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Shallowback Display Station 2000

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Operator Interface Products

Shallowback Display Station 2000

User's Guide

GFK-1832 July 2000

Warnings, Cautions, and Notes as Used in this Publication

Warning

Warning notices are used in this publication to emphasize that hazardous voltages, currents, temperatures, or other conditions that could cause personal injury exist in this equipment or may be associated with its use.

In situations where inattention could cause either personal injury or damage to equipment, a Warning notice is used.

Caution

Caution notices are used where equipment might be damaged if care is not taken.

Note

Notes merely call attention to information that is especially significant to understanding and operating the equipment.

This document is based on information available at the time of its publication. While efforts have been made to be accurate, the information contained herein does not purport to cover all details or variations in hardware or software, nor to provide for every possible contingency in connection with installation, operation, or maintenance. Features may be described herein which are not present in all hardware and software systems. GE Fanuc Automation assumes no obligation of notice to holders of this document with respect to changes subsequently made.

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CIMSTAR	Modelmaster	Series 90	VersaPro
Field Control	Motion Mate	Series Five	VuMaster
GEnet	ProLoop	Series One	Workmaster

Content of This Manual

This manual describes the features and operation of the following Shallowback Display Station 2000 series products:

Catalog Number	Features
IC752WTG502	15” LCD with PC/104 and Windows NT, 233 MHz MMX, 64 Mbytes RAM
IC752WTG552	15” LCD, PC/104, Windows NT with upgraded processor and RAM
IC752WTH802	18” LCD with PC/104 and Windows NT, 233 MHz MMX, 64 Mbytes RAM
IC752WTH852	18” LCD, PC/104, Windows NT with upgraded processor and RAM

Related Publications

GFK-1189 *CIMPLICITY® HMI for Windows NT™ and Windows® 95 Important Product Information*

GFK-1180 *CIMPLICITY® HMI for Windows NT™/CIMPLICITY HMI for Windows® 95/CIMPLICITY Server for Windows NT™ Base System User Manual*

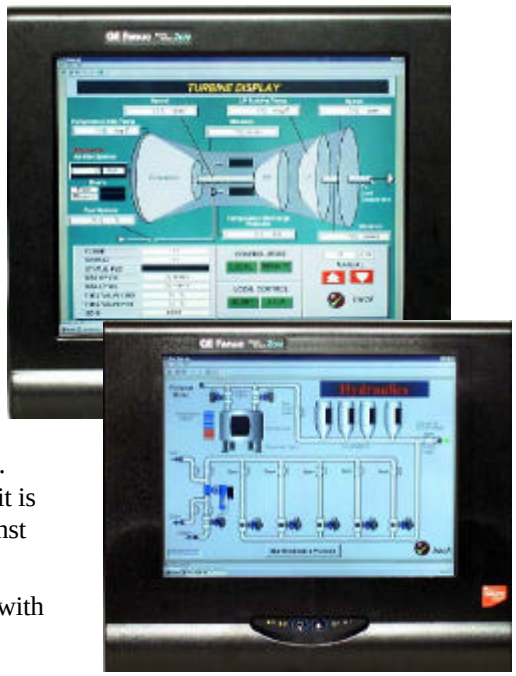
GFK-1181 *CIMPLICITY® HMI for Windows NT™/CIMPLICITY HMI for Windows® 95/CIMPLICITY Server for Windows NT™ Device Communications Manual*

GFK-1396 *CIMPLICITY® HMI for Windows NT and Windows 95 CimEdit Operation Manual*

Contents

Chapter 1 Shallowback Display Station 2000 Features

The Shallowback Display Station 2000 is a high performance workstation incorporating the latest Industrial PC architecture. The Shallowback Display Station 2000 is designed primarily as a hardware platform for Supervisory Control and Data Acquisition (SCADA) software packages running under Windows NT® operating systems. The Shallowback Display Station 2000 is available with a 15 inch or 18 inch TFT Active Matrix display and resistive touch screen.



Each model in the Shallowback Display Station 2000 range is a fully self contained PC-compatible computer with built-in flat screen display and resistive touch screen, housed in an industrial, IP65 rated front panel mounted unit. The 18' version weighs only 32 lbs. (14.51 kg); the 15" weighs 24.35 lbs. (11.04 kg). The unit is housed in a rugged metal case to protect the system against dust, water, and damage.

Shallowback Display Station 2000 models are available with autoranging power input unit for 110 or 220 VAC.

The unit is supplied completely assembled and requires only mounting and connecting. The use of special clips to secure the unit to the panel eliminates the need for mounting holes and requires only one cut-out to mount the unit.

Note

Before powering up your system for the first time, you should refer to Chapter 2 for procedures that contain information you need to set up the operating system and network communications.

Features Summary

When you purchase a Shallowback CIMPLICITY Display Station system, you receive:

- CIMPLICITY Shallowback Display Station industrial computer with CIMPLICITY HMI software and Windows operating system software installed. (See "Standard Features" below.)
- Power cord
- Installation hardware
- CIMPLICITY software licenses and license agreements
- CIMPLICITY software
- Ethernet driver floppy disk and manual
- Microsoft Windows documentation, software distribution, Certificate of Authenticity and license agreement
- Display Station Field Image Recovery disk for image recovery

Standard Features

Model	Model Number	Specifications
WTG	IC752WTG502 IC752WTG552 (upgrade)	15" standard model WTG with Windows NT and PC/104 expansion.
WTH	IC752WTH802 IC752WTH852 (upgrade)	18" standard model WTH with Windows NT and PC/104 expansion.
Automation software		CIMPLICITY HMI (various pkgs available)
CPU		Pentium MMX, 233 MHz minimum
Hard disk		6 GB minimum
CD ROM drive		42X speed minimum
Floppy disk drive		3.5 inch, 1.44 Mbyte
RAM		64 MB minimum Shallowback Display Station 2000 allows you to install a maximum of 256MB of DRAM. Supports both Fast Page and EDO (Extended Data Out)
Display		15" Color TFT Active Matrix XGA – 1024 x 768 resolution 18" Color TFT Active Matrix SXGA – 1280 x 1024 resolution
Parallel ports		One LPT1
Serial ports		Three RS-232: COM 1, COM 3 (COM 2 used for touch screen)
Other ports		Ethernet, video, mouse, keyboard, audio, two USB (USB1 and USB2)

Optional Features

The following features are optional on all models in the Shallowback Display Station range. Contact your GE Fanuc distributor for details.

- Additional DRAM (SIMMs)
- Range of hard disks
- External keyboard and mouse

System I/O

Standard I/O

The Shallowback Display Station 2000 provides the following I/O interface channels:

- Two serial interface ports are provided by the processor motherboard. The COM1 and COM3 (COM2 is dedicated to the touch screen) ports are accessible on the lower left-hand side of both the 15 inch and 18 inch Shallowback Display Station 2000 units. These serial ports use standard 9-pin D type connectors.
- A single enhanced parallel port, is also provided by the motherboard and is accessible on the lower left-hand side of the main enclosure.
- Two USB (Universal Serial Bus) ports; USB1 and USB2 ports are available and are also accessible on the lower left-hand side of the main enclosure.

Network Interface

The Shallowback Display Station 2000 includes an Ethernet adapter that provides a 10BaseT, RJ-45 connector for unshielded twisted pair cable.

Application Software

Shallowback Display Stations 2000 are supplied with CIMPLICITY HMI software, which is pre-loaded before shipment of the Shallowback Display Station.

PC/104 Card Expansion

Display Station 2000 models WTG and WTH have PC/104 expansion capabilities. See below for ordering information on I/O interface cards available from GE Fanuc:

- IC752GEN100 PC/104 Genius I/O card
- IC752PBI100 PC/104 Profibus I/O card

Chapter 2 Powerup and Software Installation

This chapter contains information you need to set up your Shallowback Display Station 2000 Windows NT operating system and network communications

Initial Startup

When you first power up your system, you will need to attach a standard PS/2-type keyboard to the external keyboard port on the Shallowback Display Station 2000. When the system starts up, you will be required to enter the Product ID from the Windows NT Certificate of Authenticity and other data to set up your system.

Also, most configuration activities that you perform on a Shallowback Display Station 2000 system can be more easily completed using a keyboard or may require a keyboard.

Note

The Shallowback Display Station 2000 range, which has no integral keypad, requires a PC-AT keyboard to configure the application software. Once the configuration is completed, the Shallowback Display Station 2000 can normally be operated by using the built-in touch screen.

On power up, if no keyboard is connected to this Shallowback Display Station 2000, a keyboard error message is given during the boot up tests. The CPU BIOS is factory configured to ignore this error, allowing the system to continue to boot up. (For details, see Chapter 6.)

For details on power supply input, see Chapter 4.

Powering Up the Shallowback Display Station 2000

Caution

Do not connect or disconnect external devices, such as a printer or a PS/2 mouse, while the unit is powered. Failure to observe this precaution could result in damage to the equipment.

The power connection is located on the lower right-side of the Shallowback Display Station 2000 unit below the CD-ROM and floppy drives. To power up the unit, plug the supplied power cord into the connector and connect the power cord to an AC power source.

During power up, the processor will run its normal diagnostic checks and indicate the presence of any errors either with a screen prompt or with warning beeps.

Setting Up Windows NT Systems

Before you get started, you need a PS/2 keyboard. A PS/2 mouse is recommended to help navigate through the setup screens.

1. Plug in the keyboard, PS/2 mouse (if available), and power cord.
2. Power on the unit.
3. Read license agreement
4. TAB to your choice and press **ENTER**.
5. Press **ENTER** to start the Windows NT Setup.
6. Type your name
7. Press the **TAB** key and type your company name.
8. Press **ENTER**.
9. Enter your Windows NT Authentication number found on your Windows NT manual. You will need to use the TAB key to get to each number field. If correct, press **ENTER**.

Note

Computer names must be less than or equal to ten characters to run CIMPLICITY HMI software. Each computer on a network must have a unique name.

10. Enter a Computer name. This name should be unique to other computers on the same network. Press **ENTER**.

Note

Your system has been set up to enable autologon. Autologon allows the system to boot into Windows NT without your having to use a keyboard to press CTL-ALT-DEL.

11. You will be prompted for a password.
    - To use the autologon feature, type lower case **admin** for the password. Press the **Tab** key and type **admin** in the Confirm Password box. Press **ENTER**.
    - To skip the password, press **ENTER**
    - To assign a password, type in a password, press the **TAB** key, and type the password in the Confirm Password box. Press ENTER.
12. Press Enter to continue with Windows NT Setup.
13. Click Finish.

Note

With Windows NT, it is highly recommended that you create an Emergency Repair Disk after you complete the setup of your system. From the Start menu choose Run and then locate Rdisk.exe. You must update the repair disk anytime you make a change to your computer hardware or software.

Configuring the Display Station to Run on a Microsoft Network

Note

Before setting up your new Display Station for the network, you should consult with your network administrator. Duplicate TCP/IP addresses and duplicate computer names on the same network cause network problems.

If you wish to use the Shallowback Display Station 2000 on a Network, *you must change* the TCP/IP and subnet mask address. To change the address:

1. Click the Start button, choose Settings, and then Control Panel.
2. In the Control Panel window, double-click the Network icon. The Network dialog box will appear.
3. In the Network dialog box, click the Identification tab, and enter your Computer name, Workgroup or Domain name, and Computer Description.

Note

Computer names must be less than or equal to 10 characters to run CIMPLICITY HMI software. Each computer on a network must have a unique name.

4. To add the TCP/IP protocol:
   A. Go to the Protocols tab and click the Add button. The Select Network Protocol dialog box will appear.
   B. From the Protocol list, select TCP/IP and click OK.
   C. Click the Properties button. The Microsoft TCP/IP Properties dialog box appears.
   D. Choose “Obtain an IP Address from DHCP Server” or enter a unique IP Address and Subnet Mask
   E. Click OK twice. You will be prompted to restart your computer so that the changes can take effect.

Login Recommendation

If you type **admin** as your Administrator password, your CIMPLICITY Shallowback Display Station 2000 will automatically log on as Administrator.

Log onto the system as Administrator when you power up the system. Doing so eliminates the requirement to log on to CIMPLICITY when you run the CIMPLICITY Demo or any other CIMPLICITY project that includes a user named Administrator. All CIMPLICITY projects are configured with an Administrator user by default.

Registering Your CIMPLICITY Software

All Shallowback Display Station 2000 models are licensed to run CIMPLICITY software. Licenses have been loaded for CIMPLICITY HMI Base, Trending, TCP/IP Communications, and Series 90 SNP Communications. If you purchase additional product options to run on the Shallowback Display Station 2000, it is necessary to contact GE Fanuc to update the system licensing.

1. Click Start, Programs, CIMPLICITY, HMI, Registration.
2. Click Next for new User.
3. Read the License Agreement and select Yes if you agree.
4. Fill in the User Information.
5. Click Next
6. Open your CIMPLICITY software box and find your license packs. Open each license pack and type the serial numbers in the fields provided.
7. Call the CIMPLICITY phone number that appears on the screen.

Faxes and phone calls will be processed between 8 AM and 5 PM Eastern time, Monday through Friday, except for regularly scheduled holidays. Faxes and calls received after hours, on weekends, or holidays will be processed as soon as possible on the following business day.

When you phone, please be prepared to provide GE Fanuc with the following information:

- Your User information
- CIMPLICITY serial numbers
- The System Key Code generated during the registration procedure

Note

When it is installed without the authorization code, you can run the software as a fully functional system in two-hour increments.

Your CIMPLICITY software can also be registered over the Internet. Contact "Software Registration" at www.gefanuc.com/cimplicity.

Installing Application Software

The Windows operating system and CIMPLICITY HMI software are loaded onto the Shallowback Display Station 2000 unit at manufacture. If it is necessary to reload software, follow the instructions in the documentation supplied with the software. The following sections give tips for customizing the software for the Shallowback Display Station 2000 platform.

Directory Structure

The contents of the Shallowback Display Station 2000 hard drive, as shipped from GE Fanuc are listed below.

Windows NT Systems

C:\CIMCD\i386	**CIMPLICITY HMI CD image**
C:\i386	**Windows NT CD**
C:\TBASE	**Touch screen drivers**
C:\i386\DRVLIB.NIC\Intel 55	**Network drivers**
C:\SP4\i386	**Service pack 4 for Windows NT drivers**
C:\LS120	**Imation Superdisk Backpack drivers***

***refer to IC752FDD100 for part ordering

Note

If you reload any Windows NT component requiring file, such as network driver, you must reload service pack 4. To do this, type:

C:\SP4\UPDATE

Reloading NT on the Hard Disk From CD

To reload Windows NT you should follow the instructions in the Windows NT manual from Microsoft. After completing the installation, the BOOT.INI file must be modified to ensure that the touch screen works correctly.

- Edit the BOOT.INI file and add the /NoSerialMice option to the end of each entry in the [operating systems] section of BOOT.INI.
- If you have concerns about performing this step call the CIMPLICITY Hotline for assistance.

Note

You must use version TNdriver 1.26 or higher of the touch screen driver to avoid a system crash during boot up.

Touch Screen Driver for Windows

Operation of the touch screen with Windows NT requires the respective Touchbase™ software driver ,T5driver or TNdriver. This software is installed and configured at the factory. We recommend that you do *not* change these settings.

The integral touch screen of the Shallowback Display Station 2000 unit is internally connected to serial port COM2 on the system board. The driver settings can be changed by running the Touchscreen icon in Programs. The touch screen must be set to:

COM Port	= COM2
IRQ	= 3
I/O Address	= 2F8

Image Recovery

The following procedure provides instruction on how to use the *Field Image Recovery Disk* (44A749863-G01Rxx). This disk will enable you to recover all software on your computer as received initially from GE Fanuc.

Warning

Before attempting an Image Recovery on your unit, make sure to record all critical settings and conduct a full back up of all CIMPLICITY Projects and critical documents. You will also need to have your CIMPLICITY registration and Microsoft Authorization Numbers handy. *This process will clear all contents from your Hard Drive and return your system to the factory configuration.*

Instructions for Image Recovery

1. Prior to Image Recovery, a standard PS/2-type keyboard will need to be connected to the external keyboard port.
2. Insert the *Field Image Recovery Disk* into the Floppy Drive
3. After inserting the Recovery Disk, the system will prompt you to restore the image. Select **<1>** to "RESTORE SYSTEM TO ORIGINAL CONDITION". If you have initiated this process in error, press **<2>** and Exit the Recovery program.
4. Select **<1>** again to "PROCEED WITH SOFTWARE RESTORE". Choose **<2>** to cancel Recovery and exit to MS-DOS®.
5. At this point the factory image will be recovered from a hidden partition on the Hard Drive. This will take approximately 12 minutes. When prompted, reboot your system.
6. After rebooting your unit, the system will bring you to the initial startup screens as received from the factory. Refer to the Display Station User's Guide for Microsoft set-up, Network configuration, and CIMPLICITY HMI initialization.

If you have any questions about this procedure, please contact 1-800 GE FANUC.

® MS-DOS is a registered trademark of Microsoft Corporation.

Shutting Down the Computer

To shut down Windows NT software, select Shut Down from the Start menu and follow the instructions on the screen.

Chapter 3 Hardware Installation

This chapter describes the procedures for the safe location and securing of the Shallowback Display Station 2000. The Shallowback Display Station 2000 has been designed to ensure simple installation.

A single cut-out in the mounting panel is all that is required when mounting the Shallowback Display Station 2000. No extra mounting holes are needed. Instead 12 spring loaded clips are supplied and are used to secure the unit from behind the mounting panel.

The Shallowback Display Station 2000 is designed using the PC/104 embedded-PC architecture. The PC/104 architecture consists of a compact form-factor with a unique self-stacking low power bus.

This chapter also describes how change the air filter.

Mounting Guidelines

Note

The IP65 rating applies to the front panel of the Shallowback Display Station 2000 only and not to the rear of the unit.

- In an industrial environment, the panel into which the unit is mounted should provide protection from dust, dirt and water.
- The panel should be capable of supporting the weight of the Shallowback Display Station 2000 without distortion to the unit. The mounting clips will support a panel thickness of up to 10mm (0.39 inch).
- All 12 mounting clips must be fitted properly to achieve a good seal between the Shallowback Display Station 2000 and the panel to which it is mounted.
- Inlets and outlets must have at least 25mm of space around them and not be obstructed.

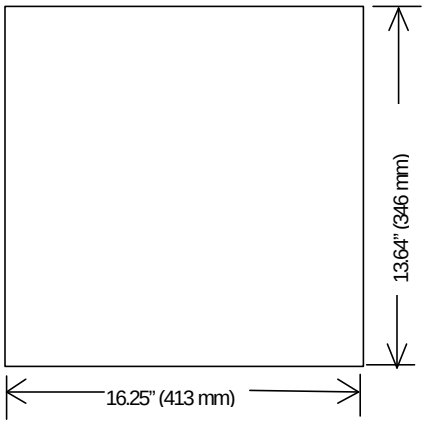
  Adequate airflow around the exterior of the unit is important to the interior temperature of the unit. Four fans are used to create air flow through the Shallowback Display Station 2000 ensuring that a correct working temperature is maintained. The first of the fans is located within the unit and is used to cool the processor. Two fans adjacent to the power supply housing pull air out of this unit.

The fourth fan, mounted on the back cover, pulls air into the unit through a filter, which removes dust, dirt. and other environment contaminants. The filter should be checked and replaced regularly (see page 3-5).

Mounting Procedure

Use the following procedure to mount the Shallowback Display Station 2000.

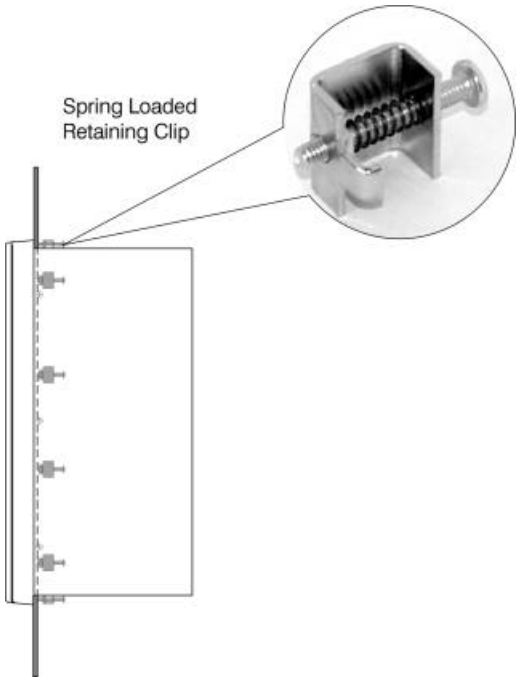
1. Cut an opening in the panel to the dimensions shown. The cut-out dimensions for both the 18-inch and 15-inch Shallowback Display Station 2000 of 16.25 inches x 13.64 inches (416 x 350mm) allow a .25 inch (6.35mm) clearance on each edge of the Shallowback Display Station 2000. Both units require a minimum of 4.56 inches (116mm) depth when mounted.



2. Position the Shallowback Display Station 2000 in the cut-out and fit the 12 spring loaded retaining clips into the slots on the Shallowback Display Station 2000. All 12 clips must be used to produce a good seal.

3. Screw in the tightening screws on each clip so that the spring is compressed by the nut. To ensure a good seal between the Shallowback Display Station 2000 and the mounting panel, the clips must be tightened evenly. (Tighten each of the clips in turn, a little at a time.)

4. When the springs are fully compressed, no further tightening of the clips is necessary. The Shallowback Display Station 2000 is locked into place.



Installing Expansion Cards and/or RAM

To avoid damage from electrostatic discharge, adhere to the following precautions when installing expansion cards:

- The card is packaged in a static-safe bag which protects the product during shipping. Before removing the card from this bag, be prepared to handle it in a static-safe environment.
- Wear a properly functioning antistatic strap and be sure that you are fully grounded. Never touch the card, or any components inside the Display Station unless you are wearing an antistatic strap.
- Any surface the unprotected card is placed on should be static-safe, facilitated by antistatic mats, if possible.
- Extra caution should be taken in cold, dry weather, when static charges can easily build up.

Installing a PC/104 Card

The PC/104 expansion slot within the system allows the card to be clamped into place using a clamping bracket with screws adjustable to the height of the card.

Warning

Remove the rear Display Station housing before removing the PC/104 plate screws. Otherwise, the internal mounting bar will fall into the unit.

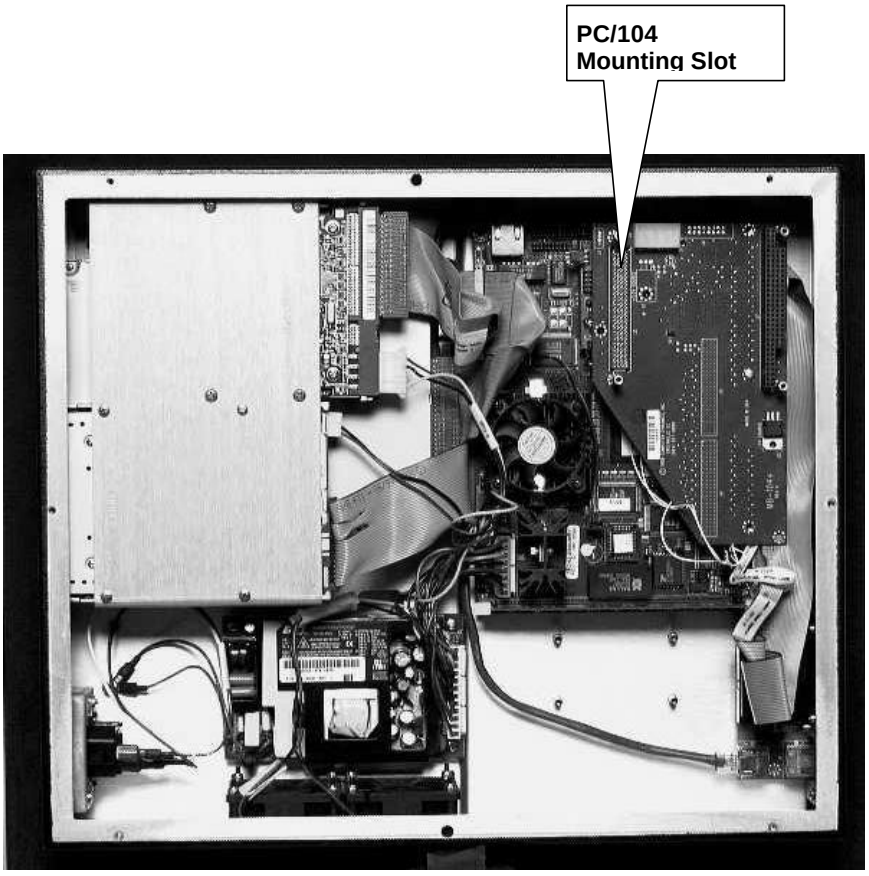
To avoid a risk of electric shock, turn off power to the Display Station and disconnect the main power before removing the rear cover from the unit. To disconnect the unit from the main power, remove the power cord.

When the back-plate screws are loosened, the back-plate will slide upwards and can then be lifted clear of the main unit.

Warning

To avoid a risk of electric shock, turn off the power to the Display Station and disconnect the main power before removing the rear cover from the unit. To disconnect the unit from the main power, remove the power cord.

An empty slot must have a blanking plate fitted, or the air flow will not comply with agency requirements. The blanking plate can be removed in order to install a new card.



Internal View of Shallowback Display Station

Changing the Air Filter Element

The filter element should be changed every three months, or sooner in dusty environments. If the air filter is not changed at suitable intervals, or if a non approved filter is used, the unit may overheat. For details of approved filter elements, refer to "Environmental Specifications" in Appendix A.

The filter element is accessed on the outside rear of the Shallowback Display Station 2000's back cover and is held in place by the filter retainer. When it becomes necessary to change the filter, you do not have to remove the rear cover plate.

To change the filter:

1. To prevent environmental contaminants from entering the unit, power down the unit prior to removing the filter.
2. Remove the filter retainer by grasping the top and bottom of the retainer and pulling it away from the fan assembly towards you. The retainer will easily come loose from the fan assembly.
3. Remove the filter element and replace it with a new one. Refer to "Filter Pad Specifications" in Appendix A for information on obtaining new filters.
4. Replace the filter retainer by centering it over the fan assembly and pushing it downward towards the back plate until it snaps securely into place.

Chapter 4 Connectors

This chapter describes the connector layout on the Shallowback Display Station 2000.

Keyboard and data connectors are provided on the proprietary cards in the Shallowback Display Station 2000. The documentation of the original manufacturers of these cards is supplied with the Shallowback Display Station 2000:

- Keyboard (CPU card)
- PS2 Mouse Port
- Serial Ports COM1, COM3 and COM2 (CPU card); COM2 used for touch screen
- Parallel Port, LPT1, 25-pin (CPU card)
- USB1 and USB2 ports (CPU card)
- Network (PCI expansion card)
- Video out port (for external CRT interface)
- Audio out port

All of the connectors listed above are accessed on a panel located on the lower left-hand side (as viewed from front of unit) of the Shallowback Display Station 2000 (see Chapter 5 for illustration of location of connectors).

Caution

External devices (printer, external disk drive, or other such devices) should not be connected or disconnected from the Shallowback Display Station 2000 when power is applied to the unit.

Power Input

An internal AC power supply unit powers the Shallowback Display Station 2000. This is an autoranging unit that accepts 85 to 265 VAC input ranges. The power supply unit is recessed within the enclosure to ensure that it does not interfere with the mounting of the Shallowback Display Station 2000 into the panel aperture. The power supply unit houses a pair of integral ventilation fans that provides cooling for the power supply.

The power supply unit also provides a standard IEC outlet socket for connection to a standard IEC cable, which is provided with the unit.

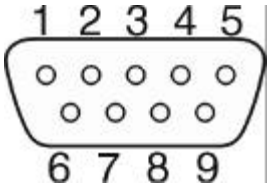
For power supply details, refer to specifications in Appendix A. There are no user-serviceable fuses in the Shallowback Display Station 2000 units.

Warning

For all equipment that is connected to a power outlet, the socket outlet shall be installed near the equipment and shall be easily accessible. The means of disconnect from the power supply is through removal of the detachable power supply cord.

Serial Communication Cables

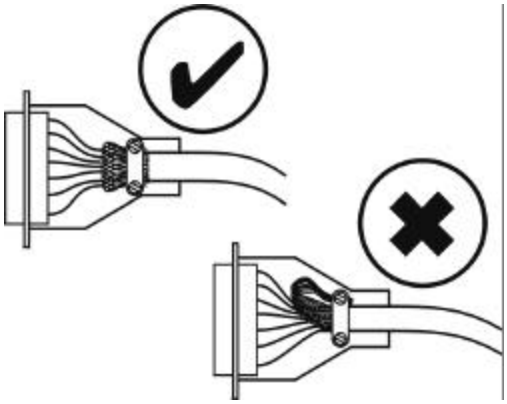
Two 9-pin D-type male connectors (COM1 and COM3) mounted on the side of the Shallowback Display Station 2000 are used for serial port connections.



RS-232C Name	Pin	Assignment
CF	1	DCD (Data Carrier Detect)
BB	2	RX (Receive Data)
BA	3	TX (Transmit Data)
CD	4	DTR (Data Terminal Ready)
AB	5	GND (Signal Ground)
CC	6	DSR (Data Set Ready)
CA	7	RTS (Request to Send)
CB	8	CTS (Clear to Send)
CE	9	RI (Ring Indicator)

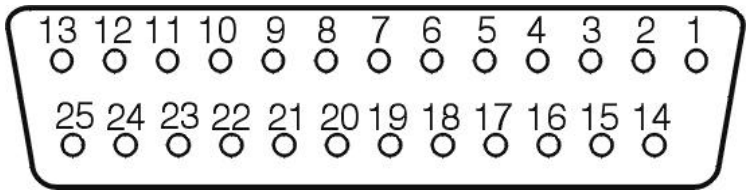
To ensure that the installation meets the EMC radiation specification, the serial cables must comply with the following points:

- The cables must be of the shielded type
- The D-type connector covers must provide EMC shielding (for example, Metallized plastic or die cast metal covers)
- The cables must be terminated with 360-degree termination of the shield, as illustrated below.



Printer Port LPT1

A 25-pin D-type female connector mounted on the side of the Shallowback Display Station 2000 is used for the printer port.



Pin	Signal Name	Pin	Signal name
1	Strobe	10	Acknowledge
2	Data Bit 0	11	Busy
3	Data Bit 1	12	Paper End
4	Data Bit 2	13	Select Out
5	Data Bit 3	14	Auto Feed XT
6	Data Bit 4	15	Error
7	Data Bit 5	16	Initialize Printer
8	Data Bit 6	17	Select In (from Printer)
9	Data Bit 7	18 to 25	Ground

Caution

External devices (printer, external disk drive, or other such devices) should not be connected or disconnected from the Shallowback Display Station 2000 when the unit is powered up.

Chapter 5 System Operation

This chapter provides details of system operation of the Shallowback Display Station 2000. The following topics are covered:

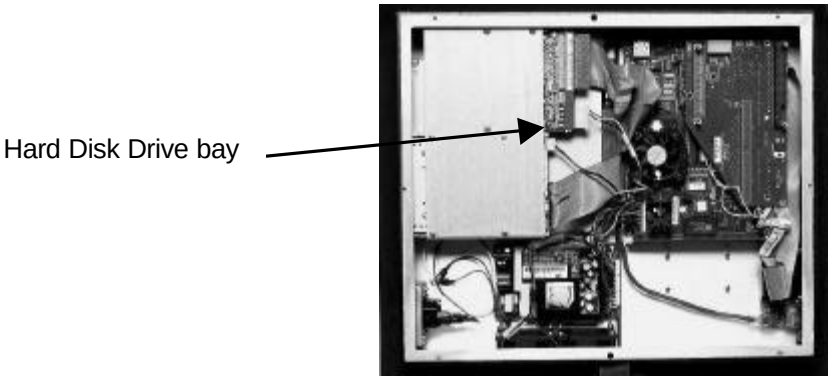
- System Peripherals
- Graphics System
- Operator Interfaces
- CIMPLICITY HMI Software
- Communications

System Peripherals

The Shallowback Display Station 2000 system contains a 3.5-inch floppy disk drive, a CD-ROM drive, and an internal hard disk.

Hard Disk Drive

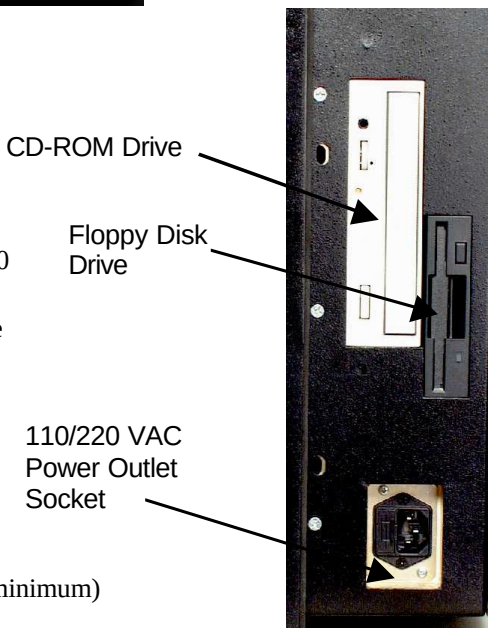
Shallow Display Station 2000 systems are configured for a single internal hard disk drive for the mass storage of data. The disk drive is a standard unit with EIDE/ATA-2 interface.



Floppy Disk Drive

The floppy drive is a standard 3.5 inch, 1 inch high unit capable of operating in both low density (720KB unformatted) and high density (1.44MB unformatted) modes.

On both the 15 and 18-inch Shallowback Display Station 2000 units, the floppy drive is positioned on the right-hand side of the unit as shown in the illustration. On both models, the drive is accessible only from the rear of the mounting panel but can be reached without having to remove any access covers.



CD-ROM Drive

The Shallowback Display Station 2000 has an integral 42X (minimum) speed CD-ROM drive.

On both the 15 and 18-inch Shallowback Display Station 2000, the CD-ROM drive is positioned on the right-hand side of the unit. On both models, the drive is accessible only from the rear of the mounting panel but can be reached without having to remove any access covers.

Graphics System

Display Types

The following display types are available:

- 15-inch color TFT Active Matrix (XGA resolution)
- 18-inch color TFT Active Matrix (SXGA resolution)

All the displays have the following specifications:

- High Luminance (equal to or greater than 200cd/m2)
- Wide angle viewing

All models include:

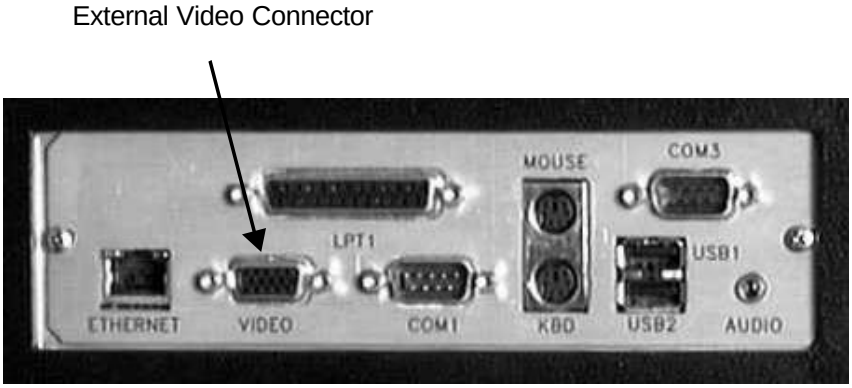
- A built-in backlight with a long life backlight tube (equal to or greater than 25,000 hrs),
- Control of the backlight to maximize the tube lifetime. (See page 5-6.)

Graphics Controller

A dedicated graphics controller card, which is installed on the motherboard, provides the interface for the flat panel display.

The following features are supported:

- The graphics controller interfaces to the host CPU using the 32 bit PCI bus and clock synthesizer.
- The graphics card supports both color TFT flat panel displays.
- The card supports display panel resolutions from VGA (640 x 480) up to SXGA (1280 x 1024), color support being from 512 to true color.
- The card supports a digital flat panel interface.
- The card also supports an external CRT interface using a 15-pin high density D-type connector.



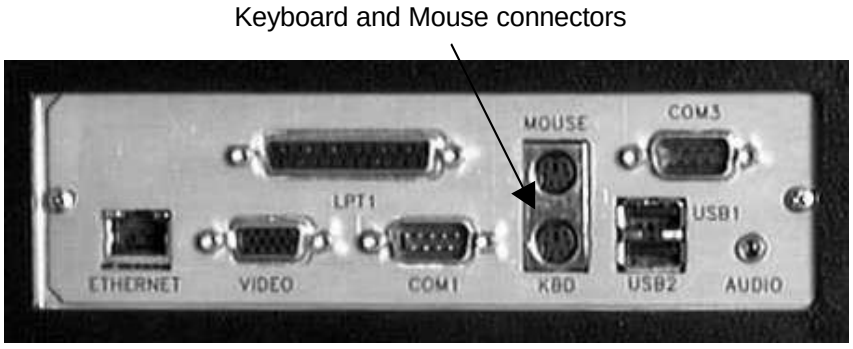
Operator Interfaces

The interface supported by the Shallowback Display Station 2000 is:

- Touch Screen only

External Keyboard and Mouse

External keyboard and PS/2 mouse connectors are located on the panel on the left side of the system as shown below:



The touch screen and PS2 mouse will work simultaneously if the mouse is Microsoft or IBM PS/2 compatible.

Touch Screen

The Shallowback Display Station 2000 range of models includes a resistive overlay touch screen on the flat panel display.

It has a touch resolution of 1024 x 1024 touch points (independent of screen size) and provides an efficient and reliable method of entering information, suitable for SCADA software packages. The screen responds to the touch of your finger with or without a glove.

The touch screen is connected internally to the COM2 serial port, which allows it to function with SCADA software. If you install a card that has settings that conflict with those of the COM2 serial port, you will need to change the card's configuration.

Touch Screen Driver for Windows

SCADA software which runs under Microsoft Windows is supplied with a driver (Twdriver) to interface with the touch screen surround.

The integral touch surround of the Shallowback Display Station 2000 is internally connected to COM2. Parameters must be set within the driver so that they match the hardware settings. The factory default settings are:

COM Port = 2
Address = 2F8 Hex
Interrupt = 3

These parameters are written into the system registry file by the driver setup utility. The driver is installed, configured and calibrated at the time of manufacture.

Control Functions

Shallowback Display Station 2000 15-inch and 18-Inch Models

The Shallowback Display Station 2000 range does not have an integral keypad. Operation of the system can be performed using the touch screen facility or by connecting a PC/AT keyboard to the Shallowback Display Station 2000. The Shallowback Display Station 2000 also has a Control/Status panel, described below.

Control/Status Panel

All models in the Shallowback Display Station 2000 range, with or without an integral keypad, include a control/status panel carrying a range of LEDs. The LEDs and keys on this small membrane panel have the following functions:

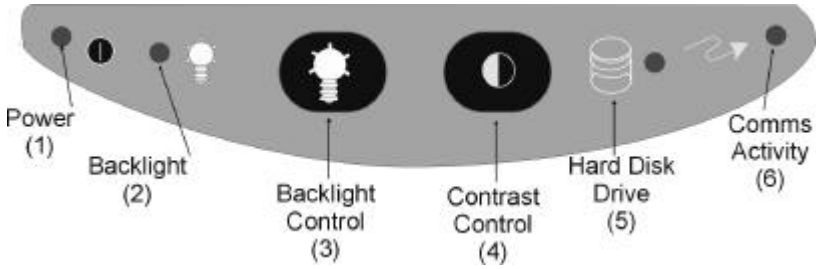


Table 5-1. Status Panel Functions

Callout	Type	Function
(1)	LED	Lighted when system power is applied
(2)	LED	Lighted when the Timed backlight mode is selected for the flat panel display
(3)	Switch	Selects the Backlight Mode of operation
(4)	Switch	Controls the flat panel display contrast.
(5)	LED	Lighted to indicate IDE drive activity (when hard disk is read from or written to)
(6)	LED	Lighted to indicate communications activity on (a general status indicator which can be used by any additional hardware installed on the system)

Adjusting the Contrast

The contrast on the Shallowback Display Station 2000 can be adjusted using the control keys mounted on the control/status front panel of the unit. To adjust the contrast, press the contrast button and hold it down. The display contrast will sweep through the range of settings.

If the button is still held down when the upper or lower limit of the contrast range is reached, then the direction of the sweep will be automatically reversed.

If you remove pressure from the contrast control button for more than 4 seconds, the direction of the sweep will be reversed when the pressure is reapplied.

For single increments of the contrast setting, apply single presses to the contrast control button.

Backlight Dimming Control Settings

The Shallowback Display Station 2000 incorporates a backlight dimming control to extend the life of the backlight tube. The dimming control is operated by using the backlight control button located on the control/status panel to select one of three mode settings.

Default Setting

At power up, the backlight control is set to the default setting. This gives a time out period of 5 minutes that the backlight stays fully on, after which time the backlight will dim.

You can configure the default setting time out period to give a time out period of between 1 to 30 minutes.

Mode Setting

The backlight can be operated in three modes:

Timed Mode - LED on
Full Constant Mode - LED off
Dim Constant Mode - LED off

To step the system through the three modes, apply single presses of the Backlight Control Button.

Timed Mode

This is the default mode. In the Timed Mode, you can set the period of time for which the backlight operates at full power. When the time set expires, the backlight display is reduced to dim and remains at the dim setting until the next interface input using the keypad.

If the system is powered down, when the unit is powered up again the default settings will be in effect. You must remake any settings for the control of the backlight.

Full Constant Mode

If the Backlight Control Button is pressed once when the system is operating in Timed Mode, the Shallowback Display Station 2000 will then operate in Full Constant Mode. In this mode, the backlight is constantly on.

Dim Constant Mode

Pressing the Backlight Control Button a second time selects the Dim Constant Mode. In this mode the backlight displays constantly on the dim setting.

Setting the Time Out Period for Timed Mode

You can configure the timeout period so that the backlight stays fully on for a period of between 1 to 30 minutes before dimming.

To set the timeout period:

Press and hold the Backlight Control Button for more than 2 seconds. The backlight control LED will begin to flash.

Each flash of this LED indicates that 1 minute has been added to the time out period. For example, if the LED is allowed to flash three times and the button is then released, the backlight will dim after a period of three minutes has elapsed.

CIMPLICITY HMI Software

For detailed software operating instructions, refer to the following documentation.

GFK-1189 *CIMPLICITY® HMI for Windows NT™ and Windows® 95 Important Product Information*

GFK-1180 *CIMPLICITY® HMI for Windows NT™/CIMPLICITY HMI for Windows® 95/CIMPLICITY Server for Windows NT™ Base System User Manual*

GFK-1181 *CIMPLICITY® HMI for Windows NT™/CIMPLICITY HMI for Windows® 95/CIMPLICITY Server for Windows NT™ Device Communications Manual*

GFK-1396 *CIMPLICITY® HMI for Windows NT and Windows 95 CimEdit Operation Manual*

Communications

For information on the hardware setup for device communications, refer to *CIMPLICITY® HMI for Windows NT™/CIMPLICITY HMI for Windows® 95/CIMPLICITY Server for Windows NT™ Device Communications Manual*, GFK-1181

Your CIMPLICITY Shallowback Display Station 2000 has been configured with networking components that enable you to establish new networks or connect to existing networks easily. If you intend to use Microsoft NetBEUI, TCP/IP, or Direct Cable Connection, some minimal setup changes are required before you can use the system for network applications. In Windows NT systems, these settings are changed using the Network application in the Control Panel program group.

Table 5-2. Installed Network Components

Network Component	Comments
PCI Network Adapter	Automatically configured in system
TCP/IP	Default settings must be changed before connecting to an existing network. Contact your network administrator for appropriate settings.
NetBEUI	Default settings must be changed before connecting to an existing network. Contact your network administrator for appropriate settings.
System Identification	Computer Name: Each system is uniquely identified by its serial number and can be renamed before adding it to an existing network. Workgroup: The default workgroup is **Workgroup**. This should be renamed before adding it to an existing network.

Caution

The IP Address must be changed to a unique address. If it is not changed, conflicts could occur on your network.

Note

On any Shallowback Display Station 2000 product with the HSSB card, only use the TCP/IP protocol. Do not install any other protocols.

Chapter 6 BIOS Settings

It is normally not necessary to change the hardware configuration settings in the CMOS memory. If settings become corrupted, follow the procedures here to reload the factory configuration.

Connect a keyboard and turn on the power. Enter the Setup mode by pressing the DEL key when prompted during the computer power-up sequence. A screen will appear offering several options for changing settings, restoring default settings, and other functions. Follow these instructions to restore the factory configuration.

1. Select the Load Setup Defaults option. Then, select the Save CMOS settings option. You will be prompted to exit. *Do not* exit at this time.

2. Go into Standard CMOS Setup and make the following selections:

	Type	**Mode**
Primary HDD master	AUTO	AUTO
Primary HDD slave	AUTO	AUTO
Secondary HDD master	AUTO	AUTO
Secondary HDD slave	AUTO	AUTO
Drive A	1.44 MB 3.5” drive	
Drive B	NONE	
Halt on Errors	All Faults **Note:** Since the Shallowback Display Station 2000 does not have an integral membrane keyboard, this should be set to “Ignore Keyboard error”	

   Exit Standard CMOS Setup.

3. Go into Integrated Peripherals Setup. Set parallel port to ECP+EPP.

4. Select Save and Exit Setup. The startup sequence should begin now.

The system is now configured with factory CMOS settings.

Chapter 7 Diagnostics and Troubleshooting

This chapter consists of “Self-Test Diagnostics,” “Troubleshooting,” and “Corrective Actions.” “Self-Test Diagnostics” describes how to respond to errors that could be detected by the automatic self test that is performed each time the Shallowback Display Station 2000 powers up. “Troubleshooting” contains tables of symptoms, their possible causes, and recommended corrective actions. “Corrective Actions” contains detailed procedures that are too lengthy to include in the Troubleshooting tables.

Self-Test Diagnostics

The computer automatically performs self-test diagnostics each time it is powered up. The self-test consists of a series of checks that verify correct performance of the computer hardware. When the self-test is being performed, you will see the message XXXX KB OK displayed on the screen, where XXXX is a number that increases until it matches the amount of usable memory.

System Test and Initialization

These routines test and initialize board hardware. If the routines encounter an error during the tests, you will see an error message on the screen. There are two kinds of errors: fatal and non-fatal. If a non-fatal error occurs, the system can usually continue the boot up sequence. Non-fatal error messages usually appear on the screen with the following instruction:

```
press <F1> to RESUME
```

Write down the message and press the F1 key to continue the bootup sequence.

System Configuration Verification

These routines check the current system configuration against the values stored in the CMOS memory. If they don’t match, the program will generate an error message. To correct this condition, you will need to run the BIOS setup program and correct the configuration information in memory.

There are three situations in which you might need to change the CMOS settings:

1. You are starting your system for the first time.
2. You have changed the hardware attached to your system.
3. The CMOS memory had lost power and the configuration information has been erased. If this has happened, call the GE Fanuc CIMPLICITY hotline at 1-800-GE FANUC (1-800-433-2682), or International direct dial 804-978-6036.

Troubleshooting

Powerup

Symptom	Possible Causes	Solution
Shallowback Display Station 2000 does not power up.	Power not on (PWR indicator is not lit or display completely dark).	Make sure that the Shallowback Display Station 2000 is plugged in. Make sure that power source is functioning properly.
Display is blank (PWR indicator is lighted).	See "Display" on page 7-3.	See "Display" on page 7-3.
`Non-System disk or disk error` message displayed.	Disk in floppy disk drive.	Remove floppy disk and then reboot or cycle power.
Memory count during powerup self-test is incorrect.	Optional SIMM is installed incorrectly or is incompatible with the Shallowback Display Station 2000 CPU.	Make sure that the appropriate memory is installed correctly.
`CMOS checksum error – Defaults loaded` `CMOS battery failed` message displayed.	CMOS battery failure.	**Note:** This battery has a lifetime of up to 10 years under normal operating conditions. For more information, see "CMOS Checksum Error" on page 7-8.
A screen appears just after powerup, or just after reset, which has the title "CMOS Setup Utility."	The Delete key has been accidentally pressed.	Cycle power again. The Shallowback Display Station 2000 will power up normally.
The Shallowback Display Station 2000 reset even though the power was not interrupted.	The Ctrl-Alt-Delete keys were pressed twice at the same time.	This should never be done, unless you are attempting to reset the Shallowback Display Station 2000.
A:> appears instead of software.	A system floppy disk is inserted.	Remove disk and cycle power.

Display

Symptom	Possible Causes	Solution
Characters are dim.	Computer screen is in direct light.	Change lighting or adjust contrast.
Display is blank (PWR indicator is lit).	Screen temperature is outside operating range.	If Shallowback Display Station 2000 is in direct sunlight, move it and allow it to cool.
	Shallowback Display Station 2000 is set up for invalid video mode.	Reboot. Select VGA Mode If Windows is now displayed, go into Control Panel, Display Settings, and change settings to the correct video driver and mode. Contact the GE Fanuc CIMPLICITY hotline for more information.
	Screen saver is active.	Touch the touch screen, or a key on the keypad.

Memory

Symptom	Possible Causes	Solution
Memory count during powerup self-test is incorrect.	Optional SIMM is installed incorrectly or is incompatible with the Shallowback Display Station 2000 CPU.	Make sure that the appropriate memory is installed correctly.
`Out of Memory` message is displayed or insufficient memory error occurs during operation.	System ran out of memory for the application.	Check the memory requirements for the application. (Refer to the application documentation.) Install additional memory.
	Too many terminate and stay resident (TSR) programs running.	Modify the startup folder to use only those TSR applications that are really needed.

Touch Screen

Note

Operating temperature can affect touch screen calibration. If touch screen operation is slightly off, recalibrate it by running calibration from the Touchscreen application in Programs.

Symptom	Possible Causes	Solution
Cursor does not respond at all to touch.	Touch screen disabled.	Make sure that documented default touch screen settings are selected.
	Touch screen driver accidentally deleted.	Reinstall touch screen driver
	System is busy.	Press Ctrl-Alt-Delete once to view task list.
	If Windows NT has been re-installed without modifying the BOOT.INI file, the NTdetect utility will cause problems with the touch screen.	Modify the BOOT.INI file to include the /NoSerialMouse option. For details, see "Reloading NT on the Hard Disk From CD" in Chapter 2.
Cursor moves but does not follow your touch accurately.	Touch screen not calibrated properly.	Run calibration from Touchscreen application in Programs.
Touch screen responds erratically to touch; cursor might not be visible.	Touch screen settings are incorrect.	Refer to settings.

External PS/2 Mouse

Symptom	Possible Causes	Solution
Cursor does not respond to mouse movement	Mouse not plugged in.	Power down Shallowback Display Station 2000. Plug mouse into mouse port on Shallowback Display Station 2000 and reboot.
	The type of mouse is not supported.	Use a PS/2 mouse.
	System is busy.	Press Ctrl-Alt-Delete to view task list.
	Mouse not detected.	Restart Shallowback Display Station 2000 product with external mouse connected.

Keyboard

Symptom	Possible Causes	Solution
External keyboard locks up	The type of keyboard is not supported.	Use a Key Tronic keyboard. (Most keyboards will work. However, we recommend a keyboard manufactured by Key Tronic.)
	Keyboard not plugged into keyboard port on Shallowback Display Station 2000.	Plug keyboard in.
	System is busy.	Press Ctrl-Alt-Delete to view task list.

Communications

PLC/CPU Connection

Symptom	Possible Causes	Solution
CIMPLICITY does not communicate with a PLC that has been autoconfigured (AUTOCONFIG/DEFAULT/I/O error).	The system is attempting to communicate with a Series 90-30 PLC using the SNP driver and a CIMPLICITY project.	1. With the PLC powered up and connected to the Shallowback Display Station 2000, establish communication between the Shallowback Display Station 2000 and PLC via the Series 90-30 SNP driver. 2. Using a Hand-Held Programmer, toggle the Default I/O (Enable or Disable) configuration parameter for the CPU. Communications between the Shallowback Display Station 2000 and the PLC will be stopped. (Communications are stopped when you toggle from Enable to Disable, or vice versa.) 3. Power cycle the PLC.
Communications between the host computer and the controller are unsuccessful.	COM port not configured in system.	Verify that the COM port is configured in the system.
	Cabling between computer and controller.	Verify that the cable between the computer and the controller is correctly wired.
	Baud rate and parity configured incorrectly.	Verify that the baud rate and parity on the computer are consistent with those on the controller.
	Wrong address.	Verify that the slave address is correct.

MODBUS RTU Communications

Symptom	Possible Causes	Solution
Communications between the host computer and the controller are unsuccessful.	COM port(s) not configured in system.	Verify that the COM port(s) is configured in the system.
	Cabling between computer and controller.	Verify that the cable between the computer and the controller is correctly wired.
	Baud rate and parity configured incorrectly.	Verify that baud rate and parity on the computer are consistent with those on the controller.
	MODBUS port not configured for RTU communications.	Verify that the controller's MODBUS port is configured for RTU communications.
	Wrong address.	Verify that the slave address is correct.

Network Communications

Symptom	Possible Causes	Solution
Conflicts on network.	IP Address not unique.	Change the IP address to a unique address. (Contact your system administrator if this or other settings need to be changed.)

Printing

Symptom	Possible Causes	Solution
Printer will not turn on.	Cables not connected properly. Printer power cord not plugged in.	Ensure that the cables are properly connected and that the power cord is connected to the electrical outlet.
Printer will not print.	Printer is not turned on.	Turn on the printer
	Printer is not online.	Set the printer to online.
	The device drivers for your application are not installed.	Install the correct printer drivers for your application in Windows.
	Printer that is set up for a network is not connected to the network.	Connect the printer to the network.
	Printer cable is too long, unshielded, or defective.	Replace the cable.
Printer is offline.	Paper tray is empty.	Fill the paper tray with paper. Set printer to online.
Printer prints garbled information.	Correct printer drivers not installed.	Install the correct printer driver.
	Cable is not connected properly.	Ensure that the printer cable is connected properly to the computer.
	Problem specific to printer.	Run a printer self-test. Refer to the documentation provided with your printer for instructions. If the self-test fails, the problem is printer-specific. The printing section of the software documentation and in Windows online Help may also be helpful.

Corrective Actions

CMOS Checksum Error

If the CMOS battery has failed, the following error messages will be displayed on the screen:

```
CMOS checksum error - Defaults loaded

CMOS battery failed
```

If you see the above message, you can still operate the Shallowback Display Station 2000 by pressing the Delete key and manually setting up the system. (You will need to set up the computer each time the system is powered up.) For setup parameters, refer to "BIOS Settings."

If the CMOS Battery Fails

This Lithium battery has a lifetime of up to 10 years under normal operating conditions. Lithium battery replacement should be done by a factory-trained service person or the unit should be returned to GE Fanuc for servicing.

If the battery failed, contact the GE Fanuc *Technical Service Hotline*. North American customers should call toll-free at **1-800-GE FANUC (1-800-433-2682)**. International customers should dial direct: **804-978-6036**.

Appendix A

Technical Data

Mechanical Specifications

Front Assembly

Each Shallowback Display Station 2000 has the same features and differs only in the size of the screen:

The two variations include a **15 inch model** and an **18 inch model**. Both models of the Display Station have a touch screen, which provides the operator interface for the unit. There is no integral keypad. A PC-AT keyboard can be connected for system configuration but is not intended for normal operator interface use.

Both models have a control/status panel located below the display screen. This panel houses the LED displays which indicate power, IDE drive activity, backlight control and contrast.

The entire front panel assembly is engineered to IP65 standards.

Touch Screen

A resistive touch screen is incorporated in front of the flat screen. The screen is designed so that impairment of visibility is reduced to a minimum. The touch screen is bonded to the front metal work using a silicon sealant.

Main Chassis

The main chassis is manufactured from sheet steel and houses the PC/104 standard boards which are mounted securely in a horizontal plane.

Four fans provide chassis cooling. A fan mounted directly over the CPU microprocessor provides direct cooling for that device. In addition two fans are mounted on the bottom of the main chassis adjacent to the power supply, which blow air out of the unit. A fourth fan, which is mounted on the back cover pulls air in through a filter that removes dust and dirt.

Rear Cover

The rear cover of the unit is fixed to the main chassis so that emissions are minimized. The cover can be removed easily without breaking any electrical connections.

Panel Mounting System

Twelve spring-loaded mounting clamps are provided for mounting the Display Station on a panel.

Functional Specifications

CPU and Memory	
Microprocessor Options	Pentium MMX 233 minimum*
User Memory	64 Mbytes Minimum*
Operating System	Windows NT
Hard Disk	6 Gbyte minimum*, IDE standard 3.5 inch mounting
Floppy Drive	Supports 3.5-inch, 1.44Mb PC format floppy disks

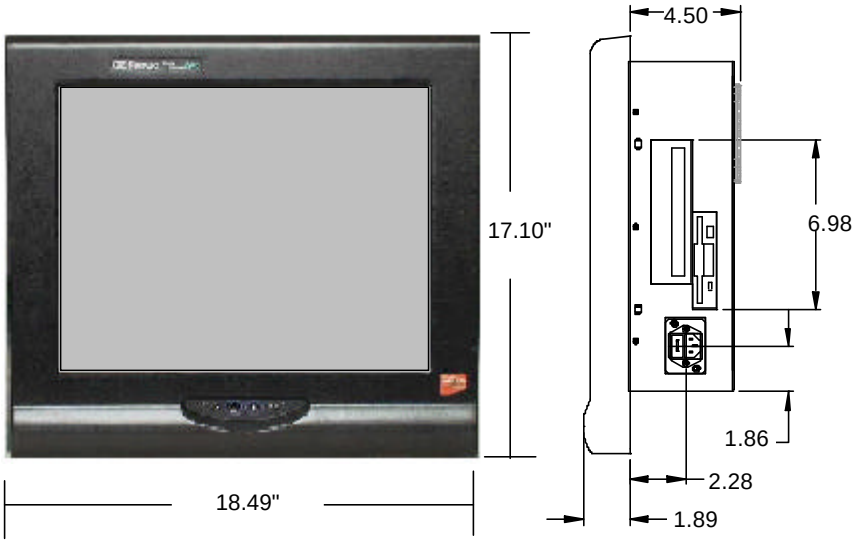
Display	
Display Variants	15 inch Color TFT Active Matrix – XGA resolution (1024 x 768) 18 inch Color TFT Active Matrix – SXGA resolution (1280 x 1024)
Active Display Area	15 inch (305 x 229 mm) 18.1 inch (355 x 286 mm)

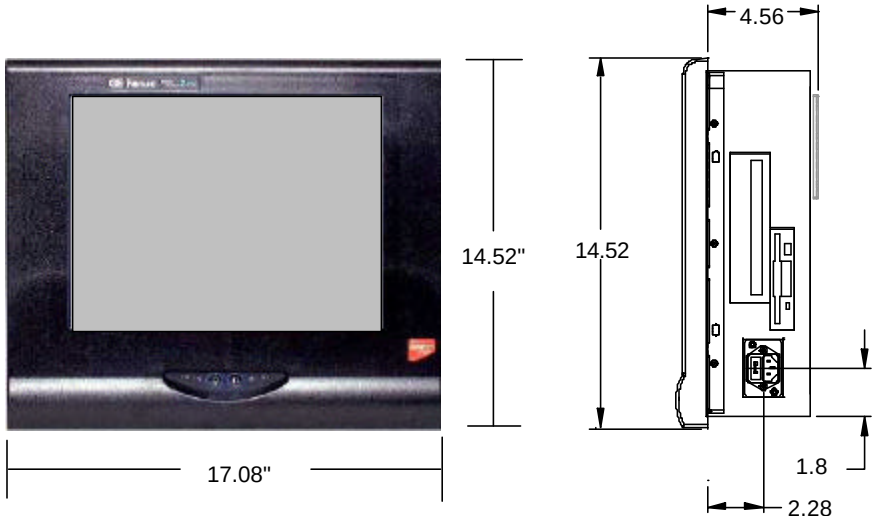
Power Requirements	
AC Input	85 to 265VAC, 200W autoranging
Power Rating	85 to 265V, 47 to 63Hz, 20/4A

Ports	
Parallel Port	One: LPT1
Serial Ports	COM1 external RS232 port COM3 external RS232 port COM2 wired internally to touch screen
Keyboard Port	PS/2 connector
Mouse Port	PS/2 Connector
USB Ports	USB1 and USB2
Ethernet Port	10BaseT port, RJ-45 connector
Video Port	15-pin D-Type connector
Audio Port	Standard audio output jack

* Contact your local distributor for upgrades.

Physical	
Dimensions	
Models with 15-inch display	434mm (17.08”) wide x 369mm (14.52”) high x 137mm (5.38”) deep
Models with 18-inch display	469mm (18.49”) wide x 434mm (17.1”) high x 153mm (6.02”) deep
Weight (base unit as configured at factory)	
Models with 15-inch display	11.04 Kg (24.35 lbs.)
Models with 18-inch display	14.51 Kg (32 lbs.)





Environmental Specifications

Operating Temperature	0 to 45°C (0 to 133°F)
Storage Temperature	-20° to +60°C (-4° to 140°F)
Relative Humidity	5 to 85% non-condensing

Filter Pad Specifications

Dimensions	80mm by 80mm
Material	P15/150B
Performance Requirements	Retain 75% by weight of dust particles down to 5-10 microns in size
	Withstand temperatures to 100° C
	Provide flame resistance to BS5588, DIN53438

Note: Filter pads (reference FP80T) are available from:

PAPST-MOTOREN GmbH & Co KG
Hermann-Papst-Straße 1
78112 St. Georgen/Schwarzwald
Postfach 14 35

Tel: (0 77 24) 81-0
Fax: (0 77 24) 81-309

http://www.papst.de/home.html

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