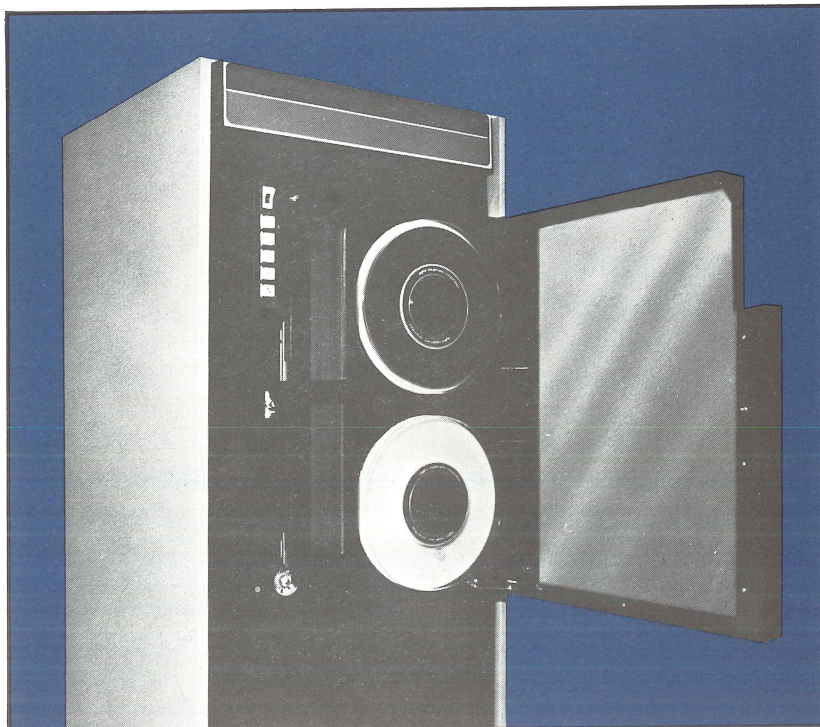
TU-45 Magnetic Tape System

The TU-45 is a fully integrated, high performance magnetic tape storage system, specifically designed to operate with Digital's PDP-11 family of computers, including PDP-11/70.

Using standard industry recording formats, with 1600 bits per inch (phase encoded) or 800 bits per inch (NRZI), the half inch tape incorporates eight tracks of data storage and one parity bit. As industry standard format is used, data can be easily transferred between computers, and permits unlimited off-line data storage, with up to 40 million characters per reel.

In addition, the TU-45 magnetic tape is ideal as a back-up arrangement for standard disk drives

in case of computer breakdowns, so that operational continuity can be achieved.

The system also comes into its own where low-cost archival storage is necessary.

With a speed of 75 inches per second over the tape head, and a rewind time of 115 seconds, reading can be performed while the tape is moving in the reverse or forward direction. The reverse direction reading is particularly useful in checking for errors.

The TU-45 is available for new installations or for adding on to existing compatible systems. Additional drives operating with the same controller can be added, expandable to eight tape drives in a single system.

Disk Back Up with Magnetic Tapes

DISKS	TU16	TU45
RP04/5	38 min	24 min
RP06	78 min	49 min

The above chart indicated the minimum back up times in minutes of RP04, RP05 and RP06 disks with the TU16, and TU45 magnetic tapes, when blocked in 2048 bytes of information.

Utilising 10½" reels (2400'), the tabulated times include rewind, as well as one minute for dismounting the existing reel, and replacing it with a new reel.

Software allows the back up process to be uninterrupted, and if there are other tasks running in a timeshare environment these times will be larger and dependent on the type of jobs.

Naturally, the back up times are dependent on software overhead, but the figures cited here are calculated using software systems which provide a disk to tape copy, and vice versa, without file structure. (RSX-11M, RSX-11D, IAS)

New 600 LPM Line Printers— LP11-Y, LP11-Z

The LP11-Y and LP11-Z line printer systems, designed and manufactured by Digital, provide all PDP-11 users with a high performance, versatile printing capability.

Filling the gaps between the highly successful 300 and 1200 line per minute standard products, the LP11-Y and LP11-Z can be used for remote job entry stations and wherever quality, speed and high vertical formatting flexibility are required.

The printer has a line length of 132 columns and prints at a rate of 600 lines per minute using the 64 ASC11 character set, and 436 lines per minute when using the 96 ASC11 character set.

Both models contain one 132 character memory with a print hammer assigned to each of the 132 print positions.

As an optional extra, the Direct Access Vertical Format Unit (DAVFU), a highly reliable paper advance controller, is available for 1 to 63 line vertical indexing under program control, which inserts special non-printing characters in the data stream being sent to the printer.

With both EDP and Scientific print drums available the LP11-Y and LP11-Z also offers such features as ribbon deskewing for higher reliability; static eliminator and paper receptacle for improved paper stacking; and self testing by six fault indicators (GATE; PAPER; RIBBON; HAMMER; FORMAT; and TAPE).

The line printers are interfaced to the PDP-11 UNIBUS via the standard LP11 controller.
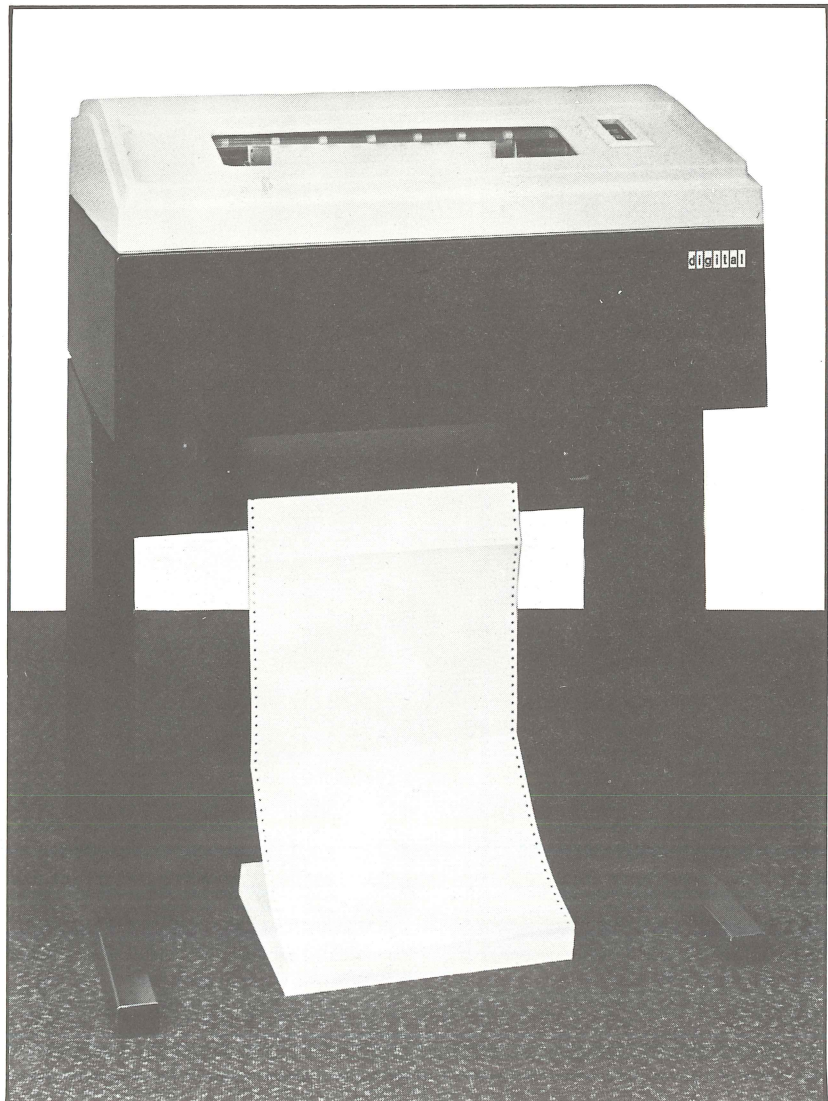
RP06— New Disk Drive by Digital

A new high capacity, high performance disk unit, the RP06 has recently been introduced to the Australian market by Digital.

The RP06 is a 200 million byte drive that sets a new low cost per byte of disk storage available on the mini/midi market.

The RP06 utilises the RP04 controller, and the two disk drives can be intermixed on the one PDP-11 system.

Double capacity for the RP06 is achieved by doubling the track density from 200 to 400 tracks per inch.

The disk drive features the same high performance including average seek plus latency in 36.3 milliseconds, and peak transfer rate of 1.2 microseconds/byte.
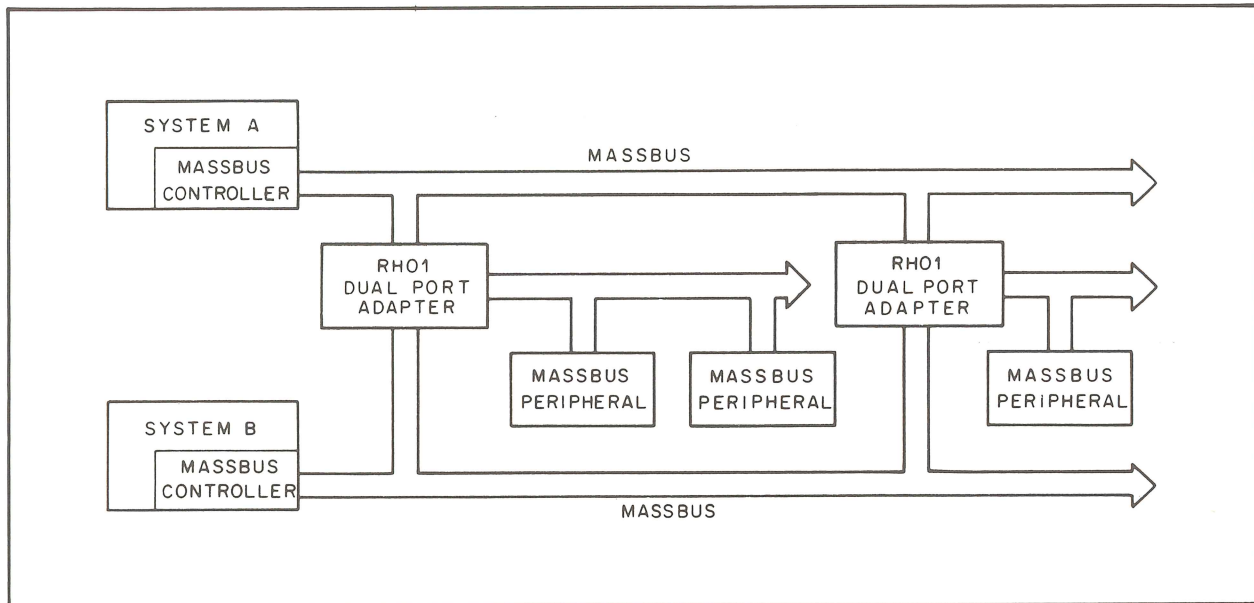
RH01— Dual Port Adaptor

A situation sometimes arises where it is useful to have more than one processor connected to a variety of high performance peripherals, such as the TU16 and TU45 tape drives or R503, R504 and RP04 disks. Generally, these applications are either for resource sharing, high availability redundant systems, or where a processor has to be switched out of a system for maintenance, and work continuity is necessary.

A new electronic switching system from Digital, the RH01 dual port adaptor, provides a flexible unit combining two functions—the function of dual port adaptor, and that of switching, either manually or by program control, of high speed peripheral data storages between two processors.

The RH01 is compatible with the majority of the PDP-11 family of computers, including the PDP-11/70, and the DEC SYSTEM 10.

Some high speed peripherals have just one port for access by a processor. The RH01 incorporates the dual port equipment needed to allow two processors to have simultaneous access to the peripheral.

The RH01 also handles the task of switching a shared MASSBUS with up to eight connected peripherals between two processors.

With this configuration, only one processor at a time can have access to one peripheral.

The system can be made more flexible by using multiple RH01 expansion units to provide individual switching to a particular peripheral, or group of peripherals, as indicated in the diagram.

The switching is designed so that it is transparent to user programs when it is manually switched to one processor. In a programmable mode it can be essentially transparent to the user program.

The RH01 has a switch that allows the user to select either one of the processors, or programmable operation, or be switched out of the

system for servicing, or to be held on standby, while the rest of the system continues to operate.

After the switch has been moved to the selected position, the actual switching is done by pressing a button.

With two processors having access to the same set of peripherals, the RH01 will automatically switch to the requesting port when an attempt is made to read or write any of the devices on the common MASSBUS. If an attempt is made to connect to one port while the RH01 is connected to the other port the request will be stored and the RH01 will switch as soon as it becomes available.

With software designed for a single system, it would be possible to have occasional delays unless it is modified appropriately. Once a controller has been seized by a port it is released again if not used in a time selectable between one second and four minutes.

There is a variety of switching systems and dual port adaptors in existence. The RH01 is the first to provide both functions conveniently combined in the one unit.

Compact System Controller for Local and Remote Control

Automation has been the watchword in industry for the past two decades, with the need to achieve greater productivity and more efficient production methods in order to offset an ever-increasing wage bill.

The computer has an important role to play in systematised automation processes, and consequently, considerable development has become apparent over the past few years.

The Compact System Controller (CSC), designed and manufactured by Digital specifically for an industrial production orientated environment, provides both local and remote control.

A highly flexible modular subsystem for input and output of all types of field signals, the CSC provides a low cost means of connecting in excess of 500 points of digital or analog data to a PDP-8 or PDP-11 family of computers.

A wide variety of control and data acquisition devices can be accommodated, and plug-in expansion units can be attached to allow control of many thousands of points.

The CSC subsystem is custom-designed for each application and is engineered to withstand the rigours of an adverse laboratory or industrial environment.

CSC may be driven by a computer for control and data acquisition at local points, or may be driven by a micro-processor at remote sites, with or without direct communication to a central computer.
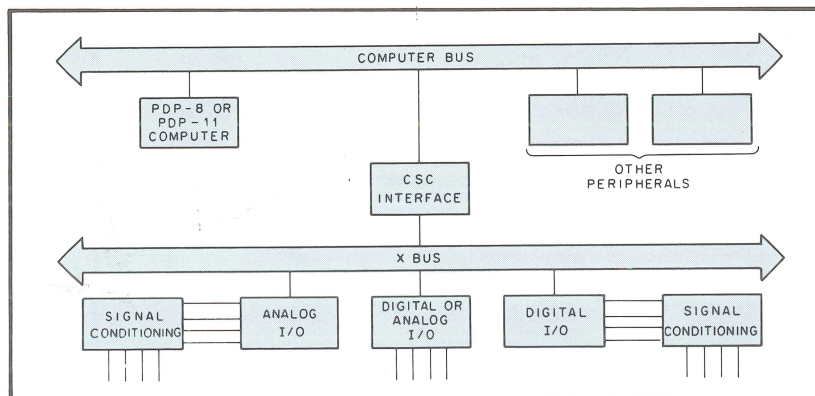
The addition of a microprocessor to the CSC subsystem to provide a very powerful programmable remote terminal, is the most recent and possibly the most exciting development for the CSC concept.

The microprocessor is PDP-8 compatible and uses either Programmable Read Only Memory (PROM) or core for program storage. Programming the "Smart' CSC is virtually identical to programming the PDP-8 family minicomputers, and all PDP-8 peripheral devices will plug directly into the 'Smart' CSC. Therefore, data communications, on site data logging, or even access to mass storage is simply a matter of plugging in the appropriate option and utilising well proven and well documented software techniques.

The parallel high speed data path of the CSC makes it ideal for such applications as hydro-electric monitoring and control, process monitoring and control, materials handling, communications systems monitoring, pipeline control, telephone industry information system, air conditioning control in large buildings, scientific data acquisition, industrial data information systems, environmental monitoring and load optimisation for energy conservation.

Specially designed for high reliability and serviceability, the Compact System Controller is supported under Digital's RSX11-M and RSX11-S software system.

Each CSC system is configured and overseen by a project engineer from sale to acceptance and after. The project engineer and other specialists are available for user consultation.