3300 Series

Flat Panel Industrial PC

User Manual for the
3308T, 3308KP,
3310T, 3310KP(T),
3312T, 3312KP(T)
models
(including 1401 Node Box)

Printed in the United States of America

Revision	*Description*	*Date*
A	Manual Released	8/04
B	Added ThinCLIENT touch screen calibration instructions	10/04
C	Added Lithium Battery Replacement section	1/06
D	Name change, correct where applicable with document	4/07

Part Number 143243 (D)

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This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

INSTALLATION: Electromagnetic Compatibility WARNING

The connection of non-shielded equipment interface cables to this equipment will invalidate FCC EMI and European Union EMC compliance and may result in electromagnetic interference and/or susceptibility levels which are in violation of regulations which apply to the legal operation of this device. It is the responsibility of the system integrator and/or user to apply the following directions that relate to installation and configuration:

All interface cables must include shielded cables. Braid/foil type shields are recommended. Communication cable connectors must be metal, ideally zinc die-cast backshell types, and provide 360-degree protection about the interface wires. The cable shield braid must be terminated directly to the metal connector shell; ground drain wires alone are not adequate.

Protective measures for power and interface cables as described within this manual must be applied. Do not leave cables connected to unused interfaces or disconnected at one end. Changes or modifications to this device not expressly approved by the manufacturer could void the user's authority to operate the equipment.

EMC compliance is, in part, a function of PCB design. Third party add-on AT/XT peripheral PCB assemblies installed within this apparatus may void EMC compliance. FCC/CE compliant PCB assemblies should always be used where possible. Pro-Face can accept no responsibility for the EMC performance of this apparatus after system integrator/user installation of PCB assemblies not manufactured and/or expressly tested and approved for compliance by Pro-Face. It is the responsibility of the system integrator/user to ensure that installation and operation of such devices does not void EMC compliance.

Table of Contents

Chapter 1 – System Overview

The 3308T, 3308KP, 3310T, 3310KP(T), 3312T and 3312KP(T) Industrial PCs combine a PC/AT computer with a flat-panel display to offer a powerful, fanless, compact package for the factory floor and other harsh environments.

The units feature an open architecture to meet a variety of applications requiring both a PC and a durable industrial enclosure. The units' front panels – sealed to NEMA 4/4X/12 – are protected by an impact-resistant shield.

The units' processor board combines all the functions of a PC/AT-compatible computer on an industrially hardened circuit board.

A screenless version is also available. The 1401 offers the same computing power in a small, rugged, fanless enclosure without an integrated display.

Standard Features

The units offer the following standard features:

- 3.3-inch mounting depth (3308 units)
- 3.5-inch mounting depth (3310 and 3312 units)
- Flat-panel displays
  - 8.4-inch TFT flat-panel color display, 640x480 VGA (3308 units)
  - 10.4-inch TFT flat-panel color display 640x480 VGA (3310 units)
  - 12.1-inch TFT flat panel color display, 800x600 SVGA (3312 units)
- LPG1 motherboard, with features including:
  - 300 MHz Geode GX1 processor
  - 144-pin SODIMM site support (128 or 256 MB of memory)
  - PCI 64-bit video controller, shared video RAM up to 4 MB
  - PCI-bus IDE controller
  - Communication ports
    - COM1 – 9-pin RS-232 or 9-pin RS-485
    - COM2 – 25-pin RS-232
    - Two USB 1.1 ports
    - One parallel port
    - PS/2 mouse and keyboard ports
  - One 10BASE-T/100 BASE-TX Ethernet controller
  - Socket for removable CompactFlash® (Type I)
  - Disk on Chip Site (DOC 2000)
  - 20 GB (minimum) hard drive

  - Flash BIOS
- PC/104 expansion site, allowing you to stack two PC/104 boards
- AC input power
- External floppy connector (FOR USE WITH 9000-EXF)
- Diagnostic LEDs: Power, Disk, COM and Input (3308T, 3310T, and 3312T)
- MS-DOS® (MS-DOS® is not included if you order Windows® 98, Windows® NT, or Windows® 2000)
- NEMA 4/4X/12 sealed front panel
- Class I, Division 2 Hazardous Location approval (not available on units with fieldbus or control options installed)
- The 3308KP, 3310KP and 3312KP also include function, control, numeric, alpha, and cursor control keypads.

Optional Features

The following optional features are available:

- Windows® 98, Windows® NT, or Windows® 2000 pre-installed
- External floppy drive
- 24-volt DC power supply

The figures and tables on the next several pages illustrate the internal and external components on the front and back panels of the units to help you locate the features of the 3300 series and 1401 node box.

Front Panel

The 3308/10/12 units come with a NEMA 4/4X/12 sealed front panel. The panel protects the system's interior when the system is properly panel mounted in an enclosure.

The 1401 is generally mounted on an inside wall of an enclosure. 1401 installation instructions are on page 20.

3308T/3310T/3312T Front Panel

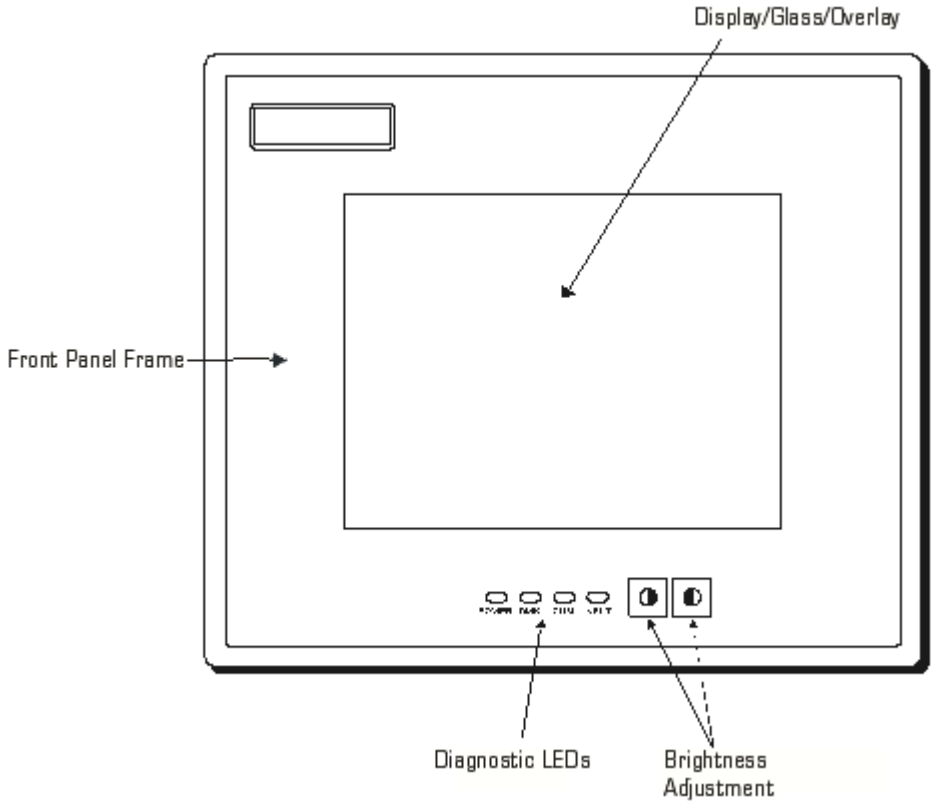


Figure 1-1. 3308T/3310T/3312T Front Panel

Caution

Leaving your TFT LCD display on constantly can result in temporary image retention (TIR). TIR can be avoided by using a screen saver, enabling the idle/doze timeout feature, or by turning off the display when it is not in use.

Table 1-1. 3308T/3310T/3312T Front Panel Features

Feature	Description
Front Panel	The front panel has four components: a display; strengthened glass covering the display; a frame in which the display and the glass are mounted; and the polyester overlay attached to both the glass and the frame The 3308T has an 8.4-inch TFT active matrix color LCD flat-panel display. The 3310T has a 10.4-inch TFT active matrix color LCD flat-panel display. The 3312T has a 12.1-inch TFT active matrix color LCD flat-panel display. The strengthened glass covering the display is intended to withstand normal operating conditions. In the event of damage to the glass, the overlay will protect the user from any glass shards. For more information abut the frame or the overlay, see Chapter 5 – Troubleshooting.
Diagnostic LEDs	Power Green when there is power to the unit. Disk Green when the computer module is accessing the disk drive. COM Green when there is communication on one of the computer module's serial ports. Input Green when the unit has a touch screen. This LED gets brighter when it detects a touch input.
Brightness Control Keys	These two keys control the brightness of the monitor. The left key decreases brightness; the right key increases brightness.

3308KP Front Panel

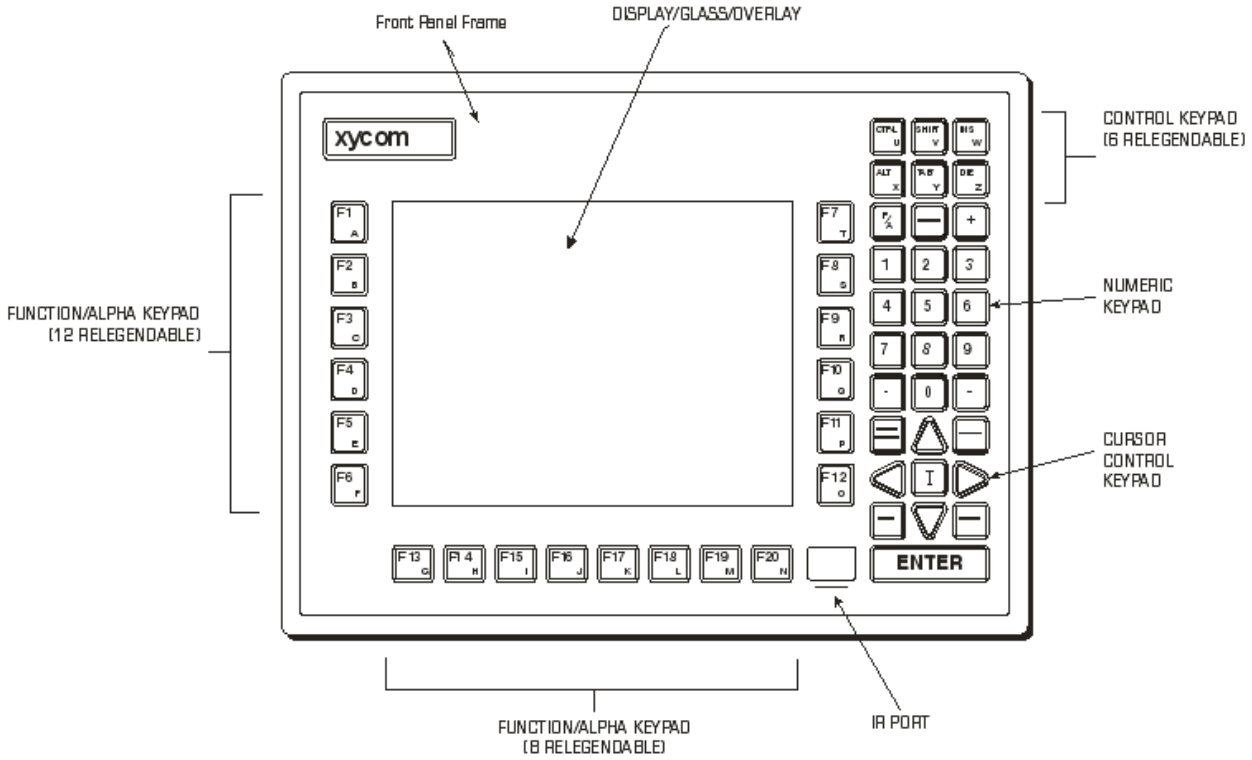


Figure 1-2. 3308KP Front Panel

Caution

Leaving your TFT LCD display on constantly can result in temporary image retention (TIR). TIR can be avoided by using a screen saver, enabling the idle/doze timeout feature, or by turning off the display when it is not in use.

Note

Refer to Chapter 3 for information on using the keypads, and Chapter 4 for information on reprogramming the keys.

The 3308KP features function keys on either side of the flat panel display (F1-F12), function keys below the display (F13-F20), a numeric keypad, window keys, and a cursor control keypad. All keypad keys are reprogrammable[1], except the F/A key, and all function keys are relegendable[2]. See Chapter 4 for more details.

[1] All keypad keys can be programmed to perform any function necessary.
[2] You are able to create your own, custom keypad inserts to reflect any reprogramming you may have done.

Table 1-2. 3308KP Front Panel Features

Feature	Description
Front Panel	The front panel has four components: a display; strengthened glass covering the display; a frame in which the display and the glass are mounted; and the polyester overlay attached to both the glass and the frame. The 3308KP ships with an 8.4-inch TFT active matrix color LCD flat-panel display. The strengthened glass covering the display is intended to withstand normal operating conditions. In the event of damage to the glass, the overlay will protect the user from any glass shards. For more information abut the frame or the overlay, see Chapter 6 – Maintenance
Function/Alpha Keypads	The keypads provide function keys F1-F20, as well as uppercase letters A-T. These keys are relegendable (refer to the*Creating* Customized Keypad Inserts section for more information).
Control/Alpha Keypad	This keypad provides the CTRL, SHIFT, INS, ALT, TAB, DEL, F/A, SPACE, and + keys, as well as the uppercase letters U-Z. All the keys are relegendable, except the F/A, SPACE, and + keys. The F/A key toggles the keypads between function and alpha mode. When the F/A key is not pressed, the keypads are in function mode. When you press and hold the F/A key, the keypads are in alpha mode (refer to the *Control Keypad* section to determine the location of the alpha characters). You can also use the F/A key to adjust brightness on the flat-panel display. To do this, hold down the F/A key while pressing a cursor control key. The Up and Right control keys increase brightness; the Down and Left control keys decrease brightness.
Numeric Keypad	This keypad provides numbers 0-9, as well as a decimal point and a minus sign.
Cursor Control Keypad	This keypad controls cursor movement. It also provides brightness control when used in conjunction with the F/A key (see above).

3310KP(T) and 3312KP(T) Front Panel

Warning

Never connect or disconnect the communication cables in Hazardous Locations while power is applied at either end of the cable. This may result in an incendiary spark. Permanent damage to the workstation communication components may occur.

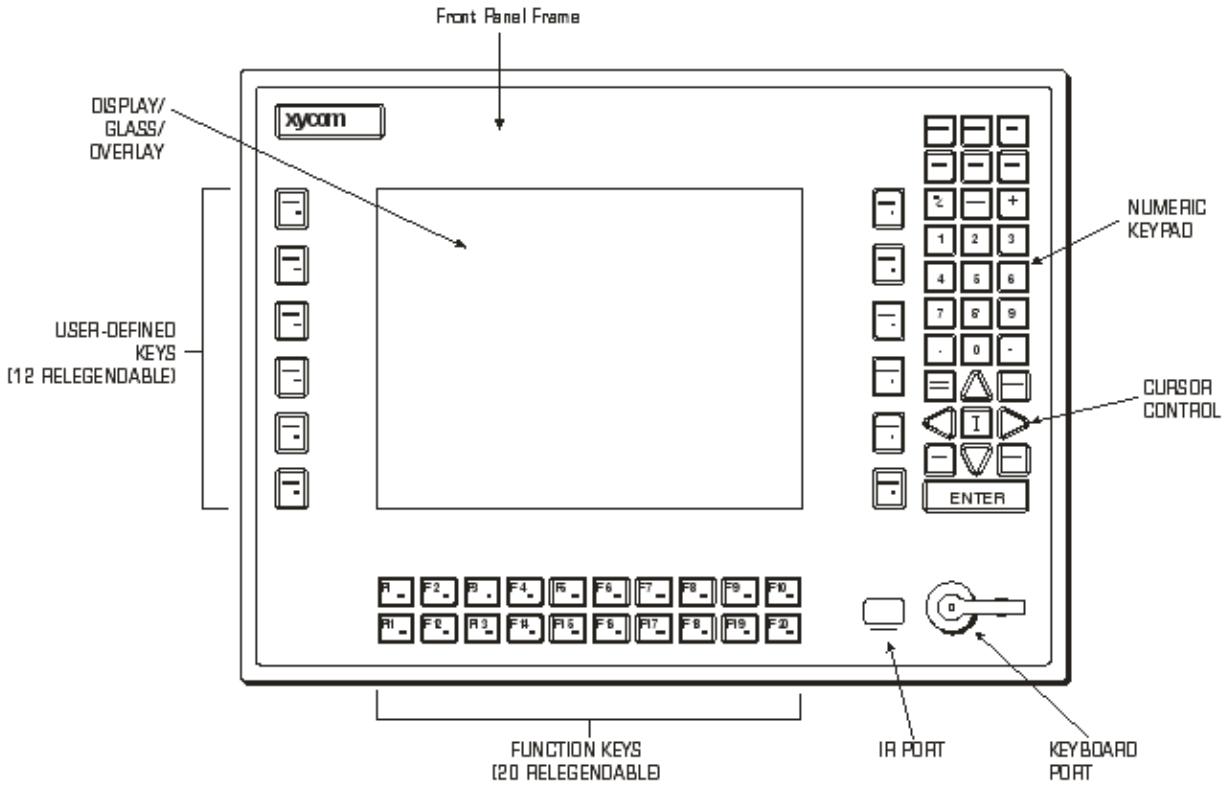


Figure 1-3. 3310KP(T)/3312KP(T) Front Panel

Caution

Leaving your TFT LCD display on constantly can result in temporary image retention (TIR). TIR can be avoided by using a screen saver, enabling the idle/doze timeout feature, or by turning off the display when it is not in use.

The 3310KP(T) and 3312KP(T) feature function keys on either side of the flat panel display (PF1-PF12), function keys below the display (F1-F20), a numeric keypad, window keys, a cursor control keypad, and a keyboard port. All keypad keys are reprogrammable[3], except the F/A key, and all function keys are relegendable[4]. See Chapter 4 for more details.

[3] All keypad keys can be programmed to perform any function necessary.
[4] You are able to create your own, custom keypad inserts to reflect any reprogramming you may have done.

Table 1-3. 3310KP(T)/3312KP(T) Front Panel Features

Feature	Description
Front Panel	The front panel has four components: a display; strengthened glass covering the display; a frame in which the display and the glass are mounted; and the polyester overlay attached to both the glass and the frame. The 3310KP(T) has a 10.4-inch TFT active matrix color LCD flat-panel display. The 3312KP(T) has a 12.1-inch TFT active matrix color LCD flat-panel display. The 3310KP(T) and 3312KP(T) also have optional touch screens. The strengthened glass covering the display is intended to withstand normal operating conditions. In the event of damage to the glass, the overlay will protect the user from any glass shards. For more information abut the frame or the overlay, see Chapter 6 – Maintenance.
PF/Function/ Alpha Keypads	The keypads provide function keys F1-F20, PF keys 1-12 (PF keys 7-12 also include punctuation symbols), as well as uppercase letters A-Z. These keys are relegendable (refer to Creating Customized Keypad Inserts on page 29).
Control Keypad	This keypad provides the CTRL, SHIFT, INS, ALT, TAB, DEL, F/A, SPACE, and + keys. All the keys are relegendable, except the F/A, SPACE, and + keys. These keys work the same as they do on a keyboard. The F/A key toggles the keypads between function and alpha mode. When the F/A key is not pressed, the keypads are in function mode. When you press and hold the F/A key, the keypads are in alpha mode (refer to Figure 1-3 to determine the location of the alpha characters). You can also use the F/A key to adjust brightness on the flat-panel display. To do this, hold down the F/A key while pressing a cursor control key. The Up and Right control keys increase brightness; the Down and Left control keys decrease brightness.
Numeric Keypad	This keypad provides numbers 0-9, as well as a decimal point and a minus sign.
Cursor Control Keypad	This keypad controls cursor movement.
Keyboard Port (front access)	The 3310KP(T) and 3312KP(T) provide both front- and rear-accessible PS/2 keyboard connectors. The front-accessible connector is located on the lower right side of the front panel. The rear accessible connector is located on the side of the unit refer to Figure 1-4 to determine the location of the keyboard port). ***Warning: To maintain a safe condition, do not use an external keyboard on these ports when the unit is operating in a Hazardous Location.***

Warning

In order to maintain a safe condition, never use an external keyboard connected to rear ports when the unit is operating in a Hazardous Location. Use of the front panel keyboard port is safe only if the control drawing criteria is satisfied as indicated on the control drawing on page 41 and if the device is approved for use in the classified Hazardous Location.

3308/3310/3312/1401 I/O Panel

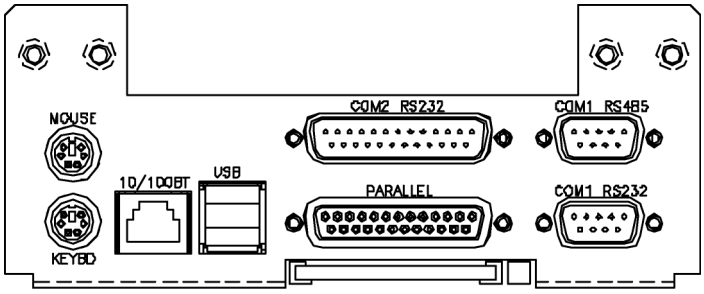


Figure 1-4. 3300 series and 1401 I/O Panel

Table 1-4. 3300 I/O Panel Description

Feature	Description
Parallel Port (LPT1)	This port provides a standard PC-compatible interface to printers and other devices, like a backpack CD-ROM drive.
COM1 Port	COM1 is RS-232/485 compatible. The lower 9-pin connector is RS-232. The upper connector is the RS-485 version of the same port. You can only use one of these connectors at a time, as they are attached to the same physical port.
COM2 Port	COM2 is a 25-pin RS-232 connector.
Ethernet Port	This port provides a 10BASE-T/100BASE-TX auto-sensing Ethernet connection.
USB Ports	These two USB 1.1 ports are available for various peripheral devices.
Keyboard Port	This port allows you to attach a PS/2-style keyboard.
Mouse Port	This port allows you to attach a PS/2-style mouse.

Warning

To maintain a safe condition, do *not* use an external keyboard or mouse port when the unit is operating in a Hazardous Location.

Back Panel

The picture below illustrates the back panel of the 3300 and 1401 units.

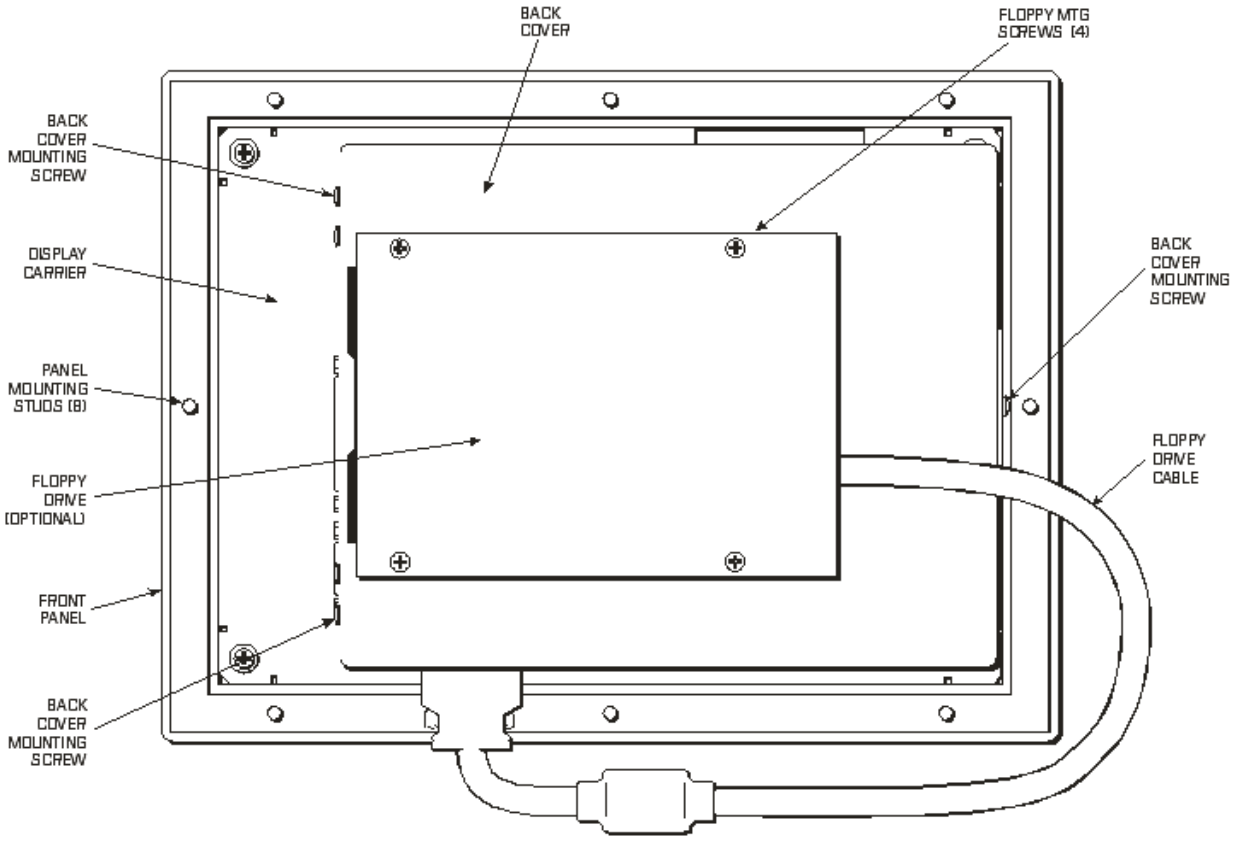


Figure 1-5. 3308 Back Panel

Note

While the 3308 model has only 8 mounting studs, the 3310 & 3312 have 12 mounting studs. The 1401 has 4 mounting holes for wall or panel mounting. All other aspects of the back panel are the same on other models.

Warning

You must disconnect the power cable, floppy cable, and any other external cables connected to the unit, before removing the back cover.

Table 1-5. Back Panel Features

Feature	Description
Back Cover	The back cover has five tabs that slide into corresponding slots on the display carrier, and three screws that secure the cover to the unit.
External Floppy Disk Drive (optional)	You can install an external floppy disk drive to the back of the unit. It connects to the floppy connector on the bottom of the unit.
Panel Mounting Studs	There are studs on the back of the unit for panel mounting. The 3308 unit has 8 mounting studs; the 3310 and 3312 units have 12 mounting studs. The 1401 mounts with 4 mounting holes.

Power Panels

This section describes the power panels on the 3308, 3310, 3312 and 1401 units.

3308 Power Panel

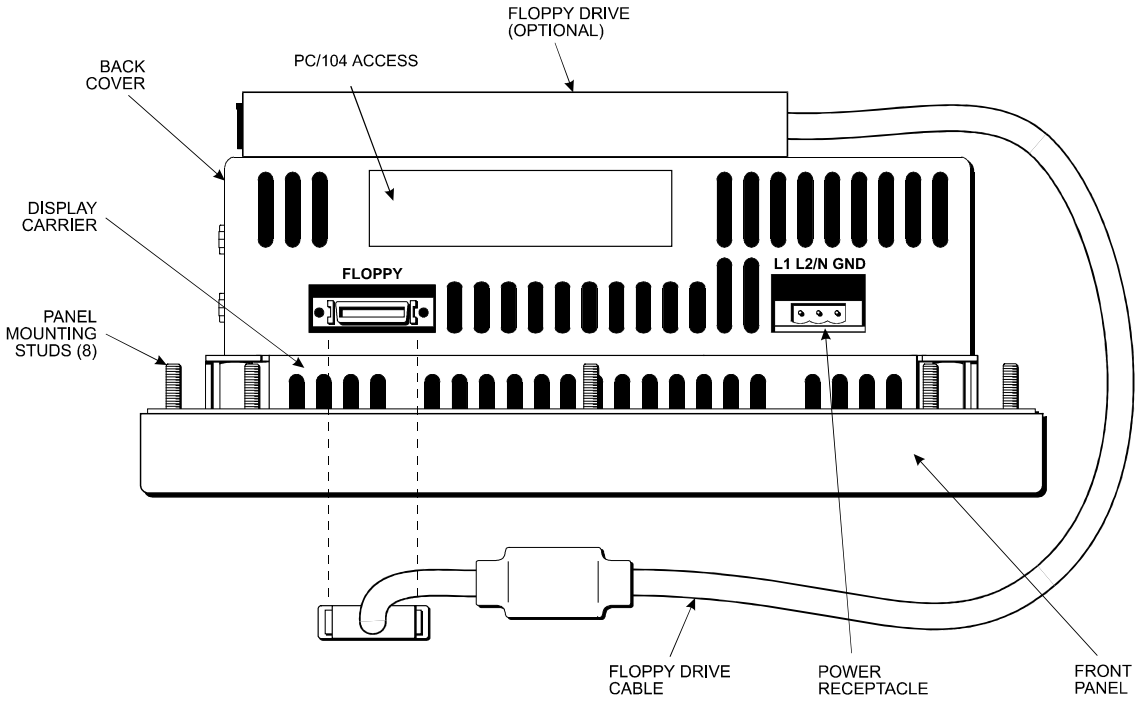


Figure 1-6. 3308 Power Panel

3310, 3312, and 1401 Power Panels

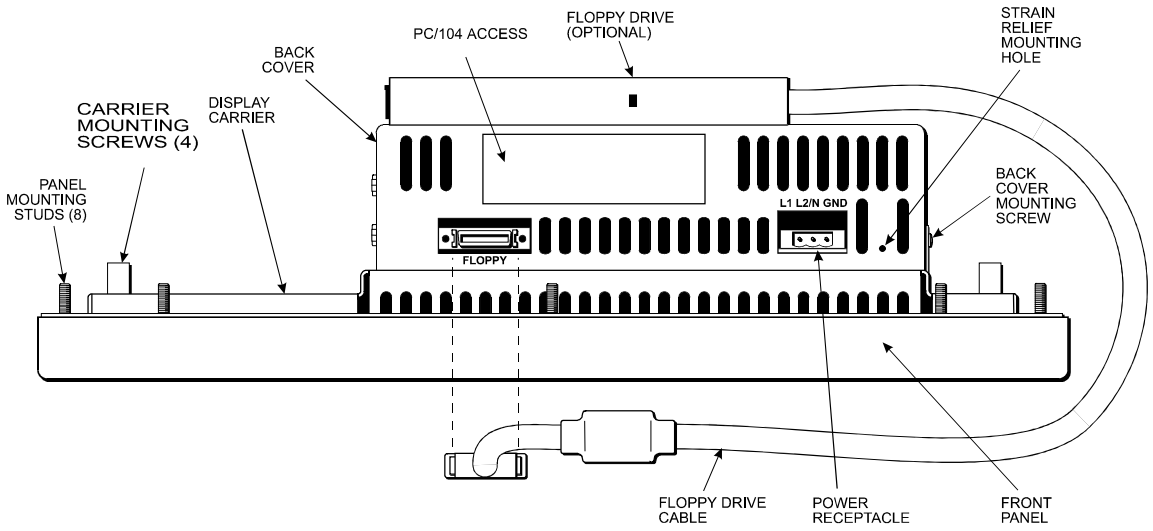


Figure 1-7. 3310/12 Power Panel

Table 1-6. 3308/10/12 & 1401 Power Panel Features

Feature	Description
Power Connector	The power receptacle is a three-pin connector. Refer to the Hazardous Location Installations section later in this chapter for special installation instructions.
External Floppy Drive Connector	The 26-pin floppy drive connector lets you connect an optional external floppy drive.

Unpacking the System

> **Note**
>
> The following list pertains to a basic PC-only system. If a Pro-face/Xycom OpenHMI or OpenCNTRL workstation has been purchased, a more complete packing list may be found in a separate Quickstart manual.

When you remove the system from its box, verify that you have the parts listed below. Save the box and inner wrapping in the event you need to reship the unit.

- 3308T, 3308KP, 3310T, 3310KP(T), 3312T, 3312KP(T), or 1401 unit
- Documentation kit:
  - Power connector
  - Recovery CD-ROM
  - Eight 8-32 hex nuts (3308 series) or twelve 10-32 hex nuts (3310/12 series)
  - Cable clamp and screw (for strain relief of power cord)
  - Four standoffs and four 4-40 screws for mounting PC/104 expansion cards
  - Documentation and Support Library CD-ROM, which contains this manual and all drivers required by the unit.

Quick Start-up

> **Note**
>
> The following steps pertain to a basic PC-only system. If a Pro-face/Xycom OpenHMI or OpenCNTRL workstation has been purchased, more complete instructions are included in a separate Quickstart manual.

This section provides the steps to get the system operating, without explaining system capabilities and options.

> **Warning**
>
> Disconnect the power cord before making any adjustments to the inside or outside of the computer.

Perform the following steps to prepare the system for use:

1. Attach optional equipment following the instructions in Chapter 2.
2. Attach the power cord from the power receptacle to a properly grounded 100-240 VAC, 50-60 Hz outlet. (See *Creating a Power Cable* on page 23.)
3. On a 1401 unit, attach an external CRT or flat-panel display.
4. Turn on power to the unit. The system will boot-up into the operating system.
5. On the 3308T, 3310T, and 3312T units, adjust the brightness by using the brightness keys on the front panel. On the 3308KP, 3310KP(T), 3312KP(T) units, adjust the brightness by pressing and holding the “F/A” key, and then pressing the left or right arrow key to increase or decrease brightness.
6. Install application software via the external floppy or the network.

Chapter 2 – Installation

This chapter outlines installation procedures, including the system cutout dimensions, and details the power management for the 3308, 3310, 3312, and 1401 units. It also includes installation instructions for internal and external hardware options; touch screen usage and calibration; and Hazardous Locations installation guidelines. You can learn how to create a customized logo and keypad inserts in this chapter as well.

Installation Overview

> **Warning**
>
> For installation in Hazardous Locations, review the *Hazardous Location Installations* section in this chapter before startup.

The rugged design of the 3300 unit allows it to be installed in most industrial environments. The system is generally placed in a NEMA 4/4X/12 enclosure to protect against contaminants such as dust, and moisture. Metal enclosures also help minimize the effects of electromagnetic radiation that nearby equipment can generate. The 1401 can be wall mounted or mounted on a shelf (see Figure 2-5 for details).

Read the following sections carefully to be sure that you are complying with all the safety requirements.

1. Select a NEMA rated enclosure and place the unit to allow easy access to the system ports (see other sections in this chapter and Appendix A).
   - To assure a NEMA 4 seal choose an approved enclosure that has a 14-gauge (0.075 in/1.9 mm thick steel or 0.125 in/3.2 mm thick aluminum) front face.
   - Be sure to account for the unit's depth when choosing the depth of the enclosure.
2. Create a cutout in the enclosure (see Figure 2-1 through Figure 2-5 in *System Cutout Dimensions*).
   - Be sure to place the unit at a comfortable working level
   - Make sure the area around the cutout is clean and free from metal burrs
3. Mount the unit in an upright position and properly secure the unit into the panel.
   - Tighten the twelve (8 on a 3308T/KP) #10 nuts to 25 inch-pounds (2.8 Newton-meters / 28Kgf cm).
4. Construct a power cable following the instructions in *Creating a Power Cable* on page 23 in this chapter.

5. Attach one end of the power cord to the power receptacle on the unit and the other end to a properly grounded 100-240 VAC, 50-60 Hz outlet.
6. Turn on power to the system. The system will boot-up the installed operating system.

Caution

Your 3300 unit does not contain a CD-ROM drive. We highly recommend that you create a backup set of boot floppy disks for Windows® or DOS operating system immediately upon receipt of your system. The backup set of boot floppy disks will be needed in the event that your operating system ever needs to be reinstalled. Refer to Chapter 7 – Troubleshooting for more information.

7. Install the application software via external floppy drive, parallel port CD-ROM, or the network. Software can also be loaded via Type I Compact Flash®.

Additional aspects to take into account when mounting your 3300 unit:

- Consider locations of accessories such as AC power outlets and lighting (interior lighting and windows) for installation and maintenance convenience
- Prevent condensation by installing a thermostat-controlled heater or air conditioner
- To allow for maximum cooling, select an adequate sized enclosure and avoid obstructing the airflow
- Place any fans or blowers close to the heat-generating devices. If using a fan, make sure that outside air is not brought into the enclosure unless a fabric or other reliable filter is used. This filtration prevents conductive particles and other harmful contaminants from entering the enclosure.
- Do not select a location near equipment that generates excessive electromagnetic interference (EMI) or radio frequency interface (RFI). Examples of these types of equipment are: high power welding machines; induction heating equipment; and large motor starters.
- Place incoming power line devices (such as isolation or constant voltage transformers, local power disconnects, and surge suppressers) away from the system. The proper location of incoming line devices keeps power wire runs as short as possible and minimizes electrical noise transmitted to the unit.
- Make sure the location does not exceed the unit's shock, vibration, and temperature specifications
- Install the unit in the rack or panel in such a way as to ensure that it does not cause a hazard from uneven mechanical loading
- Incorporate a readily-accessible disconnect device in the fixed wiring on permanently connected equipment
- Avoid circuit overloading of the supply circuit

System Cutout Dimensions

3308T Cutout Dimensions

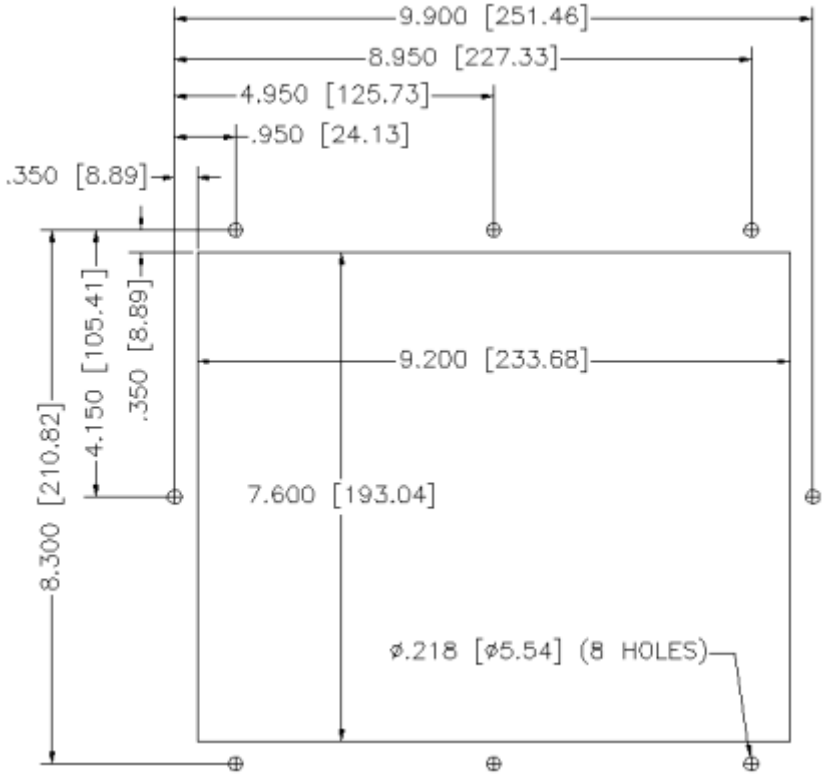


Figure 2-1. 3308T System Cutout Dimensions

Note : All dimensions in inches [mm]

3308KP Cutout Dimensions

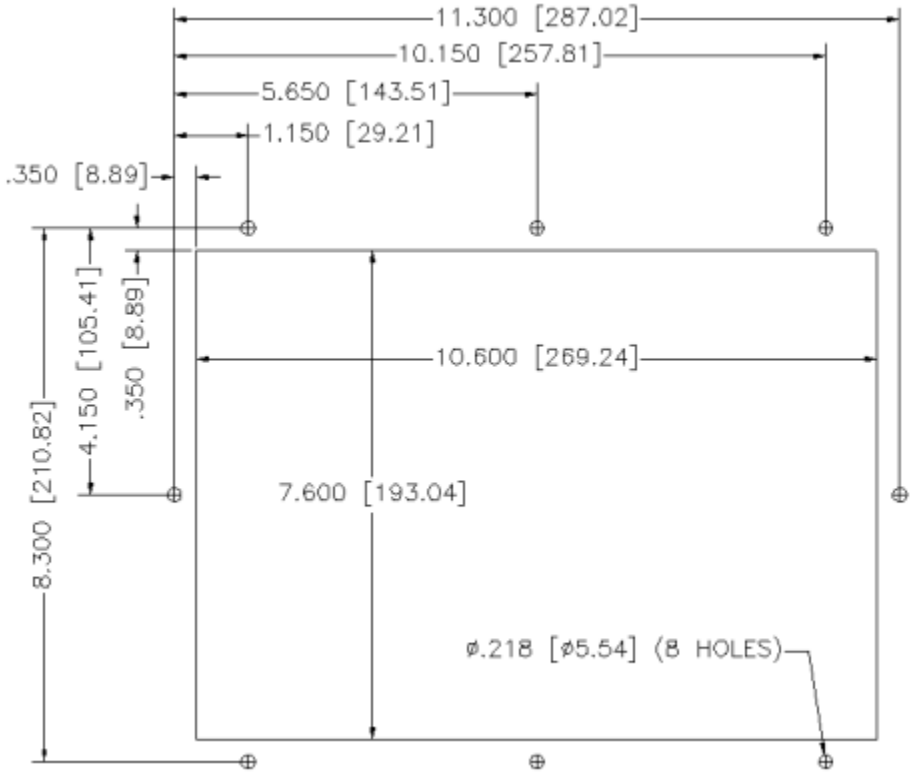


Figure 2-2. 3308KP System Cutout Dimensions

Note : All dimensions in inches [mm]

3310T/3312T Cutout Dimensions

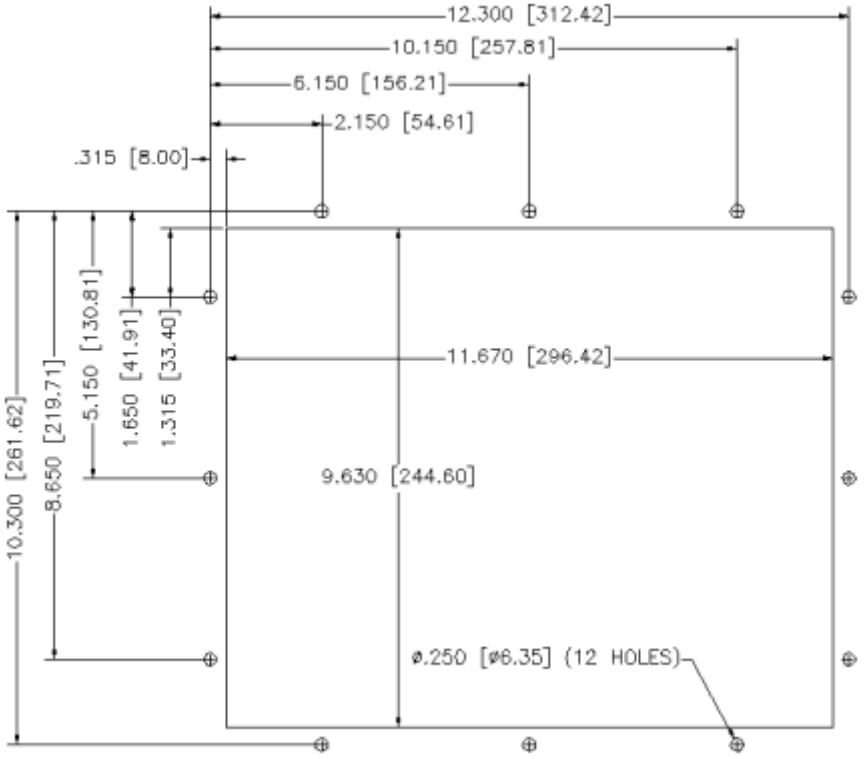


Figure 2-3. 3310/12T System Cutout Dimensions

Note : All dimensions in inches [mm]

3310KP(T)/3312KP(T) Cutout Dimensions

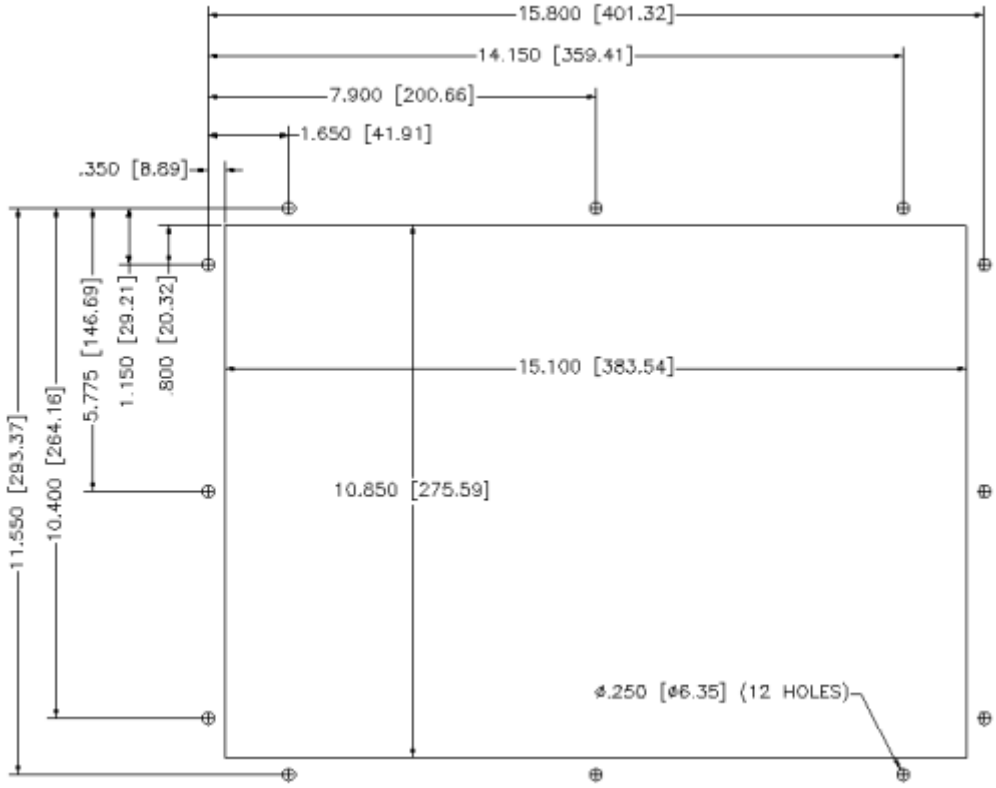


Figure 2-4. 3310/12KP System Cutout Dimensions

Note : All dimensions in inches [mm]

1401 Drill Pattern

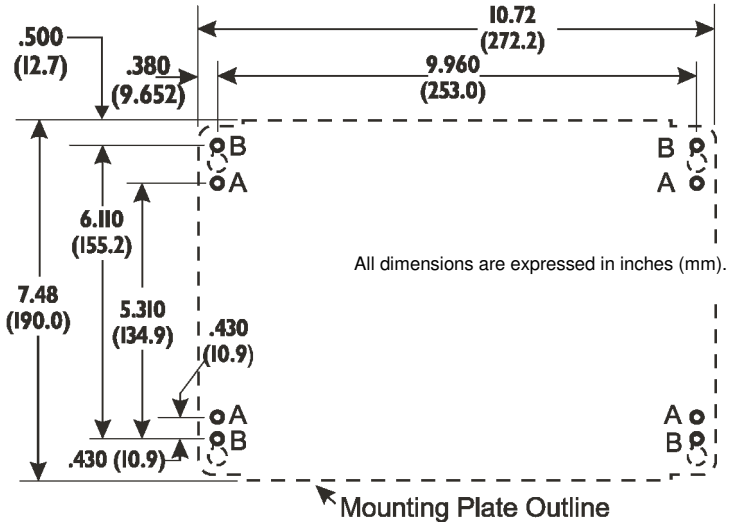


Figure 2-5. 1401 Drill Pattern

Figure 2-6. 1401 Unit, Angled

Power Management

The following paragraphs explain the system power, the power supply, and the effects of excessive heat, electrical noise, and line voltage variation of the 3300 unit.

System Power

Using isolation transformers on the incoming AC power line to the system is always a good practice. An isolation transformer is especially desirable in cases in which heavy equipment is likely to introduce noise onto the AC line. The isolation transformer can also serve as a step-down transformer to reduce the incoming line voltage to a desired level. The transformer should have a sufficient power rating (units of volt-amperes) to supply the load adequately.

Proper grounding is essential to all safe electrical installations. Refer to the relevant federal, state/provincial, and local electric codes, which provide data such as the size and types of conductors, color codes and connections necessary for safe grounding of electrical components. The code specifies that a grounding path must be permanent (no solder), continuous, and able to safely conduct the ground-fault current in the system with minimal impedance (minimum wire required is 18 AWG, 1 mm).

Observe the following procedures:

- Separate ground wires (P.E. or Protective Earth) from power wires at the point of entry to the enclosure. To minimize the ground wire length within the enclosure, locate the ground reference point near the point of entry for the plant power supply.
- All electrical racks or chassis and machine elements should be Earth Grounded in installations where high levels of electrical noise can be expected. The rack/chassis should be grounded with a ground rod or attached to a nearby Earth structure such as a steel support beam. Connect each different apparatus to a single Earth Ground point in a “star” configuration with low impedance cable. Scrape away paint and other nonconductive material from the area where a chassis makes contact with the enclosure. In addition to the ground connection made through the mounting bolt or stud, use a one-inch metal braid or size #8 AWG wire to connect between each chassis and the enclosure at the mounting bolt or stud.

Excessive Heat

The systems withstand temperatures from 0º to 50º C. They are cooled by convection, in which a vertical column of air is drawn in an upward direction over the surface of its components. To keep the temperature in range, the cooling air at the base of the system must not exceed 50° C. Allocate proper spacing between internal components installed in the enclosure.

When the air temperature is higher than the specified maximum in the enclosure, use a fan or air conditioner to lower the temperature.

Electrical Noise

Electrical noise is seldom responsible for damaging components, unless extremely high energy or high voltage levels are present. However, noise can cause temporary malfunctioning, which can result in hazardous machine operation in certain applications. Noise may be present only at certain times, may appear at widespread intervals, or in some cases may exist continuously.

Noise commonly enters through input, output, and power supply lines, and may also be coupled through the capacitance between these lines and the noise signal carrier lines. This usually results from the presence of high voltage or long, close-spaced conductors. When control lines are closely spaced with lines carrying large currents, the coupling of magnetic fields can also occur. Use shielded cables to help minimize noise. Potential noise generators include switching components, relays, solenoids, motors, and motor starters.

Refer to the relevant Federal, State/Provincial, and local electric codes, which provide data such as the size and types of conductors, color codes and connections necessary for safe grounding of electrical components. It is recommended that high- and low-voltage cabling be separated and dressed apart. In particular, AC cables and switch wiring should not be in the same conduit with all communication cables.

Line Voltage Variation

The power supply section of the unit is built to sustain line fluctuations of 90-250 VAC and still allow the system to function within its operating margin. As long as the incoming voltage is adequate, the power supply provides all the logic voltages necessary to support the processor, memory, and I/O.

When the installation is subject to unusual AC line variations, use a constant voltage transformer to prevent the system from shutting down too often. However, a first step toward the solution of the line variations is to correct any possible feed problem in the distribution system. If this correction does not solve the problem, use a constant voltage transformer.

The constant voltage transformer stabilizes the input voltage to the systems by compensating for voltage changes at the primary in order to maintain a steady voltage at the secondary. When using a constant voltage transformer, check that the power rating is sufficient to supply the unit.

Power Supply

The standard systems ship with an AC power supply; a 24 VDC power supply is optional. This section provides specifications for both AC and DC power supplies.

AC Power Supply

The AC power supply provides 100-240 VAC, 50-60 Hz (wide-ranging), 1 A maximum. This power supply typically consumes approximately 22 W, with no option boards installed.

DC Power Supply

The DC power supply accepts 18 to 30 VDC input voltage for applications requiring DC input power. Electrical specifications for the power supply are 18 to 30 VDC, 3.6 A maximum.

Expansion Power

The available power from both the AC and DC power supplies is listed below:

Table 2-1. Available Expansion Power

Voltage	LPG1 Available Current
+5 V	2.0 A
+12 V	1.0 A
- 12 V	0.4 A

Creating a Power Cable

This section describes how to create both an AC and a DC power cable.

AC Power Cable

You must create an AC power cable to furnish power to units with AC power supplies. You will need the following materials:

- A three-position power connector (supplied)
- A braid/foil shielded power cable with three 18 (1.0 mm), 16 (1.3 mm), or 14 (1.6 mm) AWG solid or stranded copper wire, rated 80º C or better.

Perform the following steps to create the cable:

1. Cut the wire cable to the desired length.
2. Strip 0.25 in (6 mm) of insulation from the end of the conductor wire. No bare wire should be exposed when the cable is connected to the workstation.
3. Tin the wire ends with solder if using stranded wire. This will keep the wire from fraying.

Warning

When inserting the wire ends of the power cable into the block plug, be sure there is no exposed wire. Trim the wire ends of the cable or cut a new cable if necessary.

4. Insert the three wire ends of the power cable into the three holes of the block plug. Insert the Protective Earth GND ground, L1, and L2/N wires into the corresponding holes, as shown in Figure 2-7. Be sure that no bare wires are exposed.

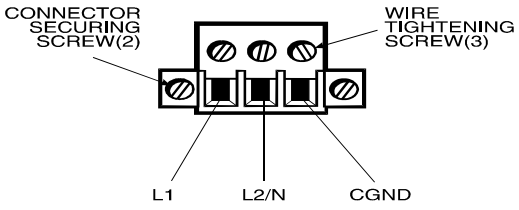


Figure 2-7. AC Power Connector

5. Tighten the three screws above the wires to hold them firmly in place.

Warning

Never tighten the three screws of the block plug when the cable is connected to a power source. The screws are conductive and have full contact with the cable wire.

6. Use a cable clamp and #6-32 screw (provided) to secure and provide strain relief to the power cable. When installing the power cable to the unit, use the securing screws on each side of the plug. This strain relief is mandatory for Hazardous Locations compliance.

Warning

Be sure to completely loosen the two securing screws on the plug when disconnecting the power cord from the unit.

DC Power Cable

You must create a DC power cable to supply power to units with DC power supplies. You will need the following materials:

- A three-position power connector (supplied)
- A braid/foil shielded power cable with three 18 (1.0 mm), 16 (1.3 mm), or 14 (1.6 mm) AWG solid or stranded copper wire, rated 80º C or better.

Perform the following steps to create the cable:

1. Cut the wire cable to the desired length.
2. Strip 0.25 in (6 mm) of insulation from the end of the conductor wire. No bare wire should be exposed when the cable is connected to the workstation.
3. Tin the wire ends with solder if using stranded wire. This will keep the wire from fraying.

Warning

When inserting the wire ends of the power cable into the block plug, be sure there is no exposed wire. Trim the wire ends of the cable or cut a new cable if necessary.

4. Insert the three wire ends of the power cable into the three holes of the block plug. Insert the Protective Earth GND ground, + (positive), and - (return) wires into the corresponding holes, as shown in Figure 2-8. Be sure that no bare wires are exposed.

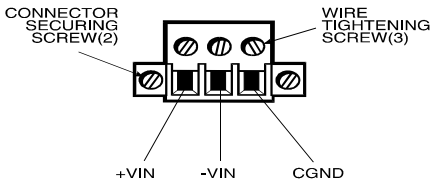


Figure 2-8. DC Power Connector

5. Tighten the three screws above the wires to hold them firmly in place.

Warning

Never tighten the three screws of the block plug when the cable is connected to a power source. The screws are conductive and have full contact with the cable wire.

6. Use the aluminum cable clamp (provided) to terminate the DC cable shield and provide strain relief. The aluminum cable clamp is designed to accommodate cable with ¼-inch (6.4 mm) O.D.

Warning

Be sure to completely loosen the two securing screws on the plug when disconnecting the power cord from the unit.

Installing Internal Hardware Options

Warning

You must disconnect the power cable, floppy cable, and any other external cables connected to the unit before removing the back cover.

DRAM Dual Inline Memory Modules (SODIMMs)

You can order your system CPU factory-configured with either 128 MB or 256 MB of DRAM. You can reconfigure DRAM capacity by changing the DRAM SODIMM on your CPU board.

PC/104 Boards

The PC/104 connector supports a 16-bit interface. The connectors are placed on the board so that PC/104 stack-through interface boards can be used.

Four standoffs are already attached to the CPU board. If you want to stack a second PC/104 card on the first, you need the four standoffs contained in the Documentation Kit (see page 12 for more information).

Note

Installation of PC/104 cards may void EMC and Hazardous Locations compliance. This is a function of the PC/104 card design. It is the system integrator and/or user's responsibility to verify compliance before installing any given card.

Note

To prevent vibration failures, always use the locking screw to attach PC/104 cards.

Perform the following steps to install the PC/104 card:

1. Disconnect the power cable, floppy cable, and any other external cables.
2. On a protective surface, lay the unit on its front panel.
3. Unscrew the three mounting screws from the back cover (refer to Figure 1-5 for positioning information).
4. Slide the back cover toward the I/O panel, and lift off.
5. Attach the PC/104 card to the four pre-installed standoffs. If you want to install a second PC/104 card, you must attach the standoffs included in the documentation kit to the first PC/104 card.
6. If you need to connect the cards to a device outside the unit, remove the access plate on the I/O panel. You can then pass cables through this area (refer to Figure 1-6).

Installing External Hardware Options

This section explains how to install external hardware options.

External Floppy Drive

Note

To avoid corruption, do not attach or detach the external floppy drive with a disk installed.

There are four screw holes on the back of the unit to mount an external floppy disk drive (9000-EXF). Refer to Figure 1-5 for more information.

Note

Make sure the floppy drive cable is able to reach from the external floppy connector to the system before making the cutout.

Using a Touch Screen

Pro-face/Xycom's touch screen complies with environmental specifications and maintains a NEMA 4 seal when panel mounted. The touch screen mouse driver emulates a Microsoft PS/2 mouse.

Installing the Touch Screen Driver

In order to use the touch screen on your 3300 unit, you must install the proper driver.

For computers running Windows® 98, NT, 2000, or XP, you will be installing the driver touchbase_windows_kpmt_mons.exe. This driver can be found in the "Drivers\Touchscreen" folder on the Documentation and Support Library CD that shipped with your monitor. The default setting is serial mode.

1. Create a folder named "Touch" on your desktop or in the root directory of your C: drive, and unzip the files into the folder.
2. Click on the file "setup.exe" and follow the directions that appear. Pro-face suggests that you accept all of the defaults.
3. Calibrate the touchscreen, following the directions in the next section.

Caution

When using MS-DOS®, the mouse driver must be loaded before the touch screen driver if both a mouse and touch screen are to be supported.

For computers running MS-DOS®, you will be installing the driver, touchbase_dos.zip. This driver can be found in the "Drivers\Touchscreen" folder on the Documentation and Support Library CD that shipped with your monitor.

1. Create a directory named "Touch" in the root directory of your C:\ drive and unzip the files into the folder.
2. Run the file "install.exe" in the TB458 subdirectory and follow the directions that appear. Pro-face suggests that you accept all of the defaults.
3. Copy all of the batchfile utilities from the Batch Files subdirectory to C:\
4. Add the command allser.bat to your autoexec.bat file.
5. Re-boot your system.
6. Calibrate the touchscreen, following the directions in the next section.

Caution

It is recommended that you keep all default setting when installing the driver.

The touch screen drivers are located on the Document and Support Library CD, which is shipped with you unit. Drivers can also be downloaded from *http://www.profaceamerica.com*

Calibrating the Touch Screen

You need to calibrate the touch screen in the following cases:

- The cursor does not follow the movement of your finger or pen.
- You adjust the size of the video image or change the video mode.

For computers running Windows® 98, NT, 2000, or XP: Before calibrating your touch screen, Pro-face strongly recommends altering the following default settings in the calibration program.

1. Go to START/PROGRAMS/UPDD/SETTINGS
2. Click on the Calibration tab.
3. Set the Calibration points to 25.
4. Set the Margin Percentage to 1.

Note

If the Margin Percentage is set to 0, the calibration may not be correct at the edges of the screen, causing the cursor to jump unexpectedly.

5. Click on the Settings tab.
6. Set the Averaging to 0.
7. Click Apply.

You are now ready to calibrate your touch screen. Follow the instructions found in the applet listed below to calibrate the touch screen:

START/PROGRAMS/UPDD/CALIBRATE

Note

The touch screen and controller is a matched pair calibrated at the factory. If touch screen and controllers are interchanged calibration may be needed.

For computers running MS-DOS®, the touch screen drivers must be loaded before you can calibrate. After the drivers are loaded, switch to **C:\Touch**, and run TBCAL.EXE to calibrate the touch screen:

1. Enter the "H" command for hard calibrate
2. Touch the cross hairs as directed by the calibrate utility
3. Save the settings
4. Exit the calibrate utility with the "X" command

Custom Logo

You may cover the Pro-face/Xycom label on the unit with a customized label. The dimensions of the existing Pro-face/Xycom label are shown below. Recommended material for the customized label is 0.007 polyester, with 3M #468 adhesive on the far side.

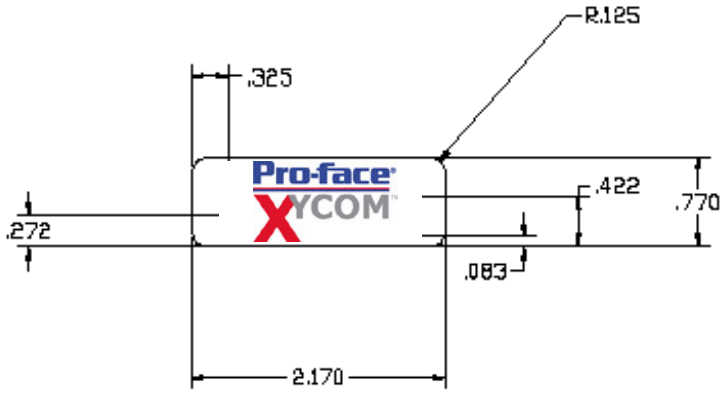
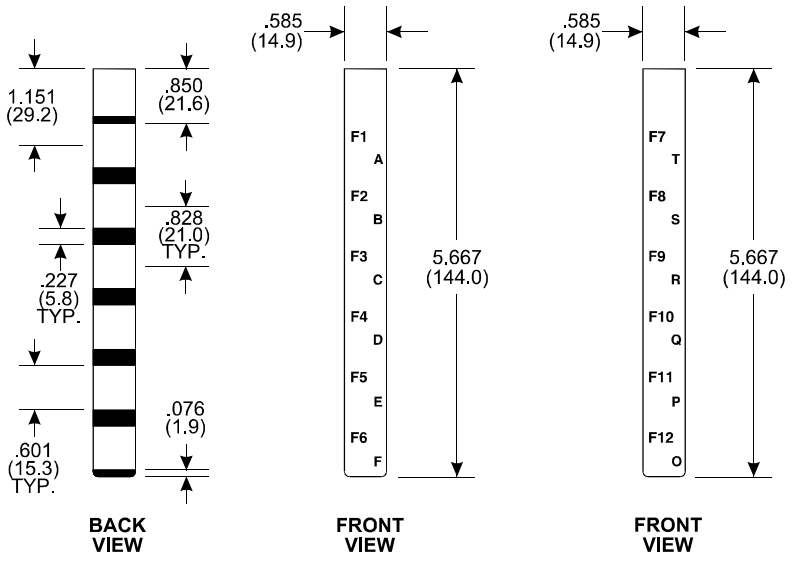


Figure 2-9. Logo Label Dimensions

Creating Customized Keypad Inserts

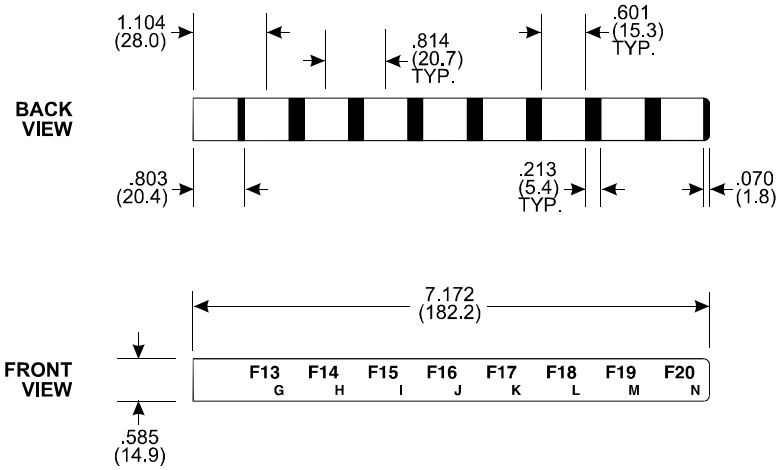
You can customize your 3308/3310/3312 keypads with keypad inserts to match the function keys that you program. All the keys are relegendable, except the F/A, SPACE, and + keys, and the numeric keypad. (See Chapter 3 for more information.) The following figures provide the necessary dimensions and recommended requirements to create customized keypad inserts.

3308KP Keypad Inserts



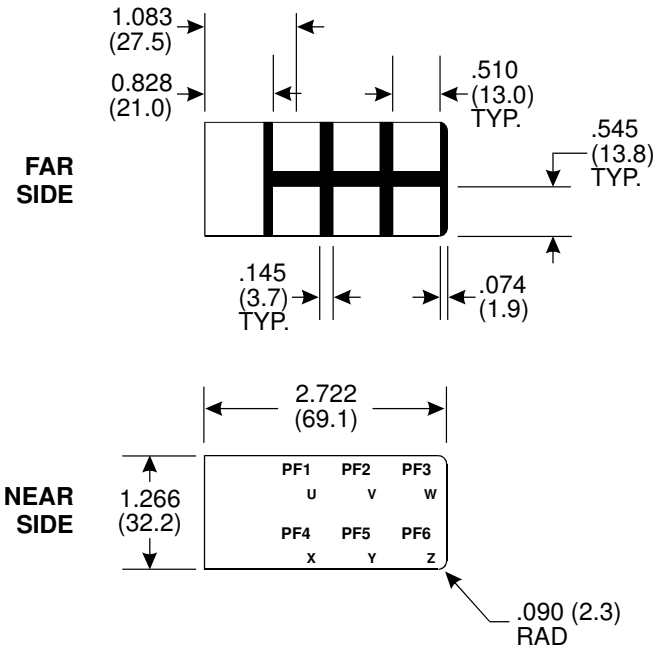
Note: All dimensions in inches (mm)
Material: .007 (.178) thick polyester

Figure 2-10. 3308KP F1-F12 Insert Dimensions



Note: All dimensions in inches (mm)
Material: .007 (.178) thick polyester

Figure 2-11. 3308KP F13-F20 Insert Dimensions



Note: All dimensions in inches (mm)
Material: .007 (.178) thick polyester

Figure 2-12. 3308KP Control Key Insert Dimensions

Figure 2-13 illustrates how to install the 3308KP keypad inserts.

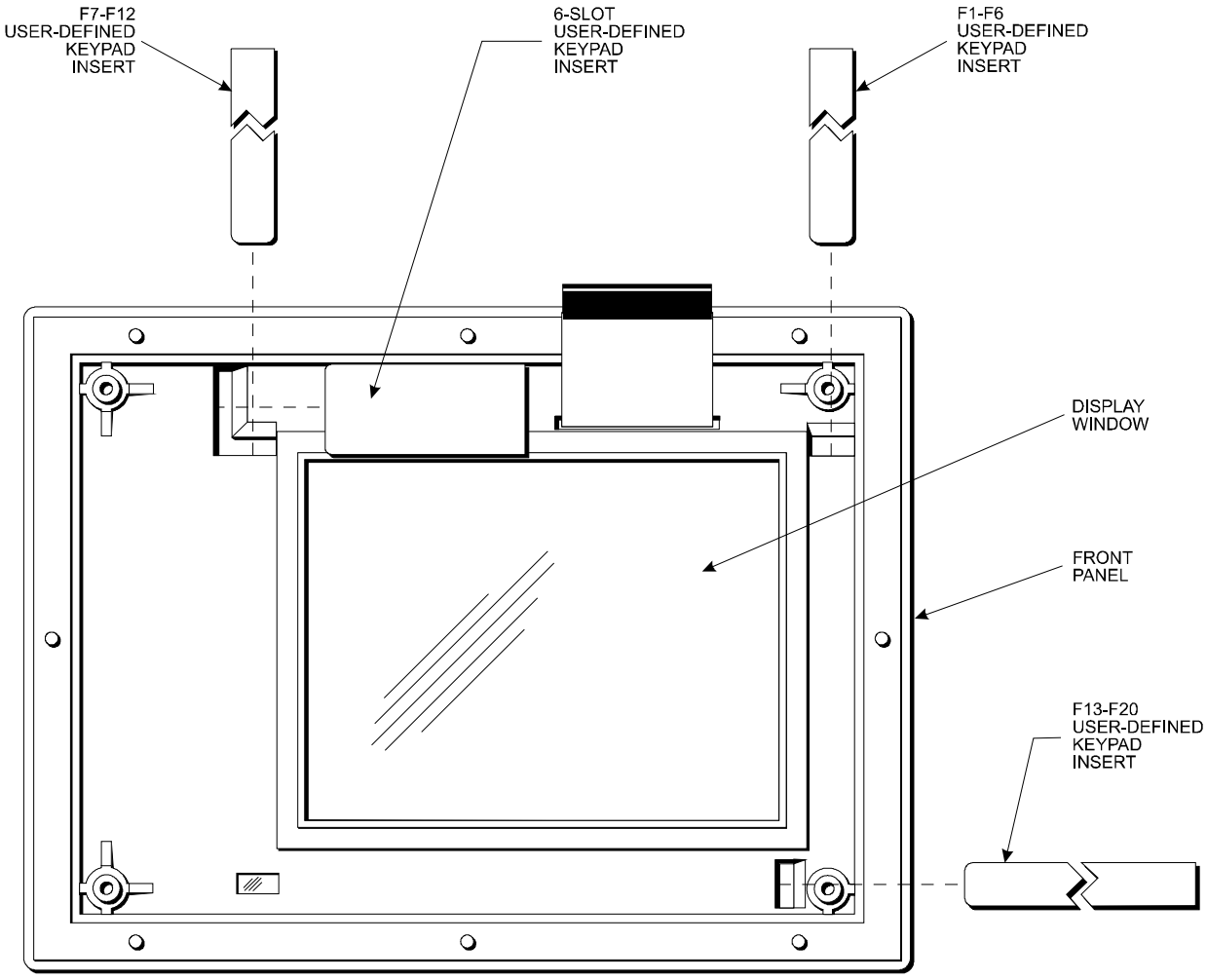


Figure 2-13. 3308KP Keypad Insert Installation

3310KP/3312KP Keypad Inserts

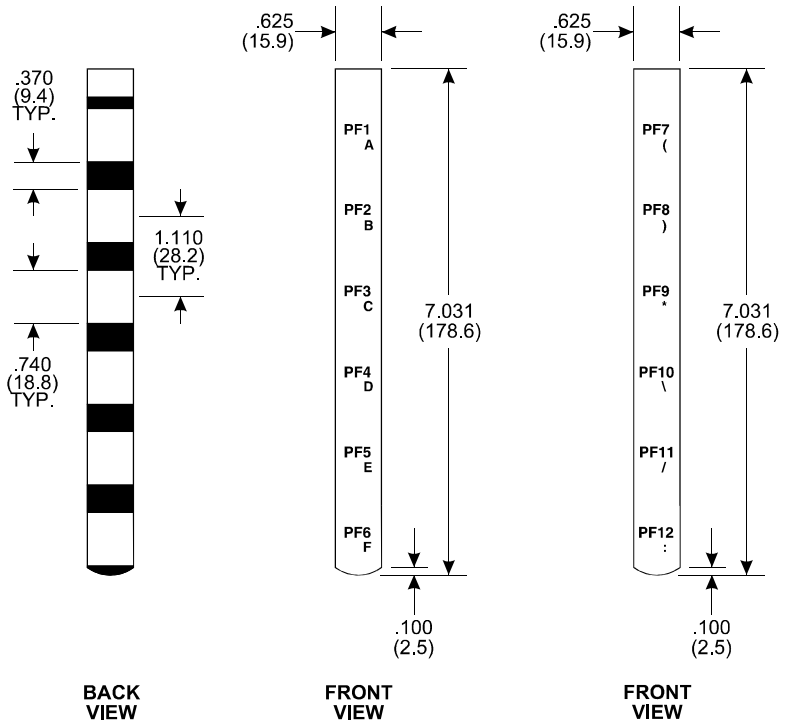


Figure 2-14. 3310KP/3312KP PF1-PF12 Insert Dimensions

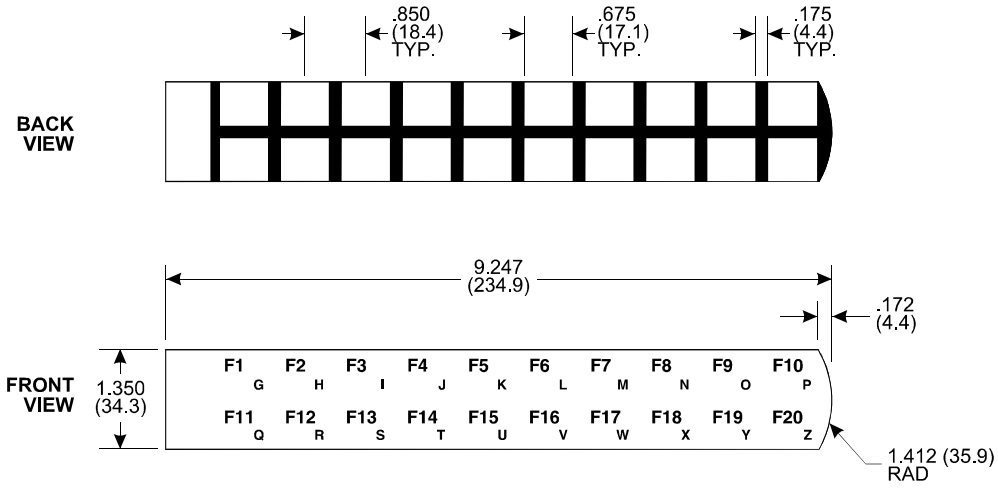
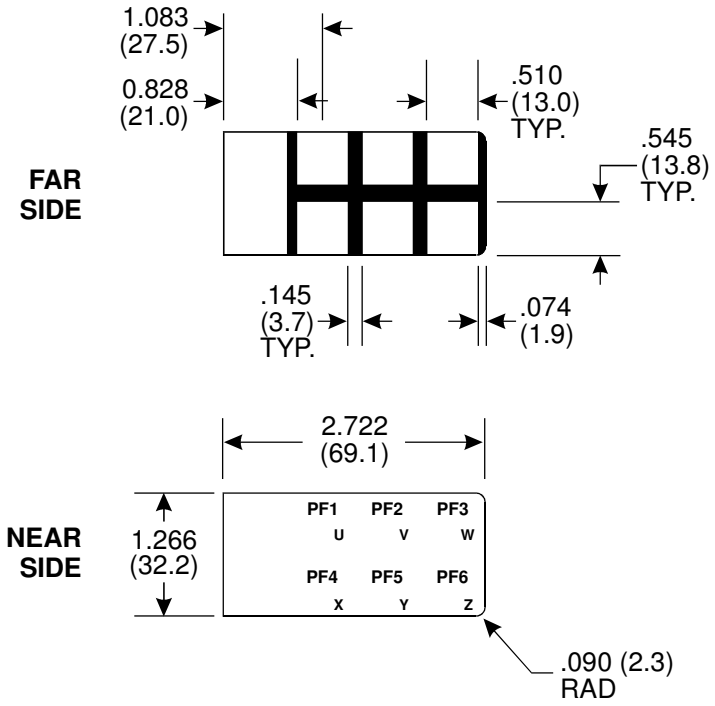


Figure 2-15. 3310KP/3312KP F1-F20 Insert Dimensions



Note: All dimensions in inches (mm)
Material: .007 (.178) thick polyester

Figure 2-16. 3310KP/3312KP Control Key Insert Dimensions

The picture below illustrates how to install the 3310KP/3312KP keypad inserts.

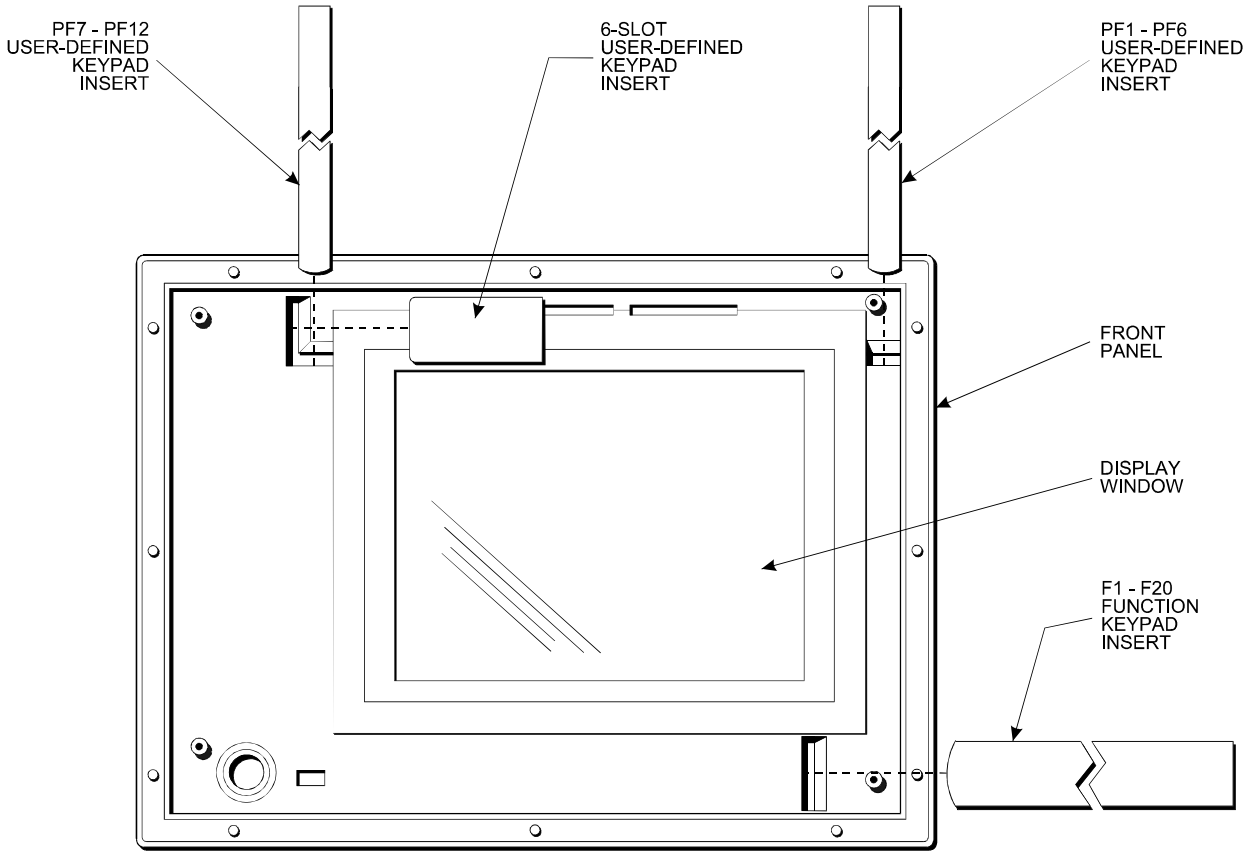


Figure 2-17. 3310KP/3312KP Keypad Insert Installation

Hazardous Location Installations

Pro-face designed the systems to meet Class I, Division 2 Hazardous Location application requirements. Division 2 locations are locations that are normally non-hazardous, but could potentially become hazardous should accidents expose the area to flammable vapors, gases, or combustible dusts.

These systems have been designed as non-incendiary devices. They are not intrinsically safe and should never be operated within a Division 1 (normally hazardous) location when installed as described here. Nor should any peripheral interface device attached to these systems be located within Division 1 locations unless approved and/or certified diode barriers are placed in series with each individual signal and DC power line. Any such installations are beyond the bounds of Pro-face design intent. Pro-face accepts no responsibility for installations of this equipment or any devices attached to this equipment in Division 1 locations.

Note

When adding cards to the system, the user must ensure that they meet operating conditions for Class I, Division 2 Hazardous Locations.

It is the customer's responsibility to ensure that the product is properly rated for the location. If the intended location does not presently have a Class, Division, and Group rating, then users should consult the appropriate authorities having jurisdiction to determine the correct rating for that Hazardous Location.

In accordance with federal, state/provincial, and local regulations, all Hazardous Location installations should be inspected by the authority having jurisdiction, prior to use. Only technically qualified personnel should install, service, and inspect these systems.

Warning

Suitable for use in Class I, Division 2, Groups A, B, C, and D, and Class II, Division 2, Groups F and G Hazardous Locations or Non-hazardous Locations only.

Warning - Explosion Hazard

Substitution of components may impair suitability for Class I, Class II, Division 2.

Advertissement Risque D'Explosion

La substitution de composants peut rendre ce materiel inacceptable pour les emplamements de classe I, II, Division 2.

Warning - Explosion Hazard

Do not disconnect equipment unless the power has been disconnected or the area is known to be non-hazardous.

Advertissement Risque D' Explosion

Avant de deconnecter l'equipment, coupler le courant ou s'assurer que l'emplacement est designe non dangereux.

Advertissement Risque D' Explosion

Dans les situations hasardees, couper la courant avant de remplacer ou de cabler les modules.

Warning - Explosion Hazard

When operating in Hazardous Locations, disconnect power before replacing or wiring modules.

Warning

To maintain a safe condition, do *not* attach an external keyboard or mouse to the rear port when the unit is operating in a hazardous environment.

Definitions

The following Class and Division explanations are derived from Article 500 (Sections 5 and 6) of the United States National Fire Protection Agency National Electric Code (NFPA 70, 1990). They are not complete and are included here as a general description for those not familiar with generic Hazardous Location requirements.

People charged with installing this equipment in Hazardous Locations are responsible for ensuring that all relevant codes and regulations related to location rating, enclosure, and wiring are met.

Class I Locations

Class I locations are those in which flammable gases or vapors are or may be present in the air in quantities sufficient to produce explosive or ignitable mixtures.

Class II Locations

Class II locations are those that are, or may become, hazardous because of the presence of combustible dust.

Division 1 Locations

Division 1 locations are those in which flammable or ignitable gases, vapors, or combustible dusts and particles can exist due to the following conditions:

- Normal operating conditions.
- Because of repair, maintenance conditions, leakage, or where mechanical failure or abnormal operation of machinery or equipment might release or cause explosive or ignitable mixtures to be released or produced.
- Combustible dusts of an electrically conductive nature may be present in hazardous quantities.

Note

Pro-face systems are not suitable for installation within Division 1 locations.

Note

Electrical equipment cannot be installed in Division 1 locations unless it is intrinsically safe, installed inside approved explosion-proof enclosures, or installed inside approved purged and pressurized enclosures.

Division 2 Locations

Division 2 locations are listed below:

- Class I volatile flammable liquids or flammable gasses are handled, processed, or used, but confined within closed containers or closed systems from which they can escape only in cases of accidental rupture or breakdown of such enclosures or systems, or in case of abnormal operation of equipment.
- Ignitable concentrations of Class I vapors or gasses are normally prevented by positive mechanical ventilation, but which may become hazardous due to mechanical failure of those ventilation systems.
- Location is adjacent to a Division 1 location.
- Class II combustible dust is not normally in the air in quantities sufficient to produce explosive or ignitable mixtures. Dust accumulations are normally insufficient to interfere with normal operation of electrical equipment or other apparatus. Combustible dust may be in suspension in the air as a result of the following: infrequent malfunctioning of handling or processing equipment; combustible dust accumulations on, or in the vicinity of electrical equipment; may be ignitable by abnormal operation or failure of electrical equipment.

Group Ratings

All electrical equipment that is approved for use in Hazardous Locations must include a group rating. Various flammable and combustible substances are divided into these groups as a function of their individual maximum experimental safe gap (MESG), explosion pressure, and ignition temperature.

Component temperatures and the potential for spark based upon voltage, current, and circuit characteristics, within electrical equipment, will determine what the equipment group rating will be. A device approved for installation within Class I, Group A locations may also be used in Groups B, C, or D.

Note

Approved Class I equipment may not be suitable for Class II installations. Class I includes Groups A, B, C, and D. Class II includes Groups F and G.

Enclosures

The systems are designed to be installed within clean and dry enclosures for both ordinary and Hazardous Locations. The front panel meets the requirements of UL and CSA Type 4, 4X, and 12 enclosures. The enclosure used for Class I Hazardous Locations should have a minimum rating of Type 12 (NEMA 12, IP 5X). However, Type 4 (IP 6X) enclosures are strongly recommended.

Panel flatness and rigidity are important to maintain a proper panel seal. If you are going to use non-metal type enclosures, such as plastic or fiberglass, install a rigid metal stiffener behind the front panel. Failure to do so may result in an inadequate panel seal due to flexure of the front panel material between the stud mounts. Tighten the nuts on the mounting studs to 25 inch-pounds.

Requirements for enclosure fittings, conduit, and wiring vary according to the specific rating of the location and the type of flammable or combustible material involved. Those requirements are beyond the scope of this document. It is the customer's responsibility to ensure that the installation is compliant with codes and regulations that apply to the specific location. Reference NFPA 70, Article 500 for specific regulations in the United States.

Power Switch

The systems do not have a power switch. The amount of input power required by these systems classifies the power switch as an incendiary device because the voltage and current across the make/break device are capable of creating a spark.

Hazardous Location regulations state that a power switch rated for ordinary locations may be used if it is located in a non-hazardous area. However, limits in cable length between the workstation and the power switch may apply. Otherwise, the switch must be compliant with Class I, Division 1 requirements (intrinsically safe). These switches are built in a manner that prevents the possibility of a spark when contacts are made or broken.

Use suitable UL-listed and/or CSA-certified Class I, Division 1 switches in Hazardous Locations. These switches are available from a number of sources. It is the customer's

responsibility to ensure that the power switch selected for the installation has the correct Hazardous Location rating for the location in which it is installed.

Cable Connections

Division 2 Hazardous Location regulations require that all cable connections be provided with adequate strain relief and positive interlock. Never connect or disconnect a cable while power is applied at either end of the cable.

Communication Cable Interfaces

All communication cables should include a chassis ground shield. This shield should include both copper braid and aluminum foil. The D-sub style connector housing should be a metal conductive type (e.g., molded zinc), and the ground shield braid should be well terminated directly to the connector housing. Do not use a shield drain wire.

The outer diameter of the cable must be suited to the inner diameter of the cable connector strain relief to ensure that a reliable degree of strain relief is maintained. Always secure the D-Sub connectors to the workstation mating connectors via the two screws located on both sides.

Warning

Never connect or disconnect the communication cables while power is applied at either end of the cable. This may result in an incendiary spark. Permanent damage to the workstation communication components may occur.

Note

This warning does not apply to the front panel keyboard interface connector. This connection is a nonincendive circuit. Please reference the Hazardous Locations control drawing on page 41.

Hazardous Locations Control Drawing

Warning

The following control drawing applies to front panel ports only.

Class I, Division 2, Groups A, B, C and D, and Class II, Division 2, Groups F and G Hazardous (Classified) Locations.

Notes:

1. Nonincendive Circuit Parameters:

PS/2 Port (Pins 3 to 4)
V_{oc} = 5 VDC
I_{sc} = 3.3 A
C_a = 10 uF
L_a = 4 uH

2. Selected Nonincendive Field Wiring Apparatus shall satisfy the following:

Nonincendive Field Wiring Apparatus		Pro-face/Xycom Model 3310 KP(T) and 3312KP(T)
V_{max}	≥	V_{oc}
I_{max}	≥	I_{sc}
$C_i + C_{cable}$	≤	C_a
$L_i + L_{cable}$	≤	L_a

3. If the electrical parameters of the cable are unknown, the following values may be used:

   Capacitance – 60 pF/ft
   Inductive – 0.20 uH/ft

4. Nonincendive Field Wiring must be installed in accordance with Article 501.4(B)(3) of the National Electrical Code ANSI/NFPA 70.

Operation and Maintenance

The systems have been designed to comply with relevant spark ignition tests. However, the workstation front panel membrane switches are the only make/break components intended to be used by the operator in normal operation.

Warning

To maintain a safe condition, do *not* attach an external keyboard or mouse to the rear port when the unit is operating in a hazardous environment.

Always observe the following rules with respect to Hazardous Location installations:

1. Always install the workstations within an enclosure suitable for the specific application. General-purpose enclosures may be acceptable for Class I applications, but are never acceptable for Class II applications. Type 4 (IP 65) enclosures are recommended even when not required by regulations.
2. Keep enclosure doors or openings closed at all times to avoid the accumulation of foreign matter inside the workstation.
3. Never subject the unit to any installation or service procedures unless power is removed and the area is non-hazardous. This includes installing or removing power cables or communication cables, or removing the unit's back cover.
4. Only technically qualified service personnel should perform installation and service. These workstations are designed to require no service in the course of normal operation by an operator.

Safety Agency Approval

The 3308, 3310 and 3312 systems have been designed to meet the following standards:

- *Underwriters Laboratories Inc., UL 1604 Standard for Safety*
  Electrical equipment for use in Class I and Class II, Division 2, and Class III Hazardous (classified) Locations
- *Underwriters Laboratories Inc., UL 508*
  Industrial Control Equipment
- *Canadian Standard Association, Specification C22.2 No. 213-M1987*
  Non-incendiary electrical equipment for use in Class I, Division 2 Hazardous Locations
- *Canadian Standards Association, Specification C22.2 No. 142*
  Process Control Equipment
- *EN60950,* Information Technology Equipment

Chapter 3 – Keypad Functionality

The 3308KP, 3310KP(T) and 3312KP(T) include function/alpha, control/alpha, numeric, and cursor control keypads.

Control Keypad

3308KP

The keypad on the 3308KP unit provides seven control keys, six alpha keys (U-Z) and the space and + keys. The CTRL, SHIFT, INS, ALT, TAB, DEL, SPACE, and + keys provide the same functions as can be found on a standard PC/AT-compatible keyboard.

Six of the keys are relegendable, as shown in Figure 3-1. Refer to the *Creating Customized Keypad Inserts* section in Chapter 3 for detailed information.

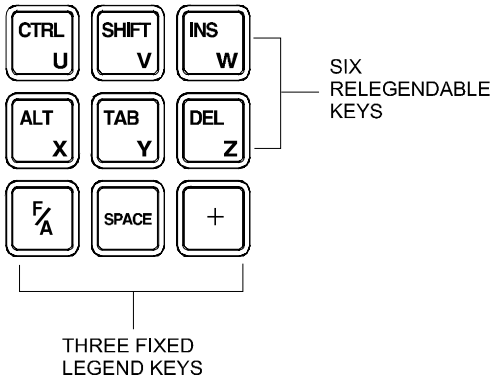


Figure 3-1. 3308KP Control/Alpha Keypad

3310KP(T)/3312KP(T)

The keypads on the 3310KP(T) and 3312KP(T) provide seven control keys, as well as the space and + keys. The CTRL, SHIFT, INS, ALT, TAB, DEL, SPACE, and + keys provide the same functions as can be found on a standard PC/AT-compatible keyboard.

Six of the keys are relegendable, as shown in Figure 3-2. Refer to the Creating Customized Keypad Inserts section in Chapter 3 for detailed information.

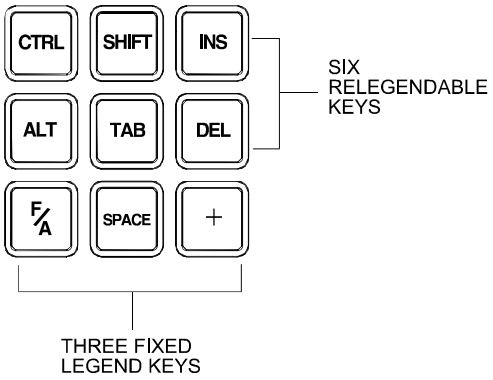


Figure 3-2. 3310KP(T)/3312KP(T) Control Keypad

Alternate Configuration

The 3310KP(T) and 3312KP(T) workstations come with an alternate insert that you may use for these six relegendable keys. This alternate insert replaces the PC control key labels with function key labels. Your unit is shipped with batch files that you can use with the keypad utility to reprogram the keys (see the *Loading the Keypad Utility* section in the next chapter).

Function and Alpha Modes

When you press and hold the F/A key, the keypad switches to alpha mode. This allows you to access the alpha characters A-Z, as well as the punctuation symbols on the 3308 KP, 3310KP(T) and 3312KP(T) units. The punctuation notations are blue letters located in the bottom right-hand corner of the keys.

Note

On 3308KP units, the default setting for alpha characters is lowercase. If you want to use uppercase alpha characters, you must reprogram the keypads using the keypad utility (see the Loading the Keypad Utility section in the next chapter).

When the F/A key it is not pressed, the keypads default to function mode. The default setting notations are white letters located in the top left-hand corner of the keys.

Note

On 3308KP units, you cannot access the CTRL, SHIFT, INS, ALT, TAB, and DEL keys in alpha mode. In other words, these keys cannot be used in combination with alpha keys.

Numeric Keypad

The numeric keypad features numbers 0-9, plus the decimal and minus sign characters.

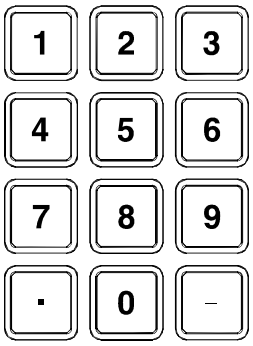


Figure 3-3. Numeric Keypad

Cursor Control Keypad

The cursor control keypad features 10 cursor control keys: BACKSPACE, PREV, NEXT, ESC, ENTER, HOME (the center key), and the up, down, right, and left arrow keys.

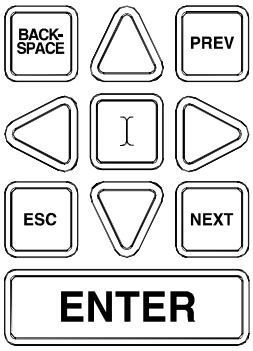


Figure 3-4.3300 Series Cursor Control Keypad

You can use the cursor control keys in conjunction with the F/A key to control the brightness on 3308KP passive-color flat panel display units.

Function/Alpha Keypads

3308KP

The twenty function/alpha keys (F1-F20, A-T,) on the 3308KP are relegendable. Refer to the Creating Customized Keypad Inserts section in Chapter 2 for detailed information.

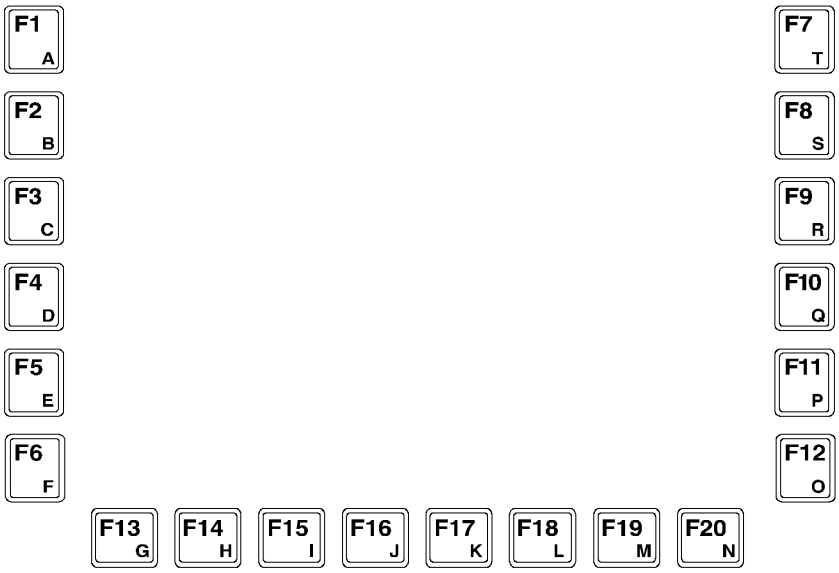


Figure 3-5. 3308KP Function/Alpha Keypads

3310KP

The thirty-two PF/function/alpha keys (PF1-PF12, F1-F20, and A-Z and punctuation symbols) on the 3310KP are relegendable. Refer to the Creating Customized Keypad Inserts section in Chapter 2 for detailed information.

The PF1-PF6 keys are equal to CTRL+F1 through CTRL+F6. PF7-PF12 are equal to ALT+F1 through ALT+F6.

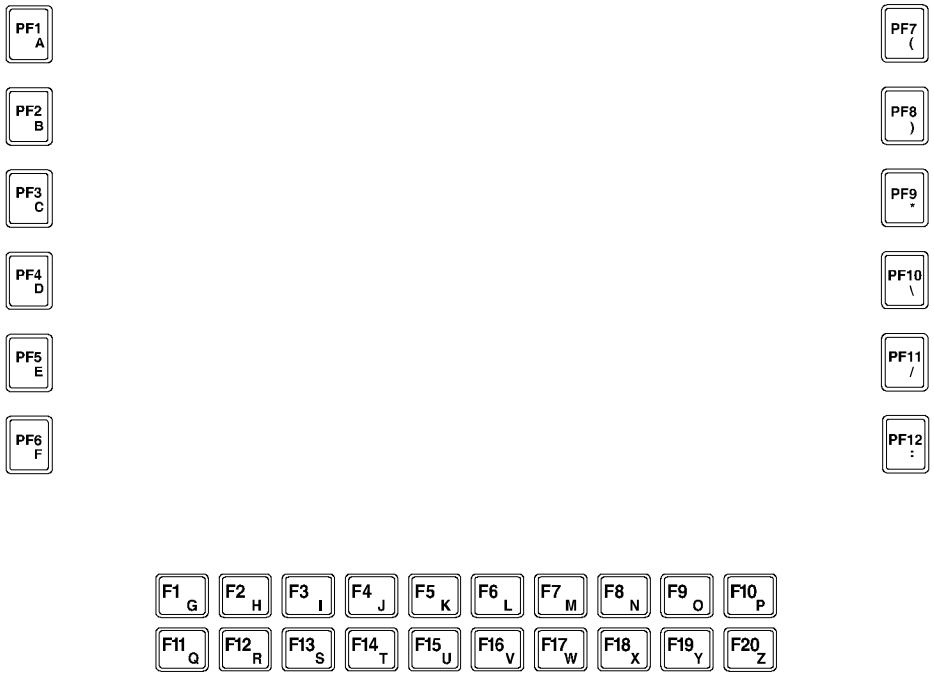


Figure 3-6. 3310KP(T) and 3312KP(T) PF/Function/Alpha Keypads

Chapter 4 – Keypad Utility

The keypad utility program allows you to redefine any or all of the keypad keys on the unit with new scan codes, using utility software. You must use an external full-stroke PC/AT keyboard to access the utility. This chapter explains how to load the keypad utility, and details how the program's pull-down menus work. Also included in this chapter are the default keypad scan codes.

Note

Your external full-stroke PC/AT keyboard cannot be redefined by running the keypad utility.

Note

The keypad switch arrays are disabled while the keypad utility is running.

Loading the Keypad Utility

Note

Pro-face's keypad utility will only run under DOS 3.2 or better. **The keypad utility will not run in a Windows environment.**

The keypad utility is on the "Documentation & Support Library" CD that shipped with your computer. You will find the self-extracting zip file, *Keypad Utility 1.2 142606-001.exe*, in the folder:

DRIVERS\Keypad Software\Keypad Utility 1.1 142606-001

If your computer is running DOS (revision 3.2 or better), create a subdirectory on your hard drive for the files, and extract the files on the disk into that subdirectory. To run the utility, go to the subdirectory and type *kp3util* at the DOS prompt.

If your computer is not running DOS, you will need to extract the files onto a DOS-bootable diskette. The diskette is then inserted into the floppy drive. You will need to reboot your computer for the computer to access the program. To run the utility, type *kp3util* at the DOS prompt.

Using the Keypad Utility

The keypad utility uses a menu bar and pull-down menu system. All menu bars are displayed across the top of the screen. "Pro-face/Xycom KP3 Utility" and the current menu titles are shown at the bottom of the screen (see Figure 4-1).

A full-stroke keyboard is needed to enter keystrokes while recording a new key macro, editing an existing macro, or entering utility commands. You can redefine all keys on the keypads, except the F/A (Function/Alpha) key. While the utility is running, the keypads are disabled.

Dialog boxes appear for user prompts, and to display error and user advice messages. Any keys used specifically in each menu are shown at the bottom of each screen (see Figure 4-1).

Two keys allow you to exit the menus:

- ESC moves to the previous menu or out of the utility from the Main Menu
- F1 returns to the current menu headings in some of the menus where Exit can be chosen to exit this menu

Startup

To begin using the keypad utility, type *kp3util* at the prompt (for the floppy drive when no DOS is available, or the subdirectory you created earlier). The program will bring up the main menu. Open the default keypad settings files in the main menu to program the keypad. For the 3308 units, the default file is *def3308.pkm.* For the 3310 and 3312 units, the default file is *def3310.pkm* file. Changes to the default file should be saved to a new file with the pkm extension. If you do not open a file, the macros pull-down menu will not be available.

Note

If you make any changes to your keypad and want to set it back to the default settings, open the pkm file for your unit (e.g., def3310.PKM for 3312KP(T)) from the File/Open menu, and then download it from the download menu.

Caution

Do not save any changes to the default files.

Main Menu

Figure 4-1 shows the Main Menu screen. The functions of the pull-down menus are described in the following sections.

Note

Exit and Download do not have pull-down menus.

Note

Use F1 to access the menu bar options in the *kp3util* program.

Exit	Files	Macros	Upload	Download	Utilities
	Open	Function Keys	KP Ctl. Version		Factory Default
	Close	Alpha Keys	Exit		Exit
	Save				
	Save As				
	Delete				
	Exit				
<Company Name> KP3 Utility: MAIN L-Arrow, R-Arrow, Enter					

Figure 4-1. Main Menu, showing first-level pull-down menus

Exit

Exit closes any open files and exits the utility. ESC can also be used for this purpose. ESC works for exiting the other menus as well.

Files Menu

When you choose Files, a pull-down menu will display these choices: Open, Close, Save, Save As, Delete, and Exit. The following table describes these menu commands.

Table 4-1. Files Menu

Command	Description
Open	Opens a file that contains a macro set for the keypad and loads the contents into memory. Any macro set in memory is overwritten. Once loaded, the macro set is available to edit, view, teach, or download to the keyboard controller.
Close	Clears the macro set from memory and closes the file from which the set came.
Save	Copies the macro set from memory back into its original file. The

Table 4-1. Files Menu

Command	Description
	original file contents are overwritten.
Save As	Creates a new file under the specified name and copies the macro set from memory into it. For example, to define different sets of codes, save each set under a different name and download the one you wish to use.
Delete	Deletes a file.
Exit	Returns to the Main Menu.

You can save files containing keypad macro sets (a macro for each key) on disk, and then load them into memory to view, edit, teach, or download to the keyboard controller. Some of these files may be included in the utility package for use in reconfiguring the keypads for different software packages, and as templates for defining completely new keypad macro sets.

Macros Menu

Note

You must have a macro file in memory before the Macros Menu is available. To load a macro file, select the File/Open menu.

When you select Macros, a keypad-type pull-down menu is available. This pull-down menu provides the following choices: Function Keys, Alpha Keys, and Exit. Table 4-2 explains the commands in the Macros Keypad Type menu.

Table 4-2. Macros Keypad Type Menu

Command	Description
Function Keys	Selects the function keys on the keypad to view, edit, or teach.
Alpha Keys	Selects the alpha keys on the keypad to view, edit, or teach.
Exit	Returns to the main menu.

After choosing which keys you want to work with (Function or Alpha), another pull-down menu becomes available. This macros edit menu displays the following choices: Exit, View, Teach, and Edit. Table 4-3 explains the commands in the Macros Edit menu.

Table 4-3. Macros Edit Menu

Command	Description
Exit	Returns to the Main Menu.
View	Lets you view, but not edit, the macro for the selected key. When View is chosen, the Exit option is displayed on the menu bar and a graphic representation of the chosen keypad is shown. To return to the Macros Menu, select Exit from the View Menu. To select a key to view, use the arrow keys to position the cursor on the desired key and press ENTER. The macro is displayed as two lines: ASCII and code. The ASCII line displays each keycode as the keys it represents on the full-stroke keyboard. Special labels are used for certain keys (e.g., Spc for space bar, UAr for up arrow, and bk for the break code prefix). The code line is displayed in either Hex or decimal. There is a one-to-one correspondence between the ASCII and code lines. While viewing the macro, the menu bar displays two options: Exit and Hex/Decimal. To access the menu bar, use F1. Exit returns to the View Menu; Hex/Decimal toggles between displaying the macro in hex or decimal format. When Hex is chosen, the keycodes are displayed as hexadecimal value scan codes. When Decimal is chosen, the keycodes are displayed as the decimal equivalent of the hex codes. For example, the macro *abc* would be displayed as 1C F0 1C 32 F0 32 21 F0 21 in hex, and 28 240 28 50 240 50 33 240 33 in decimal.
Teach	Allows you to record up to 105 keystrokes in a macro. When Teach is selected, a graphic representation of the keypad currently in memory displays. Menu bar choices are Exit, ASCII, and Click OFF. To access the menu bar, use F1. As usual, Exit returns you to the Macros menu. ASCII specifies the format to display the keystrokes as they are entered. ASCII is the default setting. The Click OFF choice is not supported. To select a key to define, use the arrow keys to position the cursor on the desired key and press ENTER. After you select a key, the utility records every keystroke made on the external full-stroke keyboard. The keystrokes are saved in a macro assigned to the chosen key. As the keystrokes are entered, they are displayed using the chosen format. ESC stops recording and returns you to the Teach Menu, so you cannot record the ESC key. However, ESC can be included in a macro by using the editor. Changes made to the macros in the Teach Menu are not programmed until you select Download.

Table 4-3. Macros Edit Menu

Command	Description
Edit	Displays a graphic representation of the keypad in memory and a menu bar displaying Exit and Click OFF. Exit returns to the Macros menu. Click OFF is not supported. To select a key to edit, use the arrow keys to position the cursor on the desired key and press ENTER. In edit mode, the macro is displayed as two lines. The top line displays the macro in either hex or decimal format, and is the line in which the editing takes place. The bottom line displays the macro in ASCII format; this line is not user configurable. The bottom line keeps track of which part of the macro being edited, and is updated by the utility as editing takes place. The insert, delete, and cursor control keys on the full-stroke keyboard are active for editing. When a key is selected from the Edit Macro option, the menu bar displays the following choices: Exit, Cut, Copy, Paste, Codes, Hex, and I/O (Insert/Overtype). The macro for the chosen key is also displayed. To access the menu bar, use F1.
Edit/Cut	Cut deletes a sequence of scan codes from the macro. To select a section to cut: 1. Place the cursor on the first character to cut. 2. Press F1 (to access the menu bar choices) and select CUT. 3. Press ENTER. Cut should still be highlighted, but the cursor will appear on the Edit line. Move the cursor on the last character to cut and press ENTER. The last character of every macro is the end of the macro (EOM) and cannot be deleted.
Edit/Copy	Copy duplicates a sequence of scan codes from the macro into memory. To select the section to copy: 1. Place the cursor on the first character to copy. Press F1 and select Copy. 2. Press ENTER. Copy should still be highlighted, but the cursor will appear on the Edit line. 3. Move the cursor to the last character to copy and press ENTER. The copied item does not appear on the screen until you select Paste.
Edit/Paste	Paste inserts a sequence of scan codes (which were saved in memory using Copy) into the macro. To paste a sequence of scan codes that were previously copied, position the cursor where you want the text to appear and then press F1. Select Paste and then press ENTER. Codes displays a table of keys and their scan codes in Hex. See the Codes section in this chapter for a complete code listing. Hex/Decimal toggles between displaying the scan codes in Hex and Decimal formats. I/O allows you to either insert text or type over text in the code(s). Use the Insert key on your full-stroke external keyboard to toggle between insert and overtype mode.

Note

The 3300KP(T) units do not support the programming of special functions such as caps lock, Number lock, or scroll lock.

Upload Menu

Use the Upload Menu to access the keypad version. As illustrated in Table 4-4, the choices in this menu are Keypad Version and Exit.

Table 4-4. Upload Menu

Command	Description
Keypad Version	Commands the keyboard controller to send its firmware revision number.
Exit	Returns to the Main Menu.

Download Menu

Note

Download contains no options. If you select Download, any macro set previously programmed is overwritten.

Caution

The macros set in memory should be saved before downloading. If they are not saved, all changes will be lost.

Download should be used only after all the keypad keys have been programmed and saved to a *.pkm file. Selecting Download prior to saving changes will result in a loss of all keypad macro programming.

When you select Download, the program creates a download file called *download.dld* and loads the keypad controller's non-volatile memory with the new macros, which become the new key definitions for the keypad. After the download is complete, the system will prompt you to cycle power.

Utilities Menu

When the Utilities menu is selected, two choices are displayed: Factory Default, and Exit. Table 4-5 explains these choices.

Table 4-5. Utilities Menu

Command	Description
Factory Default	Reprograms the keypad macros to the factory default settings. After completion, the system will need to be power cycled.
Exit	Returns to the Main Menu.

Utility Batch Mode

The Utility Batch Mode can be used to reprogram keypads on multiple units with the same customized keypad macros. This feature is useful because it allows you to do the reprogramming without having to enter the full keypad utility for each individual unit. After you have programmed the first keypad macros, you will need to create a DOS-bootable diskette to run the Utility Batch Mode.

You will need to extract files from the Documentation and Support Library CD-ROM to for the diskette. The necessary files can be found in the folder,

DRIVERS\Keypad Software\Keypad Utility 1.1 142606-001

Save the following files from the CD-ROM to the root directory on your DOS-bootable diskette:

- H8flash.exe
- KP3util.exe
- H8fload.mot
- *.pkm
- codes.pkm
- symbols.pkm
- download.dld

Then, insert the diskette into the unit you want to reprogram and reboot it. At the DOS prompt, type the *kp3util *.pkm* to run the reprogramming function. This utility can be used on as many units as necessary.

Note

The **.pkm* file is the macro file you saved in the earlier step. The * indicates the name you selected for the file.

Note

The *download.dld* file was created after the last keypad programming process. The programming process could be either new keypad programming, or the reprogramming of the keypad to the factory default settings.

Keypad Scan Codes

Table 4-6 through Table 4-13 list the default keypad scan codes produced by the keypad utility.

Table 4-6. Keypad Codes for Lowercase Letters

Key	Edit Mode in Macros Edit Menu	Make Code	Break Code
a	1C	1C	F0 1C
b	32	32	F0 32
c	21	21	F0 21
d	23	23	F0 23
e	24	24	F0 24
f	2B	2B	F0 2B
g	34	34	F0 34
h	33	33	F0 33
i	43	43	F0 43
j	3B	3B	F0 3B
k	42	42	F0 42
l	4B	4B	F0 4B
m	3A	3A	F0 3A
n	31	31	F0 31
o	44	44	F0 44
p	4D	4D	F0 4D
q	15	15	F0 15
r	2D	2D	F0 2D
s	1B	1B	F0 1B
t	2C	2C	F0 2C
u	3C	3C	F0 3C
v	2A	2A	F0 2A
w	1D	1D	F0 1D
x	22	22	F0 22
y	35	35	F0 35
z	1A	1A	F0 1A

Table 4-7. Keypad Codes for Left-Shifted (Uppercase) Letters

Key	Edit Mode in Macros Edit Menu	Make Code	Break Code
A	12 1C	12 1C	F0 1C F0 12
B	12 32	12 32	F0 32 F0 12
C	12 21	12 21	F0 21 F0 12
D	12 23	12 23	F0 23 F0 12
E	12 24	12 24	F0 24 F0 12
F	12 2B	12 2B	F0 2B F0 12
G	12 34	12 34	F0 34 F0 12
H	12 33	12 33	F0 33 F0 12
I	12 43	12 43	F0 43 F0 12
J	12 3B	12 3B	F0 3B F0 12
K	12 42	12 42	F0 42 F0 12
L	12 4B	12 4B	F0 4B F0 12
M	12 3A	12 3A	F0 3A F0 12
N	12 31	12 31	F0 31 F0 12
O	12 44	12 44	F0 44 F0 12
P	12 4D	12 4D	F0 4D F0 12
Q	12 15	12 15	F0 15 F0 12
R	12 2D	12 2D	F0 2D F0 12
S	12 1B	12 1B	F0 1B F0 12
T	12 2C	12 2C	F0 2C F0 12
U	12 3C	12 3C	F0 3C F0 12
V	12 2A	12 2A	F0 2A F0 12
W	12 1D	12 1D	F0 1D F0 12
X	12 22	12 22	F0 22 F0 12
Y	12 35	12 35	F0 35 F0 12
Z	12 1A	12 1A	F0 1A F0 12

Table 4-8. Keypad Codes for Numeric and Punctuation Keys

Key	Edit Mode in Macros Edit Menu	Make Code	Break Code
`	0E	0E	F0 0E
1	16	16	F0 16
2	1E	1E	F0 1E
3	26	26	F0 26
4	25	25	F0 25
5	2E	2E	F0 2E
6	36	36	F0 36
7	3D	3D	F0 3D
8	3E	3E	F0 3E
9	46	46	F0 46
0	45	45	F0 45
-	4E	4E	F0 4E
=	55	55	F0 55
[	54	54	F0 54
]	5B	5B	F0 5B
\	5D	5D	F0 5D
;	4C	4C	F0 4C
‘	52	52	F0 52
,	41	41	F0 41
.	49	49	F0 49
/	4A	4A	F0 4A

Table 4-9. Keypad Codes for Left-Shifted Punctuation Keys

Key	Edit Mode in Macros Edit Menu	Make Code	Break Code
~	0E	0E	F0 0E
!	16	16	F0 16
@	1E	1E	F0 1E
#	26	26	F0 26
$	25	25	F0 25
%	2E	2E	F0 2E
^	36	36	F0 36
&	3D	3D	F0 3D
*	3E	3E	F0 3E
(	46	46	F0 46
)	45	45	F0 45
_	4E	4E	F0 4E
+	55	55	F0 55
{	54	54	F0 54
}	5B	5B	F0 5B
|	5D	5D	F0 5D
:	4C	4C	F0 4C
“	52	52	F0 52
<	41	41	F0 41
>	49	49	F0 49
?	4A	4A	F0 4A

Table 4-10. Keypad Codes for Control & Miscellaneous Keys

Key	Edit Mode in Macros Edit Menu	Make Code	Break Code
Tab	0D	0D	F0 0D
Left Shift Tab	12 0D	12 0D	F0 0D F0 12
Caps Lock	58	58	F0 58
Left Shift	12	12	F0 12
Right Shift	59	59	F0 59
Left Ctrl	14	14	F0 14
Right Ctrl	E0 14	E0 14	E0 F0 14
Left Alt	11	11	F0 11
Right Alt	E0 11	E0 11	E0 F0 11
Space Bar	29	29	F0 29
Backspace	66	66	F0 66
Left Enter	5A	5A	F0 5A
Esc	76	76	F0 76
Insert	E2	E0 12 E0 70	E0 F0 70 E0 F0 12
Home	E3	E0 12 E0 6C	E0 F0 6C E0 F0 12
][	E3	E0 12 E0 6C	E0 F0 6C E0 F0 12
Page Up	E4	E0 12 E0 7D	E0 F0 7D E0 F0 12
PREV	E4	E0 12 E0 7D	E0 F0 7D E0 F0 12
Delete	E5	E0 12 E0 71	E0 F0 71 E0 F0 12
End	E6	E0 12 E0 69	E0 F0 69 E0 F0 12
Page Down	E7	E0 12 E0 7A	E0 F0 7A E0 F0 12
NEXT	E7	E0 12 E0 7A	E0 F0 7A E0 F0 12
Up Cursor	E8	E0 12 E0 75	E0 F0 75 E0 F0 12
Left Cursor	E9	E0 12 E0 6B	E0 F0 6B E0 F0 12
Right Cursor	EA	E0 12 E0 74	E0 F0 74 E0 F0 12
Down Cursor	EB	E0 12 E0 72	E0 F0 72 E0 F0 12
/	EC	E0 12 E0 4A	E0 F0 4A E0 F0 12
Print Screen	ED	E0 12 E0 7C	E0 F0 7C E0 F0 12
Pause/Break	EE	E0 12 E0 7E	E0 F0 7E E0 F0 12
SysRq PS2	ED	E0 12 E0 7C	E0 F0 7C E0 F0 12
SysRq 88 #1	84	84	F0 84
SysRq 88 #2	7F	7F	F0 7F

Table 4-10. Keypad Codes for Control & Miscellaneous Keys

Key	Edit Mode in Macros Edit Menu	Make Code	Break Code
Scroll Lock	7E	7E	F0 7E
Num Lock	77	77	F0 77
Right *	7C	7C	F0 7C
Right -	7B	7B	F0 7B
Right +	79	79	F0 79
Right Enter	E0 5A	E0 5A	E0 F0 5A

Table 4-11. Keypad Codes for Numeric/Control Keys (with Numlock on)

Key	Edit Mode in Macros Edit Menu	Make Code	Break Code
.	71	71	F0 71
0	70	70	F0 70
1	69	69	F0 69
2	72	72	F0 72
3	7A	7A	F0 7A
4	6B	6B	F0 6B
5	73	73	F0 73
6	74	74	F0 74
7	6C	6C	F0 6C
8	75	75	F0 75
9	7D	7D	F0 7D
Del	12 71	12 71	F0 71 F0 12
Ins	12 70	12 70	F0 70 F0 12
End	12 69	12 69	F0 69 F0 12
Down Cursor	12 72	12 72	F0 72 F0 12
PgDn	12 7A	12 7A	F0 7A F0 12
Left Cursor	12 6B	12 6B	F0 6B F0 12
Blank	12 73	12 73	F0 73 F0 12
Right Cursor	12 74	12 74	F0 74 F0 12
Home	12 6C	12 6C	F0 6C F0 12
Up Cursor	12 75	12 75	F0 75 F0 12
PgUp	12 7D	12 7D	F0 7D F0 12

Table 4-12. Keypad Codes for Function Keys F1-F20

Key	Edit Mode in Macros Edit Menu	Make Code	Break Code
F1	FF 01	05	F0 05
F2	FF 02	06	F0 06
F3	FF 03	04	F0 04
F4	FF 04	0C	F0 0C
F5	FF 05	03	F0 03
F6	FF 06	0B	F0 0B
F7	FF 07	83	F0 83
F8	FF 08	0A	F0 0A
F9	FF 09	01	F0 01
F10	FF 0A	09	F0 09
F11	78	78	F0 78
F11 (Shift F1)	FF 0B	12 05	F0 05 F0 12
F12	07	07	F0 07
F12 (Shift F2)	FF 0C	12 06	F0 06 F0 12
F13	FF 0D	12 04	F0 04 F0 12
F14	FF 0E	12 0C	F0 0C F0 12
F15	FF 0F	12 03	F0 03 F0 12
F16	FF 10	12 0B	F0 0B F0 12
F17	FF 11	12 83	F0 83 F0 12
F18	FF 12	12 0A	F0 0A F0 12
F19	FF 13	12 01	F0 01 F0 12
F20	FF 14	12 09	F0 09 F0 12

Table 4-13. Keypad Codes for Function Keys F21-F40 or PF1-PF20

Symbol	Edit Seq.	AT Make	AT Break	XT Make	XT Break
F21 or PF1	FF 15	14 05	F0 05 F0 14	1D 3B	BB 9D
F22 or PF2	FF 16	14 06	F0 06 F0 14	1D 3C	BC 9D
F23 or PF3	FF 17	14 04	F0 04 F0 14	1D 3D	BD 9D
F24 or PF4	FF 18	14 0C	F0 0C F0 14	1D 3E	BE 9D
F25 or PF5	FF 19	14 03	F0 03 F0 14	1D 3F	BF 9D
F26 or PF6	FF 1A	14 0B	F0 0B F0 14	1D 40	C0 9D
F27 or PF7	FF 1B	14 83	F0 83 F0 14	1D 41	C1 9D
F28 or PF8	FF 1C	14 0A	F0 0A F0 14	1D 42	C2 9D
F29 or PF9	FF 1D	14 01	F0 01 F0 14	1D 43	C3 9D
F30 or PF10	FF 1E	14 09	F0 09 F0 14	1D 44	C4 9D
F31 or PF11	FF 1F	11 05	F0 05 F0 11	38 3B	BB B8
F32 or PF12	FF 20	11 06	F0 06 F0 11	38 3C	BC B8
F33 or PF13	FF 21	11 04	F0 04 F0 11	38 3D	BD B8
F34 or PF14	FF 22	11 0C	F0 0C F0 11	38 3E	BE B8
F35 or PF15	FF 23	11 03	F0 03 F0 11	38 3F	BF B8
F36 or PF16	FF 24	11 0B	F0 0B F0 11	38 40	C0 B8
F37 or PF17	FF 25	11 83	F0 83 F0 11	38 41	C1 B8
F38 or PF18	FF 26	11 0A	F0 0A F0 11	38 42	C2 B8
F39 or PF19	FF 27	11 01	F0 01 F0 11	38 43	C3 B8
F40 or PF20	FF 28	11 09	F0 09 F0 11	38 44	C4 B8

Note

If you make any changes to your keypad and want to set it back to the default settings, open the file titled `DEF3308PC.PKM` or `DEF3308HMI.PKM` from the File/Open menu and then download it from the download menu.

Warning

Do *not* save any changes to the default files.

Chapter 5 – Motherboard and BIOS Setup

Motherboard and BIOS Setup Overview

To change the CMOS settings for the 3300 BIOS, you must hit <F1> early in the 3300's Power-On Self-Test period. The 3300 will display a message at the top of the screen during this period. Facsimiles of the various submenus (as each displays on the screen) are shown in the following sections. The menu navigation keystrokes are listed below. The keystrokes allow you to set and/or modify the values of the menu options.

- <F1> or <ALT-H> displays General Help Screen. The specific Help messages will be outlined in each specific menu section
- <UP> and <DOWN> Arrow keys move between the menu options
- <Home> or <End> moves to top or bottom of current menu
- To choose an item, enter the letter next to the option description
- <Enter> cycles through all options for each item that has options
- <L>, in the Main Menu, loads factory installed Setup Default Values
- <Q>, in the Main Menu, quits (i.e., exits Setup without saving changes)
- <S>, in the Main Menu, saves current settings without exiting Setup
- <X>, in the Main Menu, saves current settings and exits Setup

Main Setup Menu

The first two options, changing the time and/or date, are performed from this main setup menu. The next four selections lead to submenus where the settings are verified and/or modified. The last four selections are the options for accepting or discarding any changes performed during this session.

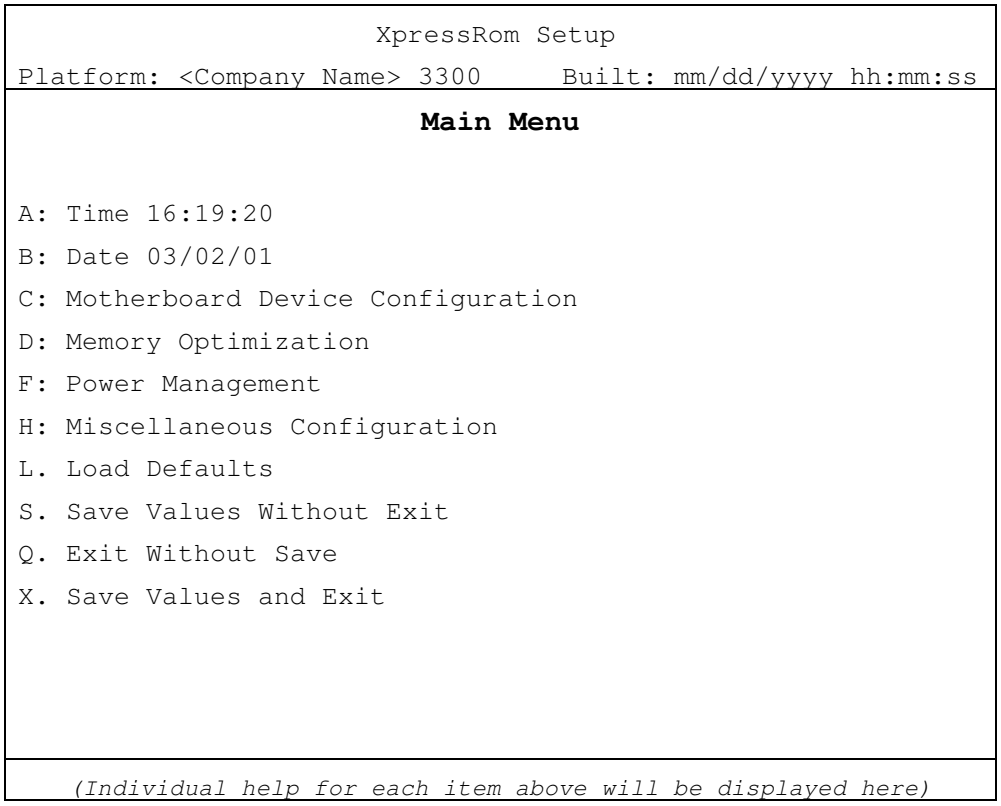


Figure 5-1. Main Menu Setup Screen

System Time

Valid values for the RTC (Real Time Clock) range from 0:0:00 through 23:59:59. Note that entering the seconds is optional. To change the time, press “A” to choose that option, and enter the current time in the format hh:mm:ss. To accept the value you have entered, press <Enter>, or press <Esc> to exit the selection without changing the setting.

System Date

Valid values for the date range from 1/1/1980 through 12/31/2099. To change the date, press “B” to choose that option, and enter the current date in the format of mm/dd/yyyy. To accept the value you have entered, press <Enter> or press <Esc> to exit the selection without changing the setting.

Motherboard Device Configuration Submenu

The Motherboard Device Configuration Submenu screen is an intermediate screen. It provides links to the specific configuration screens for the various functional areas. No settings are viewed, entered, or modified in this screen.

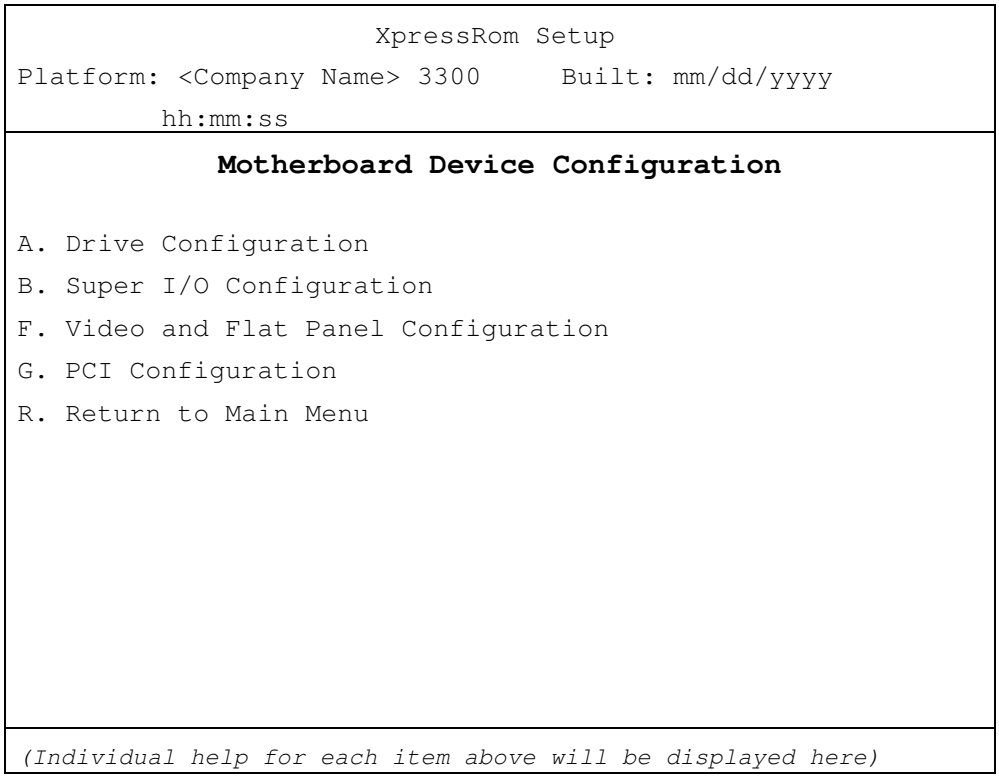


Figure 5-2. Motherboard Device Configuration Submenu Screen

Drive Configuration Submenu

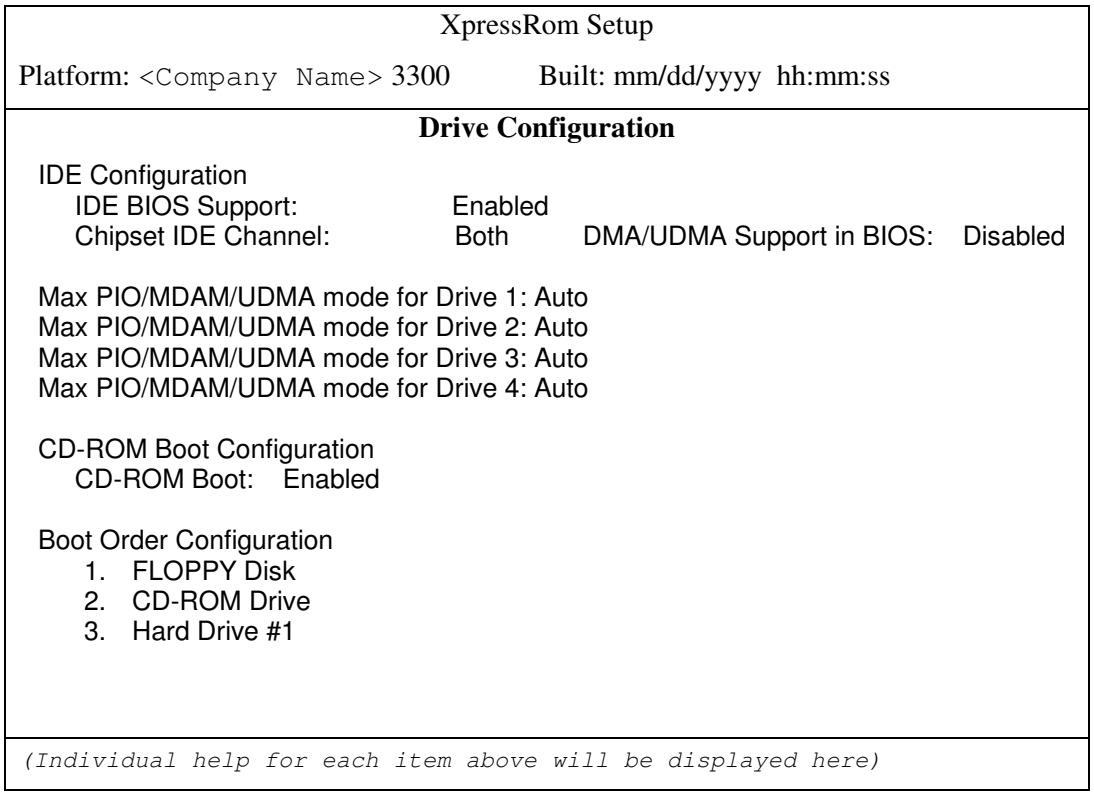


Figure 5-3. Drive Configuration Submenu

Note

The 3300 series does not include a CD-ROM drive. The unit will boot up properly, even if the CD-ROM drive is listed in the Boot Order configuration.

The Drive Configuration submenu offers two choices: IDE Configuration and Boot Order Configuration. If you wish to reconfigure either of these items, the factory default settings and other allowable values are detailed in the following list.

IDE Configuration

IDE BIOS Support: Enable/Disable INT 13h interface in BIOS for IDE drives

Chipset IDE Channel: Enable/Disable Chipset IDE channel for primary/secondary controller

Chipset Floppy: Enable/Disable chipset floppy controller

CD-ROM Boot: Enable/Disable CD-ROM Boot option

Boot Order Configuration

These settings allow you to specify the order in which the system will search devices for a boot record. If the CD-ROM boot option is not enabled above, it will be skipped in the boot order. Three boot devices can be specified. Each device can be used only once in the list. None is also a valid choice.

Default Value: 1. Floppy Disk, 2. CD-ROM Drive, 3. Hard Drive #1

Valid Values: Floppy Drive, Hard Drive, CD-ROM, None

Super I/O Configuration Submenu

The Super I/O screens are used to allocate interrupts and I/O addresses to the serial and parallel ports. The factory default settings and other allowable values are detailed in the following list.

Serial Port Configuration

Serial Port A Valid Values: Disabled, 0x3f8 IRQ 4 (default), 0x2f8 IRQ 3, 0x3e8 IRQ 4, 0x2e8 IRQ 3

Serial Port B Valid Values: Disabled, 0x3f8 IRQ 4, 0x2f8 IRQ 3 (default), 0x3e8 IRQ 4, 0x2e8 IRQ 3

Parallel Port Configuration

Parallel Port A Valid Values: 0x378 (default), 0x278, 0x3BC, Disabled

Mode Valid Values: Compatible, EPP 1.7, EPP 1.9, ECP, PS/2 Bi-directional (default)

IRQ Valid Values: IRQ 7 (default), Disabled, IRQ 5

DMA Valid Values: None (default), Channel 3, Channel 1

```
                          XpressRom Setup
Platform: <Company Name> 3300      Built: mm/dd/yyyy hh:mm:ss

                       Super I/O Configuration

Serial Port Configuration
  Serial Port A: 0x3f8 IRQ 4
  Serial Port B: 0x2f8 IRQ 3


Parallel Port Configuration
  Parallel Port A: 0x378
    MODE: PS/2 Bi-directional (EPP 1.9)
    IRQ:  IRQ 7
    DMA:  NONE



(Individual help for each item above will be displayed here)
```

Figure 5-4. I/O Configuration Screen

Video and Flat Panel Configuration Submenu

The Video configuration screens are used to set up and configure the video support. The factory default settings and other allowable values are detailed in the following list.

Video Memory

Valid Values: 4.0MB (default), NONE, 1.0MB, 1.5MB, 2.0MB, 2.5MB, 3.0MB, 3.5MB

Help Message: Select the amount of memory to reserve for video.

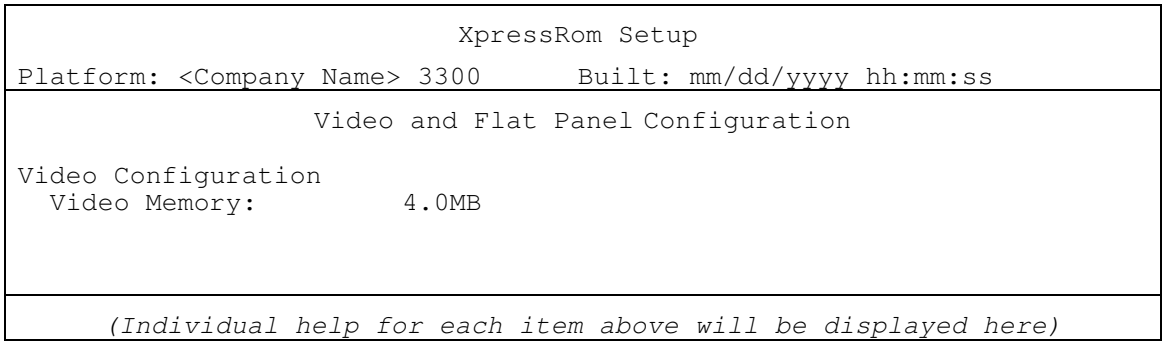


Figure 5-5. Video and Flat Panel Configuration Screen

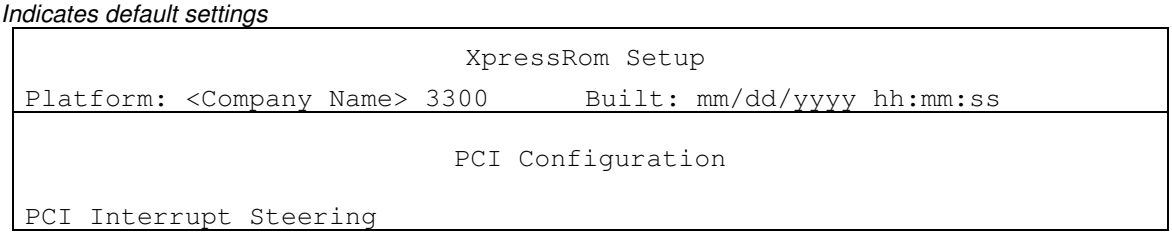
PCI Configuration Submenu

The PCI Configuration submenu allows you to view and modify the PCI settings on your 3300 unit. The following table outlines the options for the PCI configuration settings.

Table 5-1. PCI Configuration Settings

Setting	Valid Values	Help Message
PCI INTA#	IRQ 1*, IRQ 12, IRQ 14, IRQ 15, Disabled, IRQ 1, IRQ 3, IRQ 4, IRQ 5, IRQ 6, IRQ 7, IRQ 9, IRQ 11	Enable/Disable INTA# to IRQ steering.
PCI INTB#	IRQ 11*, IRQ 12, IRQ 14, IRQ 15, Disabled, IRQ 1, IRQ 3, IRQ 4, IRQ 5, IRQ 6, IRQ 7, IRQ 9, IRQ 10	Enable/Disable INTB# to IRQ steering.
PCI INTC#	IRQ 9, IRQ 10, IRQ 11*, IRQ 12, IRQ 14, IRQ 15, Disabled, IRQ 1, IRQ 3, IRQ 4 IRQ 5, IRQ 6, IRQ 7	Enable/Disable INTC# to IRQ steering.
PCI INTD#	IRQ 9*, IRQ 10, IRQ 11, IRQ 12, IRQ 14, IRQ 15, Disabled, IRQ 1, IRQ 3, IRQ 4 IRQ 5, IRQ 6, IRQ 7	Enable/Disable INTD# to IRQ steering.
32-bit Configuration Interface	Enabled*, Disabled	Enable/Disable the 32-bit PCI Configuration Interface.

* *Indicates default settings*



```
  PCI INTA#: IRQ 10
  PCI INTB#: IRQ 11
  PCI INTC#: IRQ 11
  PCI INTD#: IRQ  9

32-Bit PCI Configuration Interface
  32-Bit Configuration Interface:  Enabled
```

(Individual help for each item above will be displayed here)

Figure 5-6. PCI Configuration Screen

Memory Optimization Submenu (Cache and Memory Timing)

The Memory Optimization Submenu allows you to view and modify the cache and memory timing settings. The following table details the available options for these settings.

Table 5-2. Memory Optimization Settings and Values

Setting	Valid Values	Help Message
Cache Enable	Enable*, Disable	None
Cache Mode	Write-back*, Write-through	None
Memory Optimization	Auto*, Aggressive, Conservative, Manual[1]	None

** Indicates default settings*

[1] Items below this option will not be selectable until "Manual" is selected. Then, the "Load current values from CPU" option will become available. Available selectioning for manual mode are numerous and not listed here.

```
                          XpressRom Setup
Platform: <Company Name> 3300      Built: mm/dd/yyyy hh:mm:ss
                     Cache and Memory Timing

Cache Enable:  Enabled            Cache Mode:    Write-back

Memory Optimization: Auto           Load current values from CPU


MC_MEM_CNTRL1                         MC_SYNC_TIM1
  MD High Drive:           5                CAS Latency:  2 Clk
  MA/BA High Drive:        5                tRC:          8 Clk
  HD/Slew Control:         1                tRAS:         6 Clk
  SDRAM Clock Ratio:       4.5              tRP:          3 Clk
  Refresh Timing Interval: 0x39             tRCD:         2 Clk
  Refresh Stagger:         0 SDRAM Clocks   tRRD:         1
  2 CLK ADDR Setup:        Disabled         tDPL:         2 Clk
  SMM Mapping:             Enabled
  X-BUS Round Robin:       Enabled


MC_MEM_CTRL2
  SDRAM Shift SDCLK:  1.5
  Read Data Phase:    1 Core Clock
  Fast Read Mask:     Disabled

    (Individual help for each item above will be displayed here)
```

Figure 5-7. Cache and Memory Timing Screen

Power Management Submenu

Great care should be taken when administering Advanced Power Management on PCs in industrial and process applications. In most control and HMI applications, the computer and display must be active at all times. Injury or damage to machinery or product could result if the computer or display shuts down after a period of "inactivity".

Table 5-3. Power Management Settings and Values

Power Management Setting	Valid Values	Help Message
Power Management Mode	Legacy & APM*, Disabled, Legacy	None
Idle/Doze Timeout	Disabled*, 1 second, 5 seconds, 10 seconds, 15 seconds, 30 seconds, 45 second, 1 minute, 5 minutes, 10 minutes, 15 minutes, 30 minutes, 45 minutes, 60 minutes, 90 minutes, 120 minutes	None
Video Timeout	Disabled*, 1 second, 5 seconds, 10 seconds, 15 seconds, 30 seconds, 45 seconds, 1 minute, 5 minutes, 10 minutes, 15 minutes, 30 minutes, 45 minutes, 60 minutes, 90 minutes, 120 minutes	None
Standby Timeout	Disabled*, 1 second, 5 seconds, 10 seconds, 15 seconds, 30 seconds, 45 seconds, 1 minute, 5 minutes, 10 minutes, 15 minutes, 30 minutes, 45 minutes, 60 minutes, 90 minutes, 120 minutes	None
Suspend Timeout	Disabled*, 1 second, 5 seconds, 10 seconds, 15 seconds, 30 seconds, 45 seconds, 1 minute, 5 minutes, 10 minutes, 15 minutes, 30 minutes, 45 minutes, 60 minutes, 90 minutes, 120 minutes	None
HDD Timeout	Disabled*, 1 second, 5 seconds, 10 seconds, 15 seconds, 30 seconds, 45 seconds, 1 minute, 5 minutes, 10 minutes, 15 minutes, 30 minutes, 45 minutes, 60 minutes, 90 minutes, 120 minutes	None

** Indicates default settings*

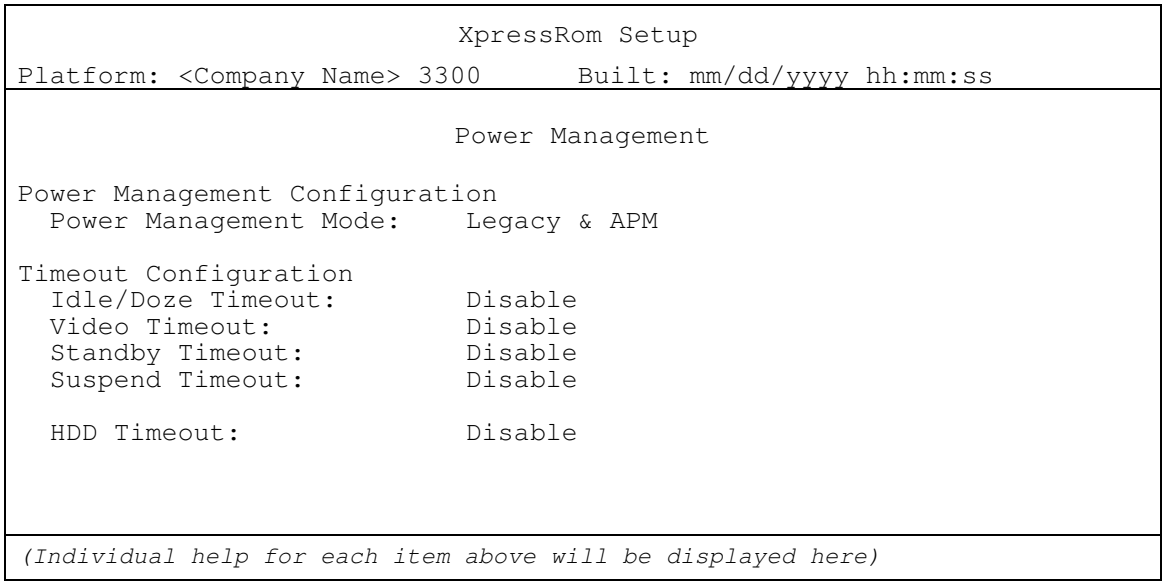


Figure 5-8. Power Management Configuration Screen

Miscellaneous Configuration

The Miscellaneous Configuration submenu allows you to view and modify the settings for the splash screen and the summary screen. The following table details the available options for these settings.

Table 5-4. Miscellaneous Configuration Settings

Configuration Setting	Valid Values	Help Message
Splash Screen	Enabled*, Disabled	Enable/Disable display of splash screen.
Clear Splash Screen	Disabled*, Enabled	Enable/Disable clearing of splash screen after display (if enabled).
Splash Screen Timeout	User entered value from 0-65535 (default value is 00010)	Enable/Disable splash screen delay/timeout after display (if enabled).
Summary Screen	Enabled*, Disabled	Enable/Disable display of splash screen.
Summary Screen Timeout	User entered value from 0-65535 (default value is 00010)	Enable/Disable summary screen delay/timeout after display (if enabled).

** Indicates default settings*

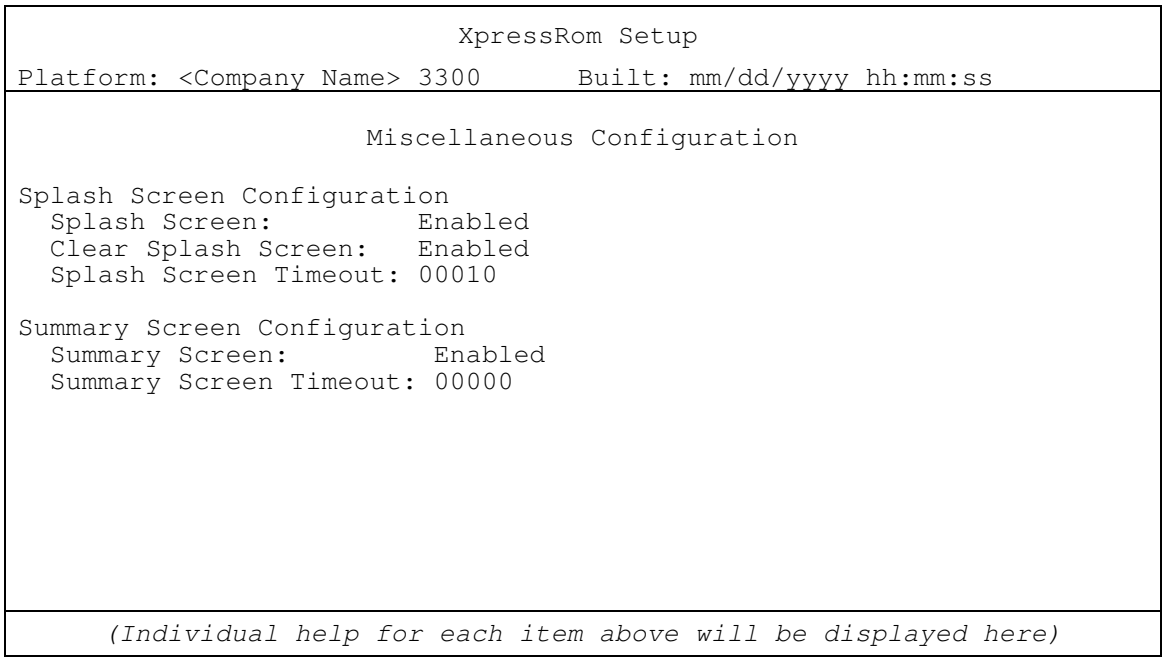


Figure 5-9. Miscellaneous Configuration Screen

3300 System Memory Map

The following table outlines the 3300 System Memory Map.

Table 5-5. 3300 System Memory Map

Address Range (Hex)	Size	Device
FFFC0000 - FFFFFFFF	256K	SYSTEM BIOS
End of DRAM – FFFBFFFF	xxxK	PCI Memory space**
00100000 - end of DRAM	xxxK	DRAM *
000F0000 - 000FFFFF	64K	SYSTEM BIOS
000E0000 - 000EFFFF	64K	Reserved for SYSTEM BIOS
000C8000 - 000DFFFF	96K	AT ISA bus memory
000C0000 - 000C7FFF	48K	VGA BIOS
000A0000 - 000BFFFF	128K	VGA DRAM MEMORY
0009FC00 - 0009FFFF	1K	DRAM BIOS BDA
00000000 - 0009FBFF	638K	DRAM

** See chipset data sheet for description of optional settings for assigning memory holes or gaps within memory map area.*

*** PCI steals blocks of memory in this space for various uses.*

3300 I/O Map

The I/O map for the 3300 units is fixed. The I/O map contains all the I/O ports of the IBM AT architecture and some additions. The following table lists the I/O map for the 3300 units.

Table 5-6. 3300 I/O Map

Hex Range	Device	Hex Range	Device
000-01F	DMA controller 1, 8237A-5 equivalent	1F0-1F7	Primary IDE Controller (AT Drive)
020-03F	Interrupt controller 1, 8259 equivalent	1F8-22F	Available
03F0/03F1 or 370/371	SIO configuration index/data registers (note 5)	230	Reserved
040-05F	Timer, 8254-2 equivalent	231	Reserved for LED port
060, 062, 064, 066	8742 equivalent (keyboard/mouse) (note 3, 5)	233	Reserved Flash control register
061	Port B Control	234	Reserved IO port control register
070-07F	Real Time Clock bit 7 NMI mask (note 3)	235-277	Available
080-091	DMA page register (note 3)	278-27F	Parallel Port 2 (note 1, 3, 5), (Aliases A[10])
092	Port A, Reset (Bit 0)/ Fast Gate A20 (Bit 1)	280-2F7	Available
93-9F	DMA page registers continued (note 3)	2F8-2FF	Serial Port 2 (note 1, 3, 5)
0A0-0B1 and 0B4-0BF	Interrupt controller 2, 8259 equivalent (note 3)	300-36F	Available
0B2 and 0B3	APM control and status port respectively	370-377	Alt. Floppy Disk Controller (note 1) / Secondary IDE
0C0-0DF	DMA controller 2, 8237A-5 equivalent (note 3)	378-37F	Parallel Port 1 (note 1, 3, 5), (Aliases A[10])
0E0-0EF	Available	380-3AF	Available
0F0	N/A	3B0-3BB and 3BF	Mono/VGA mode video (Aliases A[15:10]), (note 2)
0F1	N/A	3BC-3BE	Reserved for parallel port), (Aliases A[10])
0F2-0F3	N/A	3C0-3DF	VGA registers (Aliases A[15:10]), (note 2)

Table 5-6. 3300 I/O Map

Hex Range	Device	Hex Range	Device
0F4	IDE ID port	3E0-3EF	Available
0F5-0F7	N/A	3F0-3F7	Primary Floppy disk controller / Primary IDE
0F8	IDE Index port	3F8-3FF	Serial port 1 (note 1, 3, 5)
0F9-0FB	N/A	400-43B	FP control registers for the National® CS9211
0FC	IDE Data port	4D0	Master PIC Edge/Level Trigger register
0FD-0FF	N/A	4D1	Slave PIC Edge/Level Trigger register
100-179	Available	CF8-CFB	PCI configuration address register (32 bit I/O only), (note 4)
170-177	Secondary IDE Controller (AT Drive)	CF9	Reset Control register (8 bit I/O)
180-181	Reserved for SRAM control register (May be remapped)	CFC-CFF	PCI configuration data register (note 4)
182-1EF	Available		

Note 1: The serial and parallel port addresses may be changed or the port may be disabled. Therefore, these addresses may be used for some applications and not for others.
Note 2: Reference the National ® GX1 data book for detailed information.
Note 3: Reference the National ® 5530A data book for detailed information.
Note 4: Reference the PCI local bus specification rev 2.1, for PCI configuration information.
Note 5: Reference the Winbond 83977F data book for detailed information.

Interrupt Map

There are two Serial ports on the 3300 that can be mapped to either Interrupt 3 or Interrupt 4. There is one parallel port that can be mapped to IRQ5 or IRQ7. The BIOS setup menu is used to control the location and interrupts for the serial and the parallel port. The following table contains the settings for the Interrupt Map.

Table 5-7. 3300 Interrupt Map

Interrupt	Description
IRQ0	System Timer
IRQ1	Keyboard
IRQ2	Cascade
IRQ3	Serial Port (BIOS setup controlled)
IRQ4	Serial Port (BIOS setup controlled)
IRQ5	Parallel Port (BIOS setup controlled)
IRQ6	Floppy Controller
IRQ7	Parallel Port (BIOS setup controlled)
IRQ8	Real Time Clock
IRQ9	Unused
IRQ10	Default PNP PCI USB
IRQ11	Default PNP PCI Ethernet
IRQ12	Mouse Port
IRQ13	Math Co
IRQ14	Primary IDE (master, slave)
IRQ15	Secondary IDE (master, slave)

> **Note**
>
> The BIOS also controls the mapping of the PCI interrupts to AT-bus interrupts. This means that if a PCI device is plugged into a slot and needs an interrupt, one of the AT-bus interrupts must be mapped to the PCI interrupt.

DMA Mapping

The DMA channels 0-3 are 8-bit while channels 5-7 are 16-bit. When the ECP option is enabled, one of the 8-bit DMA channels will be used. The following table lists the DMA channel mappings and descriptions.

Table 5-8. DMA Channel Mapping

DMA Channel	Description
DMA0	Unused
DMA1	Unused (Could be used for EPP/ECP parallel port option)
DMA2	Floppy Controller
DMA3	Unused (Could be used for EPP/ECP parallel port option)
DMA5	Unused
DMA6	Unused
DMA7	Unused

3300 PCI Devices

The following table outlines the available 3300 PCI devices.

Table 5-9. 3300 PCI Devices

IDSEL (Addr)[1]	Device Name	PCI Address	PCI DID/VID	PCI Bus #	PCI Device #	Vendor Name	Device or Func Description Note B:D:F values in hex.
N/A	National 5530A	80**000000**[2]	0001/1078	0	0d/0h Func. 0	National	Host-Hub Interface Bridge
AD10+ Dev. #	Realtek 8100B	80**0068**00	8139/10EC	0	13d/0dh Func. 0	Realtek	LAN Controller Registers (B0:D0d:F0)
AD10+ Dev. #	National 5530A	80**0090**00	0100/1078	0	18d/12h Func. 0	National	PCI to ISA Bridge (B0:D12:F0)
AD10+ Dev. #	National 5530A	80**0091**00	0101/1078	0	18d/12h Func. 1	National	Hub Interface to PCI Bridge Registers (B0:D12:F1)
AD10+ Dev. #	National 5530A	80**0092**00	0102/1078	0	18d/12h Func. 2	National	IDE Controller Registers (B0:D12:F2)
AD10+ Dev. #	National 5530A	80**0093**00	0103/1078	0	18d/12h Func. 3	National	XpressAudio Controller Registers (B0:D12:F3)
AD10+ Dev. #	National 5530A	80**0094**00	0104/1078	0	18d/12h Func. 4	National	Graphics Device Registers (B0:D12:F4)
AD10+ Dev. #	National 5530A	80**0098**00	A0F8/0E11	0	19d/13h Func 0	National	USB Controller Registers, PCI Config. Registers (B0:D13:F0)

[1] *AD10 + the decimal value of the device # equals the Address line used. E.g. AD10+13=AD23 is IDSEL for LAN*

[2] *Bold portion is equal to the PFA to which the BIOS typically refers.*

3300 Base Addresses in 5530A

The following table outlines the 3300 Base Addresses in 5530A.

Table 5-10. 3300 Base Addresses in 5530A

Base Address Name	Hex Address is determined by:	Access method	Adjusted Hex Value[1]	Configuration Size (bits)
GPCS BASE	80000070	PCI configuration space	0000	16
UDEF1 BASE	800000C0	PCI configuration space	0000	16
UDEF2 BASE	800000C4	PCI configuration space	0000	16
UDEF3 BASE	800000C8	PCI configuration space	0000	16
USB BAR	80009810	PCI configuration space	0000	16
F1BAR*	80009110	PCI configuration space	N/A	24 + (8 range)
F2BAR*	80009220	PCI configuration space	N/A	24 + (8 range)
F3BAR*	80009310	PCI configuration space	N/A	24 + (8 range)
F4BAR*	80009410	PCI configuration space	N/A	24 + (8 range)
SMI_BASE	BIOS decides	Memory	N/A	N/A
DMABASE_CA Ch. 0-7	----------	I/O	0,2,4,6,C4,C8,CC	8*7
DMABASE_CC Ch. 0-7	----------	I/O	1,3,5,7,C6,CA,CE	8*7
Int. Vector Base Mas/Slv	----------	I/O (7:3 addr., 2:0 IRQ)	21/A1	---

[1] For all PCI configuration space I/O base addresses bit 0 is always set to 1 to indicate I/0 space. (0 indicates memory space.) Also, some of the values for the PCI configuration space addresses must be shifted to get the final value. Therefore, the values shown above reflect the actual base address rather than the address read from the PCI addresses listed.

Chapter 6 – Maintenance

The 3308, 3310 and 3312 units are designed to withstand the harsh environment of the factory floor. However, preventive and routine maintenance will help keep the system in good operating condition.

Preventive Maintenance

Preventive maintenance consists of several basic procedures that will reduce the chance of system malfunction. Schedule preventive maintenance along with the regular equipment maintenance to minimize down time.

The following are some preventive measures you can take to keep your unit in good working order:

- *Clean the monitor screen* using a non-residue cleaner such as a mild window cleaning solution or CRT screen cleaner. Take care not to scratch or mar the screen face.
- *Base your maintenance schedule* on the type of environment the system is in (i.e., if the area is dusty, schedule maintenance more often than if it is a dry, clean area).
- *Remove dust and dirt from PC components*. If dust builds up on heat sinks and circuitry, an obstruction of heat dissipation could cause the unit to malfunction. If dust reaches the electronic boards, a short circuit could occur.
- *Check connections to I/O modules*, especially in environments where shock could loosen the connections. Check all plugs, sockets, and module connections.
- *Remove unnecessary articles*, such as drawings or manuals, from the unit. They can obstruct airflow and create hot spots, which causes the system to malfunction.
- *Do not place* noise-generating equipment near the unit.
- *Replace the module with the correct type*. If the new module solves the problem but the failure reoccurs, check for inductive loads that may be generating voltage and current spikes and may require external suppression.

Pro-face Recommended Hard Drive Preventive Maintenance

Pro-face has recognized that hard drive failures may begin to increase an average of four to five years into the life of most computers used in industrial applications. Therefore, it is our recommendation as a preventive maintenance measure that all hard drives used in these types of applications be replaced before the four to five year time period to avoid any down time related to hard drive failure.

Pro-face believes it is important to keep our customers informed, to offer alternative solutions, and to provide all of our customers with the excellent service they deserve.

Any questions regarding this issue may be directed to our support center at *support@profaceamerica.com*

Note

Pro-face recommends frequent backups of your hard drive, especially before beginning preventive maintenance procedures.

Replacing the Fuse

The 3308, 3310, 3312, and 1401 units have no accessible fuse. Return the unit to Pro-face for fuse replacement.

System Battery Replacement

The 3300 series and model 1401 LPG1 CPU board includes a coin cell type lithium battery that maintains computer configuration, date, and time information when input power is removed from the system.

If the LPG1 CPU board battery life is ended then the 3300 series computer will no longer maintain the configuration information, date, or time and the battery will need to be replaced.

BATTERY SPECIFICATIONS:

Part Number:	CR2032
Voltage:	3 V
Nominal Capacity:	220 mAh

This battery must be a UL Recognized component.

BATTERY LIFETIME:

Battery current is not consumed while input power is applied to the LPG1 CPU board. However, electrolyte loss through the crimp seal will typically occur at the rate of approximately 0.5% per year at 20 degrees C (68 F). This rate will increase with higher temperatures.

The LPG1 CPU board will consume approximately 6 uA of battery current when power is removed from the motherboard. At this rate, the battery will last approximately 4.2 years in storage at 21 degrees C (70 F). This represents 100% duty cycle, or 'input power off time'. Example:

Battery Capacity = 220 mAh
IC Current Drain = 6 uA
Battery lifetime = (0.22 aH)/6 X 10^{-6} = 36,666 hours = 4.2 years.

When input power is off at the rate of 12 hours per day continuously the battery life should be approximately double the 100% duty cycle time, or 8.4 years at 21 degrees C (50% duty cycle). When input power is off at the rate of 16 hours per day the lifetime should be approximately 12.6 years (33%) duty cycle. However, the electrolyte loss through the crimp seal may reduce the 33% duty cycle lifetime somewhat.

Battery lifetime is inversely proportional to the temperature of the battery. At elevated temperatures the battery life will be decreased.

Caution

There is danger of the new battery exploding if it is incorrectly installed. Only technically qualified personnel should perform Battery replacement and disposal. Please note the disposal instructions as described in this section.

TOOLS REQUIRED:

1. Philips Screwdriver for three #6 philips screws
2. Needle nose pliers
3. Electrical tape to tape the old battery after removal
4. QWERTY keyboard to restore CMOS memory settings after replacing the lithium battery

ESD WARNING!

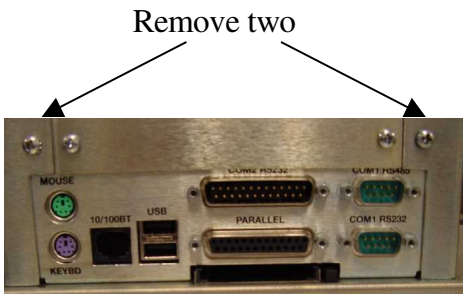
Protective measures against electrostatic discharge (ESD) must be taken when working inside of any computer. Failure to do so may result in permanent damage to electrical components within. This damage may be immediate or latent (final computer failure may occur at a later date). Be sure to make consistent 'skin to metal' contact with the computer chassis when making contact with any electrical assemblies or components.

TO GAIN ACCESS TO THE BATTERY AND REPLACE:

1. Remove power from the 3300 series computer. If installed in a panel the computer must be removed and placed screen down on a bench. To work on the computer on the bench you must first place a soft clean cloth on the clean surface of the bench in order to prevent scratches to the display overlay or touch screen. If the computer includes a front panel mouse, then be sure to prop up the bottom edge of the front panel with a soft object in order to prevent damage to the panel mouse controller. Do not rest the face of the computer on the mouse controller.

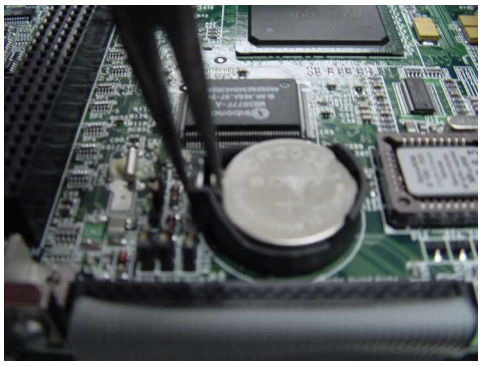
2. Remove the top cover of the rear chassis (three #6 screws). First remove the two top outermost corner screws on the rear chassis as noted in the following picture:

3. Then remove the third screw from the opposite side of the chassis as shown in the following picture:



4. Next, push the rear chassis cover away from the third screw attachment side until it stops and then lift the cover off of the unit.

5. The coin cell battery is located near the bottom edge of the LPG1 CPU board. It is marked 'CR2032' on the top. Use needle nose pliers to remove the coin cell battery by depressing the lever on the left side of the battery as shown in the following photograph:



6. Immediately apply electrical tape to the old battery on all sides in order to prevent shorting the battery. The battery may still have charge and a short may cause fire or explosion. Do not dispose of the battery with standard waste. Contact your local waste disposal agency for the address of the nearest battery deposit site.

7. Install the new battery. The '+' sign must be up and exposed. Slide one edge of the battery under the lip of the battery holder as shown in the following photograph and then press down on the battery. It will snap into place.

TO RE-ASSEMBLE THE 3300 series COMPUTER:

1. The rear chassis cover has four hooks located on the bottom edge of the cover. These four hooks must be inserted into the corresponding slots on the 3300 series front panel assembly. Insert the hooks and gently push down on the rear cover. The bottom edges must make contact with the front panel assembly. Next, push the cover horizontally until it makes contact with the single chassis screw tab on the left side.
2. Re-install the three rear chassis cover #6 screws

TO SETUP THE CMOS MEMORY:

3. Plug a QWERTY keyboard into the Keyboard port on the side of the 3300 series computer and apply power to the 3300 series computer.
4. When the screen displays "Press F1 to Enter Setup", continue to press the QWERTY keyboard F1 function every two seconds until the system enters CMOS Memory SETUP
5. When in the SETUP screen, press 'A' on the QWERTY keyboard to set the time. Enter the current time in a HH:MM:SS format. The SS (seconds) are optional.
6. Next, press "B' on the QWERTY keyboard to set the date. Enter the date in the MM/DD/YYYY format.
7. Finally, press 'X' on the QWERTY keyboard to save the configuration and exit the SETUP utility. Lithium battery replacement is now complete.

Product Repair Program

Pro-face's Product Repair & Customization Department (PR&C) restores equipment to normal operating condition and implements engineering changes that enhance operating specifications. Pro-face tests products returned to Pro-face with the standard Pro-face test diagnostics.

Follow the steps below to prepare the unit for shipment:

1. Obtain an Return Merchandise Authorization (RMA) number for your unit by visiting the Pro-face RMA Request web page and fill out the online request form:

http://www.profaceamerica.com/rma//

If you cannot fill out the online form, there is an RMA Request Form Document that can be downloaded and either E-mailed (*support@profaceamerica.com*) or Faxed (734-429-1010) to the Pro-face Customer Support Team.

If you have difficulty then please call the Pro-face Customer Support Team at (734) 944-0482.

2. Call your nearest Pro-face Repair Department or Xycom Automation, L.L.C. at 734-429-4971 or 1-800-289-9266.
3. Please have the following information:
   - Company name, shipping and billing address
   - Type of service desired: product repair or product exchange
   - Product model number, part number, quantity, serial number(s), and warranty status
   - Failure mode and failure systems
   - Purchase order number or repair order number
4. Make sure the front panel assembly is properly attached to the unit.
5. Attach failure information to the unit to speed processing.
6. Place the unit securely in its original packaging or an equivalent heavy-duty box.
7. Mark the RMA number on your purchase order and on the outside of the box.
8. Send the unit to the address given when you receive your RMA number.

Chemical Compatibility

Certain combinations of chemical environments, temperature, and stress can adversely affect parts made from thermoplastic resin. For this reason, material that may come in contact with 3308/3310/3312 units should be carefully evaluated under end-use conditions for compatibility. You should also follow the use and compatibility recommendations of the material manufacturer. Table 6-1 lists general chemical compatibility guidelines for the 3300 units.

Table 6-1. Chemical Compatibility Chart

Chemical Class	Effects
Acids	No effect under most common conditions of concentration and temperature.
Alcohols	Generally compatible at low concentration and room temperature. Higher concentrations and elevated temperatures result in etching and attack evidenced by decomposition.
Alkalis	Generally compatible at low concentration and room temperature. Higher concentrations and elevated temperatures result in etching and attack evidenced by decomposition.
Aliphatic Hydrocarbons	Generally compatible
Amines	Surface crystallization and chemical attack. Avoid.
Aromatic Hydrocarbons	Partial solvents and severe stress cracking agents. Avoid.
Detergents and cleaners	Mild soap solutions are compatible. Strong alkaline materials should be avoided.
Esters	Causes severe crystallization. Partial solvents. Avoid.
Greases and oils	Pure petroleum types generally compatible. Many additives used with them are not compatible.
Halogenated Hydrocarbons	Solvents. Avoid.
Ketones	Causes severe crystallization and stress cracking. Partial solvents. Avoid.
Silicone oil and greases	Generally compatible up to 85º C (185º F). Some contain aromatic hydrocarbons, which should be avoided.

Compatible Lubricants

Table 6-2 lists known compatible lubricants and the manufacturers' names. If you want to use a lubricant that is not listed in the table, contact the appropriate manufacturer to determine compatibility.

Table 6-2. Compatible Lubricants

Lubricants	Manufacturer	Lubricants	Manufacturer
Lubriplate® Aero	Fisher Bros. Refinery 129 Lockwood Street Newark, NJ 07105	Terrestic® 77	Exxon P.O. Box 2180 Houston, TX 77092 (713) 680-5712
Harmony® 68 Security® 68	Gulf Oil Petroleum Prod. Dept. Pittsburgh, PA 15230 (412) 655-6247	SF® 1147 Versilube® F-50	GE Silicone Products Waterford, NY 12188 (518) 237-3330
Martemp® 2500	E.F. Houghton & Co. 303 W. Lehigh Ave. Philadelphia, PA 19133 (215) 666-4000	Nyogel® 795A Rheolube® 368 Rheolube® 723G Rheolube® 788 Synthetic Oil® 181	Wm. J Nye P.O. Box G-927 New Bedford, MA 02742 (617) 966-6721
DC® 230 Molykote® 33	Dow Corning Midland, MI 48640 (800) 248-2345		

Compatible Cleaning Agents

Table 6-3 lists known compatible cleaning agents. If you choose to use a cleaning agent that is not listed in the table, Pro-face recommends that you contact the appropriate manufacturer to determine compatibility.

Table 6-3. Compatible Cleaning Agents

Type	Agents
Aliphatics	Hexane, Heptane, White Kerosene Mineral Spirits, Petroleum Ethers (65º C boiling point)
Alcohols	Methyl, Isopropyl and Isobutyl, 1 + 3 Denatured Alcohol
Halogenated hydrocarbons	Freons TF & TE
Detergents and cleaners	Mild Soap and Water Solution, VM&P Naphtha Fantastik®, Windex®, Joy®, Top Job®, Mr. Clean®, Formula 409®

Compatible aliphatics, alcohols, and halogenated hydrocarbons should be used only for wiping or short-term immersion (less than 10 minutes). If parts are completely immersed, remove all traces of solvent by forced-air drying or rinsing in hot water.

Non-compatible Cleaning Agents

Table 6-4 lists cleaning agents known to be detrimental to the 3300 units.

Table 6-4. Non-Compatible Cleaning Agents

Type	Agents
Bases	25% Ammonium Hydroxide, 10% Potassium Hydroxide, Sodium Hydroxide
Organic Solvents	Lacquer Thinner, Toluene, Methyl Cellosolve, Methylethylketone

Chapter 7 – Troubleshooting

Diagnostic Tests

If your system ships with MS-DOS, Pro-face provides diagnostic tests to verify system hardware functions. If a test fails, either you do not have the correct default setting or there has been a hardware failure. Check the default settings and run the tests again. If another failure occurs, contact Pro-face's Product Repair and Customization Department at 1-800-289-9266.

> **Note**
>
> Unexpected failures may occur if you run Pro-face diagnostics with device drivers or memory resident programs (TSRs) installed on the system. Remove the drivers or TSRs before running any diagnostic tests.

Preparing for the Tests

You need the following equipment to test your system:

- Floppy disk drive
- IBM PC/AT or PS/2-compatible keyboard
- 3.5-inch, DS/DD bootable disk
- Centronics-compatible printer cable
- Parallel printer (Centronics-style interface)
- Two serial loopback test connectors (refer to Figure 7-1 for pinouts)
- 3.5-inch, DS/HD (1.44 Mbyte) disk, formatted

Perform the following steps before starting the tests:

1. Copy the folder "DOS" from the "DRIVERS\Computer Diagnostics 9929" folder onto the bootable disk.
2. Place the CPU board jumpers to the factory-set positions. Refer to your CPU manual for these settings.
3. Plug the female end of the AC power cable into the bottom of the unit and the male end into a properly grounded outlet.
4. Connect the serial loopback connector(s) and the printer cable to the appropriate connectors and connect a PC/AT or PS/2 keyboard. Figure 7-1 illustrates the wiring necessary for the loopback connection.
5. Make sure the BIOS setup menus are set to the default settings.

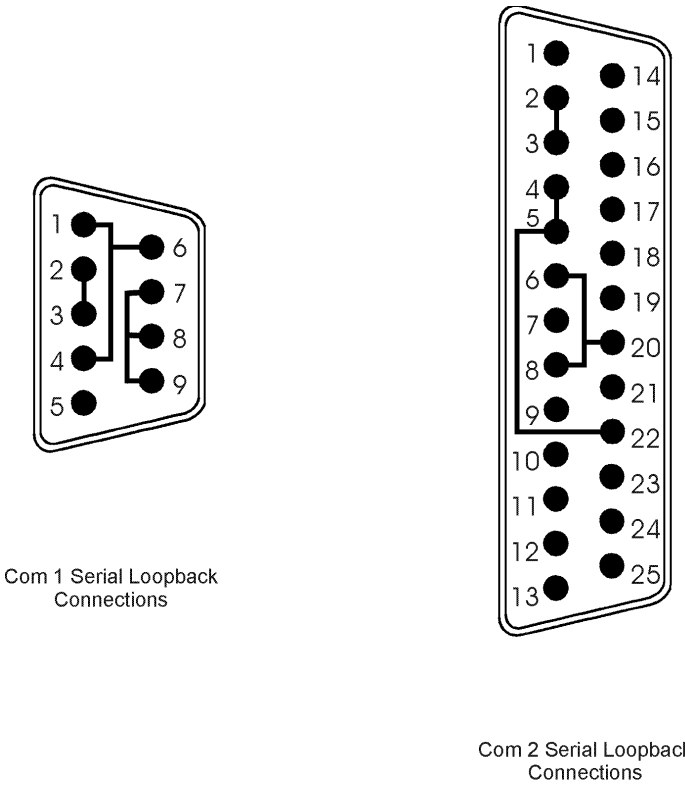


Figure 7-1. Serial Loopback Connections

Set BIOS to Defaults

Make sure the BIOS setup menus are configured properly (default settings). To access the setup menus,

- Press F1 after the memory tests.
- Make the necessary changes by following the on-screen directions.
- Press ESC.
- Press ENTER twice to save the setup and exit.

Running the Tests

To run the tests, insert the diagnostics disk into drive A and turn on the computer. The diagnostics program will boot-up. Figure 7-2 illustrates the Main Menu.

Copyright xxxx, <Company Name> All rights reserved.

Diagnostic Tests Sequence/Selection Menu (Rel. xx)

WILL pause on error	Auto-select tests
SINGLE PASS test mode	Deselect all tests
Save setup to file	Quit and exit to DOS
Extract setup from a file	Return to previous screen

A) RAM Test	K) Video Interface Test
B) Video RAM Test	L) Speaker Port Test
C) Extended RAM Test	M) LPT1: Printer Port Test
D) Real Time Clock Test	N) LPT2: Printer Port Test
E) COM1 Serial Port Test	O) C: Hard Drive Interface Test
F) COM2 Serial Port Test	P) D: Hard Drive Interface Test
G) COM3 Serial Port Test	Q) A: Floppy Drive Interface Test
H) COM4 Serial Port Test	R) B: Floppy Drive Interface Test
I) Math Coprocessor Test	S) Keyboard, Keypad Tests
J) Video Adjustments Test	≡ = Test Selected

[ENTER]=START TESTING

Use the letters to move the cursor and select/deselect, or use the arrow keys to move, then use the [SPACE] key to select/deselect a test or function.

Figure 7-2. Main Menu

Note

Please read the DIAG.TXT file on the diagnostics disk for detailed information about the tests.

Reinstalling Operating Systems

The 3300 series ships with MS-DOS pre-installed. Optional operating systems include Windows® 98, Windows® NT, or Windows® 2000. If you need to reinstall an operating system, refer to the appropriate section below. If you want to change operating systems, you will need to use the manufacturer's instruction manual.

Caution

Your 3300 unit does not contain a CD-ROM drive. We highly recommend that you create a backup set of boot floppy disks for Windows® or DOS operating systems immediately upon receipt of your system. The backup set of boot floppy disks will be needed in the event that your operating system ever needs be reinstalled.

Note

All of the recovery media are CD-based. Therefore, you will need to hook-up a Microsolutions Bantam Backpack (or industry equivalent) CD-ROM drive to the 3300 unit. If a backpack CD-ROM is used, modify the BIOS setting for the parallel port to bi-directional. See the *Parallel Port Configuration* section in Chapter 5 for more information.

MS-DOS® Reinstallation

If you need to reinstall MS-DOS®, refer to the *Pro-face/Xycom Workstation Recovery Media Software Installation Instructions for Microsoft MS-DOS 6.22* (shipped on the Documentation and Support Library CD). This document is devoted to the reinstallation of your MS-DOS® operating system and drivers utilizing the Recovery Media provided with your Pro-face/Xycom industrial computer.

Warning

This procedure assumes that the computer hard disk drive has been completely corrupted or replaced. This procedure will destroy data that may exist on the hard disk drive.

Note

MS-DOS® does not support audio; there are no audio drivers available for MS-DOS.

Windows® 98 Reinstallation

If you need to reinstall the Windows® 98 operating system, refer to the *Pro-face/Xycom Workstation Recovery Media Software Installation Instructions for Microsoft® Windows® 98_SE* (shipped on the Documentation and Support Library CD). This document is devoted to the reinstallation of your Microsoft® Windows® 98 operating system and drivers utilizing the Recovery Media provided with your Pro-face/Xycom industrial computer.

Warning

This procedure assumes that the computer hard disk drive has been completely corrupted or replaced. This procedure will destroy data that may exist on the hard disk drive.

Windows NT® Reinstallation

If you need to reinstall the Windows NT operating system, refer to the *Pro-face/ Xycom Workstation Recovery Media Software Installation Instructions for Microsoft® Windows® NT Workstation 4.0* (shipped with systems preinstalled with Windows NT). This document is devoted to the reinstallation of your Windows NT Workstation 4.0 operating system and drivers utilizing the Recovery Media provided with your Pro-face/Xycom industrial computer.

Warning

This procedure assumes that the computer hard disk drive has been completely corrupted or replaced. This procedure will destroy data that may exist on the hard disk drive.

Windows® 2000 Reinstallation

If you need to reinstall the Windows® XP operating system, refer to the *Pro-face/Xycom Workstation Software Installation Instructions for Microsoft Windows XP* (shipped with systems preinstalled with Windows XP). This document is devoted to the reinstallation of your Windows XP operating system and drivers, utilizing the XP CD provided with your Pro-face/Xycom industrial computer. If you want to install a new operating system or reinstall a current operating system, refer to the Windows XP Professional CD-ROM (shipped with systems preinstalled with Windows XP Professional).

Warning

This procedure assumes that the computer hard disk drive has been completely corrupted or replaced. This procedure will destroy data that may exist on the hard disk drive.

Installing Drivers

This section describes how to install the drivers associated with the 3300 series. Information about installing drivers for your computer is included in the *Documentation and Support Library* CD shipped with your computer, or on the web at www.profaceamerica.com.

Note

For further assistance, call Pro-face technical support at 734–429–4971 ext. 595 or 1-800-289-9266.

Note

MS-DOS® does not support audio; there are no audio drivers available for MS-DOS®.

Ethernet Drivers

If MS-DOS® is installed on your system, the Ethernet drivers are supplied on your hard drive in the C:\netdrv directory, but they are not installed.

To install the MS-DOS Ethernet drivers,

1. At the C: prompt, type “cd lan”.
2. Once the C:\lan path is specified, type “install”.
3. Follow the on-screen instructions to complete installation.

If you install Windows® on your system, Pro-face provides the Ethernet drivers. They can be found on the Ethernet Drivers disk that ships with your system, on the *Documentation Support Library* CD, or on the web at www.profaceamerica.com.

Note

If you install Windows® NT 4.0 be aware that the Ethernet driver included in that operating system may not work with the Ethernet controller in the 3300 series. You must use the drivers provided by Pro-face.

These drivers can be found on the Ethernet Drivers disk or Documentation Support Library CD that ships with your system, or on the web at www.profaceamerica.com.

Touch Screen Drivers

If you have a touch screen driver that has been factory installed, you will also receive, pre-loaded and at no extra charge: MS-DOS®, Windows® 98, Windows® 2000, and Windows® NT touch screen drivers.

Note

If you ordered a system pre-loaded with an operating system, the touch screen driver was pre-installed.

You must install the corresponding touch screen driver software if you change the operating system. The touch screen drivers are located on the Document and Support Library CD under:

\DRIVERS\TOUCHSCREEN\TOUCH-BASE

Video Drivers

Video drivers and expansion utilities are on the disk included with the documentation kit, as well as on the hard drive. Drivers are also included on the *Documentation and Support Library CD* or on the web at *www.profaceamerica.com*. To install a video driver, refer to the INSTALL.TXT file on the disk for your operating system.

Miscellaneous Drivers

Refer to your operating system and peripheral manuals for information on installing drivers. See the *Documentation and Support Library CD,* or *www.profaceamerica.com* for drivers associated with Pro-face/Xycom equipment and software.

Appendix A– Technical Specifications

Hardware Specifications

Table A-1 lists the hardware specifications for the 3308T, 3308KP, 3310T, 3310KP(T), 3312T, and 3312KP(T).

Table A - 1. Hardware Specifications

Characteristic	Specification			
	3308T	**3308KP**	**3310T &3312T**	**3310KP(T) & 3312KP(T)**
Mechanical				
Height, front panel	9.0”	9.0”	11.0”	12.25”
Width, front panel	10.6”	12.0”	13.0”	16.6”
Depth, overall	4.2”	4.2”	4.5”	4.5”
behind front panel	3.3”	3.3”	3.5”	3.5”
Weight	9 lbs	9 lbs	11 lbs	12 lbs
Electrical AC Power DC Power	100 to 240 VAC, 50-60 Hz, wide-ranging 1A maximum 18 to 30 V, 24 volts nominal 3.6 A maximum			
Power Supply	40 watts output			
Available Power	With LPG1 CPU board + 5 V @ 2.0 A +12 V @ 1.0 A -12 V @ 0.4 A			
Mounting	Panel Mount			
Flat-Panel Displays	50,000-hour half-life backlights			
3308 series	8.4-inch TFT active matrix color 640x480 LCD			
3310 series	10.4-inch TFT active matrix color 640x480 LCD			
3312 series	12.1-inch active matrix color, 800x600 SVGA			
Agency Approvals	UL 508 Industrial Control Equipment UL 1604 Electrical eqiupment for use in Class I and Class II, Division 2, and Class III Hazardous (classified) Locations CUL C22.2, No. 142 Process Control Equiment CUL C22.2, No. 213 Non-incendiary electrical equipment for use in Class I, Division 2 Hazardous Locations			
Regulatory Compliance	CE EMI EN55022, Class A IMMUNITY EN61000-6-2 SAFETY EN60950 FCC 47 CFR. Part 15, Class A ICES-003, Class A			

Environmental Specifications

Table A - 2 lists the environmental specifications for the 3308T, 3308KP, 3310T, 3310KP(T), 3312T & 3312KP(T).

Table A - 2. Environmental Specifications

Characteristic	Specification
Temperature	
Operating	0° to 50° C (32° to 122° F)
Non-operating	-20° to 60°C (-4° to 140°F)
Humidity	
Operating	20% to 80% RH non-condensing
Non-operating	20% to 80% RH non-condensing
Altitude*	
Operating	Sea level to 10,000 feet (3048 m)
Non-operating	Sea level to 40,000 feet (12192 m)
Vibration**	
Frequency	5 to 2000 Hz
Operating	0.006" peak-to-peak displacement 1.0g maximum acceleration
Non-operating	0.015" peak-to-peak displacement 2.5 g maximum acceleration
Shock**	
Operating	15g peak acceleration, 11 msec duration
Non-operating	30g peak acceleration, 11 msec duration

*These values are consistent with internal component specifications.

**These values are with solid state hard drives and not rotating media drives.

Appendix B – Pinouts

This appendix provides pinouts for the external connectors on the LPG1 board. **NC** indicates No Connection.

Parallel Port Connector

This 25-pin DB connector supports ECP and EPP.

Pin	Signal		Pin	Signal
1	STROBE		14	AUTOFEED
2	PD(0)		15	PERROR
3	PD(1)		16	INIT
4	PD(2)		17	SELIN
5	PD(3)		18	GND
6	PD(4)		19	GND
7	PD(5)		20	GND
8	PD(6)		21	GND
9	PD(7)		22	GND
10	PACK		23	GND
11	PBUSY		24	GND
12	PE		25	GND
13	SELECT			

PS/2 Keyboard Connector

This connector provides an external keyboard interface. This port uses a polyswitch to protect VCC from directly shorting to GND.

Pin	Signal
1	KB_DATA
2	**NC**
3	GND
4	5VFUSE
5	KB_CLK
6	**NC**

Warning

To maintain a safe condition, do ***not*** use an external keyboard or mouse port when the unit is operating in a hazardous environment.

Mouse Port Connector

This connector provides an external mouse interface. This port uses a polyswitch to protect VCC from directly shorting to GND.

Pin	Signal
1	MS_DATA
2	**NC**
3	GND
4	5VFUSE
5	MS_CLK
6	**NC**

Warning

To maintain a safe condition, do ***not*** use an external keyboard or mouse port when the unit is operating in a hazardous environment.

External Floppy Drive Connector

This 26-pin connector allows you to connect an external floppy. This port uses a polyswitch to protect VCC from directly shorting to GND.

Pin	Signal	Pin	Signal
1	+5V	14	FSTEP*
2	IDX*	15	**NC**
3	FDS1*	16	FWD*
4	+5V	17	GND
5	**NC**	18	FWE*
6	DCHG*	19	GND
7	**NC**	20	FTK0*
8	**NC**	21	GND
9	GND	22	FWP*
10	MO1*	23	GND
11	**NC**	24	FRDD*
12	FDIRC*	25	GND
13	**NC**	26	FHS*

Power Connector

This 3-pin connector provides AC or DC input power to the unit.

Pin	AC Signal	DC Signal
1	L	+DC
2	N	-DC
3	AC_GND	GND

Ethernet Connector

This 8-pin connector provides 10BASE-T and 100BASE-TX Ethernet connections.

Pin	Signal
1	TX+
2	TX-
3	RX+
4	**NC**
5	**NC**
6	RX-
7	**NC**
8	**NC**

COM1 Connector

This 9-pin connector actually consists of two connectors (RS-232 and RS-485) attached to one logical port. Only one connector can be used at a time.

RS-232 Connector

The lower 9-pin connector provides the RS-232 protocol.

Pin	Signal
1	DCD1
2	RXD1
3	TXD1
4	DTR1
5	GND
6	DSR1
7	RTS1
8	CTS1
9	RI1

RS-485 Connector

The upper 9-pin connector provides the RS-485 protocol.

Pin	Signal
1	TXD-
2	TXD+
3	TXD TERM -
4	TXD TERM +
5	GND
6	RXD-
7	RXD+
8	RXD TERM +
9	RXD TERM -

Note

For TXD termination, connect a 150Ω, ½-watt resistor from pin 3 to pin 4, with pin 1 connected to pin 3 and pin 2 connected to pin 4.

For RXD termination, connect a 150Ω, ½-watt resistor from pin 8 to pin 9 with pin 6 connected to pin 9 and pin 7 connected to pin 8.

COM2 Connector

This 25-pin connector provides the COM2, RS-232 protocol.

Pin	Signal	Pin	Signal
1	ORB_GND	14	**NC**
2	TXD2	15	**NC**
3	RXD2	16	**NC**
4	RTS2	17	**NC**
5	CTS2	18	**NC**
6	DSR2	19	**NC**
7	GND	20	DTR2
8	DCD2	21	**NC**
9	**NC**	22	RI2
10	**NC**	23	**NC**
11	PB_RESET*	24	**NC**
12	**NC**	25	**NC**
13	**NC**		

This connector also contains the remote system reset option. A normally open pushbutton switch can be connected to pins 11 and 7. When the switch is pressed, the PB_RESET* signal is forced to GND, which causes the CPU to reset. To enable this option, you must set jumper J1 to position B.

Appendix C – LPG1 and Jumper Settings

3300 Motherboard LPG1 and Jumper Settings

The 3300 Motherboard contains the following switch and jumper settings: Touch Screen Option Jumpers; Touch Screen Controller Module Settings; H8 Keyboard Controller Settings; LCD Display Jumper Settings; Inverter Option Jumpers; COM Option Jumpers; and Miscellaneous System Jumper Options. These settings are detailed in the following tables.

Touch Screen Option Jumpers

The following table outlines the options for the Touch Screen Option Jumpers.

Table C - 1. Touch Screen Jumpers

Option	PS2 Output Mode		RS-232 Output Mode	
	JP1	JP2	JP1	JP2
W/O TS Controller	2-3	2-3	N/A	N/A
W/TS Controller	1-2	1-2	2-3	2-3

Touch Screen Controller Module Settings

The following table outlines the options for the Touch Screen Controller Module Settings.

Table C - 2. Touch Screen Controller Module Settings

Output Mode Options	Jumper Settings
PS2 Output Mode	J1 – J9, Position B*
RS-232 Output Mode	J1 – J9, Position A

** Indicates factory default setting.*

Note: RS-232 Mode utilizes the COM-2 Port for data transfer.

H8 Keyboard Controller Settings

The following tables outline the settings for the H8 Keyboard Controller Settings. Table C - 3 shows the Mode Switch S1 settings; Table C - 4 shows the H8 Jumper Settings.

Mode Switch S1

Table C - 3. Mode Switch S1 Keyboard Controller Settings

Mode Selection	S1 Positions							
	1	2	3	4	5	6	7	8
8.4” Display	On	On	Off	Off	Off	Off	Off	Off
10.4” Display	Off	On	Off	Off	Off	Off	Off	Off
12.1” Display	Off	On	Off	Off	Off	Off	Off	Off
CRT	Off	On	Off	Off	Off	Off	Off	Off

H8 Jumper Settings

Table C - 4. H8 Keyboard Jumper Settings

Mode Selection	JP6	JP7
Normal Mode	1-2*	1-2*
H8 Programming Mode	2-3	2-3

** Indicates factory default setting.*

LCD Display Jumper Settings

The following tables outline the LCD Display Jumper Settings. Table C - 5 lists the LCD Display Model Settings; Table C - 6 lists the LCD Power Select Settings; Table C - 7 lists the LCD Mode Jumper Settings.

LCD Display Model

Table C - 5. LCD Display Model Settings

LCD Type	JP18	JP19	JP20
8.4” Display	On	On	On
10.4” Display	Open	On	On
12.1” Display	On	Open	On
1401 (CRT mode)	Open	Open	On

Note: During initialization, the BIOS checks these jumpers for the size of the display.

LCD Power Select

Table C - 6. LCD Power Select Settings

LCD Type	LCD Voltage	JP10
8.4” Display	+3.3V	1-2
10.4” Display	+5V	2-3
12.1” Display	+5V	2-3
1401	+5V	2-3

LCD Mode Jumpers

Table C - 7. LCD Mode Jumper Settings

LCD Type	Function	JP8	JP9
8.4” Display	Normal Scan Mode	Open	2-3
10.4” Display	Reverse Video Scan	Open	1-2
12.1” Display	Normal Scan Mode	Open	2-3
1401	Reverse Video Scan	Off	1-2

Inverter Option Jumpers

The following tables outline the Inverter Option Jumpers. Table C - 8 lists the Invert Signal Drive Voltage Jumpers; Table C - 9 lists the Inverter Drive Signal Polarity Jumpers; Table C - 10 lists the Inverter Brightness Control Range Settings.

Invert Signal Drive Voltage Jumpers

Table C - 8. Inverter Signal Drive Voltage Jumpers

Function	JP4
ON/OFF Drive +5V	1-2
ON/OFF Drive +12V	2-3*

** Indicates factory default setting.*

Inverter Drive Signal Polarity

Table C - 9. Inverter Drive Signal Polarity

Display Type	Function	JP3
8.4” Display	High = Inverter OFF	2-3
10.4” Display	High = Inverter OFF	2-3
12.1” Display	Low = Inverter OFF	1-2
1401	High = Inverter OFF	2-3

Inverter Brightness Control Range Setting

Table C - 10. Inverter Brightness Control Range Setting

LCD	Voltage Range	JP21
8.4” Display	0 – 3.5 VDC	1-2
10.4” Display	0 – 3.5 VDC	1-2
12.1” Display	0 – 0.7 VDC	2-3
1401	0 – 3.5 VDC	1-2

COM Option Jumpers

The following tables outline the COM Option Jumpers. Table C - 11 lists the RS-422/485 Selection jumpers; Table C - 12 lists the RS-485 Transmitter Gating Options; Table C - 13 lists the COM2, Pin 11 External Reset Enable settings.

RS-422/485 Selection

Table C - 11. RS-422/485 Selection Jumpers

Mode	JP13
RS-422	1-2
RS-485	2-3*

** Indicates factory default setting.*

RS-485 Transmitter Gating Options

Table C - 12. RS-485 Transmitter Gating Options

Transmit Enable	JP16	JP17
DTR Active	2-3*	1-2*
DTR Inactive	1-2	1-2
RTS Active	2-3	2-3
RTS Inactive	1-2	2-3

** Indicates factory default setting.*

External Reset Enable – COM2, Pin 11

Table C - 13. COM2 Pin 11, External Reset Enable

Function	JP11
External Reset Input Enabled	1-2
External Reset Input Disabled	2-3*

** Indicates factory default setting.*

Miscellaneous System Jumper Options

The following tables outline the Miscellaneous System Jumper Options. Table C - 14 lists the IDE Port Selection Options; Table C - 15 lists the Fixed Compact Flash Mode Options; Table C - 16 lists the DOC 2000 Address Select Options; Table C - 17 lists the RTC Battery Jumper options; Table C - 18 lists the System Reset Jumper options.

IDE Port Selection: HDD or Compact Flash Assembly

Table C - 14. IDE Port Selection

Device Connected	Supply Voltage	JP22
HDD Assembly	+5V	2-3
Compact Flash Assembly	+3V	1-2

Fixed Compact Flash Mode Options

Table C - 15. Fixed Compact Flash Mode Options

Compact Flash Mode	JCF1
Secondary Master	2-3*
Secondary Slave	1-2

** Indicates factory default setting.*

DOC 2000 Address Select

Table C - 16. DOC 2000 Address Select

Address Range	JP12
D0000-D1FF0H	1-2*
D8000-D9FF0H	3-4

** Indicates factory default setting.*

RTC Battery Jumper

Table C - 17. RTC Battery Jumper

Function	JP15
Battery Backup Enabled	1-2*
N/A	2-3

** Indicates factory default setting.*

System Reset Jumper

Table C - 18. System Reset Jumper

Function	J14
Normal Mode	Open*
Reset Mode	1-2

** Indicates factory default setting.*
Note: To reset this jumper, momentarily short pin 1 to pin 2.

System Debug Jumper

Table C - 19. System Debug Jumper

Function	J14
Normal Mode	Open*
** Indicates factory default setting.*	

Appendix D DOS Video Modes

The National 5530A supports many standard, VESA, and extended modes. The following table lists the standard and extended video modes for the 3300 series IPCs and for monitors attached to the 1401 node box. The TFT 12", TFT 10", and TFT 8" are the monitors for the 3312, 3310 and3308, respectively; the 5015KPT, CRT, and 5015T are monitors that can be hooked up to the 1401 node box.

Table D - 1. DOS Video modes supported by National 5530A

DOS video modes supported by National 5530A, in the 3300 series and 1401 Node									
5015KPT	**TFT 12"**	**TFT 10"**	**TFT 8"**	**CRT**	**5015T**	**Mode**	**Vesa Mode**	**Resolution**	**Colors & Colors / Attr.**
T,O	E,T,O	E,T,O	E,T,O	T,O	T,O	00	-------	40x25 [1]	16
T,O	E,T,O	E,T,O	E,T,O	T,O	T,O	00*	-------	40x25	16
T,O	E,T,O	E,T,O	E,T,O	T,O	T,O	00+	-------	40x25	16
T,O	E,T,O	E,T,O	E,T,O	T,O	T,O	01	-------	40x25	16
T,O	E,T,O	E,T,O	E,T,O	T,O	T,O	01*	-------	40x25	16
T,O	E,T,O	E,T,O	E,T,O	T,O	T,O	01+	-------	40x25	16
T,O	E,T,O	E,T,O	E,T,O	T,O	T,O	02	-------	80x25 [2]	16
T,O	E,T,O	E,T,O	E,T,O	T,O	T,O	02*	-------	80x25	16
T,O	E,T,O	E,T,O	E,T,O	T,O	T,O	02+	-------	80x25	16
T,O	E,T,O	E,T,O	E,T,O	T,O	T,O	03	-------	80x25	16
T,O	E,T,O	E,T,O	E,T,O	T,O	T,O	03*	-------	80x25	16
T,O	E,T,O	E,T,O	E,T,O	T,O	T,O	03+	-------	80x25	16
G,O	E,G,O	E,G,O	E,G,O	G,O	G,O	04	-------	320x200 [1]	4
G,O	E,G,O	E,G,O	E,G,O	G,O	G,O	05	-------	320x200	4
G,O	E,G,O	E,G,O	E,G,O	G,O	G,O	06	-------	640x200 [2]	2
T,O	E,T,O	E,T,O	E,T,O	T,O	T,O	07	-------	80x25 [1]	Mono
T,O	E,T,O	E,T,O	E,T,O	T,O	T,O	07+	-------	80x25	Mono
G,O	E,G,O	E,G,O	E,G,O	G,O	G,O	0D	-------	320x200 [1]	16
G,O	E,G,O	E,G,O	E,G,O	G,O	G,O	0E	-------	640x200 [2]	16
G,O	E,G,O	E,G,O	E,G,O	G,O	G,O	0F	-------	640x350 [2]	Mono
G,O	E,G,O	G,O	G,O	G,O	G,O	10	-------	640x350	16
G,O	E,G,O	G,O	G,O	G,O	G,O	11	-------	640x480 [2]	2
G,O	E,G,O	E,G,O	E,G,O	G,O	G,O	12	-------	640x480	16
G,O	E,G,O	G,O	G,O	G,O	G,O	13	-------	320x200 [2]	256
G,O	E,G,O	E,G,O	E,G,O	G,O	G,O	20	120	320x200	256
G,O	E,G,O	G,O	G,O	G,O	G,O	21	121	320x240	256
D,G,O	D,G,O	D,G,O	D,G,O	D,G,O	D,G,O	23	123	40 column	64K
G,O	G,O	E,G,O	E,G,O	G,O	G,O	25	125	400x300	256
G,O	G,O	E,G,O	E,G,O	G,O	G,O	27	127	50 column	64K
G,O,X	E,G,O	E,G,O	E,G,O	G,O	G,O	29	129	512x384	256

Table D - 1. DOS Video modes supported by National 5530A

DOS video modes supported by National 5530A, in the 3300 series and 1401 Node									
5015KPT	**TFT 12”**	**TFT 10”**	**TFT 8”**	**CRT**	**5015T**	**Mode**	**Vesa Mode**	**Resolution**	**Colors & Colors / Attr.**
D,G,X	D,E,G,O	D,E,G,O	D,E,G,O	D,G,O	D,G,O	2B	12B	64 column	64K
D,G,O	D,E,G,O	D,E,G,O	D,E,G,O	D,G,O	D,G,O	2E	12E	80 column	64K
G,V	E,R,G	E,R,G	E,R,G	G,V	G,V	54	------	132 column	16/16
G,V	E,R,G	E,R,G	E,R,G	G,V	G,V	55	------	132 column	16/16
G,X	G,R	G,R	G,R	G,O	G,O,X	5A	106	1280x1024	16
G,X	E,O	E,G,O	E,G,O	G,O	G,O	5B	100	640x400	256
G,O	G,O	G,R	G,R	G,O	G,O	5C	103	800x600	256
G,X	G,R	G,R	G,R	G,O	G,O	5D	104	1024x768	16
G,O	G,O	G,O	G,O	G,O	G,O	5F	101	640x400	256
G,X	G,R	G,R	G,R	O,G	O,G	60	105	1024x768	“
G,X	R,G	R,G	R,G	G,O	G,O	62	117	128 column	64K
G,V	R,G	R,G	R,G	G,V	G,V	64	------	132 column	16/16
G,V	R,G	R,G	R,G	G,V	G,V	65	------	132 column	16/16
G,O	G,O	G,O	G,O	G,O	G,O	68	------	80 column	16/16
G,O	G,O	G,O	G,R	G,O	G,O	6A	102	800x600	16
G,X	G,R	G,R	G,R	G,O	G,X	6B	107	1280x1024	256
D,G,O	D,G	D,G	D,G	D,G,O	D,G,O	6D	111	80 column	64K
D,G,O	D,G	D,R,G	D,R,G	D,G,O	D,G,O	6F	114	100 column	64K
D,G,X	R,G	R,G	D,G,R	O,D,G	D,G,X	76	11A	160 column	64K
D,G	D,E,G	D,E,G	D,E,G	D,G	D,G	79	10E	40 column	64K

Footnotes:

[1] IBM documents with no border support

[2] IBM documents with border support

Legend:

B=Border problems,	O=Ok,
C=No VGA Video Out,	P=No Perim.,
D=No DOS color call	R=Resolution to big to fully display,
E=No Expansion,	S=Scrolling prob.,
F=No native font support.	T=Text mode,
G=Graphics mode,	V=No Vert. Sync.,
N=Noise,	X=Out of frequency range,

Notes:

1. Only the panels listed above were tested for compatibility with this video BIOS.
2. All the panels listed above were tested with Windows® XP, NT, 2000, 98 and MS-DOS® 6.22.
3. Pro-face modechk.exe was used for this testing

Appendix E Setting up Your OpenCLIENT 3300 as a ThinCLIENT

Detailed instructions for configuring your server and managing an installation of Thin Clients are on the ACP ThinManager CD. The following section deals only with the local configuration of the OpenCLIENT.

The OpenCLIENT has no floppy drive or hard drive - it has an ACP bootloader in place of an operating system. In order for an OpenCLIENT to function as a ThinCLIENT terminal, the PC must be installed on an Ethernet network that has a server and an ACP ThinManager application running on it. Some configuration of the OpenCLIENT is required in order for it to be visible on the network to the ACP ThinManager application. The tables included in this section show you how to set various IP addresses to modify your OpenCLIENT to a ThinCLIENT. (See Figure E - 1 and Table E - 1.)

After the local configuration step is complete and your changes are saved, the OpenCLIENT is ready to participate on the network. If you've performed the steps properly, the ACP ThinManager will see the OpenCLIENT and establish a connection with it. Once the network connection is made, the ACP ThinManager application will complete the configuration of the OpenCLIENT, and the PC will be able to function as a terminal to the server.

When you first power on your OpenCLIENT, it will go through its power-up sequence quickly and present a screen that says to press any key to get to the configuration menu. You have a couple of seconds to do this. Pressing a key during this period will show the following screen, Figure E - 1. Please note that the IP addresses on your screens will differ from the examples.

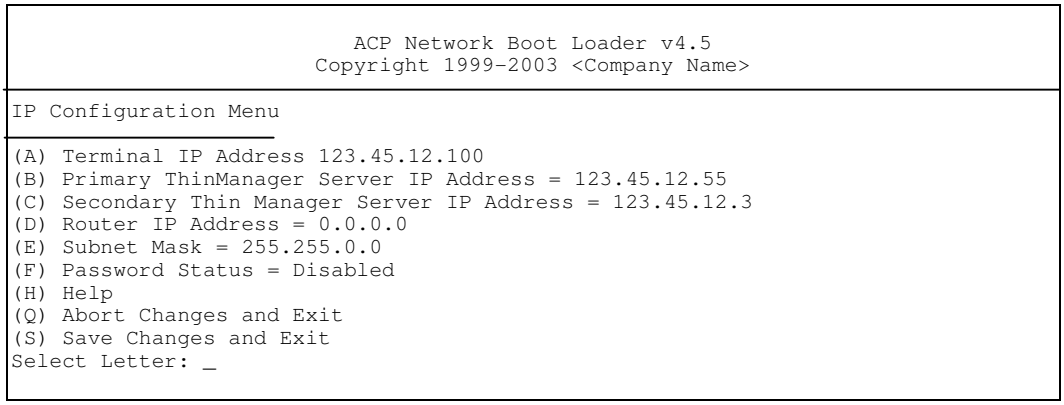


Figure E - 1. ACP Network Boot Loader IP Configuration Menu

You may enter any alpha character, A-f, H, Q or S, to perform an action. The following table explains the options available with each selection.

Table E - 1. Description of IP Configuration Menu Choices

Menu Selection	Instruction
(A)	Enter new Terminal IP Address Enter 'D' for DHCP or Static IP as X.X.X.X : _
(B)	Enter Primary ThinManager Server IP Address (X.X.X.X) : _
(C)	Enter Secondary ThinManager Server IP Address (X.X.X.X) : _ Enter 0.0.0.0 if no Secondary Server is Present
(D)	Enter Router IP Address (X.X.X.X) : _
(E)	Enter Subnet Mask (X.X.X.X) : _
(F)	Enter New Password : _
(H)	(A) Enter 'D' for DHCP or enter the IP Address of this terminal in X.X.X.X format. If using DHCP, you must set Option 66 (Boot Server Host Name) to the IP address of the Primary ThinManager Server. If a Secondary ThinManager is present, add it after the Primary Server separated by a space. (B) Enter the IP Address of the Primary ThinManager Server. This is the address which this terminal will try to boot from first (C) Enter the IP Address of the Secondary ThinManager Server. This is the address that this terminal will try to boot from if it fails to boot from the Primary Server. If no Secondary Server is present, enter 0.0.0.0 (D) Enter the IP Address of the Router. If a Router is not used, enter 0.0.0.0 (E) Enter the Subnet Mask in X.X.X.X format. (F) Enable or Disable the Password. The Password must be 8 characters or less. Press Any Key to Continue

The final required configuration step is to enter the IP address of your Primary ACP ThinManager (and your Secondary ACP ThinManager, if one is installed on your network).This step is explained under Menu Selection H in the preceding table.

Note

If you have a DHCP (Dynamic Host Configuration Protocol) server on your network, it will provide an IP address for the OpenCLIENT (you won't need to do anything under option A).

If you do not have a DHCP server on your network, then you will have to assign an IP address and a subnet mask for the OpenCLIENT. Your IT Department will have to assign you a valid address and subnet address for your network.

Appendix F 3300 Series ThinCLIENT Touch Screen Calibration Instructions

Note

ACP Online Help contains a help file entitled “Calibrate Touchscreen”. The instructions that follow incorporate a portion of the information that can be found in the ACP help file.

The ACP ThinManager Calibrate Touch Screen program allows you to calibrate the touch screen on your 3308T, 3310T, 3310KP(T), 3312T, or 3312KP(T) unit. This program also offers you the option to modify the selection screen.

Pro-face recommends that you modify the selection screen on the 3312T and 3312KP(T) units to improve the performance of the unit. The default settings work well for the 3308 series and 3310 series units.

Modifying the Touch Screen Settings

To modify the touch screen settings on your 3312 series unit, follow these steps:

1. Open the ThinManager Interface: **Start > Programs > ThinManager**.
2. Select your unit from the list – **3312**.
3. Right-click on the terminal name.
4. Select **Modify**. This will open a series of modification options.
5. Click **Next** several times, until you reach the Module Selection Screen.
6. Select option “Pro-face/Xycom 33XX Touch Screen Driver”.
7. Click on Configure. The options for this program are:
   - Double touch area
   - Number of calibration points
   - Calibration margin percentage
   - Calibration [entered-automatically]
8. Select “Calibration Margin Percentage”.
9. In the **Value** drop-down menu, select 20.

Note

The default setting is 15. Pro-face recommends that you use the default setting for the 3308 and 3310 series units.

10. Click **Set**.
11. Click **Done**.
12. To activate the new percentage number, you will need to reboot your unit. Right-click on the terminal name in the ThinManager interface, and select **Reboot**.
13. After you computer reboots, you will need to calibrate the touch screen. See the instructions in the following section.

Calibrating the Touch Screen

To calibrate the touch screen, follow these steps:

1. Open the ThinManager Interface: **Start > Programs > ThinManager.**
2. Select your unit from the list (i.e. 3308)
3. From the drop-down menus at the top of the screen, select **Tools > Calibrate Touchscreen.**
4. A large plus sign (+) will appear. Touch the center of the plus sign on the terminal's display.
5. A second plus sign will appear. Touch the center of this one as well. Repeat as necessary.
6. When you have finished calibrating the touch screen, the program will close.

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143243 (D)

Xycom Automation, L.L.C.
734-429-4971
Fax: 734-429-1010
http://www.profaceamerica.com

Canada Sales: 905-607-3400
Northern Europe Sales: +44-1604-790-767
Southern Europe Sales: +39-011-770-53-11