I/A Series® HARDWARE
Product Specifications

invensys
Foxboro®

PSS 21H-4D1 B3

Workstation Components

Workstation components provide the user interface to all I/A Series® system human input/output functions.

OVERVIEW

A selection of workstation components is available for command and data entry, along with video display pointer manipulation and control. These components interact with the software resident in Windows® and Solaris™ based workstations.

The user can select the human interface components with which they are most comfortable to perform their needed tasks. The choice is linked to the specific Solaris or Windows based workstation selection.

Solaris and Windows workstation components include:

- Alphanumeric Keyboard
- Annunciator and Annunciator/Numeric Keyboards
- Graphic Controller Input/Output (GCIO) Module
- 19-Inch flat panel LCD Monitor (without touchscreen)
- 20-Inch flat panel LCD Monitor (with/without touchscreen)
- 40-Inch flat panel Supervisory LCD Monitor (without touchscreen)
- Mouse or Trackball

The above components are used:

- In the Command Center Console
- In the WorkCenter Console
- On the desktop.

The selection of a touchscreen, mouse, trackball, or industrial pointing device is required for picking display objects on the video display. The touchscreen has sufficient resolution for all functions normally associated with a process operator. Only the mouse or trackball provides the picking resolution necessary for engineer-related functions (for example, building graphic displays).

Optional USB touchscreen capability is offered for Windows and Solaris workstations configured with 20-Inch LCD workstation displays. A USB interface connects the USB touchscreen directly to the workstation. Refer to the workstation's PSS for details.

Figure 1. Typical Tabletop Workstation

ALPHANUMERIC KEYBOARD

Typical alphanumeric keyboards used with the Solaris based workstations and Windows based workstations are shown in Figure 2 and Figure 3, respectively.

Figure 2. Solaris Workstation Alphanumeric Keyboard

Figure 3. Windows Workstation Alphanumeric Keyboard

The alphanumeric keyboard is used for entering text 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.

ANNUNCIATOR KEYBOARD AND ANNUNCIATOR/ NUMERIC KEYBOARD

These keyboards provide output information through the use of annunciator lights and audible alarms, plus allow input information through key switches. Both keyboards are suitable for use with the Solaris and Windows based workstations through a GCIO interface module. The keyboards can be free-standing or workstation/panel-mounted.

The audio alarm feature provides multiple pitches which can indicate audible differentiation of system alarms and process alarm priorities. An external audio output jack is available for an attachable, customer-supplied, audio amplifier with speakers. The external speakers should be used when extra audio capacity is needed if the keyboard is located in a high ambient-noise environment.

Annunciator Keyboard

Figure 4. Annunciator Keyboard

The annunciator keyboard (Figure 4) is an array of 48 LED/switch pairs. It also contains a horn silence switch and a lamp test switch. Each LED, under the control of the workstation software, may be ON, OFF, or FLASHING as determined by the process conditions. The LEDs, when used in conjunction with the unit's audible annunciator, form an effective means of calling a user's attention to specific areas of the system. The switch associated with each LED can be used to invoke any preconfigured displays or operator responses. The keyboard allows for the insertion of user-legendable polyester labels. The label inserts also act as a mask for selecting either a red or amber LED at each switch location. Refer to PSS 21H-4E1 B4.

Annunciator/Numeric Keyboard

Figure 5. Annunciator/Numeric Keyboard

The annunciator/numeric keyboard (Figure 5) is a combination of 32 LED/switch pairs, a 16-section numeric keypad and one NUM LOCK LED. The keypad section is suitable for entering numeric data into the system. The 32 LED/switch pairs are arranged in an 8-column by 4-row matrix similar to the annunciator keyboard. The matrix also provides for the insertion of user-legendable polyester labels that also allow for selecting either a red or amber LED. Refer to PSS 21H-4E1 B4.

I/A SERIES ALARM SPEAKERS

Two types of optional I/A Series alarm speaker systems are available for Windows processors: USB interface units and analog interface units.

Figure 6. Alarm Speakers for Windows Processors

USB speakers (P0923MH) derive both power and audio signal from the attached processor via the USB cable. Analog interface speaker sets, which are powered from a wall outlet are either 120 V ac (P0923GK) or 240 V ac (P0923QQ) units.

GCIO MODULES

Figure 7. GCIO Modules

Graphic Controller Input/Output (GCIO) Modules connect annunciator keyboards (two maximum per GCIO) through a serial cable. They are available in a number of variations to accommodate different configurations. There are two physical shapes of the GCIO as shown in Figure 7. The smaller unit is for installing within MIC or MIW enclosures. The larger configuration is designed to be placed under a tabletop monitor. Options include support for annunciator keyboards only or keyboards plus serial touchscreens, internal or external touchscreen controllers, and desktop or embedded mounting.

WORKSTATION DISPLAYS

There are a variety of workstation displays available for each of the workstations:

- 19-Inch LCD monitor (without touchscreen)
- 20-Inch LCD monitor (with/without USB touchscreen)
- 40-Inch LCD monitor

19-Inch LCD Monitor

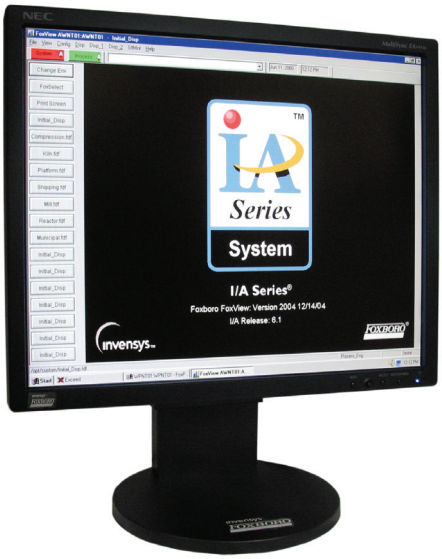


Figure 8. 19-Inch LCD, Tabletop

The 19-Inch flat panel LCD monitor (Figure 8) has a picture matrix of 1280 x 1024 pixels which gives excellent images at its native resolution while producing very good images at off-native resolutions. It is capable of accepting both analog (VGA) and digital (DVI-D) video signals. This monitor can be used with workstations at its full 1280 x1024 resolution and, where necessary, with workstations at lesser resolutions. As an added feature, the 19-inch monitors, P0923VY/VZ (Model P77*R, Rev B), have integrated stereo speakers.

The19-inch monitor can be used on a tabletop Figure 8), or mounted on a workstation console as shown in Figure 14 and Figure 15.

As a tabletop (Figure 8) unit, the monitor comes with a stand that has swivel, tilt and height adjustments.

It can be ordered either as a stand-mounted tabletop unit or as a baseless unit for console mounting. See Figure 14 and Figure 15.

20-Inch LCD Monitor

Figure 9. 20-Inch LCD, Tabletop

The 20-Inch flat panel LCD monitor (Figure 9) gives excellent images with workstations that use its full 1600 x 1200 resolution and produces very good images with workstations that use lesser resolutions. It is capable of accepting both analog (VGA) and digital (DVI-D and DVI-I) video signals.

The monitor comes with several options. It may be ordered with or without a protective screen shield or with a capacitive touchscreen with a USB interface. USB touchscreens connect directly to the supported workstation type(1). The protective shield prevents the LCD elements of the screen from being scratched or marred. The monitor can be used for tabletop mounting (Figure 9), workstation console embedded mounting, or workstation console top mounted (Figure 14 and Figure 15).

As a tabletop unit, the monitor comes with a stand that has swivel, tilt, rotate and height adjustments.

40-Inch LCD Supervisory Monitor

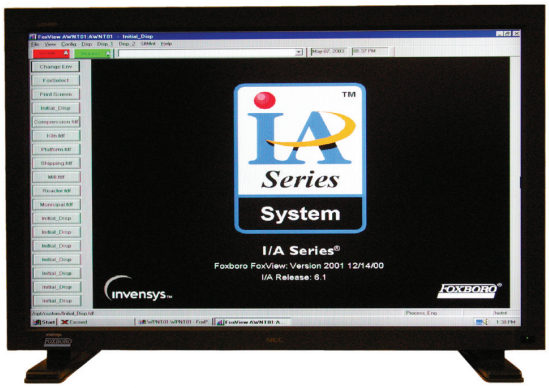


Figure 10. 40-Inch LCD Monitor

The 40-Inch flat panel LCD monitor (Figure 10) displays large color images for direct viewing of multiple user or supervisory displays. The large screen gives unobstructed views of the plant process from great distances.

This 40-Inch monitor has a native resolution of 1920 x 1080 pixels with both analog (VGA/BNC) and digital (DVI-D), HDMI, display (port) video input capability.

The 40-Inch LCD monitor can be installed in areas with high magnetic fields without negative effects to the displayed image. A tabletop mounting stand is standard but optional ceiling and wall mounts are available. Refer to PSS 21H-4D10 B4.

(1) Legacy workstations that support the serial touchscreen require a GCIO module.

MOUSE

Solaris *Windows*

Figure 11. Solaris and Windows Mouse

The Solaris based workstation mouse is a tabletop-operated cursor control device. Three buttons on the mouse (Figure 11) allow the user to make selections on areas of the screen determined by the position of the cursor and enable features associated with the X-Window™ system feature of the I/A Series software.

The Windows based workstation mouse (Figure 11) is a 2-button, optical wheel mouse which functions the same as the Solaris based workstation mouse and may be used with or without a mouse pad. Both mice are USB devices.

TRACKBALL

Figure 12. Trackballs

The trackball (Figure 12) is a stationary component that contains a rotatable sphere. The trackball can be located on a tabletop or on a workstation bay work surface. With the trackball, user rotation of the sphere causes video graphics pointer movement which is analogous to the mouse action. Similarly, buttons are also provided for user selections/manipulations.

I/A SERIES WORKSTATIONS

An I/A Series workstation, in conjunction with its peripherals, provides an operator interface for supervisory control and monitoring on the I/A Series system. A Solaris or Windows based I/A Series workstation accesses the information network. As an operator's station, the workstation provides access to displays, trending, alarming, and system management functions.

In addition to the processor and video monitors, the Solaris or Windows based workstation supports a mouse or trackball and an alphanumeric keyboard for command and data entry and display selection. Optional software alarm panels are configurable for alarm notification and response.

With optional control software, the workstation supports real-time data acquisition from I/O devices as well as process control involving sequence and batch processes.

The workstations receive graphic and textual information either stored internally or from control processors and generate signals to display the information on a workstation display. Display formats and data files are available from bulk storage. Live display information (distributed data objects) is available from any control processor, or from shared system global data. The video information displayed can include free form combinations of text, graphic illustrations, charts, and control displays.

The workstations provide resizable and stackable windows.

For features and support details, refer to Table 1 for a list of the Application Workstations.

Table 1. Application Workstations

PSS Number	Product
21H-4D13 B4	Model P92 Workstation for Windows XP® Professional Operating System
21H-4U6 B4	Model P91 Workstation Server for Windows Server 2003® Operating System
21H-4U12 B4	Model P90 Workstation Server for Windows Server 2003® Operating System
21H-4U8 B4	Model P82 Solaris™ Based Workstation
21H-4U7 B4	Model P81 Solaris™ Based Workstation (Legacy)
21H-4R7 B4	Model P79 Solaris™ Based Workstation (Legacy)

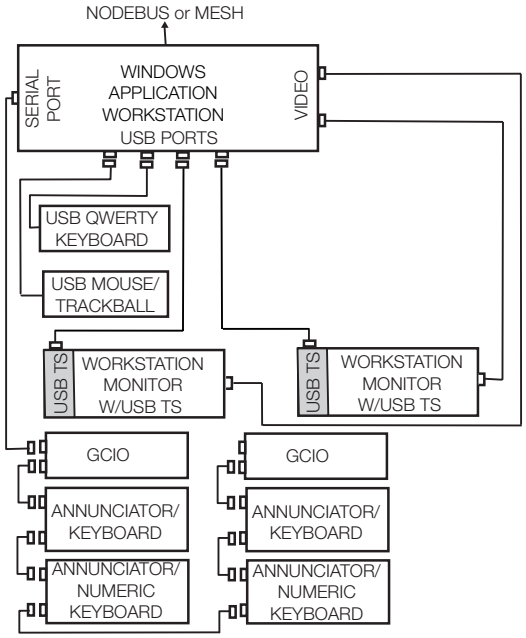


Figure 13. Multiple Screen Shared Peripherals Configuration Using Dual Monitor with USB Touchscreens on Windows Application Workstations

Workstation Subsystem Configurations

A workstation, with its monitor and input components, can be configured with combinations of peripherals to suit functions and user preferences.

The multiple-screen configuration shown in Figure 13 employ a common peripheral bus that links input components together. The shared peripheral configuration is supported by selected workstations. This configuration allows input components (that is, annunciator type keyboards and serial touchscreens) to be logically dedicated to workstations/video monitor pairs where required, and allows other components (mouse/trackball or alphanumeric keyboards) to be shared among the video displays (logically software switchable). The number of components supported is shown in Table 2.

Table 2. Shared Devices Supported

Workstation Devices	Max. Quantity (Solaris Based Workstations)	Max. Quantity (Windows Based Workstations)
Alphanumeric Keyboard	1	1
Mouse or Trackball	1	1
Screen(a)	2	4
USB Touchscreen	2	4
Annunciator or Annunciator/ Numeric Keyboards	4	4 (Workstation Dependent)

(a) Each screen supports up to one touchscreen and two annunciator keyboards.

WORKSTATION CONTROL CENTERS

The following console options allow workstation components to be incorporated into a flexible arrangement to centrally control and monitor process needs:

- Command Center
- WorkCenter for I/A Series Systems.

Command Center

The Command Center (Figure 14) provides you with the ultimate control center to monitor and direct every process in your manufacturing environment. Designed with both the operator and engineer in mind, it enhances the control environment by providing an interactive, user-friendly workplace to centrally control and monitor process needs.

It incorporates multiple flat screens and large overhead screens in conjunction with tabletop or remotely mounted workstations.

The Command Center is designed to incorporate all the interactive tools necessary to perform your tasks in a professional and safe manner. These include the annunciator keyboard, mouse, trackball, and printers. It is ergonomically friendly, allowing the operator and/or engineer to spend more productive time monitoring and controlling the process. Comfort and easy access to all controls, monitors, and process alarms are evident with the Command Center. Heavy gauge sheet metal and a powder coat paint finish provide long lasting durability. Refer to PSS 21H-4C1 B3.

Figure 14. Command Center

WorkCenter for I/A Series Systems

The WorkCenter for I/A Series systems is a customized workspace with a versatile design that is ideal for serving as a command center and monitoring station for industrial applications.

The WorkCenter is made up of modular furniture designed for industrial use that can be custom configured to provide flexible mounting arrangements of I/A Series system components.

The WorkCenter is designed to use flat-panel display technology, and is ideal for multi-screen monitoring of real-time process interactions.

Refer to PSS 21H-4D10 B4 for LCD descriptions and specifications.

With the WorkCenter, you can organize and mount I/A Series system equipment, including workstations, Ethernet switches, pointing devices, printers, annunciator and alphanumeric keyboards, 1x8 mounting structures, and DIN-rail mountable equipment. You can also mount other free-standing or 19-inch rack mounted customer-supplied equipment. Refer to PSS 21H-4D14 B4.

Figure 15. WorkCenter for I/A Series Systems

ALPHANUMERIC KEYBOARD FUNCTIONAL SPECIFICATIONS

Type
A QWERTY keyboard, with function keys and numeric keypad, meeting the DIN standard 30 mm (1.2 in) height to the home row.

ENVIRONMENTAL SPECIFICATIONS

Operating Temperature
10 to 40°C (50 to 104°F)

Storage Temperature
–20 to 60°C (–4 to +140°F)

Humidity
20 to 80% (noncondensing)

Location
UL/UL-C listed as suitable for use in ordinary locations and meets ordinary safety standards for fire and shock hazards.

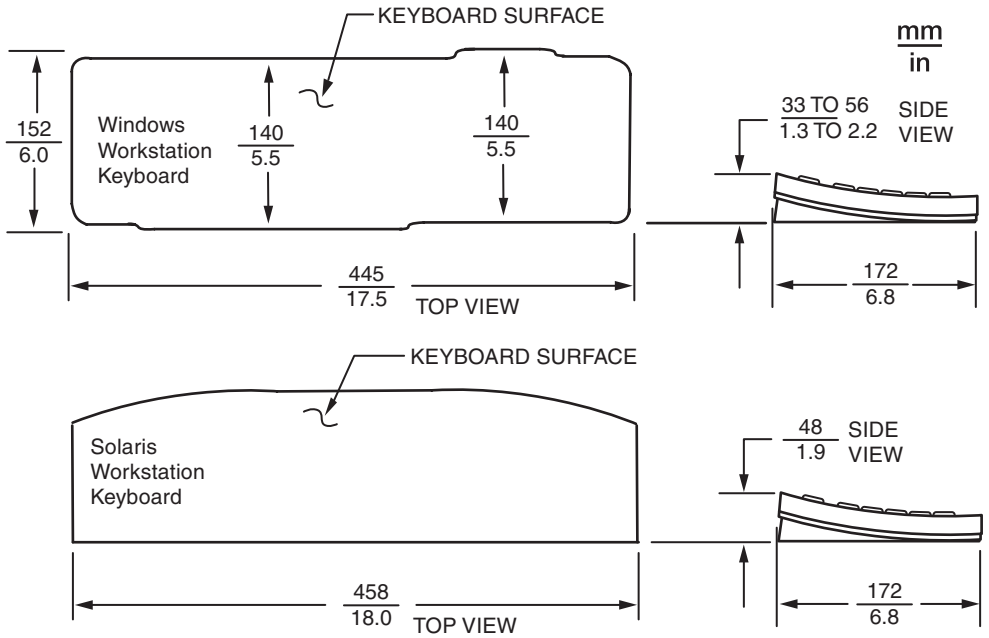
Contamination
Class G1 (Mild) as defined in ISA Standard S71.04

PHYSICAL SPECIFICATIONS

Mounting
The keyboard is a stand-alone device for desktop use.

Mass
.86 kg (1.9 lb), Windows workstation keyboard
1.75 kg (3.85 lb), Solaris workstation keyboard

DIMENSIONS–NOMINAL(2)



(2) Keyboards are subject to change without notice. Check with your Invensys representative if exact measurements are required.

MOUSE
ENVIRONMENTAL SPECIFICATIONS

Operating Temperature
10 to 40°C (50 to 104°F)

Storage Temperature
–20 to 60°C (–4 to +140°F)

Humidity
20 to 80% (noncondensing)

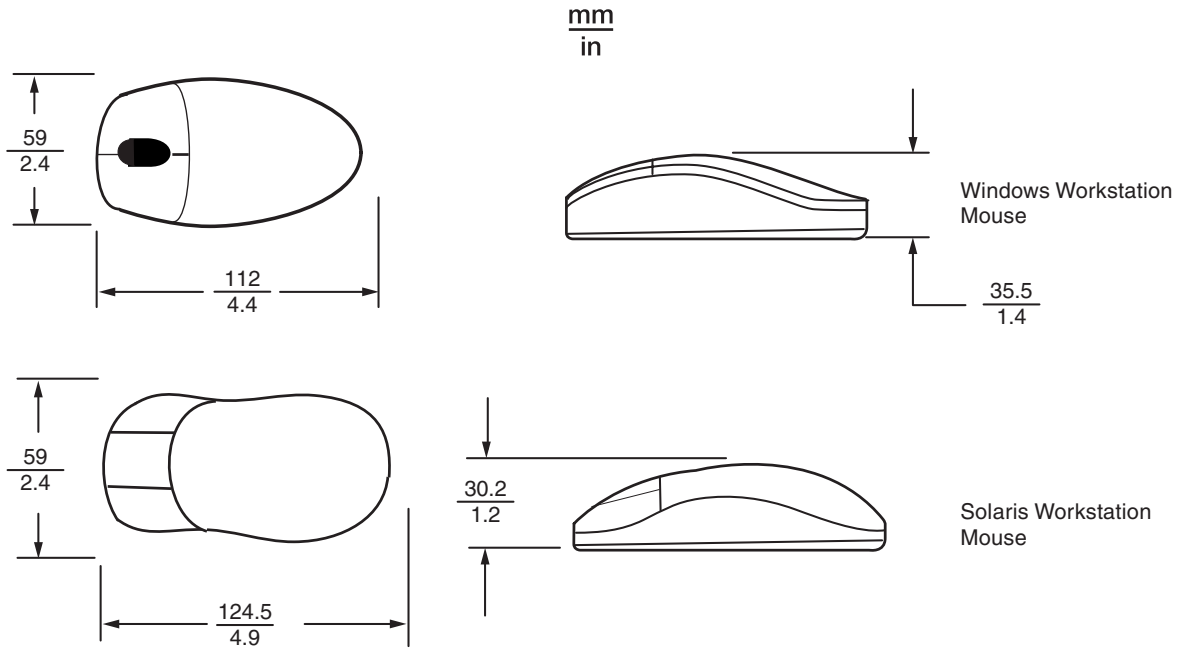
Location
Is suitable for use in ordinary locations and is designed to meet ordinary safety standards for fire and shock hazards

Contamination
Class G1 (Mild) as defined in ISA Standard S71.04

PHYSICAL SPECIFICATIONS

Mass
0.12 kg (0.26 lb) Solaris workstation mouse
0.135 kg (0.29 lb) Windows workstation mouse

DIMENSIONS–NOMINAL(3)



(3) Mouse dimensions may vary. Check with your Invensys representative if exact measurements are required.

TRACKBALL(4) ENVIRONMENTAL SPECIFICATIONS

Operating Temperature
5 to 50°C (40 to 122°F)

Storage Temperature
–25 to +60°C (–13 to +140°F)

Humidity
5 to 95% (noncondensing)

Location
UL/UL-C listed as suitable for use in ordinary locations and meets ordinary safety standards for fire and shock hazards.

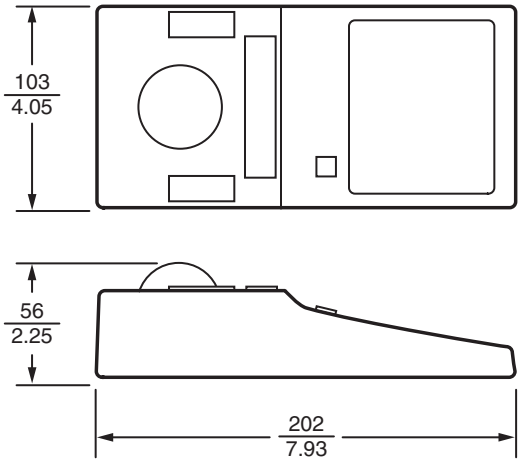
Contamination
Class G1 (Mild) as defined in ISA Standard S71.04

PHYSICAL SPECIFICATIONS

Mass
0.5 kg (1 lb)

DIMENSIONS–NOMINAL(4)

mm
in



(4) Trackball devices are subject to change without notice. Check with your Invensys representative if exact measurements are required.

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