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GE Fanuc Automation

Operator Interface Products

Display Station 2000™

User's Guide

GFK-1562C

September 2000

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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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Field Control	Motion Mate	Series Five	VuMaster
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Content of This Manual

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

Catalog Number	Features
IC752WBB202	12 inch display, with keypad and touchscreen
IC752WBB252	12 inch display, with keypad and touchscreen
IC752WTC402	14 inch display, with touchscreen
IC752WTC502	15 inch display, with touchscreen
IC752WTC452	14 inch display, with touchscreen
IC752WTC552	15 inch display, with touchscreen
IC752WTD802	18 inch display, with touchscreen
IC752WTD852	18 inch display, with touchscreen

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*

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Contents

Chapter 1 Display Station 2000 Features 1-1

Features Summary 1-2
System I/O 1-3
Standard I/O 1-3
ISA and PCI Card Expansion 1-3
Network Interface 1-3
Application Software 1-3

Chapter 2 Powerup and Software Installation 2-1

Initial Startup 2-1
Powering Up the Display Station Unit 2-2
Setting Up Windows NT Systems 2-2
Configuring the Display Station to Run on a Microsoft Network 2-3
Login Recommendation 2-4
Registering Your CIMPLICITY Software 2-5
Installing Application Software 2-6
Directory Structure 2-6
Field Image Recovery 2-6
Instructions for Image Recovery 2-6
Reloading NT on the Hard Disk From CD 2-7
Windows NT Touch Screen Driver Installation 2-8
External CD-ROM Drive 2-9
Shutting Down the Computer 2-9

Chapter 3 Hardware Installation 3-1

Mounting Guidelines 3-1
Mounting Procedure 3-2
Installing Cards 3-3
Card Clamping 3-4
Using the Card Clamp Bracket 3-5
Blanking Plates 3-5
Configuring Expansion Cards (Legacy ISA Only) 3-6
Changing the Air Filter Element 3-7

Chapter 4 Connectors 4-1

Power Input 4-2
Serial Communication Cables 4-3
Printer Port LPT1 4-4

Chapter 5 System Operation 5-1

System Peripherals 5-2
Hard Disk Drive 5-2
Floppy Disk Drive 5-2

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Graphic System 5-3
Display Types 5-3
Graphics Controller 5-3
Operator Interfaces 5-4
External Keyboard and Mouse 5-4
Touch Screen 5-4
Touch Screen Driver for Windows 5-5
Control Functions 5-5
Display Station Model WBB 5-5
Display Station WTC and WTD Models 5-8
Control/Status Panel 5-8
Backlight Dimming Control Settings 5-9
Setting the Time Out Period for Timed Mode 5-9
CIMPLICITY Software 5-10
Communications 5-11

Chapter 6 BIOS Settings 6-1

Chapter 7 Diagnostics and Troubleshooting 7-1

Self-Test Diagnostics 7-1
System Test and Initialization 7-1
System Configuration Verification 7-1
Troubleshooting 7-2
Powerup 7-2
Display 7-3
Memory 7-3
Touch Screen 7-4
External PS2 Mouse 7-4
Keyboard 7-5
Communications 7-5
PLC/CPU Connection 7-5
MODBUS RTU Communications 7-6
Network Communications 7-6
Printing 7-7
Corrective Actions 7-8
CMOS Checksum Error 7-8

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Appendix A Technical Data A-1

Mechanical Specifications A-1
- Front Assembly A-1
- Touch Screen A-1
- Keypad A-1
- Main Chassis A-2
- Rear Cover A-2
- Panel Mounting System A-2

Functional Specifications A-3

Ordering Information A-5

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Chapter 1 Display Station 2000 Features

The Display Station 2000 is a high performance workstation incorporating the latest Pentium® system architecture. The Display Station 2000 is designed primarily as a hardware platform for Human Machine Interface (HMI) Supervisory Control and Data Acquisition (SCADA) software packages running under the Windows NT® operating system. The Display Station 2000 products are available with a variety of screen sizes and keypad options.

Each model in the Display Station 2000 range is a fully self contained PC-compatible computer with built-in flat screen display and resistive touch screen, front-panel-mounted unit, weighing less than 20 kg (44 lbs). The unit is housed in a rugged metal case to protect the system against dust and damage.



Display Stations are available with autoranging power supplies for 110 or 220 VAC operation.

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 which contain information you need to set up the operating system and network communications.

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Features Summary

When you purchase a CIMPLICITY Display Station, you receive:

- CIMPLICITY Display Station industrial computer with CIMPLICITY HMI software and Windows operating system software installed. See “Standard Features” below. (Demo only for IC850PCT500.)
- Power cord.
- Installation hardware.
- CIMPLICITY software licenses and license agreements. (Not included in IC850PCT500.)
- CIMPLICITY software.
- Ethernet driver floppy disk and manual.
- Microsoft Windows documentation, software distribution, Certificate of Authenticity and license agreement.
- Image Recovery disk with instructions.

Operating system	Windows NT
CIMPLICITY HMI software	Development and Runtime software
CPU IC752WBB202, IC752WTC402, IC752WTC502, IC752WTD802	 Pentium® MMX — 233 MHz, minimum
IC752WBB252, IC752WTC452, IC752WTC552, IC752WTD852	AMD-K6®-2 — 350 MHz, minimum
Hard disk	6 GB minimum
Floppy disk drive	3.5 inch, 1.44 Mbyte
RAM	64 MB minimum Display Stations allow you to install a maximum of 256MB of DRAM. Supports both Fast Page and EDO (Extended Data Out)
Display	Color TFT-SVGA
Parallel ports	One LPT1
Serial ports	Two RS-232 (COM 2 used for touch screen)

*Contact your sales representative for upgrades and options.

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System I/O

Standard I/O

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

- A single serial interface port provided by the processor motherboard. This COM1 port is accessible at the bottom of the WBB model and uses a standard 9-pin D type connector. On the WTC and WTD models, the serial interface port is accessible on the right-hand side of the main enclosure.
- A single enhanced parallel port is also provided by the motherboard. This port is accessible at the bottom of the WBB model and uses a standard 25-pin female D type connector. On the WTC and WTD models, the parallel interface port is accessible on the right-hand side of the main enclosure.

If the end application requires serial or parallel interfaces in addition to those provided by the standard system, a specific ISA I/O card can be installed. A wide selection of ISA cards is available from third party sources to provide user flexibility.

ISA and PCI Card Expansion

Display Station 2000 provides expansion slots to accommodate extra ISA and PCI cards.

- One open and available ISA slot — accommodates full length cards
- One open and available shared expansion slot for either a PCI or ISA card

All the expansion slots within the system allow the card to be clamped into place using a clamping bracket with screws adjustable to the height of the card.

Warning

Turn off power to the Display Station and disconnect the power supply before installing or removing any control card or communications cable. To disconnect the unit from the main power, remove the power cord.

Network Interface

The Display Station includes an autosensing Ethernet adapter that provides a 10/100BASE-T, RJ-45 connector for unshielded twisted pair cable.

Application Software

Display Stations 2000 are supplied with CIMPLICITY HMI software, which is pre-loaded before shipment of the Display Station. (Demo only for IC850PCT500.)

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Chapter 2 Powerup and Software Installation

This chapter contains information you need to set up your Display Station's operating system and network communications.

Initial Startup

When you first power up your system, you will need to attach a standard PS2-type keyboard to the external keyboard port on the Display Station. 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 Display Station system can be more easily completed using a keyboard or may require a keyboard.

Note

The WTC and WTD models of the Display Station range, which have no integral keypad, require a PS2 keyboard to configure the application software. Once the configuration is completed, the Display Station can normally be operated by using the built-in touch screen.

On power up, if no keyboard is connected to this Display Station, 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.

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Powering Up the Display Station Unit

Caution

Do not connect or disconnect external devices, such as a printer or a PS2 keyboard or mouse, while the unit is powered. Failure to observe this precaution could result in damage to the equipment.

The power switch is located on the side of the Display Station unit next to the input power connector. To power up the unit, set the rocker switch to the | (ON) position.

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 PS2 keyboard. A PS2 mouse is recommended to help navigate through the setup screens.

1. Plug in the keyboard, PS2 mouse (if available), and power cord.
2. Power on the unit.
3. Read license agreement
4. TAB to your choice and press ENTER.
5. Type your name
6. Press the TAB key and type your company name.
7. Press ENTER.
8. 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.

9. 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.

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10. You will be prompted for a password.

- To use the autologon feature, type **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.

11. Press ENTER to continue with Windows NT Setup.
12. Click Finish.

Note

With Windows NT, it is highly recommended that you create an Emergency Repair Disk once you have completed the setup of your system. Go to Start/Run/Rdisk.exe. You will need to update this disk anytime you make a change to the hardware or software.

Configuring the Display Station to Run on a Microsoft Network

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 can cause network problems.

1. Click the Start icon, then click Settings and 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. You will need to type in your Computer name, Workgroup name, and Computer Description.

Note

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

4. To allow sharing,
   A. Go to the Configuration tab and click the File and Print Sharing button. The File and Print Sharing dialog box will appear.
   B. Check the File and Print Sharing options that you want and click OK.
5. To add the TCP/IP protocol,
   A. Go to the Configuration tab and click the Add button. The Select Network Component dialog box will appear.
   B. Click the Protocol icon and click Add. The Select Network Protocol dialog box will appear.
   C. In the Manufacturer list, select Microsoft. In the Protocol list, select TCP/IP. Click OK.

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D. Change the Address from 10.0.0.1 to a unique address. Change the default subnet mask 255.0.0.0 to your subnet mask.

E. Click OK twice.

6. When you have finished setting up the Network, click OK in the Network dialog box. Click Yes to reboot your system now.

Login Recommendation

If you type **admin** as your Administrator password, your Display Station 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.

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Registering Your CIMPLICITY Software

(Not applicable on IC850PCT500 models.) All Display Stations 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 Display Station, 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.

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Installing Application Software

The Windows operating system and CIMPLICITY HMI software are loaded onto the Display Station 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 Display Station platform.

Directory Structure

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

`C:\CIMCD\i386`	**CIMPLICITY CD**
`C:\i386`	**Windows NT CD**
`C:\Backpack`	**Backpack CD drivers**
`C:\TBASE`	**Touch screen drivers**
`C:\i386\DRVLIB.NIC\INTEL55`	**Network drivers**
`C:\SP4\i386`	**Service pack 4 drivers**
`C:\LS120`	`Imation SuperDisk floppy backpack drivers`

Note

If you reload any Windows NT component requiring files, such as network driver, you must reload service pack 3. To do this type:

`C:\SP4\UPDATE`

Field 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. Before you start the image recovery procedure, a standard PS/2-type keyboard will need to be connected to the external keyboard port.

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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.

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

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Reloading NT on the Hard Disk From CD

Note

Image recovery should be attempted before executing this step. See "Field Image Recovery" on page 2-6. The WBB, WTC, and WTD Display Station products do not contain a CD-ROM drive. If you need to reload the Windows NT operating system, you must first install a CD-ROM drive. For information on a recommended external CD-ROM, refer to "External CD-ROM Drive" on page 2-9.

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.

You may need to set up the display driver in the event of a reload. Go to Control Panel/Display/Settings and make the following settings:

Colors: 65536
Resolution: 800 x 600
Refresh: 60 Hz
Display Type: Chips & Technologies 65550

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Windows NT Touch Screen Driver Installation

If the Display Station touch screen drivers become corrupt, an experienced user can try re-installing the drivers and editing the boot.ini file by doing the following procedure:

1. Initial driver installation is completed by double clicking NT setup on the touch driver floppy disk. Once installed, the computer will request that you reboot the system.

   The touch screen will not work until you edit the NTboot.ini file in the root directory of Windows NT. A suggested procedure follows:

2. Open Windows Explorer. Clock View and the menu bar and make sure that you are viewing all files.
3. Click the (C:) drive to display all files.
4. Find the "boot" folder in your contents and right click.
5. Click the Properties option.
6. Click the General tab and make sure that all the attributes are unchecked: Archive, Apply, and Read-only. Once all boxes are unchecked, click Apply and then OK to return to Windows Explorer.
7. Double click the boot folder. Wordpad will display five lines of code.
8. Edit the fourth and fifth line of code to be identical to the code shown below:

```
[boot loader]

timeout=5

default=multi(0)disk(0)rdisk(0)partition(1)\WINNT="Windows NT Workstation Version 4.00"

[operating systems]

multi(0)disk(0)rdisk(0)partition(1)\WINNT="Windows NT Workstation Version 4.00"

/NoSerialMice:Com2

multi(0)disk(0)rdisk(0)partition(1)\WINNT="Windows NT Workstation Version 4.00 [VGA mode]"

/basevideo /sos /NoSerialMice:Com2
```

9. From the File menu, Save, then Exit Wordpad.
10. Click the Windows NT Start button and select Shut Down.
11. ***Turn the computer off.*** The NT driver will not load properly if you only restart the computer. It must be completely powered down.
12. Turn the computer on.
13. Click the Windows NT Start button, select Programs, Touch, and Touch Screen Control.
14. Click the Hardware Controls button and check that COM2 is selected.
15. Click the Calibrate button and follow the procedures for calibration.
16. Exit the program.

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External CD-ROM Drive

A driver, BP32DRV, is factory-installed to allow the Micro Solutions Backpack™ External CD-ROM Drive to be used for loading software. To enable this driver on units with Windows NT, select Devices under Control Panel, select BP32DRV, and change Startup setting to System. Close the Control Panel, shut down, and connect the drive to the parallel port. Restart the system and open Windows NT Explorer. The CD-ROM should appear as D:. When finished, the driver can be set to Disabled again.

Shutting Down the Computer

Caution

To avoid damaging files, always shut down Windows software before removing power from your Display Station product.

To shut down Windows NT software, select Shut Down from the Start menu.

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Chapter 3 Hardware Installation

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

A single cut-out in the mounting panel is all that is required when mounting the Display Station. 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.

This chapter also describes how to install ISA and PCI cards and how to change the air filter.

Mounting Guidelines

Note

To meet the European EMC requirements for ESD (EN 61000-4-2) of +/- 4.0kV, the unit must be installed in a grounded metal enclosure when used with the DeviceNet PCI/ISA expansion card (PC752DVM000).

- 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 Display Station 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 Display Station 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. Two fans are used to create air flow through the Display Station 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. The second fan is built into the power supply housing and blows air out of this unit.

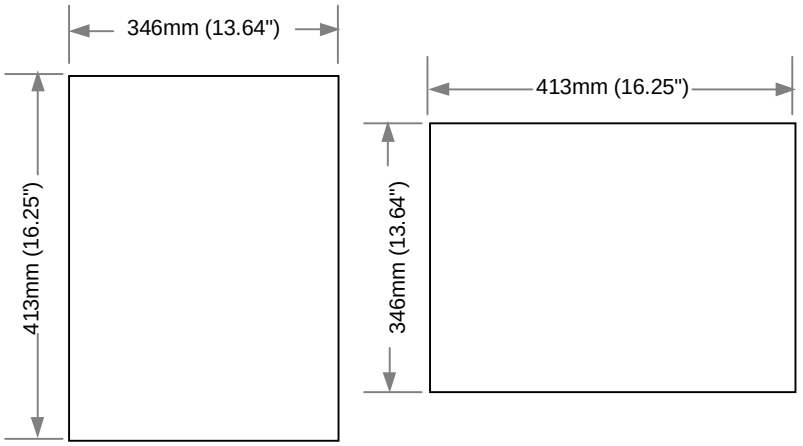
  Incoming air passes through a filter that removes dust and dirt. The filter should be checked and replaced regularly (see page 2-6).

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Mounting Procedure

Use the following procedure to mount the Display Station 2000.

1. Cut an opening in the panel to the dimensions shown. The cut-out dimensions of 411 x 346 mm allow a 1.2 mm clearance on each edge of the Display Station. The unit requires a minimum of 200mm depth when mounted.

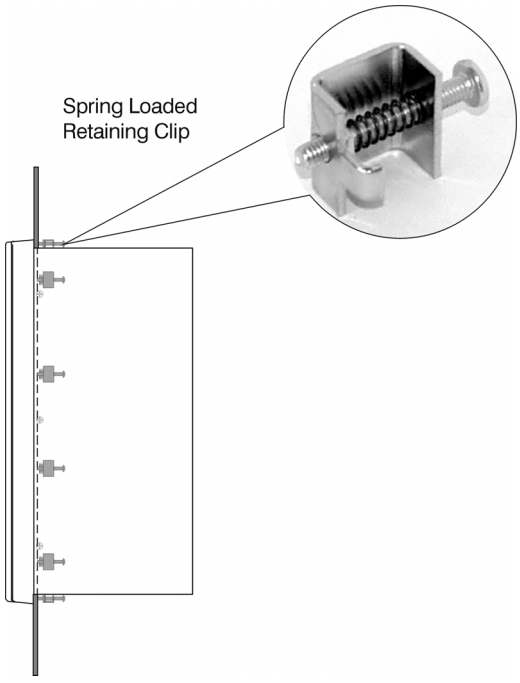


WBB Model WTC and WTD Models

2. Position the Display Station in the cut-out and fit the 12 spring loaded retaining clips into the slots on the Display Station. 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 Display Station 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 Display Station is locked into place.



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Installing Cards

Note

If you are installing an optional serial card, none of the ports can be configured as COM2, which conflicts with the touch screen.

Display Station 2000 provides four expansion slots, two of which are available for installation of user cards.

- One 16 bit ISA slot — accommodates full length cards (open and available)
- Three PCI/ISA shared expansion slots (One open and available)

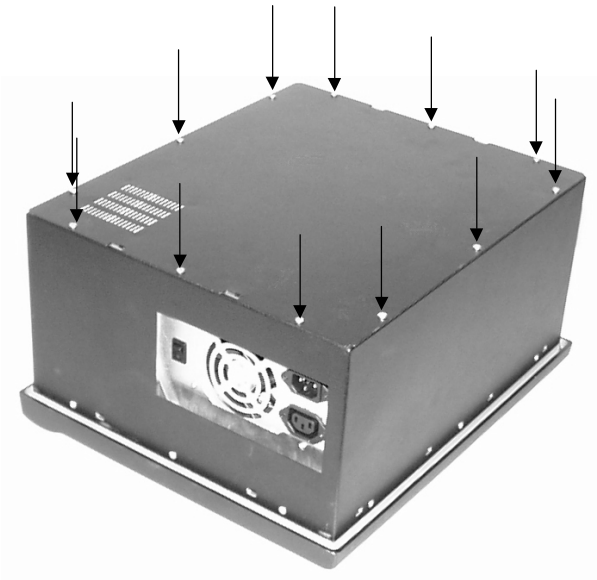
If your card is a Legacy ISA type, follow the instructions on page 3-6, then proceed with installation.

All the expansion slots within the system allow the card to be clamped into place using a clamping bracket with screws adjustable to the height of the card.

The rear cover of the Display Station must be removed in order to access the ISA and PCI bus cards. Twelve screws are used to secure the rear panel to the Display unit. When these screws are removed, the backplate will slide upward and can then be lifted clear of the main unit.

Warning

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



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Caution

To avoid damage from electrostatic discharge, adhere to the following precautions when installing ISA and PCI 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 upon which you place the unprotected card 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.

Card Clamping

A card clamping bracket with blocks adjustable to the height of the card is used in the Display Station.



The clamp can be adjusted for all standard heights of ISA and PCI cards:

- All standard height cards are secured by a card clamping bracket fixed over and above the cards.
- Each Display Station is supplied with card securing blocks and screws as well as a foam strip for the highest standard card. When installing a card in one of the vacant positions, the block must be fitted to the clamping bracket as shown in the figure above.

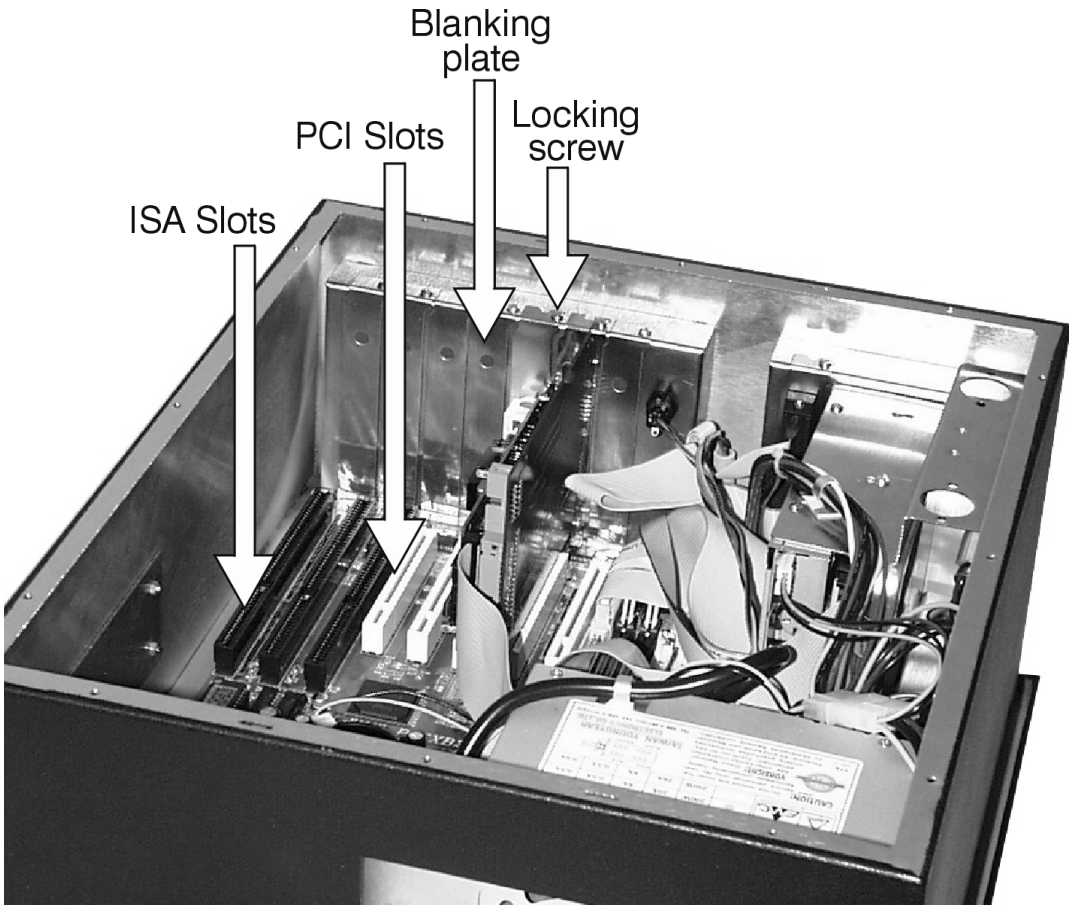
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Using the Card Clamp Bracket

- Take the card clamping bracket (with the necessary blocks at the appropriate height in place), as shown above, fix the clamp into position by aligning the two holes in the folded end of the bracket over the two pins on the inside wall of the main Display Station enclosure.
- Locate the two off holes on the opposite end of the clamp with the two threaded holes on the top of the hard disk drive bracket.
- Secure the bracket using two M3x6mm screws and nuts.

Blanking Plates

Blanking plates are fitted to each unused card position. These blanking plates can be removed as necessary in order to install new cards. Any empty slots must have a blanking plate fitted, otherwise agency approvals become invalid.



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Configuring Expansion Cards (Legacy ISA Only)

Caution

For most applications an IRQ or address cannot be shared by more than one resource. If more than one resource is set to the same interrupt or address, the application may not respond properly and could cause your machine to lock up. Following these instructions when installing Legacy ISA cards will prevent problems with resource conflicts.

Legacy ISA cards are the oldest standard and require memory, I/O, and IRQ settings to be manually set on the card using jumpers, DIP switches, or a configuration program. The card and system need to have the same hardware settings.

1. Connect a keyboard, turn on the system power, and press DEL when prompted to enter the BIOS Setup program.
2. Select PNP/PCI CONFIGURATION.
3. If the card requires one or more interrupts, go to an IRQ that currently reads "PNP PCI/ISA" and change it to "Legacy ISA" by pressing PAGE DOWN. Do ***not*** use an IRQ that already reads "Legacy ISA."
4. If the card requires memory space, enter the address and amount where "Memory Used" appears. Press ESC to exit this screen, and F10 to save and exit Setup. When the screen goes blank, turn off the power.
5. If the card has jumpers or DIP switches, set them so that they match the IRQ and memory addresses set in the BIOS Setup.
6. Set the I/O port settings of the card (if any) so that they fall within the ranges labeled "Available" in Table 2.
7. If the card is set up using a configuration program, proceed with installation, then run the card's configuration program. Set the IRQ and memory address settings to be the same as those put into BIOS Setup. Set the I/O port settings (if any) to a range labeled "Available" in Table 3-1.

Table 3-1. I/O Port Range Table

000-1FF	Reserved
200-27F	Available
280-2FF	Reserved
300-377	Available
378-3DF	Reserved
3E0-3EF	Available
3F0-3FF	Reserved

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Changing the Air Filter Element

The filter element should be changed or cleaned 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 "Ordering Information" in Appendix A.

The filter element is mounted to the inside of the back plate of the Display Station using one center securing screw. When it becomes necessary to change the filter, unscrew the center screw and remove the filter hold down plate. Removing the rear cover of the unit is not necessary.

Warning

To avoid a risk of electric shock, turn off power to the Display Station and disconnect the power supply before removing the filter hold-down plate from the unit. To disconnect the unit from the power supply, remove the power cord.

To change the filter:

1. To avoid a risk of electric shock and to prevent environmental contaminants from entering the unit, power down the unit prior to removing the filter.
2. Remove the center securing screw as shown in the photo. There is no need to remove the rear cover of the CPU.
3. Carefully remove the filter hold-down plate.
4. Remove the filter element and replace it with a new one.
5. Put the filter hold down plate in place and secure it to the backplate by tightening the center securing screw.



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Chapter 4 Connectors

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

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

- Keyboard (CPU card)
- PS2 Mouse Port
- Serial Ports COM 1 and COM2 (CPU card) — COM2 used for touch screen
- Parallel Port, 25-pin (CPU card)
- Network (PCI expansion card)

For details about connectors on proprietary cards you have installed in the Display Station, refer to the manufacturer's documentation provided with your card.

Caution

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

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Power Input

Series 2000 Display Stations are powered by an internal AC power supply unit. This is an autoranging unit which accepts 85 to 135 and 180 to 265 VAC input ranges. A rocker switch is provided to allow the system to be isolated from the input.

The power supply unit and the power switch are recessed within the enclosure to ensure that they do not interfere with the mounting of the Display Station into the panel aperture. The power supply unit houses an integral ventilation fan that provides cooling for the power supply.

For power supply details, refer to specifications in Appendix A. There are no user-servicable fuses in these Display Station units.

The power supply input to the Display Station uses a standard IEC cable, which is provided with the unit.

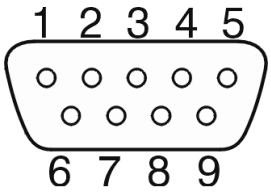
Warning

For all equipment that is connected to a power outlet, the socket outlet shall be installed near the equipment and shall be easily accessible.

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Serial Communication Cables

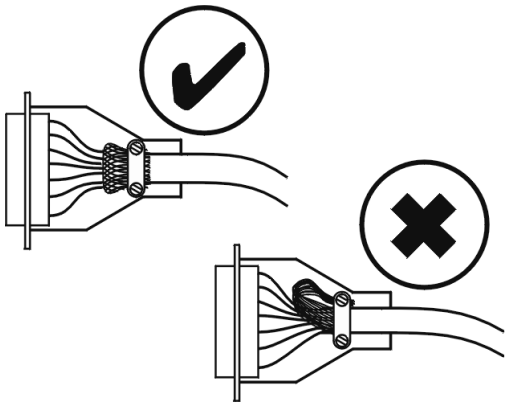
A 9-pin D type male connector mounted on the side of the Display Station is used for the serial port (COM1).



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 requirements:

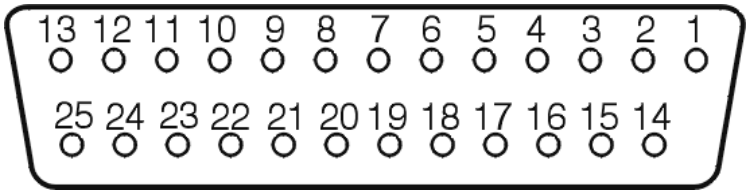
- The cables must be of the shielded type.
- The D type connector covers must provide EMC shielding (e.g. metallized plastic or die cast metal covers).
- The cables must be terminated with 360 degree termination of the shield, as illustrated below.



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Printer Port LPT1

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



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 etc.) should not be connected or disconnected from the Display Station when the unit is powered up.

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Chapter 5 System Operation

This chapter provides details of system operation. The following topics are covered:

- System Peripherals
- Graphic System
- Operator Interfaces
- CIMPLICITY Software
- Communications

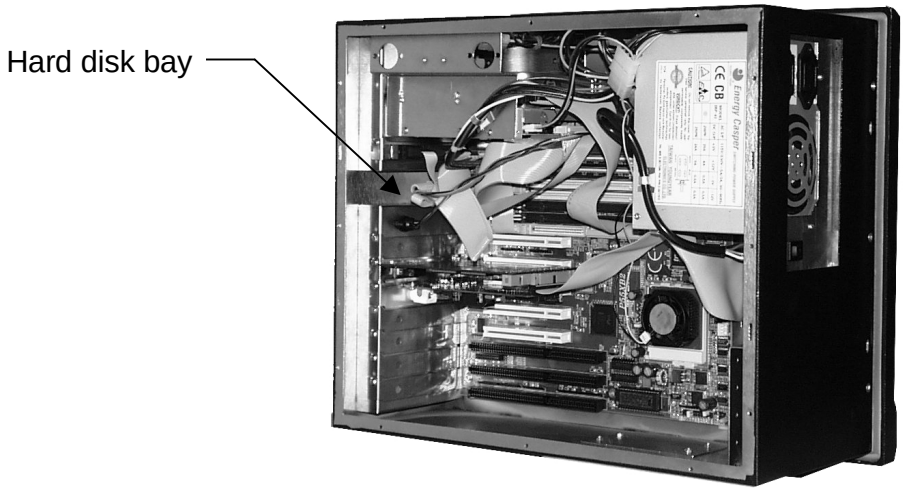
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System Peripherals

The system contains a 3.5 inch floppy disk drive and an internal hard disk.

Hard Disk Drive

Display Station 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 the WBB model Display Station, the floppy drive is positioned on the right-hand side of the underside of the unit. On the WTC and WTD models, the drive is located within the unit on the upper right-hand side. In all models, the drive is accessible only from the rear of the mounting panel but can be reached without removing any access covers.

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Graphic System

Display Types

The following display types are available:

- 12.1 inch color TFT (SVGA resolution)
- 13.8 inch color TFT (XGA resolution)
- 15 inch color TFT (XGA resolution)
- 18.1 inch color TBC (SXGA resolution)

All the displays have the following specifications:

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

All models include:

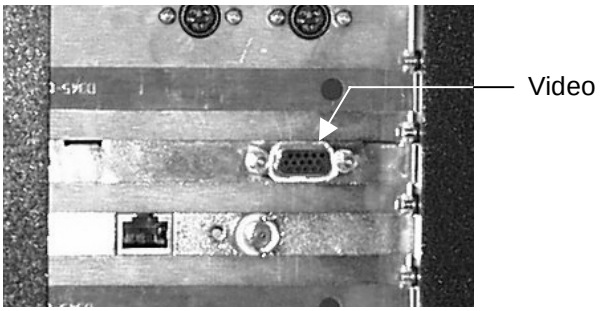
- A built-in backlight with a long life backlight tube (equal to or greater than 25,000 hrs),
- Control of the backlight to maximize the tube lifetime. (See page 5-9.)

Graphics Controller

A dedicated graphics controller card, which is installed in a PCI expansion slot 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 card supports display panel resolutions from VGA (640 x 480) up to XVGA (1024 x 768), 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 15 pin high density D type connector.



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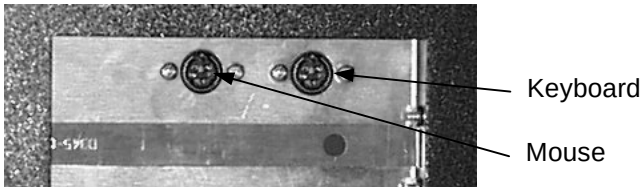
Operator Interfaces

Two interface options are supported by Display Stations 2000:

- Touch Screen only
- Touch Screen and keypad

External Keyboard and Mouse

External keyboard and PS2 mouse connectors are located on the side of the system as illustrated below:



The touch screen and PS2 mouse will work simultaneously if the mouse is Microsoft or IBM PS2 compatible. Because Windows can load only one mouse driver at a time, it is not possible to provide simultaneous support for a mouse that requires its own specific Windows driver.

If you are installing an optional serial card, none of the ports can be configured as COM 2, which conflicts with the touch screen.

Touch Screen

The Display Station 2000 range 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 COM 2 serial port, which allows it to function with SCADA software. If you install a card that has settings that conflict with those of the COM 2 serial port, you will need to change the card's configuration.

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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 Display Station 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

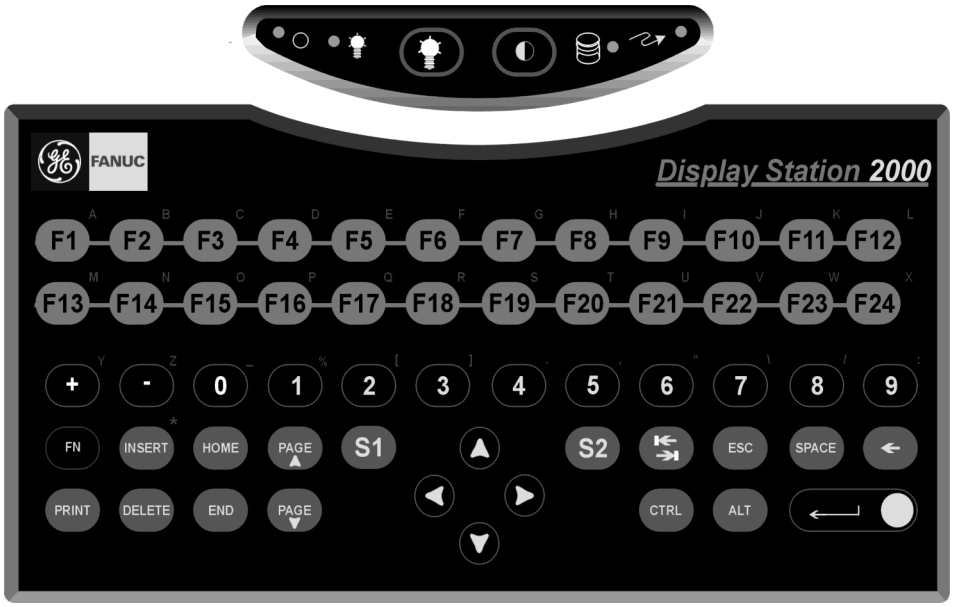
These parameters are written into the system registry file by the driver setup utility. The driver is installed, configured and calibrated at the time of manufacture.

Control Functions

Display Station Model WBB

The model WBB Display Station 2000 has an integral keypad which is located in the front display subassembly. The keypad returns the same scan codes as a standard PC/AT keyboard, listed in Table 5-1. The internal membrane keys on the integral keypad remain functional when a keyboard is connected to the external PC/AT keyboard interface.

The Display Station also has a Control/Status panel, which is described on page 5-8.



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Table 5-1. Membrane Keypad Scan Codes

	Without FN Key		With FN Key	
Display Station Key	**AT Command**	**Make Scan Code (Hex)**	**AT Command with FN Key Held**	**Make Scan Code with FN Held**
7	7	0837	\	2B5C
8	8	0938	/	352F
9	9	0A39	:	273A
4	4	0534	.	342E
5	5	0635	,	332C
6	6	0736	"	2822
1	1	0231	%	0625
2	2	0332	[	1A5B
3	3	0433	]	1B5D
0	0	0B30	_	0C5F
-	-	0C2D	+	0D2B
FN	None (Note 1)	None	None	None
ENTER	Enter	1C0D	None	None
DELETE	Delete	53E0	None	None
PRINT	Ctrl + P	1910	None	None
HOME	Home	47E0	None	None
SPACE	Space	3920	None	None
BACKSPACE	Backspace	0E08	None	None
ESCAPE	Escape	011B	None	None
INSERT	Insert	52E0	*	092A
PAGE↑	Pageup	49E0	None	None
PAGE↓	Pagedown	51E0	None	None
Alt	Alt		None	None
Tab	Tab	0F09	Shift Tab	0F00
END	End	4FE0	None	None
←	Left arrow	4BE0	None	None
→	Right arrow	4DE0	None	None
↑	Up arrow	48E0	None	None
↓	Down arrow	50E0	None	None
F1	F1	3B00	A	1E41
F2	F2	3C00	B	3042
F3	F3	3D00	C	2E43
F4	F4	3E00	D	2044
F5	F5	3F00	E	1245
F6	F6	4000	F	2146
F7	F7	4100	G	2247
F8	F8	4200	H	2348
F9	F9	4300	I	1749
F10	F10	4400	J	244A

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Table 5-1. Membrane Keypad Scan Codes - Continued

	Without FN Key		With FN Key	
Display Station Key	**AT Command**	**Make Scan Code (Hex)**	**AT Command with FN Key Held**	**Make Scan Code with FN Held**
S1	Start Button (WinMenu) Note 2	E02F	M	324D
F11	F11	8500	K	254B
F12	F12	8600	L	264C
F13	CTRL F1	5E00	N	314E
F14	CTRL F2	5F00	O	184F
F15	CTRL F3	6000	P	1950
F16	CTRL F4	6100	Q	1051
F17	CTRL F5	6200	R	1352
F18	CTRL F6	6300	S	1F53
F19	CTRL F7	6400	T	1454
F20	CTRL F8	6500	U	1655
F21	CTRL F9	6600	V	2F56
F22	CTRL F10	6700	W	1157
F23	CTRL F11	8900	X	2D58
F24	CTRL F12	8A00	Y	1599
S2	Context Menu (Note 3)		Z	2C5A
Unnamed Upper Left	Shift F1	5400	None	None
2nd from top left	Shift F2	5500	None	None
left center	Shift F3	5600	None	None
2nd from bottom left	Shift F4	5700	None	None
Unnamed Lower Left	Shift F5	5800	None	None
Unnamed Upper Right	Shift F6	5900	None	None
2nd from top right	Shift F7	5A00	None	None
right center	Shift F8	5B00	None	None
2nd from bottom right	Shift F9	5C00	None	None
Unnamed Lower Right	Shift F10	5D00	None	None

Notes:

1. The **S1** key produces the same scan code as that for a Microsoft Windows compatible keyboard. It performs the same function as clicking the mouse on the Windows Start icon.
2. The **S2** key produces the same scan code as that for a Microsoft Windows compatible keyboard. It performs the same function as clicking the right (secondary) mouse button to produce a popup menu.
3. The **FN** key produces no scan codes on its own. It modifies the scan codes produced by the other keys as indicated in the table above.

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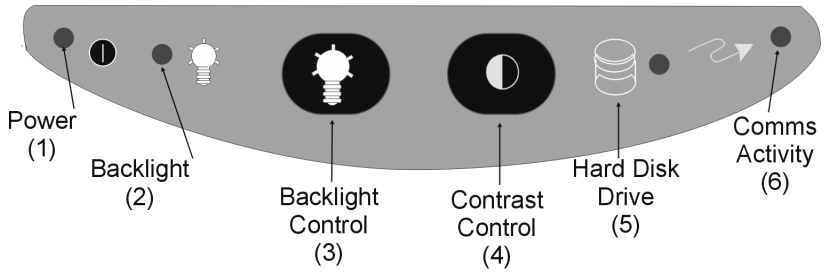
Display Station WTC and WTD Models

The 14-inch, 15-inch, and 18-inch Display Station models do not have integral keypads. Operation of the system can be performed using the touch screen facility or by connecting a PC/AT keyboard to the Display Station. The Display Station also has a Control/Status panel, described below.



Control/Status Panel

All models in the Display Station 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:



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 (only applicable for the STN technology).
(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)

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Backlight Dimming Control Settings

Display Stations incorporate 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 as with the contrast control.

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

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

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 Display Station 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.

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CIMPLICITY 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*

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

Note

For Windows NT systems: If any component is removed and re-installed, the Service Pack will need to be run after installation. Path is:

```
C:\SP4\i386\SP4:386
```


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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:** if the Display Station 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.

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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 Display Station 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 GE Fanuc’s CIMPLICITY hotline.

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Troubleshooting

Powerup

Symptom	Possible Causes	Solution
Display Station does not power up.	Power not on (PWR indicator is not lit or display completely dark).	Make sure that Display Station 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 .
`Safe Recovery Error` message displayed.	Occurs on initial power up if the unit is accidentally turned off without first shutting down the Windows software.	The Display Station will power up normally.
Memory count during powerup self-test is incorrect.	Optional SIMM is installed incorrectly or is incompatible with the Display Station 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 DEL key has been accidentally pressed.	Cycle power again. The Display Station will power up normally.
The Display Station reset even though the power was not interrupted.	The CTRL-ALT-DEL keys were pressed twice at the same time.	This should never be done, unless you are attempting to reset the Display Station.
A:> appears instead of software.	A system floppy disk is inserted.	Remove disk and cycle power.

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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 Display Station is in direct sunlight, move it and allow it to cool.
	Display Station 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 GE Fanuc's 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 Display Station 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.

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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.
	Windows NT systems: 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.
	Conflicts with port configuration.	If you are installing an optional serial card, do not configure any port as COM2. COM2 is used by the touch screen.
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 PS2 Mouse

Symptom	Possible Causes	Solution
Cursor does not respond to mouse movement	Mouse not plugged in.	Power down Display Station. Plug mouse into mouse port on Display Station and reboot.
	The type of mouse is not supported.	Use a PS2 mouse.
	System is busy.	Press CTRL-ALT-DELETE to view task list.
	Mouse not detected.	Restart Display Station product with external mouse connected.

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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 Display Station.	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 90-30 PLC using the SNP driver and a CIMPLICITY project.	1. With the PLC powered up and connected to the Display Station, establish communication between the Display Station and PLC via the 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 Display Station 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.

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MODBUS RTU Communications

Symptom	Possible Causes	Solution
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 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.)

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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.

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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 Display Station 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."

This battery has a lifetime of up to 10 years under normal operating conditions. If the battery failed, contact the GE Fanuc Hotline.

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Appendix A

Technical Data

Mechanical Specifications

Front Assembly

There are two variants of the Display Station 2000:

- The **WBB model** of the Display Station features a display screen with touch screen, and a built in operator keypad.
- The **WTC and WTD models** of the Display Station have a larger display with touch screen, but no integral keypad. The touch screen provides the operator interface for the unit. A PC AT keyboard can be connected for system configuration but is not intended for normal operator interface use.

All 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.

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.

Keypad

Two keypads are used on the model WBB, a main keypad and the status control panel. They are manufactured from a chemically resistant polyester. All the keys provide tactile feedback.

All the function keys on the main membrane keypad can be relegended.

Note

Contact your local dealer if you require different legends.

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Main Chassis

The main chassis is manufactured from sheet steel and houses the motherboard which is mounted securely in a vertical plane. Plug in boards are mounted in either a vertical or horizontal plane perpendicular to the front of the Display Station.

The housing for the card connectors is recessed so that the card interfaces do not protrude beyond the profile of the main housing.

A card clamp device secures cards of standard height. Slots are included for both ISA and PCI cards to be used.

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 clamps are provided for mounting the Display Station on a panel.

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Functional Specifications

CPU and Memory	
Microprocessor IC752WBB202, IC752WTC402, IC752WTC502, IC752WTD802 IC752WBB252, IC752WTC452, IC752WTD552, IC752WTD852	 Pentium® MMX 233 MHz, minimum AMD-K6®-2, 350 MHz, minimum
User Memory	Minimum 64 Mbyte
Operating System	Windows NT
Hard Disk	6.4 Gbyte minimum, IDE standard
Floppy Drive	Supports 3.5-inch, 1.44Mb PC format floppy disks

PC Backplane	
ISA bus card slots	One full length slot (open and available)
ISA/PCI Shared slots	Three slots. Accommodates one full length or one half length card (One open and available)
Total current available for sharing by up to 3 user cards	+5VDC 1.2 A approx +12VDC 0.1 A approx -12VDC 0.1 A approx

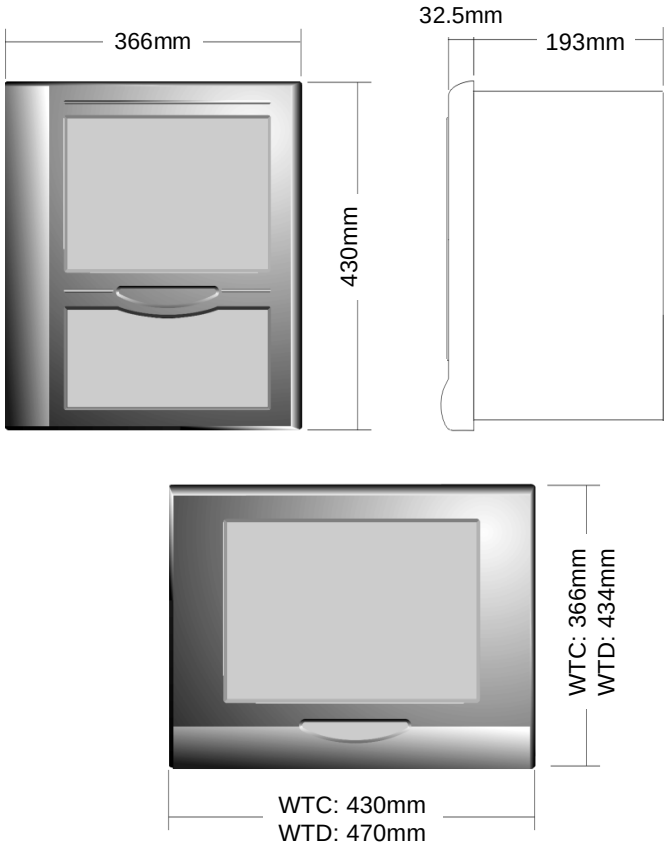
Display	
Display Variants	12 inch Color TFT active matrix – VGA resolution 14 inch Color TFT – SVGA resolution 18 inch Color TFT active matrix – SXGA resolution

Power Requirements	
AC Models	
AC Input	85 to 265VAC, 200W autoranging
Power Rating	85 to 265V, 47 to 63Hz, 2.4A
AC Output	115V, 2A 230V, 1A

Ports	
Parallel Port	One: LPT1
Serial Ports	COM1 external RS232 port COM2 wired internally to touch screen
Keyboard Port	PS2 connector
Mouse Port	PS2 connector

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Physical	
Dimensions	
Model WBB (12-inch display)	430mm high x 366mm wide x 193mm deep
Model WTC (14-inch display)	366mm high x 430mm wide x 193mm deep
Model WTD (18-inch display)	434mm high x 470mm wide x 193mm deep
Weight (base unit with no optional cards installed)	
Model WBB (12-inch display)	14.1Kg (31.1lbs)
Model WTC (14-inch display)	15.5Kg (34.2lbs)
Model WTD (18-inch display)	(approximate) 16 Kg (35 lbs.)



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Ordering Information

Filter Pads	
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 DIN53438 and BS5588

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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A

Air filter element
  changing, 3-7
Application software, 1-3
Audible warning, 2-2
Autologon, 2-2

B

Backlight dimming control settings, 5-9
Blanking plates, 3-5

C

Catalog numbers
  Display Station
    IC752CTD450, 1-2
  Display Station
    IC752CTD400, 1-2
CIMPLICITY software
  operation, 5-10
CMOS battery, 7-2
CMOS Battery, 7-8
CMOS checksum error, 7-8
CMOS settings, 7-1
Communications, 5-11
  troubleshooting, 7-5
Configuring the Network, 2-3
Connectors, 4-1
Control functions, 5-5
Control/Status panel, 5-8
Corrective Actions, 7-8

D

Diagnostics
  bootup sequence, 7-1
  self-test, 7-1
  system configuration verification, 7-1
  system test and initialization, 7-1
Dimensions, A-4
Dimming control settings, 5-9
Display
  troubleshooting, 7-3
Display types, 5-3
Driver
  touch screen, 5-5

E

Error messages
  AUTOCONFIG/DEFAULT I/O, 7-5, 7-6
  CMOS checksum error, 7-2, 7-8
  CMOS Setup Utility, 7-2
  Disk Error, 7-2
  Insufficient memory, 7-3
  non-fatal, 7-1
  Non-system disk, 7-2
  Out of Memory, 7-3
  Safe Recovery, 7-2
External keyboard, 5-4
External mouse, 5-4

F

Features summary, 1-2
Field image recovery disk, 2-6
Filters
  changing, 3-7
  specifications, A-5
Floppy Disk Drive, 5-2

G

Graphic system, 5-3
Graphics controller, 5-3

H

Hard Disk Drive, 5-2
Hardware installation, 3-1

I

I/O, 1-3
Image recovery, 2-6
Initial startup, 2-1
Input power, 4-2
Installation
  cards, 3-3
  hardware, 3-1
Installing application software, 2-6

K

Keyboard
  error message, 2-1, 6-1
  troubleshooting, 7-5
Keypad, integral, 5-5

L

Legacy ISA cards, 3-6
Login recommendation, 2-4

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M

Mechanical specification, A-1
Memory
  troubleshooting, 7-3
MODBUS RTU communications
  troubleshooting, 7-6
Mounting guidelines, 3-1

N

Network communications
  troubleshooting, 7-6
Network components, 5-11
Network interface, 1-3

O

Operator interfaces, 5-4
Ordering information
  filters, A-5

P

Peripherals, 5-2
PLC/CPU connection
  troubleshooting, 7-5
Power input, 4-2
Powering up, 2-2
  troubleshooting, 7-2
Printing
  troubleshooting, 7-7

R

Recovery, image, 2-6
Registering your CIMPLICITY software, 2-5
Reset
  accidental, 7-2

S

Self-test diagnostics, 7-1
Serial Mouse
  troubleshooting, 7-4
Setting up Windows NT systems, 2-2
Shutting down the computer, 2-9
Specifications
  filters, A-5
  functional, A-3
  mechanical, A-1
System architecture, 1-1
System Configuration Verification, 7-1
System I/O, 1-3
System Test and Initialization, 7-1

T

Temperature
  effect on contrast setting, 7-3
Timeout period, setting, 5-9
Touch screen, 5-4
  troubleshooting, 7-4
Troubleshooting, 7-2
  communications, 7-5
  display, 7-3
  keyboard, 7-5
  memory, 7-3
  MODBUS RTU communications, 7-6
  network communications, 7-6
  PLC/CPU connection, 7-5
  powerup, 7-2
  printing, 7-7
  serial mouse, 7-4
  touch screen, 7-4
TSRs, 7-3

W

Warning, audible, 2-2
Windows NT systems
  setting up, 2-2

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