I/A Series®
Model 51 X Terminal

The Model 51 X terminal, residing on an Ethernet network such as TCP/IP, is a lower-cost alternative to a Workstation Processor for remote supervisory, maintenance, or operator functions.

Utilizing X Window System technology, the Model 51 X terminal on an Ethernet network provides an additional interface to the I/A Series System in your plant. The X terminal uses optional additional Display Managers running on Application Workstations (AW51) or Workstation Processors (WP51) connected to the I/A Series control network and the Ethernet network.

A remote X terminal makes system information such as process displays and applications easily accessible to an operator, engineer, or technician at multiple locations in the plant as well as to plant management personnel. In addition, it provides an X interface to other applications on the Ethernet network.

With I/A Series environments within Display Manager configured to meet users' needs, the remote X terminal provides convenient access to pertinent I/A Series information when the following are NOT required:

- a touchscreen or an annunciator keyboard
- local horn alarming and alarm annunciation

As a diskless workstation, the X terminal is fully integrated into an I/A Series system with support for configuration, hosting, and start-up from Application Workstations (AW51) or Workstation Processors (WP51) connected to the Ethernet network.

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Network Architecture

The X terminal resides on an Ethernet network such as TCP/IP and interfaces with the I/A Series System via an Application Workstation (AW51), or a Workstation Processor (WP51) residing on the I/A Series Nodebus and also on the network with the terminal (as shown in Figure 1). Model 51 Workstations provide startup information as well as Display Manager windows for the X terminal to access I/A Series system software and applications. To provide additional reliability, multiple Model 51 stations can be designated as hosts for X terminal startup and I/A Series System Display Manager access.

The X terminal is also available directly connected to an Application Workstation (AW51) or Workstation Processor (WP51) on the I/A Series Nodebus via an optional Ethernet Communications port. This configuration provides for additional low cost terminals on the I/A Series Nodebus.
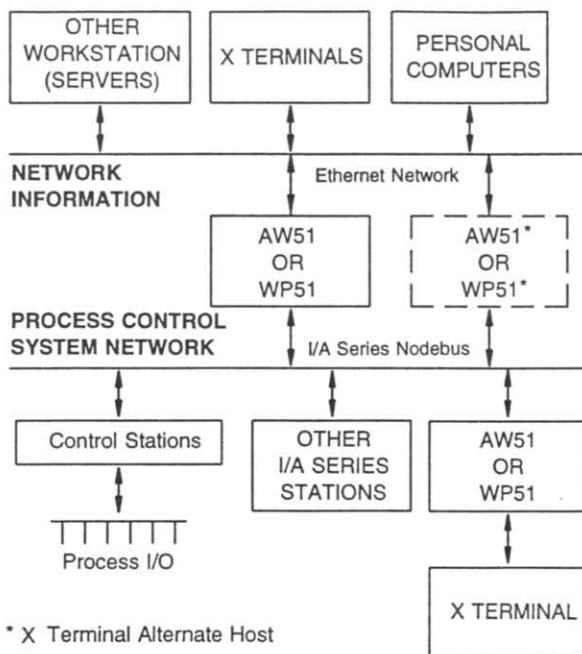

* X Terminal Alternate Host

Figure 1. Network Architecture

Software

The X Window software in the required I/A Series stations and the X terminal allows the X terminal to act as a workstation with reduced functionality on the I/A Series System, receiving and transmitting information to and from its I/A Series "source" station. The Display Manager window(s) provided by the Workstation allows the X terminal complete or limited access to information from the Workstation Processor or Application Workstation based on access configuration and customer requirements.

Refer to PSS 21S-2B1 B3 Human Interface Software for additional information regarding I/A Series System and application software and multiple instances of real time display software. Refer to PSS 21H-4R1 B3 and PSS 21H-4D1 B3 for an explanation of the functions provided by an Application Workstation or Workstation Processor.

X Terminal Processor

The Model 51 X terminal 32-bit RISC processor contains the following elements:

- Processor
- Dynamic memory (8 Mb, 16 Mb optional)
- Video interface
- Serial interface ports
- Ethernet communications port

X Terminal Components

The X terminal components provide user interface to most system CRT display functions. They allow command and data entry, and CRT pointer manipulation and control. The X terminal includes the following:

- 20-inch Workstation Display without Touchscreen
- Alphanumeric Keyboard
- Mouse, optional trackball, or industrial pointing device

Selection of a mouse or optional trackball or industrial pointing device is required for picking display objects on the CRT. The alphanumeric keyboard, and mouse or trackball, connect together in a functional pair or independently via a dedicated serial communications link to the Model 51 X terminal Processor.

20-inch Workstation Display without Touchscreen

The 20-inch workstation display is an analog cathode ray tube (CRT) color monitor supporting high resolution and ultra-high resolution (50 Series) applications. The monitor is suitable for mounting on a desktop or in a Modular Industrial Workstation Bay Top. Figure 5 shows the monitor with a tilt and swivel base.

Figure 1.   20-inch Table-Top X Terminal Display

Alphanumeric Keyboard

The alphanumeric keyboard is used any time text is entered into the system. It consists of the full set of alphanumeric keys plus punctuation and special symbol keys laid out in the standard QWERTY format, and a numeric data entry pad (with cursor control). The alphanumeric keyboard is shown in Figure 2.

Figure 2. Alphanumeric Keyboard

Mouse

Buttons on the mouse allow the user to make selections of areas of the screen determined by the position of the pointer. The mouse is the optical type, used in conjunction with an optical pad. Figure 3 depicts the optical mouse and pad.

Figure 3. Optical Mouse and Pad

Trackball

A trackball as shown in Figure 4 may be optionally used. The trackball is a stationary component that contains a rotatable sphere. The trackball may be located on a tabletop. User rotation of the sphere causes CRT pointer movement analogous to the mouse action. Similarly, buttons are provided for user selections/manipulations on both the trackball and the industrial pointing device.
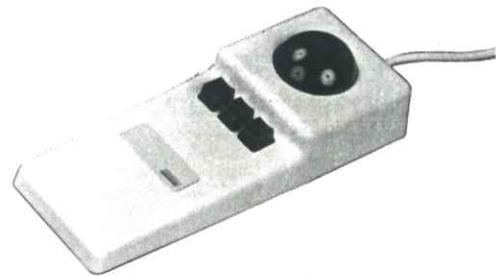

Figure 4. Trackball

Industrial Pointing Device

The industrial pointing device as shown in Figure 5 is completely sealed and finger pressure determines the direction and speed of the CRT pointer. Two click pads provide user selections similar to the primary and secondary click buttons found on a conventional mouse.

Figure 5. Industrial Pointing Device

FUNCTIONAL SPECIFICATIONS

Devices Served
VIDEO INTERFACE
Color Video Monitor (1)
SERIAL INTERFACES
Alphanumeric Keyboard (1)
Mouse, trackball, or industrial pointing
device (1)

Processor Type
- MicroSPARC® RISC Processor @ 50 MHz and
  Floating Point Unit
- Color Frame Buffer

Program Memory
8 Mb (16 Mb, optional)

Screen Presentation
REFRESH RATE
66 frames/s
COLORS
32 for user displays, 8 for menu bar;
selectable from a palette of over 16 million
MARKER SETS
4 sets, up to 255 markers in each set.
2 (default) sets supplied by Foxboro, 2 can be
created by user.

CHARACTER SETS
4 (default) I/A Series sets supplied by
Foxboro; additional non-Foxboro sets also
supplied
RESOLUTION (PIXELS)
1152 horizontal, 900 vertical

Video Output
TYPE
Analog (EIA RS-170): Red, Blue, Green,
Sync.
MAXIMUM CABLE LENGTH
30 m (100 ft)

Power Requirements
INPUT VOLTAGE
100-120 V ac or 200-240 V ac
NOMINAL POWER
25 W

Error Detection
COMMUNICATION ERRORS
Cyclic redundancy codes (CRC) and
checksum codes
MEMORY ERRORS
Parity code

Internal Diagnostics
Self-checking performed at power-up. Runtime
checks and watchdog timer function performed
during operation.

ENVIRONMENTAL SPECIFICATIONS

Operating
TEMPERATURE
0 to 40 °C (32 to 104 °F)
RELATIVE HUMIDITY
20 to 80%, noncondensing
ALTITUDE
0 to +3000 m (0 to +10 000 ft)

Storage
TEMPERATURE
−20 to +60 °C (−4 to +140 °F)
RELATIVE HUMIDITY
5 to 95%, noncondensing
ALTITUDE
−300 to +12 000 m (−1000 to
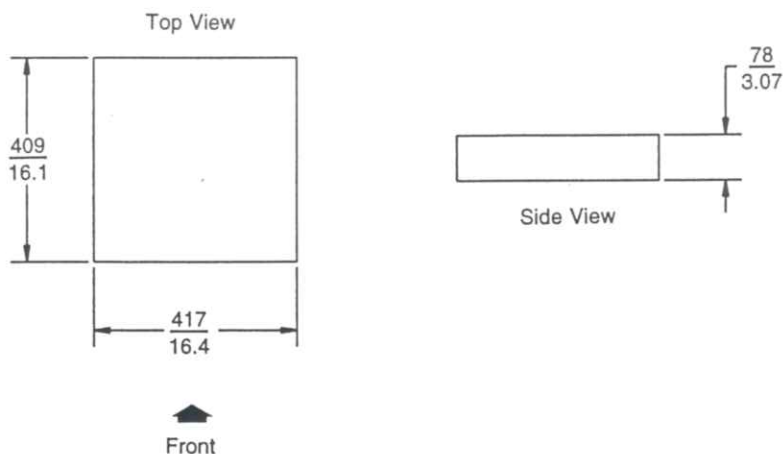+40 000 ft)

PHYSICAL SPECIFICATIONS

Mounting

Consists of a single module having a C-Module form factor. May be mounted on a table-top, in an I/A Series Industrial Enclosure or Modular Industrial Workstation Bay, or in a 19-inch rack (using a Foxboro-designed modular mounting structure).

Mass (Maximum)

7.9 kg (17.6 lbs)

DIMENSIONS - NOMINAL

$$\frac{mm}{in}$$

Top View

409
16.1

417
16.4

Front

78
3.07

Side View