DESCRIPTION

The MP12 is available in a basic system configuration and a teletype system configuration. The basic system consists of an MP12 Microcomputer, Chassis Assembly, and Power Supply. The teletype system consists of a basic system together with an Internal Teletype Controller and a Teletype Modification Kit. Both configurations include a complete basic software package and supporting documentation.

MP12 MICROCOMPUTER

- Twelve-bit general purpose computer with 1.5 microsecond cycle time.
- Includes 4096-word core memory, direct memory access channel, processor input-output channel, power-fail/auto-restart circuitry, hardware interrupt facility, and operating console.
- Plugs directly into a dedicated position in the Chassis Assembly.

CHASSIS ASSEMBLY

- Rugged card-cage holds processor, power supply, and up to 14 interface cards.
- Printed circuit backplane furnishes power and I-O signals to interface cards.
- Accepts I-O adapters to extend I-O signals from backplane to cable connectors.
- Mounts in an EIA standard 19-inch rack.

POWER SUPPLY

- Delivers 20 A at 5 V dc to power processor, modules, and interface cards.
- Plugs directly into a dedicated position in the Chassis Assembly.
- Operates from 117 V ac (±10%), 60 Hz primary source.
- Includes power failure detection circuitry and line frequency clock.

INTERNAL TELETYPE CONTROLLER

- Contains parallel-to-serial and serial-to-parallel conversion circuitry required to interface an ASR-33 teletype to the MP12.
- Full-duplex, asynchronous operation.
- Single printed circuit card mounts inside processor enclosure.

TELETYPE MODIFICATION KIT

- Provides 20 mA teletype signal loop current.
- Translates TTL signal levels to teletype-compatible signal levels.
- Contains circuitry to permit incremental control of the paper tape reader.
- Designed to install in a Teletype Corporation Model 3320-3JA teletype.

FABRI-TEK INC. COMPUTER SYSTEMS

HOME OF MP12

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FABRI-TEK INC.
COMPUTER SYSTEMS

5901 South County Road 18 • Minneapolis, MN 55436 • (612) 935-8811

MP12

MP12 MICROCOMPUTER

**999-4090-00** Without Internal Teletype Controller
999-4090-01 With Internal Teletype Controller

DESCRIPTION

The MP12 is a compact, rugged, 12-bit digital computer with complete processing capability. Designed for industrial control, laboratory automation, data communications, data acquisition, and other applications, the MP12 consists of the following elements:

- 12-bit parallel logic processor
- 4 k x 12 random access core memory
- Processor input-output channel
- Direct memory access input-output channel
- Hardware interrupt facility
- Power-fail, auto-restart circuitry
- Operating console

MP12 system options include an EIA standard 19-inch rack-mountable Chassis Assembly, 5-V Power Supply Module with line frequency clock, Wire-Wrap Module, Data Storage Module, and standard interface cards for a variety of peripheral devices. All modules and interface cards plug directly into the Chassis Assembly.
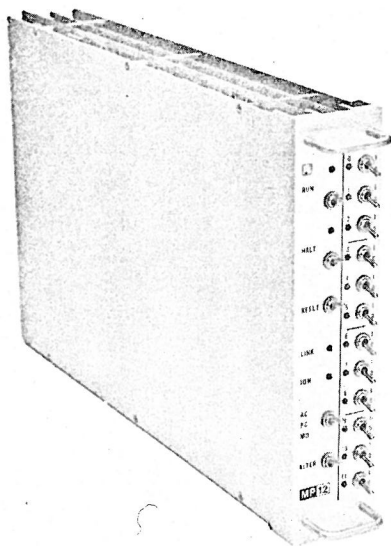
FEATURES

- PDP-8 instruction set compatibility
- Accepts up to 2048 words of PROM in 512-word increments
- Remote control signals permit operation from a remote control panel
- Non-volatile memory

SPECIFICATIONS

MEMORY 4096 x 12 magnetic core with 1.5 microsecond cycle time.

INPUT-OUTPUT Processor input-output channel transfer rate — 66,000 words/second. Direct memory access channel transfer rate — 666,000 words/second.

INTERRUPTS Single-level with program controlled priorities.

OPERATING TEMPERATURE 0° C to 50° C.

POWER REQUIREMENTS 8 A at 5 V dc, $\pm 2\%$.

PHYSICAL Processor plugs into a dedicated position in the Chassis Assembly. Dimensions: 16.3 in. (41.1 cm) long, 9.5 in. (24.1 cm) high, 2.1 in. (5.4 cm) wide, 6.25 lb. weight.

SOFTWARE Standard MP12 software includes: Assembler, Binary Loader, Source Edit Utility, Debugging Utility, Processor Diagnostic, and 360/370 Cross-Assembler.

DOCUMENTATION Standard MP12 documentation includes: Reference Manual, System Manual with schematic diagrams and source listings for standard software programs, and I-O Interfacing Manual.

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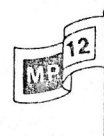
HOME OF MP12

DESCRIPTION

The Magnetic Tape Drive Controller incorporates the circuitry necessary to interface up to four industry-standard magnetic tape drives to the MP12. It consists of four functional sections: a motion control section, a read section, a write section, and a direct memory access interface section. Recording format is IBM compatible. Data formats are 8-bit character format and 12-bit binary format. The controller is available in a standard version and a buffered version. The standard version uses the processor memory for direct memory access data transfers. The buffered version uses a 4096-word Data Storage Module, which forms an integral part of the controller, for direct memory access data transfers.

SPECIFICATIONS

RECORDING FORMAT NRZI, 800 bpi, nine-track, odd parity.

ERROR CHECKING Vertical parity, longitudinal parity, cyclic redundancy, and record format.

OPERATING SPEEDS Factory set to operate at 37.5 ips. Field adjustable to operate at 12.5 to 50.0 ips.

TRANSPORT REQUIREMENTS Magnetic tape transports must be equipped with a dual-gap read-after-write head assembly. The controller is designed to operate with Pertec 8640 compatible transports, such as the Cipher 100X or the Ampex TMB.

OPERATING TEMPERATURE 0° C to 50° C.

POWER REQUIREMENTS
    Standard version 2 A at 5 V dc, $\pm$2%.
    Buffered version 7.5 A at 5 V dc, $\pm$2%.

PHYSICAL
    Standard version Components are mounted on a single printed circuit card that plugs directly into the MP12 Chassis Assembly. Dimensions: 16.3 in. (41.4 cm) long, 9.5 in. (24.1 cm) high, and 0.6 in. (1.6 cm) wide.
    Buffered version Components are housed in a double-width module that plugs directly into the MP12 Chassis Assembly. Dimensions: 16.3 in. (41.4 cm) long, 9.5 in. (24.1 cm) high, and 4.3 in. (10.9 cm) wide.

FABRI-TEK INC.
COMPUTER SYSTEMS

HOME OF MP12

DESCRIPTION

The Asynchronous Communications Controller incorporates the circuitry necessary to interface Bell data set Models 103, 202, or equivalent, to the MP12. The controller consists of three functional sections: a control section, a receiver section, and a transmitter section. The control section contains the timing and control circuitry necessary to interface with the data set and provide accurate transmission timing. The receiver converts serial incoming data into parallel input data with parity, framing, and overrun error detection. The transmitter converts parallel output data into serial outgoing data with one start bit and either one or two stop bits. Parity generation and checking is a switch-selectable option; the controller is capable of generating and checking both even and odd parity.

FEATURES

- Operates with Bell data set Models 103, 202, or equivalent.
- Full or half duplex, asynchronous operation.
- Programmable master reset and status interrupt control.
- Parity, framing, and overrun error detection.
- Switch-selectable even, odd, or no parity generation and checking.
- One or two stop bits.
- Switch-selectable baud rate.
- Test mode operation.
- Jumper-enabled carriage-return delay for hardcopy terminals.

SPECIFICATIONS

I-O SIGNAL LEVELS Defined by EIA standard RS-232C.

OPERATING TEMPERATURE 0° C to 50° C.

POWER REQUIREMENTS 2 A at 5 V dc, ±2%.

PHYSICAL Components are mounted on a single printed circuit card that plugs directly into the MP12 Chassis Assembly. Dimensions: 16.3 in. (41.4 cm) long, 9.5 in. (24.1 cm) high, and 0.6 in. (1.6 cm) wide.

Printed in the United States of America

DESCRIPTION

The Multi-Port Data Storage Interface incorporates the circuitry necessary to interface an MP12 Data Storage Module to a pair of MP12 processors. The Data Storage Module to be shared is part of a first system, System A. A second system, System B, requires access to the same Data Storage Module. The Multi-Port Data Storage Interface is part of System B and connects with the Data Storage Module by means of an I-O cable. This arrangement allows independent access to the Data Storage Module by both processor A and processor B.
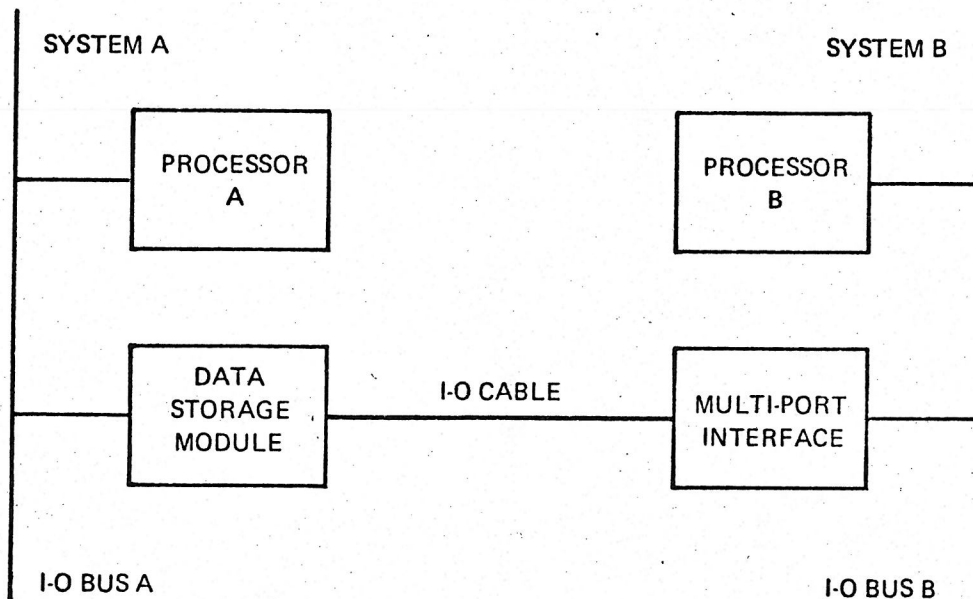
SPECIFICATIONS

OPERATING TEMPERATURE 0° C to 50° C.

POWER REQUIREMENTS 1.8 A at 5 V dc, $\pm 2\%$.

PHYSICAL Components are mounted on a single printed circuit card that plugs directly into the MP12 Chassis Assembly. Dimensions: 16.3 in. (41.4 cm) long, 9.5 in. (24.1 cm) high, and 0.6 in. (1.6 cm) wide.

DESCRIPTION

The Data Terminal Controller incorporates the serial-to-parallel and parallel-to-serial conversion circuitry required to interface a local teletype or RS-232C-compatible data terminal to the MP12. It contains a receiver and a transmitter which operate as independent input and output devices. The receiver converts serial incoming data into parallel input data with parity, framing, and over-run error detection. The transmitter converts parallel output data into serial outgoing data with one start bit and either one or two stop bits. Parity generation and checking is a switch-selectable option; the controller is capable of generating and checking both even and odd parity.

FEATURES

- Full-duplex, asynchronous operation.
- Parity, framing, and overrun detection.
- Switch-selectable even, odd, or no parity generation and checking.
- One or two stop bits.
- Teletype or RS-232C-compatible operation.
- Switch-selectable baud rates of 110 to 9600.
- Test mode operation.
- Jumper-enabled carriage-return delay for hardcopy terminals.

SPECIFICATIONS

OPERATING TEMPERATURE 0° C to 50° C.

POWER REQUIREMENTS 2 A at 5 V dc, $\pm$2%.

PHYSICAL Components are mounted on a single printed circuit card that plugs directly into the MP12 Chassis Assembly. Dimensions: 16.3 in. (41.4 cm) long, 9.5 in. (24.1 cm) high, and 0.6 in. (1.6 cm) wide.

Printed in the United States of America

DESCRIPTION

The Digital Output Interface incorporates the circuitry necessary to interface 24 digital output signals to the MP12. The 24 outputs are divided into two independently addressable 12-bit groups. Outputs can be configured as static outputs or pulsed outputs. Static outputs present data to an addressed output group whenever data is received from the processor. The data remains until another 12-bit data word is received from the processor. Pulsed outputs present data to an addressed output group for an amount of time determined by a drive-time multivibrator. After the drive time has elapsed, the output data word returns to zero. Pulsed outputs may also be configured to generate a processor interrupt after an amount of time, determined by a busy-time multivibrator, has elapsed. Drive and busy times are trimpot adjustable.

SPECIFICATIONS

DIGITAL OUTPUTS TTL or contact closure outputs. Jumper-configurable for static or pulsed operation.

VOLTAGE RANGES TTL outputs — logic ZERO, open; logic ONE, 0.0 V to 0.4 V. Contact closure outputs — logic ZERO, open; logic ONE, closed.

DRIVE TIMES TTL outputs adjustable from 1 to 10 microseconds. Contact closure outputs adjustable from 10 to 100 milliseconds.

BUSY TIMES TTL outputs adjustable from 10 to 100 microseconds. Contact closure outputs adjustable from 50 to 500 milliseconds.

OPERATING TEMPERATURE 0° C to 50° C.

POWER REQUIREMENTS TTL outputs — 1.0 A at 5 V dc, ±2%. Contact closure outputs — 2.5 A at 5 V dc, ±2%.

PHYSICAL Components are mounted on a single printed circuit card that plugs directly into the MP12 Chassis Assembly. Dimensions: 16.3 in. (41.4 cm) long, 9.5 in. (24.1 cm) high, and 0.6 in. (1.6 cm) wide.

HOME OF MP12

DESCRIPTION

The Analog-To-Digital Converter Subsystem incorporates the circuitry necessary to interface up to 16 analog input channels to the MP12. It consists of an input multiplexer, differential amplifier, sample and hold circuitry, and a 12-bit A/D converter. The subsystem accepts high-level analog signals having nominal full-scale ranges of 0 V to +10 V, ±5 V or ±10 V, and provides 12 bits of corresponding digital data which may be read by the processor.

SPECIFICATIONS

NUMBER OF INPUTS Eight differential inputs or 16 single-ended inputs.

RESOLUTION 12 bits.

CONVERSION TIME 40 microseconds.

THROUGHPUT 25,000 conversions-per-second, maximum.

LINEARITY $\pm1/2$ LSB.

QUANTIZING ERROR $\pm1/2$ LSB.

ACCURACY $\pm0.03\%$.

TEMPERATURE COEFFICIENT ±25 PPM/$^{\circ}$C.

INPUT VOLTAGE RANGES 0.0 V to +10.2375 V, -5.1200 V to +5.1175 V, or -10.240 V to +10.235 V.

INPUT IMPEDANCE 100 megohm.

ACQUISITION TIME 5.0 microseconds to $\pm0.015\%$.

OPERATING TEMPERATURE 0° C to 50° C.

POWER REQUIREMENTS 1.7 A at 5 V dc, $\pm2\%$.

PHYSICAL Components are mounted on a single printed circuit card that plugs directly into the MP12 Chassis Assembly. Dimensions: 16.3 in. (41.4 cm) long, 9.5 in. (24.1 cm) high, and 0.6 in. (1.6 cm) wide.

MP 12   FABRI-TEK INC.   MP 12
COMPUTER SYSTEMS

PART NUMBER 258-0192-00
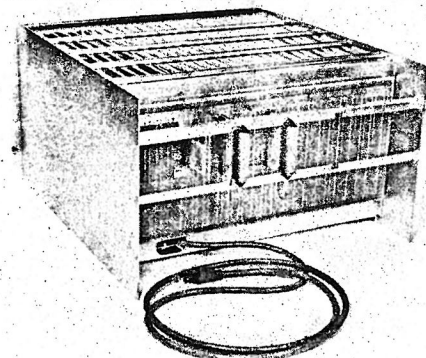
Chassis Assembly

STANDARD RETMA RACK DIMENSIONS—19" x 10.5" x 19.5"

RUGGED CARD RACK HOLDS ONE PROCESSOR, ONE POWER
SUPPLY, AND UP TO 14 INTERFACE CARDS

PC BACKPLANE PROVIDES POWER AND I/O SIGNAL BUSSING
BETWEEN ALL MODULES

ACCEPTS I/O ADAPTERS (190-1716-00) TO BRING BACKPLANE
SIGNALS TO INTERFACE CONNECTORS

PART NUMBER 261-0130-00

Power Supply

DELIVERS 20A AT 5 VDC TO POWER PROCESSOR, PERIPHERAL
INTERFACES, AND OTHER MODULES

PLUGS DIRECTLY INTO THE MP12 CHASSIS ASSEMBLY

INTERNALLY SELECTABLE FOR ANY OF EIGHT AC PRIMARY
SOURCES— 100, 120, 190, 200, 210, 220, 230, OR 240V;
47 - 63 Hz

CONTAINS PROGRAMMABLE LINE-FREQUENCY CLOCK

ACCEPTS 9.6 - 14.4 VDC PRIMARY SOURCE

PART NUMBER 268-0411-00
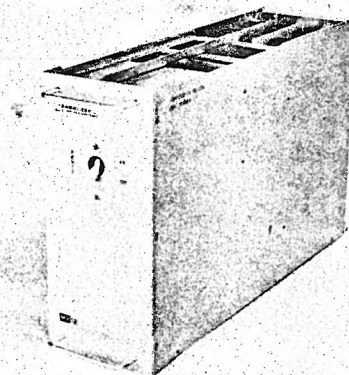
Wire-Wrap Module

RUGGED METAL ENCLOSURE HOUSES A 9.5" x 15.0" PC CARD
THAT ACCOMODATES UP TO 140 IC SOCKETS FOR WIRE-
WRAPPED INTERFACE DEVELOPMENT

PLUGS DIRECTLY INTO THE MP12 CHASSIS ASSEMBLY
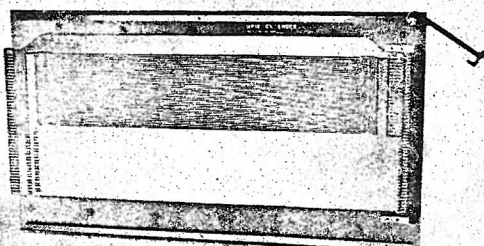
PART NUMBER 190-1778-00
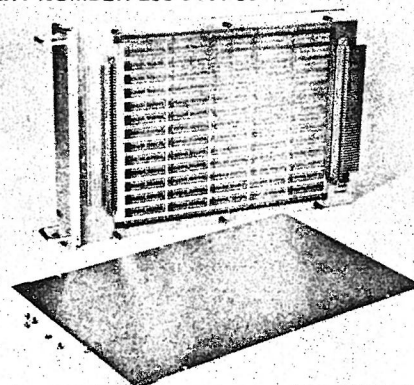
Extender Card

EXTENDS PROCESSOR AND INTERFACE CARDS OUT FROM
CHASSIS ASSEMBLY FOR MAINTENANCE PURPOSES

ELECTRICAL CHARACTERISTICS PERMIT NORMAL SYSTEM
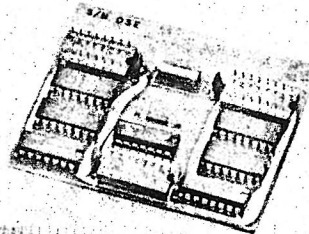OPERATION WHEN MODULES ARE EXTENDED

PROM Loader Kit

FIRMWARE IMPLEMENTATION OF THE MP12 BINARY LOADER
FUNCTIONS WITH TELETYPE OR HIGH SPEED READER
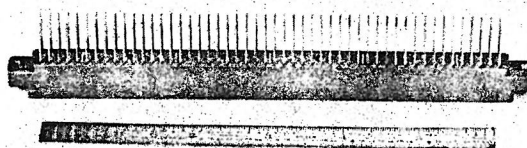PLUGS DIRECTLY INTO SOCKETS WITHIN THE MP12 PROCESSOR
ENCLOSURE

PART NUMBER 117-0335-00

I/O Connector

SAME 100-PIN CARD-EDGE CONNECTOR AS CONTAINED
IN THE MP12 CHASSIS ASSEMBLY
PROVIDES WIRE-WRAP CONNECTIONS TO PROCESSOR,
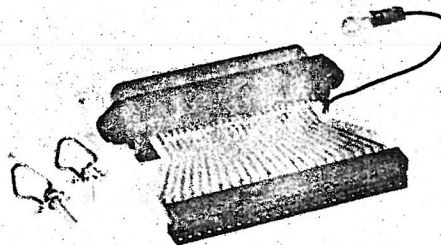POWER SUPPLY, INTERFACE CARDS, AND OTHER
MP12 MODULES

PART NUMBER 024-1518-00

I/O Adapter

EXTENDS I/O SIGNAL LINES FROM CHASSIS BACKPLANE
CONNECTOR TO I/O CONNECTOR
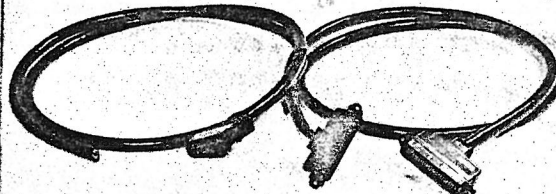24 SIGNAL PAIRS PLUS CHASSIS GROUND

PART NUMBER 190-1716-00

I/O Cable

25-PAIR CABLE WITH CONNECTOR(s)
28-GA STRANDED TWISTED PAIRS, WITH PROTECTIVE
JACKET

PART NUMBERS
262-0314-XX* (single connector)
262-0318-XX* (double connector)
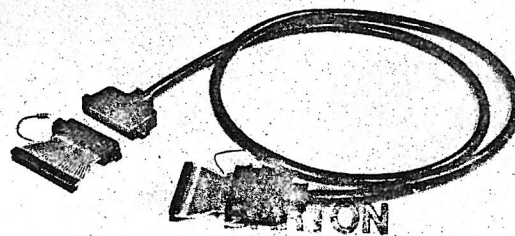262-0328-XX* (mating double connector)

*XX=Cable Length in Feet (05,10,15)

I/O Bus Extender Kit

EXTENDS I/O BUS FROM CHASSIS TO CHASSIS TO EXPAND
PERIPHERAL INTERFACE CARD CAPACITY
KIT INCLUDES 2 CABLE ADAPTERS AND 2-FT. CABLE
(262-0318-02)

PART NUMBER 117-0341-00

ALL SPECIFICATIONS SUBJECT TO CHANGE

FABRI-TEK INC. COMPUTER SYSTEMS

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