DILOG

Model DQ 202A
SMD INTERFACE COMPATIBLE
DISC CONTROLLER
DEC LSI-11 COMPATIBLE

FEATURES

- The first *true* SMD I/O disc controller for the LSI-11 computer that does not retain disc drive parameters in on-board components.

- Interfaces one or two drives (mix-or-match) with the same or different characteristics such as transfer rates, number of heads, data surfaces and capacities to LSI-11, 11/2 and 11/23 computers.

- Maintains compatibility with RP02/RP03 software drivers RT-11 and RSX-11.

- Up to 88% utilization of drive unformatted storage capacity.

- Switch selectable RP02/RP03 emulation.

- Low cost microprocessor based intelligent controller is completely contained on one quad printed circuit module.

- Up to 60% less power consumption than other similar controllers.

- Automatic media flaw compensation with bad-sector flagging and transparent, automatic, track-skipping features.

- Automatic power down protection.

- Full sector data buffer for elimination of data late errors due to DMA latency.

- On-board bootstrap loader for RP02/RP03 and TM-11 support, with jumper selectable bootstrap address.

- Automatic self-test mode having built-in microdiagnostics and a data protect feature with status indicator.

- Cost effective for 8″ Winchesters, yet allows larger 14″ Winchesters, SMD pack, or CMD cartridge type drives to be used without changing controller or components on the controller.

- Memory addressing to 128K words.

- Multiple sector transfers across track boundries to 64K words.
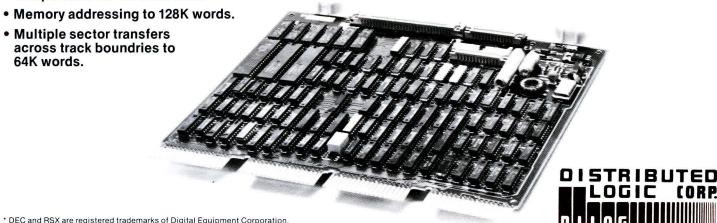
DESCRIPTION

The Distributed Logic Corporation (DILOG) Model DQ202A is the first *true* field-proven *SMD I/O disc controller* on a *single quad size board* which allows you to mix-or-match up to two each 8″ or 14″ Winchester, SMD pack or cartridge type disc drives without removing and replacing one or more components on the controller during or after installation. If your data base outgrows your system, you simply add and/or replace the drive of your choice, no need to notify DILOG. This controller is compatible with all LSI-11, 11/2 and 11/23 based systems using the DEC RP02/RP03 software drivers in RT-11 and RSX-11 operating systems.

The Model DQ202A controller is microprocessor based and implemented on a single quad board which plugs into and requires one slot in any LSI-11 based quad backplane.

On-board firmware provides such features as automatic self-test, automatic media flaw compensation, write protect, and automatic read retry.

A complete disc subsystem is comprised of the controller, one or two disc drives, and the necessary interconnecting ribbon cables.

No specially wired connectors, additional chassis, power supplies or bus converters are required. The single quad printed circuit module contains all necessary disc controller interface and formatting circuitry.

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DISC DRIVE COMPATIBILITY

The Model DQ202A can interface with up to two SMD-I/O or compatible drives having up to 300 megabytes of unformatted capacity each. Two drives with the same or different characteristics and/or types (Winchester and cartridge) may be handled by the same controllers. This includes mixing 8″ Winchester, 14″ Winchester, SMD pack, or cartridge type drives.

MEDIA FLAW COMPENSATION

The Model DQ202A is available with two methods of providing for prevention of data errors caused by media flaws. The first is bad sector mapping when formatting the disc. The second is automatic, flawed media compensation built into the firmware, which causes a transparent track skipping function to be implemented whenever a hard error is detected on a given track. Soft errors are compensated for by an automatic read retry function.

HARDWARE BOOTSTRAP

The Model DQ202A contains an on-board hardware bootstrap loader for RP02/RP03 and TM-11 mag tape support. On-board jumpers allow you to select one of two bootstrap addresses, in addition to enabling/disabling of the bootstrap. When the bootstrap is disabled, the Model DQ202A will boot from the standard DEC bootboard.

SOFTWARE SUPPORT

The Model DQ202A is transparent to the RP02/RP03 drivers contained in the various DEC operating systems, such as RT-11 and RSX-11. A format/diagnostic routine is supplied with each unit.

DATA FORMAT MAPPING

The Model DQ202A allows the various types of physical drives with which it is compatible to be mapped into a maximum of 8 logical units. Logical unit size may vary with drive capacity and type.

MICROPROCESSOR BASED

The heart of the Model DQ202A is a proprietary, high speed, bipolar microprocessor configuration. The majority of controller functions are implemented in firmware. This allows a parts count significantly reduced from the conventional controllers. User benefits include reduced size, increased controller reliability and applications flexibility.

AUTOMATIC SELF-TEST FEATURE

The Model DQ202A is supplied with an automatic self-test feature which causes on-board microdiagnostics to be run on the controller each time the Q-BUS is initialized. A green card-edge LED indicator is lit and remains lit after each successful completion of the microdiagnostics. Should the microdiagnostic fail, the LED indicator is extinguished and a data protect feature is invoked which disallows any communications between the CPU and the disc, thus protecting critical data base areas from the over-writing of erroneous information.

MODE CONTROL SWITCHES

Model DQ202A contains on-board jumpers and switches for selection of starting bootstrap address, bootstrap enable/disable and disc mapping control.

LOW POWER CONSUMPTION

With its single board architecture and extensive use of Low Power Schottky circuitry, the Model DQ202A exhibits up to 60% less power consumption than other DEC compatible SMD type disc controllers.

FULL SYSTEMS SUPPORT

Distributed Logic Corporation also supplies fully integrated and tested disc subsystems, including the disc drives themselves. For the customer that wishes to purchase drives directly from the manufacturer, they can be drop-shipped to our facility where they will be integrated, tested and shipped as a complete system with the Model DQ202A.

DOCUMENTATION

Each Model DQ202A is supplied with an Instruction Manual.

OPTIONS

Disc drive I/O cables • Disc drives • Factory integration of customer-supplied drives.

DISC DRIVES SUPPORTED

The Model DQ202A will interface to industry standard SMD-I/O compatible disc drives, including manufacturers and drive types as follows:

CDC — SMD/MMD/CMD
CENTURY DATA — TRIDENT SMD
BALL COMPUTER PRODUCTS — SMD
AMPEX — SMD/WINCHESTER/DFR
FUJITSU — WINCHESTER
KENNEDY — WINCHESTER
PRIAM — WINCHESTER
BASF — WINCHESTER
MEMOREX — WINCHESTER
MICRODATA — WINCHESTER

Rotational Rates — to 3,600 rpm
Unformatted Capacities — to 300 megabytes

CONTROLLER SPECIFICATIONS

Mechanical — The Model DQ202A is completely contained on one quad module 10.44 inches wide by 8.88 inches deep, and plugs into and requires one slot in any DEC LSI-11 based backplane.

Computer I/O
  Register Addresses (PROM selectable)
  — Device Status Register (RPDS) 776 710
  — Error Register (RPER) 776 712
  — Control Status Register (RPCS) 776 714
  — Word Count (RPWC) 776 716
  — Bus Address (RPBS) 776 720
  — Cylinder Address (RPCA) 776 722
  — Disc Address (RPDA) 776 724
  — Silo Memory (SILO) 776 726

Data Transfer
  — Method: DMA
  — Maximum block size transferred in a single operation is 64K words.

Bus Load
  — 1 std unit load

Address Ranges
  — Disc drive: up to 340 megabytes total
  — Computer memory: to 128K words

Interrupt Vector Address
  — PROM selectable (factory set at 254, priority level BR5)

Disc Drive I/O
  — one 60 pin type "A" flat ribbon cable connector mounted on outer edge of controller module. Two 26 pin type "B" ribbon cables (1 for each drive interfaced).

Signal — SMD A/B flat cable compatible

Power — +5 volts at 3.5 amps, +12 volts at 300 milliamps from computer power supply.

Environment — Operating temperature 40°F. to 140°F., humidity 10 to 95% non-condensing.

Shipping Weight — 5 pounds, includes documentation and cables.

†Specifications subject to change without notice.

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