

I/A Series® Hardware AP20 Data Storage Devices



The data storage devices, operating in conjunction with the Application Processor 20, provide a means of storing and retrieving process control source programs and data. The devices include:

- 120 MB Hard Disk Drive
- 150 MB Streaming Tape Drive
- 1.2 MB Diskette Drive(s)
- 1.4 MB Diskette Drive(s).

Designed as compact system modules, these devices can be implemented singly or in combination to provide data storage configurations specifically tailored to the customer's requirements. Multiple-drive configurations provide the ability to create, expand, copy, or reorganize new or existing data.

Diskettes or streaming tape cartridges, containing various types of data, can be filed for later use. When needed, the data can be loaded into the system after inserting the media into the associated data storage device.

Hard Disk Drive

The hard disk drive is a high-speed storage device which performs random-access reading and writing of data. It is used for nonvolatile, on-line storage of large quantities of data such as programs, database files, and display information.

The 120 MB hard disk drive uses 3.5-inch non-removable rigid disks as storage media, and employ Winchester technology disks and read/write heads are sealed in a dust-free enclosure to provide high reliability. A disk controller designed into the electronics of the hard disk drive eliminates the need for a separately mounted controller.

Streaming Tape Drive

The streaming tape drive is a high-speed bulk storage device which uses a quarter-inch magnetic tape cartridge as a recording medium. The drive format capacity is either a 150 MB read/write, or a 60 MB read-only device.

It is used primarily for backup and restoration of data stored on hard disk. Periodic copying of hard disk contents onto streaming tape provides added security for critical programs and data.

The industry standard tape cartridge contains 182 m (600 ft) of magnetic tape. The drive conforms to ANSI Industry Standard X3B5/87-217, so the cartridge can also be used as a means of data interchange with nonFoxboro equipment.

1.2 and 1.4 MB Diskette Drives

The 1.2 MB (5.25-inch) and 1.4 MB (3.5-inch) diskette drives are bulk storage devices which perform reading and writing of data to and from standard, commercially available diskettes. (The 5.25-inch diskette drive also supports the 360 KB IBM PC format.) The primary use for the diskette drives is for initial loading and configuring of software into the system. Once loaded and configured, the software is typically saved on hard disk for quick access by the system.

The diskette drives also can be used to store (archive) data for future use in the system, to input (load) data generated in other computer systems, and to output (off-load) data for use in other computer systems.

Data Storage Device Configurations

The data storage devices are packaged two ways: (1) mounting structure configuration (mounted in mounting structure slots), and (2) integrally mounted in the spacer section of a Modular Industrial Workstation.

In the mounting structure configuration, the storage device occupies one or four mounting structure slots. For information on how the data storage devices are mounted in the Modular Industrial Workstation, refer to PSS 21H-4D3 B4.

120 MB HARD DISK FUNCTIONAL SPECIFICATIONS**Storage Medium**

3.5-inch nonremovable rigid disks

Formatted Capacity

120 MB

Interface Type

Small Computer System Interface (SCSI), ANSI
Standard ANSC X3T9.2

Power Requirements (Mounting Structure Configuration)(a)

INPUT VOLTAGE (REDUNDANT)

27.5 to 39 V dc, from dual sources via mounting structure bus

CONSUMPTION

14 W typical (30% seek)

Power Requirements (Integrally Mounted Configuration)(b)

INPUT VOLTAGE

5 and 12 V dc, from power supply (Foxboro supplied)

CONSUMPTION (DRIVE ONLY)

4 W typical

(a) Includes drive, power converter, and cooling fan with removeable front access filter module nose cover.

(b) Mounted in Modular Industrial Workstation spacer section.

120 MB HARD DISK ENVIRONMENTAL SPECIFICATIONS(a)**Operating**

TEMPERATURE

4 to 50°C (39 to 122°F)

RELATIVE HUMIDITY

8 to 85%, noncondensing

SHOCK

10 G (10 ms half sine wave pulse)

VIBRATION

5 to 300 Hz, 1.0 G peak amplitude

ALTITUDE

0 to 3,000 m (10,000 ft)

Storage

TEMPERATURE

-40 to +70°C (-40 to +158°F)

RELATIVE HUMIDITY

5 to 95%, noncondensing

SHOCK

70 G (10 ms half sine wave pulse)

VIBRATION

5 to 300 Hz, 2.0 G peak amplitude

ALTITUDE

0 to 12,000 m (40,000 ft)

Contamination Level

Class G1

(a) In a climate controlled enclosure, refer to the appropriate Product Specification Sheet (PSS) for temperature and humidity specifications only.

120 MB HARD DISK PHYSICAL SPECIFICATIONS**Mounting**

Mounting structure configuration, containing drive, power converter and cooling fan, occupies one slot in the mounting structure. Drive can also be integrally mounted in the Modular Industrial Workstation spacer section.

Mass

MOUNTING STRUCTURE CONFIGURATION(a)

1.4 kg (3.0 lb)

INTEGRALLY MOUNTED CONFIGURATION

DRIVE ONLY(b)

0.9 kg (1.9 lb)

Indicators

- A yellow indicator on the hard disk drive illuminates when a data transfer between the drive and the application processor is in progress.
- A green indicator illuminates with power on. Indicator flashes if improper letterbug is installed.

SCSI Termination and Address Decision

MODULE MOUNTED

Indicated by letterbug port

INTEGRALLY MOUNTED

The SCSI termination is by SIP terminators and the address is selected by a jumper, both on the drive.

(a) Includes drive, power converter, and cooling fan with removeable front access filter module nose cover.

(b) Mounted in Modular Industrial Workstation spacer section.

150 MB STREAMING TAPE FUNCTIONAL SPECIFICATIONS

Storage Medium TYPE Industry standard 6.35 mm (0.25 in) magnetic tape cartridge DIMENSIONS 100 mm (4 in) by 150 mm (6 in) by 17 mm (11/16 in)	Power Requirements (Mounting Structure Configuration)(a) (Cont.) CONSUMPTION <i>Idle</i> 7 W <i>During Data Transfer</i> 15 W
Formatted Capacity 150 MB, read/write; 60 MB, read only; 182 m (600 ft) tape, ANSI Standard X3B5/87-217	Power Requirements (Integrally Mounted Configuration)(b) INPUT VOLTAGE 5 and 12 V dc, from power supply (Foxboro supplied) CONSUMPTION <i>Idle</i> 4 W <i>During Data Transfer</i> 11 W
Interface Type Small Computer System Interface (SCSI), ANSI Standard ANSC X3T9.2	
Power Requirements (Mounting Structure Configuration)(a) INPUT VOLTAGE (REDUNDANT) 27.5 to 42 V dc, from dual sources via mounting structure bus	

(a) Includes drive, controller, power converters, and cooling fans.
(b) Mounted in Modular Industrial Workstation spacer section.

150 MB STREAMING TAPE ENVIRONMENTAL SPECIFICATIONS(a,b)

Operating TEMPERATURE 5 to 46°C (40 to 115°F) RELATIVE HUMIDITY 20 to 80%, noncondensing SHOCK 2.5 G (11 ms half sine wave pulse) VIBRATION 0.005 inch maximum peak-to-peak, 0 to 45 Hz, 0.5 G peak maximum acceleration, 45 to 600 Hz ALTITUDE -300 to +4,500 m (-1,000 to +15,000 ft)	Storage TEMPERATURE -40 to +46°C (-40 to +115°F) RELATIVE HUMIDITY 20 to 80%, noncondensing SHOCK 2.5 G (11 ms half sine wave pulse) VIBRATION 0.5 inch maximum peak-to-peak, 0 to 8 Hz, 1.5 G peak maximum acceleration, 17 to 600 Hz ALTITUDE -300 to +15,000 m (-1000 to +45,000 ft) Contamination Level Class G1
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(a) In a climate controlled enclosure, refer to the appropriate Product Specification Sheet (PSS) for temperature and humidity specifications only.
(b) The environmental limits for temperature and humidity of the storage medium (tape) may be more restrictive than the device itself.

150 MB STREAMING TAPE PHYSICAL SPECIFICATIONS

Mounting Mounting structure configuration, containing tape drive, controller, power converter and cooling fan, occupies four slots in the mounting structure. Drive can also be integrally mounted in the Modular Industrial Workstation.	Mass (Cont.) INTEGRALLY MOUNTED CONFIGURATION(b) 3.0 kg (6.7 lb)
Mass MOUNTING STRUCTURE CONFIGURATION(a) 5.8 kg (12.8 lb)	Indicators A single indicator on the streamer tape drive illuminates when the cartridge is loaded. It is extinguished when it is safe to remove the cartridge.

(a) Includes drive, controller, power converters, and cooling fans.
(b) Mounted in Modular Industrial Workstation spacer section.

1.2 MB DISKETTE DRIVE FUNCTIONAL SPECIFICATIONS

Storage Medium

5.25-inch, soft-sectored, double-sided, high-density diskette

Formatted Capacity

1.2 MB (also reads and writes 360 KB IBM PC formats)

Interface Type

Small Computer System Interface (SCSI), ANSI Standard ANSC X3T9.2

Power Requirements (Mounting Structure Configuration)(a)

INPUT VOLTAGE (REDUNDANT)

26 to 36 V, ac or dc, from dual sources via mounting structure bus

CONSUMPTION

Dual-drive configuration 24 W (both drives in use)

Power Requirements (Integrally Mounted Configuration)(b)

INPUT VOLTAGE

5 and 12 V dc, from power supply (Foxboro supplied)

CONSUMPTION (DRIVE ONLY)

5.5 W

(a) Mounting structure configuration includes two drives, a disk controller, a power converter, and a cooling fan.

(b) Mounted in Modular Industrial Workstation spacer section.

1.2 MB DISKETTE ENVIRONMENTAL SPECIFICATIONS(a,b)

Operating

TEMPERATURE

5 to 46°C (40 to 115°F)

RELATIVE HUMIDITY

20 to 80%, noncondensing

SHOCK

Less than 10 G (Less than 10 ms)

VIBRATION

Less than 0.5 G (Less than 55 Hz)

ALTITUDE

0 to 3,000 m (10,000 ft)

Storage

TEMPERATURE

-22 to +60°C (+8 to +140°F)

RELATIVE HUMIDITY

10 to 90%, noncondensing

SHOCK

Less than 40 G (Less than 10 ms)

VIBRATION

Less than 2 G (Less than 100 Hz)

ALTITUDE

0 to 12,000 m (40,000 ft)

Contamination Level

Class G1

(a) In a climate controlled enclosure, refer to the appropriate Product Specification Sheet (PSS) for temperature and humidity specifications only.

(b) The environmental limits for temperature and humidity of the storage medium (tape) may be more restrictive than the device itself.

1.2 MB DISKETTE PHYSICAL SPECIFICATIONS

Mounting

Mounting structure configuration contains two diskette drives (and controller, if applicable) and occupies four slots in the mounting structure. The diskette drive can also be integrally mounted in the Modular Industrial Workstation spacer section.

Mass

MOUNTING STRUCTURE CONFIGURATION(a)

5.2 kg (6.8 lb)

(a) Includes drive, power converter, and cooling fan with removeable front access filter module nose cover.

(b) Mounted in Modular Industrial Workstation spacer section.

Mass (Cont.)

INTEGRALLY MOUNTED CONFIGURATION

DRIVE ONLY(b)

1.3 kg (2.8 lb)

Indicators

A single indicator on the diskette drive illuminates when the drive is selected by the controller.

1.4 MB DISKETTE FUNCTIONAL SPECIFICATIONS

Storage Medium Formatted Capacity
1.4 MB

Interface Type
Small Computer System Interface (SCSI), ANSI
Standard ANSC X3T9.2

Power Requirements (Mounting Structure Configuration)(a)
INPUT VOLTAGE (REDUNDANT)
26 to 36 V, ac or dc, from dual sources via
mounting structure bus
CONSUMPTION
Dual-drive configuration 24 W (both drives in use)

Power Requirements (Integrally Mounted Configuration)(b)
INPUT VOLTAGE
5 and 12 V dc, from power supply (Foxboro
supplied)
CONSUMPTION (DRIVE ONLY)
1.4 W (typical, read/write)

(a) Mounting structure configuration includes two drives, a disk controller, a power converter, and a cooling fan.
(b) Mounted in Modular Industrial Workstation spacer section.

1.4 MB DISKETTE ENVIRONMENTAL SPECIFICATIONS(a,b)

Operating
TEMPERATURE
5 to 46°C (40 to 115°F)
RELATIVE HUMIDITY
20 to 80%, noncondensing
SHOCK
Less than 10 G (Less than 10 ms)
VIBRATION
Less than 0.5 G (Less than 55 Hz)
ALTITUDE
0 to 5,000 m (16,400 ft)

Storage
TEMPERATURE
-22 to +60°C (+8 to +140°F)
RELATIVE HUMIDITY
10 to 90%, noncondensing
SHOCK
Less than 50 G (Less than 10 ms)
VIBRATION
Less than 2 G (Less than 100 Hz)
ALTITUDE
0 to 12,000 m (40,000 ft)

Contamination Level
Class G1

(a) In a climate controlled enclosure, refer to the appropriate Product Specification Sheet (PSS) for temperature and humidity specifications only.
(b) The environmental limits for temperature and humidity of the storage medium (tape) may be more restrictive than the device itself.

1.4 MB DISKETTE PHYSICAL SPECIFICATIONS

Mounting
Mounting structure configuration contains two
diskette drives (and controller, if applicable) and
occupies four slots in the mounting structure. The
diskette drive can also be integrally mounted in the
Modular Industrial Workstation spacer section.

Mass
MOUNTING STRUCTURE CONFIGURATION(a)
5.2 kg (6.8 lb)

Mass (Cont.)
INTEGRALLY MOUNTED CONFIGURATION
DRIVE ONLY(b)
1.3 kg (2.8 lb)

Indicators
A single indicator on the diskette drive illuminates
when the drive is selected by the controller.

(a) Includes drive, power converter, and cooling fan with removeable front access filter module nose cover.
(b) Mounted in Modular Industrial Workstation spacer section.

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