

# 3015KPM(T)

FLAT PANEL INDUSTRIAL MONITOR

## *Hardware Guide*



Revision	Description	Date
A	Create Manual	11/01
B	Add Keypad Utility Program description	5/02
C	Update	7/02

**Xycom Automation Part Number: 300151(C)**

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**United States FCC Part 15, Subpart B, Class A EMI Compliance Statement:**

NOTE: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

**For European Users: WARNING**

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 which 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.

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# I Product Overview

Xycom Automation's 3015KPM(T) industrial monitors meet the rigorous requirements of the plant floor with high-resolution flat panel displays in a ruggedized housing with an optional resistive membrane touchscreen and a keypad and mouse. The 3015KPM(T) monitor delivers crisp, bright text and graphics with a low current draw and fits into panels that CRT's can't.

## PRODUCT FEATURES

- 15" flat panel TFT XGA color display, supporting resolutions up to 1024 x 768 @ 75 Hz
- Equivalent viewing area to a 17" CRT without the size or weight
- Impact-resistant display shield
- Shallow mounting depth
- Display adjustment available from front or rear of the unit
- NEMA 4/4X/12 sealed front panel
- Class I and Class II, Division 2 Hazardous Locations certified
- Optional analog resistive touchscreen

## PARTS VERIFICATION

When you remove the 3015KPM from its shipping carton, verify that you have the parts listed below. Save the box and inner wrapping in case you need them.

- 3015KPM unit
- Terminal block for creating power cable
- Mounting hardware (fourteen #10-32 nuts with washers)
- Host cables
  - KPM(T): 10 ft. serial cable, two PS2 cables, video cable, ground cable
  - KPM: two PS2 cables, video cable ground cable
- *Documentation and Support Library* CD-ROM (contains touchscreen driver and driver documentation)

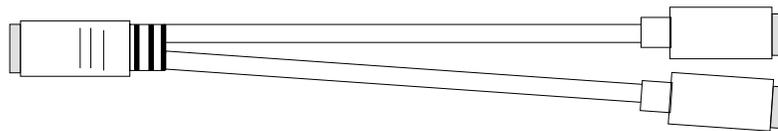
## ACCESSORIES

- 3000-CBL-10V - 10 ft. (3m) video cable
- 3000-CBL-25V - 25 ft. (7.5m) video cable
- 3000-CBL-50V - 50 ft. (15m) video cable
- 3000-CBL-10T - 10 ft. (3m) serial touchscreen cable<sup>1</sup>
- 3000-CBL-25T - 25 ft. (7.5m) serial touchscreen cable<sup>1</sup>
- 3000-CBL-50T - 50 ft. (15m) serial touchscreen cable<sup>1</sup>
- 3000-CBL-10VT - 10 ft. (3m) video and serial touchscreen cable<sup>1</sup>
- 3000-CBL-25VT - 25 ft. (7.5m) video and serial touchscreen cable<sup>1</sup>
- 3000-CBL-50VT - 50 ft. (15m) video and serial touchscreen cable<sup>1</sup>
- 3000-CBL-10VKM - 10 ft. (3m) video, PS/2 keyboard, and PS/2 mouse cable
- 3000-CBL-25VKM - 25 ft. (7.5m) video, PS/2 keyboard, and PS/2 mouse cable
- 3000-CBL-50VKM - 50 ft. (15m) video, PS/2 keyboard, and PS/2 mouse cable
- 3000-CBL-10VKMT - 10 ft. (3m) video, PS/2 keyboard, PS/2 mouse, and serial touchscreen cable<sup>1</sup>
- 3000-CBL-25VKMT - 25 ft. (7.5m) video, PS/2 keyboard, PS/2 mouse, and serial touchscreen cable<sup>1</sup>
- 3000-CBL-50VKMT - 50 ft. (15m) video, PS/2 keyboard, PS/2 mouse, and serial touchscreen cable<sup>1</sup>
- 140668-001 - Y-cable

<sup>1</sup> Serial touchscreen cable is not capable of serial connections requiring hardware handshaking. Contains GND, Tx, and Rx lines only.

**Note: Other cable lengths available. Contact Xycom factory for details.**

With the Y-cable two devices can be connected using one port. The Y adapter kit is sold separately. Only one Y adapter may be used at any given time. When a Y adapter is



used on one of the ports the other port is rendered useless and must not have anything plugged into it.

Figure 1-1. Y-Adapter Cable

## LOCATING COMPONENTS AND CONNECTORS

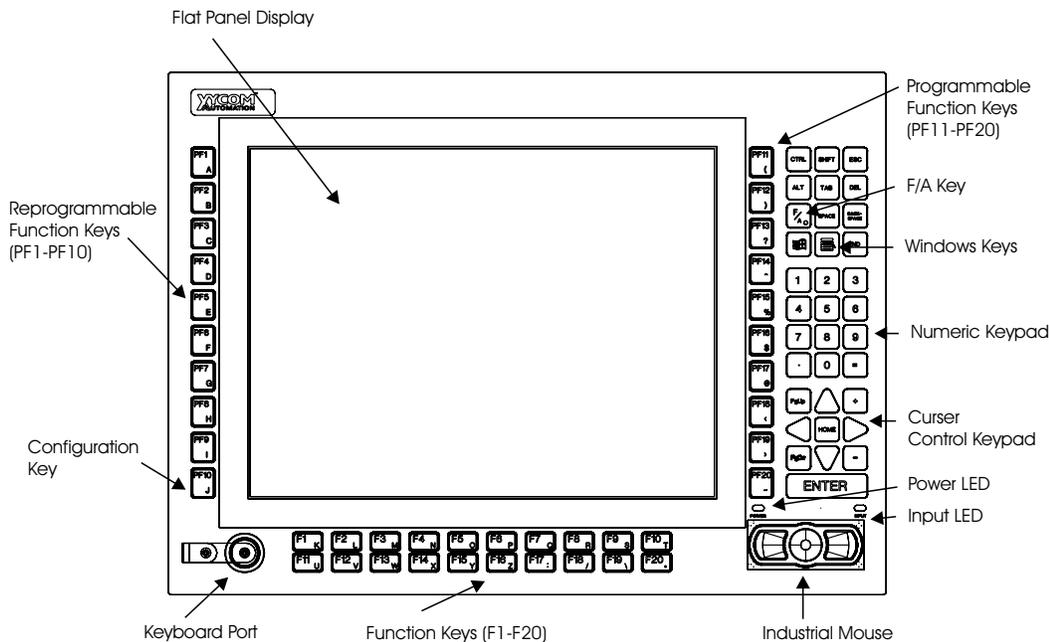


Figure 1-2. 3015KPM Front Panel

### External Views

**Logo Area:** The front panel incorporates a logo panel that can be customized. Figure 1-5 depicts the label dimensions and provides the recommended requirements for a customized label.

**Display:** The 15" TFT XGA (1024 x 768) color display is protected from breakage by an impact-resistant shield and can display complex operations with clarity.

**Touchscreen (optional):** An optional analog resistive touchscreen provides a flexible, easy-to-use interface for operator input.

**Mouse:** Front and back PS/2 ports are dual-purpose input ports. They were designed to support either a keyboard or a mouse. This allows the user to connect either device to either port, and at any time (hot plug). The user can also use the Y adapter cable which allows two devices to be connected using one port. The Y adapter kit is sold separately under part number 140668-001. Only one Y cable can be used at any given time. When the Y cable is used on either port the other port is rendered useless and nothing can be plugged into it.

**LEDs:** The 3015KPM has three LEDs including Input, F/A, and Power. The input LED will be partially lit when a touch controller is installed indicating the presence of the touch controller. When no controller is present the LED will be off. When there is either a keypad input or touch, the LED will light brightly. The Power LED is simply driven by the power supply indicating that power is present. The F/A LED indicates what mode the keypad is in.

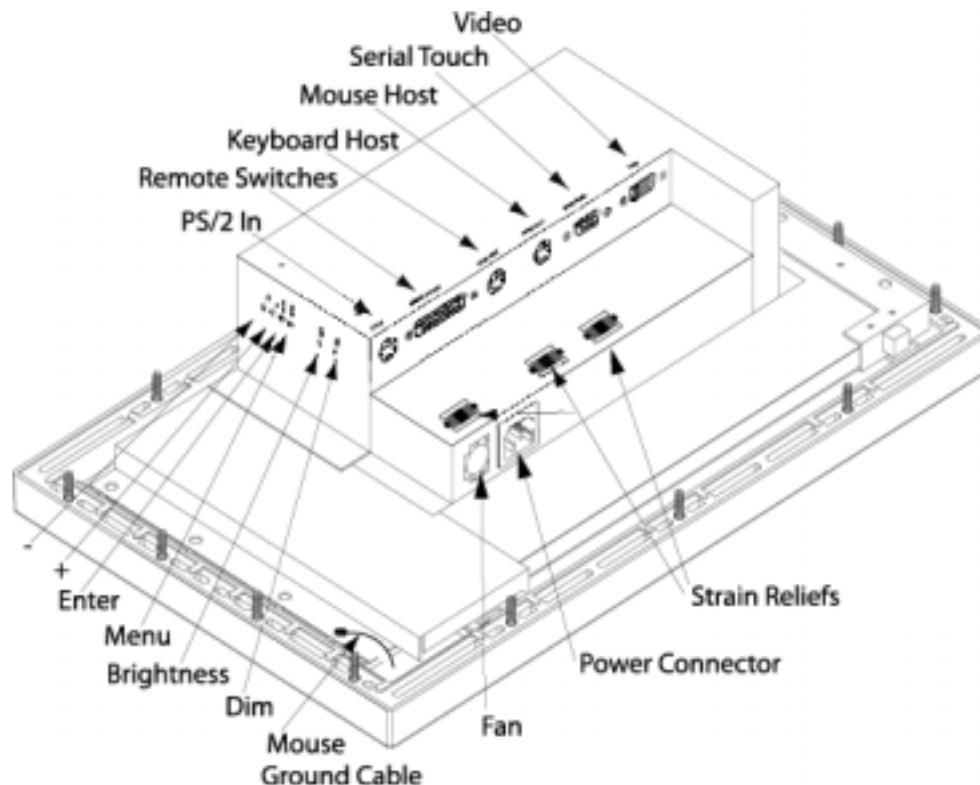


Figure 1-3. 3015KPM Back Panel

**Power Connector:** The power connector is on the back, lower left of the unit. The input range for the supply is 110 to 240 VAC, 50-60 Hz. Refer to Appendix A for power connector pinouts.

**Bright/Dim Buttons:** The bright/dim buttons adjust the brightness of the bulbs. Brightness can be adjusted from the front or the rear.

**Strain Relief:** Use the strain relief for securing the cables to the PS/2 In, the Keyboard Host, and the Mouse Host, as required by the Hazardous Location Approvals Class I Division 2. Depress the release tabs on each side of the strain relief at the same time to cause the cap to pop up; place, or remove, the cable from the strain relief as needed.

**Video Connector:** This 15-pin high-density female connector is used to connect the 3015KPM monitor to your computer's video output. Refer to Appendix A for video connector pinouts.

**Serial Touchscreen Connector:** If your display comes equipped with a touchscreen, you can connect a cable between this connector and the COM1 or COM2 port on the computer. Refer to Appendix A for touchscreen connector pinouts. You must also load the appropriate touchscreen driver. Refer to Chapter 2 for installation instructions.

**On Screen Display (OSD) Controls:** The on screen display video controls consist of four buttons that control brightness, contrast, color, and position adjustment. Refer to page 17 for more information on adjusting the display. These adjustments are also available from the front of the unit.

**Grounding the 3015KPM:** Provided is a 4-foot braided ground cable. This cable is required in order to comply with CE Marking electromagnetic immunity standards. Remove the mouse ground cable screw (refer to figure 1-3) in the lower left hand corner of unit and remove the ground lug. Place the ground lug from the 4-foot cable onto the chassis. Place the already existing ground lug on top of that and replace the screw. The 4-foot braided ground cable may be cut to the length needed if desired. An additional ground lug is provided in the doc kit to replace the one that will be discarded if the cable is cut to a new length. Attach the free end of the new cable to a protective earth (PE) ground within your system.

## Opening the Unit

To open the 3015KPM follow the instructions below.

1. Disconnect all cables.
2. Turn the unit face down on a protected surface to avoid scratching the face.
3. Use a Phillips screw driver to remove screws 1, 2, 3, and 4.
4. Slide the back cover in a downward motion so the connectors clear their openings in the cover, and lift the cover from the unit.
5. You will see four front panel connections (3 ribbon cables and one black round cable), which are the keypad, touchscreen, and front internal mouse cables. Disconnect these cables.
6. Remove screws 5, 6, 7, 8, 9, 10, 11, and 12. Lift the main unit up, removing it from the front panel.

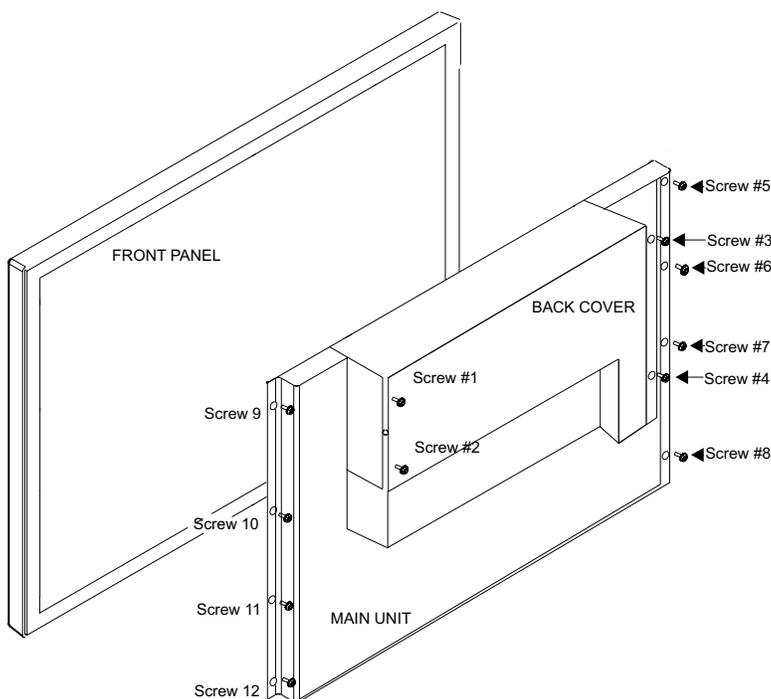


Figure 1-4. Opening the 3015KPM

## To Access the Touchscreen Controller Card

1. Disconnect all cables.
2. Turn the unit face down on a protected surface to avoid scratching the face.
3. Use a Phillips screw driver to remove screws 1, 2, 3, and 4.
4. Slide the back cover in a downward motion so the connectors clear their openings in the cover, and lift the cover from the unit.
5. Locate the two screws securing the Touchscreen Controller Card to the unit. Un-screw these two screws and remove the card.

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

**Warning: RISQUE D' EXPLOSION** Avant de deconnecter l'equipment, coupler le courant ou s'assurer que l'emplacement est designe non dangereux.

**Warning: EXPLOSION HAZARD** When operating in hazardous locations, disconnect power before replacing or wiring modules.

**RISQUE D' EXPLOSION** Dans les situations hasardees, couper la courant avant de remplacer ou de cabler les modules.

**Warning:** You must disconnect the power cable and any other external cables connected to the unit before opening the unit. To close the unit perform the open unit steps in reverse order.

**Note:** If replacing the controller, examine and record the jumper configuration that is unique to your old controller. The new controller jumper settings must be set to be identical to the old controller before installation.

**Warning:** Safety regulations for hazardous locations will not allow inclusion of a standard power cord with these monitors. For installation outside of classified hazardous locations, a standard power cord with an IEC 320 termination can be used.

## CREATING A CUSTOMIZED LOGO

You may place a customized label on the unit. Figure 1-5 provides the dimensions and recommended requirements for a customized label.

Once you have created a customized label, place it over the “Xycom Automation” label.



Figure 1-5. Customized Logo.

## VIDEO ANALOG MODES SUPPORTED

### VESA Modes

Mode	Resolution	Total	Horizontal		Vertical		Nominal Pixel Clock (MHZ)
			Nominal Frequency +/-0.5 KHz	Sync Polarity	Nominal Frequency +/-1Hz	Sync Polarity	
VGA	640x480@60 Hz	800x525	31.469	N	59.940	N	25.175
	640x480@72 Hz	832x520	37.861	N	72.809	N	31.500
	640x480@75 Hz	840x500	37.500	N	75.000	N	31.500
SVGA	800x600@56 Hz	1024x625	35.156	N/P	56.250	N/P	36.000
	800x600@60 Hz	1056x628	37.879	P	60.317	P	40.000
	800x600@72 Hz	1040x666	48.077	P	72.188	P	50.000
	800x600@75 Hz	1056x625	46.875	P	75.000	P	49.500
XGA	1024x768@60 Hz	1344x806	48.363	N	60.004	N	65.000
	1024x768@70 Hz	1328x806	56.476	N	70.069	N	75.000
	1024x768@75 Hz	1312x800	60.023	P	75.029	P	78.750

## IBM Modes<sup>a</sup>

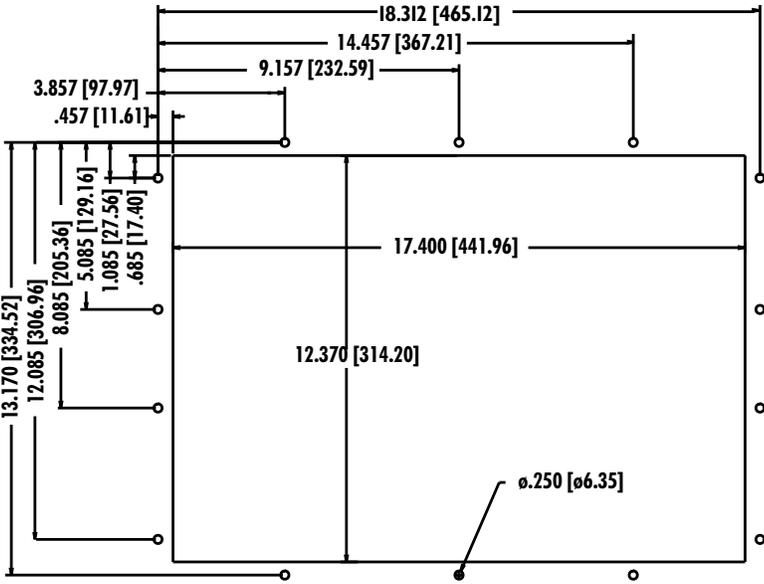
Mode	Resolution	Total	Horizontal		Vertical		Nominal Pixel Clock (MHZ)
			Nominal Frequency +/-0.5 KHz	Sync Polarity	Nominal Frequency +/-1Hz	Sync Polarity	
<b>EGA</b>	640x350@70 Hz	800x449	31.469	P	70.086	N	25.175
<b>CGA</b>	640x400@70 Hz	800x449	31.469	N	70.086	P	25.175
<b>EGA</b>	720x350@70 Hz	900x449	31.469	P	70.086	N	28.322
<b>DOS</b>	720x400@70 Hz	900x449	31.469	N	70.087	P	28.322
<b>XGA</b>	1024x768@72 Hz	1304x798	57.515	P	72.1	P	75.000

## MAC Modes<sup>a</sup>

Mode	Resolution	Total	Horizontal		Vertical		Nominal Pixel Clock (MHZ)
			Nominal Frequency +/-0.5 KHz	Sync Polarity	Nominal Frequency +/-1Hz	Sync Polarity	
<b>VGA (14")</b>	640x480@67 Hz	864x525	35.000	N	66.6667	N	30.240
<b>SVGA (16")</b>	832x624@75 Hz	1152x667	49.728	N	74.551	N	57.284
<b>XGA (19")</b>	1024x768@60 Hz	1312x813	48.780	N	60.001	N	64.000
	1024x768@75 Hz	1328x804	60.241	N	74.927	N	80.000

<sup>a</sup>Calibration of on screen parameters may be necessary.

# PRODUCT DIMENSIONS



## 3015KPM Unit Dimensions

Height	14.20" (360.7 mm)
Width	19.00" (482.6 mm)
Depth	
3015(T)	4.00" (101.6 mm)
3015(KPM)	4.50" (114.3 mm)
Mounting Depth	
3015(T)	3.25" (82.6 mm)
3015(KPM)	3.75" (95.25 mm)
Weight	14 lbs. (6.3 kg)

**Note:** The 3015KPM's front panel size and mounting dimensions are identical to Xycom Automation's 3515T, 3535T, 3535KPM, 3512KPM, and 3515KPM PC products. NOTE: The 3015KPM can be mounted in an EIA standard 19" rack.

# PRODUCT SPECIFICATIONS AND RATINGS

## Environmental

	Operating	Nonoperating
Thermal	0C to 50° C	-20C to 60° C
Humidity	20% to 80% RH, noncondensing	20% to 80% RH, noncondensing
Shock	15g peak acceleration, 11 msec duration	30g peak acceleration, 11 msec duration
Vibration 5-2000 Hz	.006" peak to peak displacement 1.0g maximum acceleration	.015" peak to peak displacement 2.5g maximum acceleration
Altitude	Sea level to 10,000 ft.	Sea level to 40,000 ft.

## Electrical

AC power 100-240 VAC, 0.6A, 50/60 Hz

## Regulatory Compliance

### CE

- EN 55022: Class A
- EN 61000-6-2
- EN 60950

### FCC

- 47 CFR, Part 15, Class A

## Safety Agency Approvals

### UL

- UL 1950
- UL 1604

### CUL

- CSA-C22.2, #950
- CSA-C22.2, #213

## Front Panel

- NEMA 4/4X/12, IP65

# 2 Installation

## ENVIRONMENTAL CONSIDERATIONS

The system's rugged design allows it to be installed in most industrial environments. You can refer to the unit's electrical and environmental specifications and tolerances for more detailed information.

### 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 practices:

- 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

To keep the temperature in range, the cooling air at the base of the system must not exceed the maximum temperature specification (page 10). 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 malfunctions which can result in hazardous machine operation in certain applications. Noise may be present only at certain times, may appear at widely-spread 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.

**Note:** It is very important that the directions, as explained in Chapter 1 under “Grounding the 3015KPM(T),” are followed.

## Line Voltage Variation

The power supply section of the unit is built to sustain the specified line fluctuations (see page 10) and still allow the system to function in its operating margin. As long as the incoming voltage is adequate, the power supply provides all the logic voltages necessary to support the monitor unit.

Unusual AC line variations may cause undesirable system shutdowns. As a first step to reduce line variations, you can correct any possible feed problems 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.

## Location and Enclosure

- Place the unit to allow easy access to the system ports.
- Account for the unit's dimensions when selecting an installation location or enclosure (see page 9).
- You can maintain the NEMA 4 seal by mounting the unit in an approved enclosure that has a 14 gauge (0.075"/1.9 mm thick) steel or (0.125"/3.2 mm thick) aluminum front face.
- Place the unit at a comfortable working level.
- Mount the unit in an upright position, if possible.
- 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.
- Avoid obstructing the air flow to allow for maximum cooling.
- Place any fans or blowers close to the heat-generating devices. If using a fan, make sure that outside air is not brought inside the enclosure unless a fabric or other reliable filter is used. This filtration prevents conductive particles or 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) (equipment such as high-power welding machines, induction heating equipment, and large motor starters).
- Do not place incoming power line devices (such as isolation or constant voltage transformers, local power disconnects, and surge suppressers) near 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 (see page 10 for specifications).
- Install the unit so 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 overloading the supply circuit.

## GENERAL COMPATIBILITY ISSUES

Below are compatibility issues that apply to the 3015KPM.

- The 3015KPM must be powered up before the host computer is powered up so that the host can determine if a keyboard and mouse are connected. If the 3015KPM is not powered up first the host will determine that there is no mouse or keyboard available. Once the complete system is up and running the 3015KPM can be power cycled at any time without affecting the host. It is the initial power up of the host that requires the power up sequence.
- If an operating system is loaded on the host computer, the 3015KPM should not be used as the host mouse or keyboard during the loading of the operating system. Instead, a mouse and keyboard can plug directly into the host for the loading of an operating system. The 3015KPM can be used for the monitor only during the loading of the operating system.
- The IBM specification for PS/2 ports defines both a Type I and Type II interface. The 3015KPM is a Type II interface. Xycom has determined that not all PS/2 compatible devices are Type II compatible. The user can try any standard PS/2 device, but Xycom only guarantees the approved list.
- Non-standard devices should not be used with the 3015KPM. If a device does not meet the standard PS/2 definition, and does not use the standard PS/2 driver that comes with the operating system, it will not work reliably with the 3015KPM. For example, if a device requires its own separate driver it probably will not work because it was written to expect that the device would be plugged directly into the computer's host port. In the case of the 3015KPM this is not true.

Known Compatible and Incompatible devices:

**Compatible:** Microsoft PS/2 Mouse

**Incompatible:** Logitech® Mouse

Dell® Mouse

- Daisy-chaining two or more 3015KPM(T) units is not supported.
- Special functions, such as Capslock and Numlock, cannot be part of a programmed keypad macro sequence.
- Hot unplug of a full-travel keyboard or mouse from the 3015KPM(T) is not supported.
- If a 35XX(T) is used as a host, only the 35XX(T) or the 3015KPM(T) can make use of their touchscreens.
- Using the 14XX/34XX as a host is not supported.

## XVME COMPATIBILITY ISSUES

- If you are going to connect a 3015KPM or 3015KPMT monitor to a Xycom XVME-660 processor board, the XVME-600 must have BIOS revision 1.3 (or higher). The Xycom BIOS revision number will appear at the top of the screen briefly during system boot-up. If you do not see the Xycom BIOS revision number for the XVME-660, enable the Boot

Time Diagnostic Screen in the Advanced menu of the BIOS setup (see the XVME-660 manual for more details). Older Xycom processor boards (XVME-654, XVME-655, and older) have not been validated to work with the 3015KPM or the 3015KPMT.

- Using the XVME-653, 656, 658 or 659 as a host is not supported.

To get a copy of the new BIOS revision, call Xycom Automation technical support at 1-800-ATXYCOM (if outside the United States, Puerto Rico, or Canada call 1-734-429-4971), or download the new BIOS from Xycom Automation web site at [www.xycom.com](http://www.xycom.com). On the homepage of the web site scroll down to the Support Center box in the main frame and select the BIOS and Firmware Updates option in the third drop-down menu Hardware Drivers. The necessary files will be included in a ZIP file that can be downloaded from the table on that page. The instructions will be on a README.txt file in the ZIP file. You will need WinZip® or PKUNZIP® to extract the files from the ZIP file.

## THE POWER SUPPLY

See page 10 for the electrical specifications of available power supplies.

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

**Warning: RISQUE D' EXPLOSION** Avant de deconnecter l'equiment, couper le courant ou s'assurer que l'emplacement est designe non dangereux.

**Warning: EXPLOSION HAZARD** When operating in hazardous locations, disconnect power before replacing or wiring modules.

**RISQUE D' EXPLOSION** Dans les situations hasardees, couper la courant avant de remplacer ou de cabler les modules.

### To Attach the Power Cable

1. Before you can connect your unit to a power source, you must create a power cable. See below.
2. Attach one end of the power cord to the power receptacle and the other end to a properly grounded outlet.

## Creating an AC Power Supply Cable

You will need the following materials:

- A three-position power connector (supplied, see figure 2-1)
- A braid/foil shielded power cable, terminated at power source end, with three 18 (1.0 mm), 16 (1.3 mm), or 14 (1.6 mm) AWG solid or stranded copper wire, rated 80° C or better.

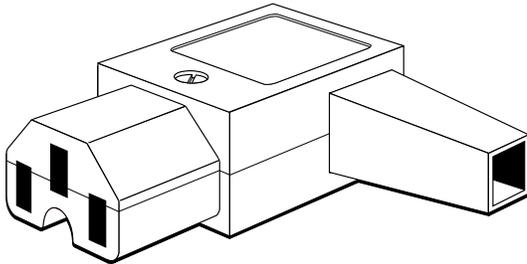


Figure 2-1. AC Power Connector.

### To Create an AC Cable

1. Cut the wire cable to the desired length.
2. Strip 0.25-inch (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 (see figure 2-2). Insert the Protective Earth ground (PE) wire, the neutral (N) wire, and the line (L) wire around the corresponding screw. Be sure that no bare wires are

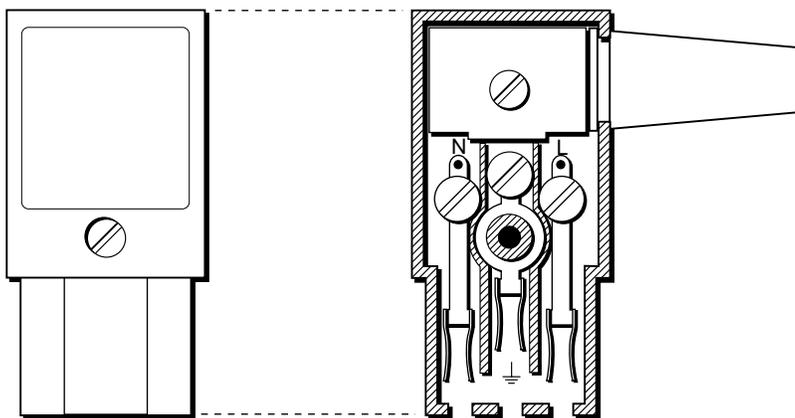


Figure 2-2. Internal View of AC Power Connector.

exposed.

5. Tighten the three screws above the wires to hold them firmly in place.
6. Use the screw provided to secure and strain-relief the power cable inside the connector. Plug the power cable into the power supply located on the back of the unit.
7. Once the power cable and other optional interface cables are installed, installation is complete.

## Cable Retainer Bracket

Once you have created the power cable, attach the retainer bracket that secures the cable connector to the unit. You *must* use this retainer bracket in hazardous locations.

**Warning:** Absence of this bracket can allow a power connector to become disengaged. An explosion could result if this occurs in the presence of a hazardous environment. Refer to Appendix B for information regarding hazardous locations.

### To Attach the Retainer Bracket

1. Plug the completed cable into the system's power supply.
2. Place the retainer bracket over the connector so that the shorter sides wrap around the connector and the screw holes on the large flange line up with those on the case (see figure 2-3).
3. Insert the two M3 x 0.5 metric screws and tighten to the standard torque (11-in/lb).

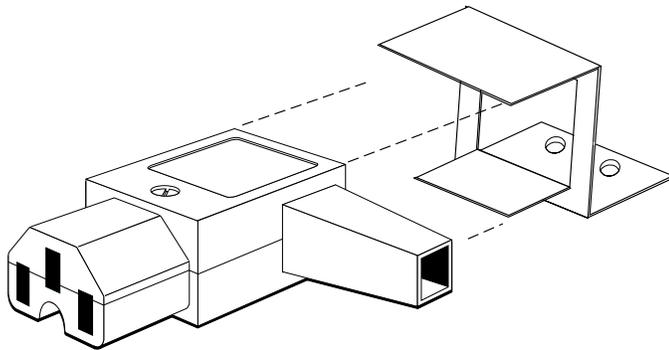


Figure 2-3. Cable Retainer Bracket.

**Warning:** Be sure to completely loosen the two securing screws on the retainer bracket when disconnecting the power cord from the unit. **Please refer to Appendix B for information regarding hazardous locations.**

## ADJUSTING THE DISPLAY

The user has the option of adjusting the display from the front or the rear of the unit. Six momentary switches on the back are MENU, ENTER, +, -, BRIGHT, and DIM. The first four are associated with the Menu. Enter setup mode by depressing MENU.

To make adjustments from the front panel use the following keys:

**F/A Key** – Must be held down at all times in order for the rest of the keys to function in the adjustment mode. The following key descriptions assume the F/A key is being held down at all times.

**EXPLORE Key** – Depress once for the monitor menu to appear. To return to the menu or to turn the menu off simply depress the **EXPLORE** key until menu appears or turns off.

**+ Key** – This key functions the same as the PLUS switch on the back of the unit.

**- Key** – This key functions the same as the MINUS switch on the back of the unit.

**^ or >** — (Up arrow or right arrow) will increase the brightness bulb, and functions the same as the BRIGHT switch on the back of the unit

**V or <** — (Down arrow or left arrow) will decrease the brightness bulb, and functions the same as the DIM switch on the back of the unit.

The on screen display (OSD) menu is displayed (refer to figure 2-4) when the MENU button on the back of the monitor is pressed with the monitor powered up and inputs properly connected.

ENTER Key -- Use to select the chosen adjustment.



Figure 2-4. Main OSD Menu (example)

There are eight items within the main menu:

Icon	Function	Description
	Brightness	Adjusts image brightness
	Contrast	Adjusts image contrast
	Color	Adjusts image color
	Position	Adjusts image position on the display
	Image	Configures clocks per line and clock phase
	Video Modes	Selects signal standard
	Auto Config	Auto-configures phase/clock
	Miscellaneous	Resets factory default parameters, adjusts the OSD timeout, adjusts the OSD menu position, displays system information

Figure 2-5. Menu Items

**Note:** The 3015KPM is calibrated at the factory for high resolution.

Once a menu item is activated with the ENTER button on the back of the monitor, the + and - buttons are used to adjust the settings. Once a setting is adjusted, pressing ENTER will save the new setting and return to the previous menu. Pressing the MENU button while adjusting a setting will return to the previous menu without saving the adjustment.

## Brightness

The brightness control is used to adjust the image brightness. A slider indicating the current brightness is displayed (refer to figure 2-6). The brightness value is adjusted to the input signal.



Figure 2-6. Brightness Control.

## Contrast

The Contrast control is used to adjust image contrast. A slider indicates the current contrast setting (refer to figure 2-7). The contrast value is adjusted according to the input signal. The RGB channel is set in the screen contrast.



Figure 2-7. Contrast Control.

## Color

The color menu contains four items to adjust RGB colors (refer to figure 2-8). Menu items are displayed according to the input port signal. The red, green, and blue

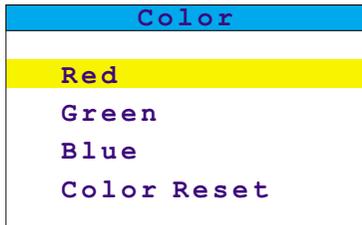


Figure 2-8. Color Menu.

controls (refer to figure 2-9) are used to adjust each color channel in PC graphics.

The color reset control resets each color to the factory settings. The default selection is *No*. If *Yes* is selected, each color is automatically reset to the factory settings. A *Please Wait* message is displayed during the automatic color reset process. After the process is completed successfully, *Completed* is displayed. Otherwise, *Aborted* is displayed to indicate that the process failed.

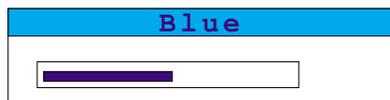
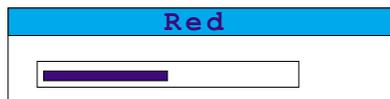


Figure 2-9. Red, Green, Blue, and Color Reset Controls.

## Position

The position menu (refer to figure 2-10) allows the image position to be adjusted. The menu items are displayed according to the input port signal.



Figure 2-10. Position Menu.

The H-Position and V-Position controls (refer to figure 2-11) allow the user to adjust the horizontal and vertical image positions.

Auto (automatic center) performs automatic adjustment of both the horizontal and vertical image positions. The default selection is *NO*. If *YES* is selected, the image is centered automatically according to the current graphics resolution. A *Please Wait* message is displayed during the automatic configuration process. After the process is completed successfully, *Completed* is displayed. Otherwise, *Aborted* is displayed to indicate that the process failed.

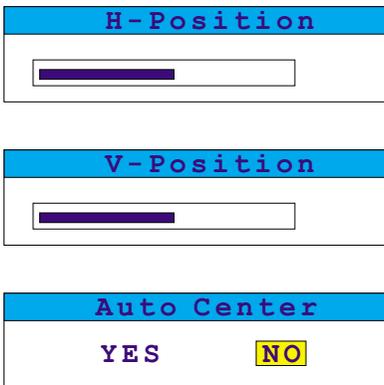


Figure 2-11. H-Position, V-Position, and Auto Center Controls.

## Image

The image menu includes two options to adjust the display image (refer to figure 2-12). The menu items are displayed according to the input port signal.

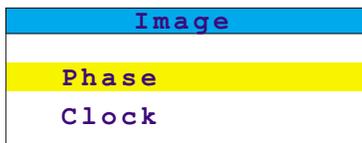


Figure 2-12. Image Menu.

The phase control is used to adjust the phase sample pixel clock. The clock control is used to adjust the number of clock pixels per line (samples per line). The range of

clock adjustment is +/- 40 pixels from the VESA standard, in increments of two pixels. (Refer to figure 2-13.)

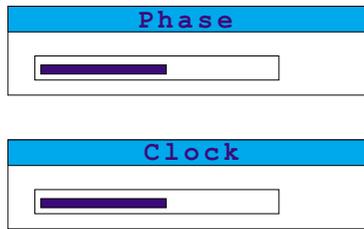


Figure 2-13. Phase and Clock Controls.

## Video Modes

The first four items (EGAI, EGAI, DOS, and CGA) select the proper text mode. The last two items (VESA and MAC) must match the PC/Macintosh system to get the best visual. (Refer to figure 2-14.)

Video Modes	
EGA	640x350
EGA	720x350
▶ DOS	720x400
CGA	640x400
▶ VESA	Format
MAC	Format

Figure 2-14. Video Modes Menu.

## Auto Configuration

The auto configuration control (refer to figure 2-15) is used to perform automatic configuration of clock and position. The default selection in the box is *NO*. After *YES* is selected and automatic CLK/POS is started, a *Please Wait* message is displayed. The system first performs a vertical position adjustment to position the image at the top of the display. Next, a horizontal position adjustment is made to position the image at the left of the display. Then, the system will automatically find the correct clocks per line within a tolerance of +/- 32 clocks per line. Finally, a phase adjustment is performed, varying the sampling point of the phase over 360 degrees in 32 steps to find the best approximation phase setting. After the process is completed successfully, *Completed* is displayed. Otherwise, *Aborted* is displayed.



Figure 2-15. Auto Configuration Control.

The vertical position and horizontal position can be adjusted individually from the Position menu, and the phase and clock controls can be fine-tuned from the Image menu.

## Miscellaneous

The Miscellaneous menu is used to select miscellaneous OSD settings and submenus (refer to figure 2-16).

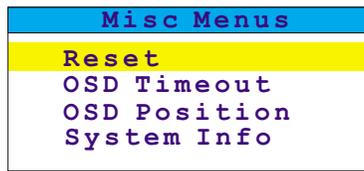


Figure 2-16. Miscellaneous Menu.

The Reset control (refer to figure 2-17) is used to reload all the factory default parameters. The default selection is NO. If YES is selected, all previously saved changes in memory are replaced by the factory defaults. A *Please Wait* message is displayed during the automatic configuration process. After the process is completed successfully, *Completed* is displayed. Otherwise, *Aborted* is displayed to indicate that the process failed.



Figure 2-17. Reset Control.

The OSD Timeout control is used to set the OSD idle time-out. If no active action, key press, or automatic configuration occurs for the defined period, the OSD menu is closed. There are four OSD time-out values available: 15, 30, 45, and 60 seconds.

The OSD Position is used to set the OSD menu position. The horizontal and vertical position can be adjusted separately (refer to figure 2-18).

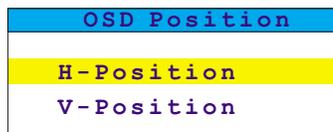


Figure 2-18. OSD Menu Position Controls.

Each position adjustment item reveals a slider window. The maximum position values are based on the size of the OSD menu.

The System Information menu provides the user with detailed information on the current input format. V-frequency, H-frequency, Pixel Clk, Width, and Height are indicated.

## REMOTE SWITCHES

The 3015KPM(T) is capable of monitoring eight remote switches. The switches selected by the user should be +5 volt logic compatible. A normally open, momentary, low-level switch can be found in most switch catalogs. This port will allow the user to wire up to eight push-button switches alongside the 3015KPM(T). A 25DB connector on the back of the unit is provided for these connections. See pin out for key codes associated with each switch. As an example, to implement a remote switch for the ENTER key the user could simply connect a switch between pins 1 and 14 on the DB25 connector.

## INSTALLING THE UNIT

After you have pre-attached the ground cable to the unit and prepared an appropriate location you can install the 3015KPM(T).

### Grounding the 3015KPM(T)

Provided is a 4-foot braided ground cable. This cable is required in order to comply with CE Marking electromagnetic immunity standards. Remove the mouse ground cable screw (refer to figure 1-3) in the lower left hand corner of unit and remove the ground lug. Place the ground lug from the 4-foot cable onto the chassis. Place the already existing ground lug on top of that and replace the screw. The 4-foot braided ground cable may be cut to the length needed if desired. An additional ground lug is provided in the doc kit to replace the one that will be discarded if the cable is cut to a new length. Attach the free end of the new cable to a protective earth (PE) ground within your system.

### Panel-Mounting

The system is generally placed in a NEMA 4/4X/12 enclosure to protect against contaminants such as dust, moisture, etc. Metal enclosures also help minimize the effects of electromagnetic radiation that nearby equipment can generate.

**Warning:** For Class II hazardous locations the 3015KPM MUST be installed within a dust-proof enclosure. Refer to Appendix B for information regarding hazardous locations.

#### To Panel-Mount the Unit

Refer to the mounting specifications (page 9) for your unit to complete these steps.

1. Create a cutout in the panel to specifications. Make sure the area around the cutout is free of metal burrs.
2. Drill the mounting holes to specifications.
3. Secure the unit in place.
4. Tighten the mounting nuts to specifications.

### Rack-Mounting

You can position and secure the unit in a 19" universal spacing rack. Refer to the mounting specifications (page 9) for your unit to complete these steps.

**Warning:** Install the unit in a manner that does not create an unsafe load condition when mounted in the rack. You may need to reconfigure other equipment in the rack.

**Warning:** For Class II hazardous locations the 3015KPM MUST be installed within a dust-proof enclosure. Refer to Appendix B for information regarding hazardous locations.

**To Rack-Mount the Unit**

1. Attach the unit securely in the rack, using the proper mounting hardware for your rack.
2. Install the unit in the rack, using standard rack-mounting hardware.
3. To remove the unit from the rack, reverse the procedure.

# 3 Operator Input

Xycom Automation offers models with different integrated operator input options. This chapter includes information about the possible operator input options of your unit.

## TOUCHSCREEN

Xycom Automation's touchscreen complies with environmental specifications and maintains a NEMA 4 seal when panel-mounted. It remains operational even after 30 million touches. Installation and configuration requirements vary according to the operating system in use. If you change the operating system, you must install and configure the corresponding touchscreen driver software.

### Installing Touchscreen Drivers

If your system has a touchscreen controller you must determine which driver(s) to install.

Power up the system to see what response the Input LED gives. You must watch closely for the Input LED response during power up to see the response. If the LED flashes three times at power up it has a Xycom touchscreen controller. After flashing three times the LED will be constantly and dimly lit. However, if at power up the LED is constantly and dimly lit (with no flashing) your system has a Microtouch touchscreen controller.

You will install the driver that corresponds to the touchscreen controller and the operating system of the host computer.

1. Insert the *Documentation and Support Library CD* in the CD-ROM.
2. Navigate to the **Drivers/Touchscreen** folder.
3. Inside that folder are other folders with the titles of various drivers. Refer to the following matrix to determine which driver(s) you need for your system.

	DOS	Windows
Microtouch (Touchware)	Touchware 3.4	Touchware 5.62
Xycom (Touch-base)	Touch-base/DOS	Touch-base/Windows

4. Copy the needed files to your computer or install them from the *Documentation and Support Library CD*.

**Note:** All touchscreen units ship with the MS-DOS, Windows 3.x, Windows 95, Windows NT, and Windows 2000 touchscreen drivers.

**Note:** For Xycom/Touch-Base touchscreen systems, the UPDD driver must be installed in Serial Mode. Simultaneous touch screen operation can be achieved by choosing two touch devices, one on COM1 and the second on COM2, during installation. Separate calibration will be required for each screen. Once installed, run the Pointer Device Control Panel applet and select Help for details.

## Calibrating the Touchscreen

If you need to recalibrate the touchscreen, refer to the sections in the touchscreen manual that explain calibrating the touchscreen and using the diagnostic utility.

For Xycom/Touch-Base controllers, if you need to recalibrate the touchscreen, run the Pointer Devices Control Panel applet. Select Help for details about calibrating. For best results, use the 25 point calibration setting with Start In At set to 0.

You need to calibrate the touchscreen if:

- 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.

# 4 Keypad Utility Program

The Keypad Utility lets users redefine all keypad keys with new scan codes using utility software. Use an external full-stroke PC/AT keyboard to access the utility. (You cannot redefine keys on the full-stroke keyboard.)

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

## LOADING THE KEYPAD UTILITY

**Note:** You need MS-DOS 3.2 or higher to run the keypad utility. It will *not* work if you are running Windows 95 or Windows NT. However, the keypad utility will run under Windows 95 in DOS mode.

You can run this utility directly from the disk or copy it onto your hard drive. To run the keypad utility from the disk, change the directory to the appropriate drive and type `kp2util`. To load the utility onto your hard drive, create a subdirectory for the files and copy all of the files onto the disk into that subdirectory. Enter the subdirectory and type `kp2util`.

## 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. “Xycom Automation KP2 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, and entering utility commands. You can redefine all keys on the keypads except NumLock and CapLock. While the utility is running, the keypads are disabled.

Dialog boxes appear for user prompts and to display error and user advice messages.

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.

Keys specific to each menu are shown at the bottom of each screen.

## STARTUP

Type `kp2util` to run the full keypad utility.

## UTILITY BATCH MODE

You can also use a batch file to reprogram keypads. This feature is useful if you wish to reprogram many units with customized keypad macros without having to enter the full keypad utility for each unit. Once the full utility has been used to create and save keypad macros, the files containing these macros can be included on a disk with the keypad utility and then used to reprogram other units from a batch file.

The command `kp2util filename` runs the keypad utility batch mode. “*Filename*” is the file containing the new keypad macros. The filename extension must be included. For example, in a batch file, the command `kp2util def3015.pkm` would reprogram the keypad on the 3015KPM with default values for the numeric keypad. After programming, the system will reboot.

## MAIN MENU

Figure 4-1 illustrates the Main Menu.

Exit	Files	Macros	Upload	Download	Utilities
Xycom Automation KP2 Utility: MAIN L-Arrow, R-Arrow, Enter					

Figure 4-1. Main Menu

## EXIT

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

## FILES 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.

The following table describes the menu commands.

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 they came.
Save	Copies the macro set from memory back into its original file. The 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.

## MACROS KEYPAD TYPE MENU

When you select Macros, a pull down menu displays and provides the following choices: Function Keys, Alpha Keys, and Exit. Also, another pull down menu displays the following choices once the Macros menu is chosen: Exit, View, Teach, and Edit.

**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.

Command	Description
Function Keys	Selects the function keys on the keypad to either view, edit, or teach.
Alpha Keys	Selects the alpha keys on the keypad to either view, edit, or teach.
Exit	Returns to the Main Menu.
View	<p>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. Select Exit from the View Menu to return to the Macros 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.</p> <p>While viewing the macro, the menu bar displays two options: Exit and Hex/Decimal. Exit returns to the View Menu, while 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.</p> <p>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.</p>
Teach	<p>Allows you to record up to 105 keystrokes in a macro. When selected, a graphic representation of the keypad currently in memory displays. Menu bar choices are Exit, ASCII/Hex/Decimal, and Click ON/OFF. Exit returns to the Macros menu.</p> <p>ASCII/Hex/Decimal specifies the format to display the keystrokes as they are entered. Default is ASCII. Click is not supported.</p> <p>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 on the external full-stroke keyboard in a macro assigned to the chosen key. As the keys are entered, they are displayed using the chosen format. ESC stops recording and returns 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.</p>

Command	Description
Edit	<p>Displays a graphic representation of the keypad in memory and a menu bar displaying Exit, Click, and ON/OFF. Exit returns to the Macros menu. Click is not supported. To select a key to edit, use the arrow keys to position the cursor on the desired key and press Enter.</p> <p>In edit mode, the macro is displayed as two lines. The top line (the edit 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; it is not user configurable. This line keeps track of which part of the macro you are editing, and is updated by the utility as editing takes place.</p> <p>The Insert, Delete and cursor control keys 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/Decimal, and I/O (Insert/Overtyp). The macro for the chosen key is also displayed.</p> <p>Cut deletes a sequence of scan codes from the macro. To select a section to cut:</p> <ol style="list-style-type: none"> <li>1. Place the cursor on the first character to cut.</li> <li>2. Press F1 and select Cut.</li> <li>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</li> </ol> <p>The last character of every macro is the end of the macro (EOM) and cannot be deleted.</p> <p>Copy copies a sequence of scan codes from the macro into memory. To select the section to copy:</p> <ol style="list-style-type: none"> <li>1. Place the cursor on the first character to copy. Press F1 and select Copy.</li> <li>2. Press Enter. Copy should still be highlighted, but the cursor will appear on the Edit line.</li> <li>3. Move the cursor on the last character to copy and press Enter.</li> </ol> <p>The copied item does not appear on the screen until you select Paste.</p> <p>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. Insert toggles between insert and overtype mode.</p>

**Note:** The 3015KPM does not support the programming of special functions, such as Caps Lock, Num Lock or Scroll Lock.

## UPLOAD MENU

Use the Upload Menu to choose which data to load. Choices in this menu are: Keypad Version and Exit.

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

**Note:** Only one macro set may reside in memory at one time.

A checksum will be calculated during transmission. If an error occurs, an error message will be displayed.

## DOWNLOAD MENU

**Note:** When you select Download, any macro set previously programmed is overwritten.

Download sends the set of keypad macros to the keyboard controller. The macro set must reside in memory before it can be downloaded. A checksum is calculated during transmission and an error message displays if an error occurs.

**Caution:** Macroset in memory should be saved before downloading. Otherwise, all changes will be lost.

As the macro is sent, the keyboard controller programs its non-volatile memory with the new macros that become the new key definitions for the keypad. After programming the 3015KPM, the 3015KPM and the host system will need to be power cycled.

## UTILITIES MENU

When Utilities is selected, a menu bar displays two choices: Factory Default and Exit.

Command	Description
Factory Default	Reprograms the keypad macros to the factory default settings. After completion, the 3015KPM and host system will need to be power cycled.
Exit	Returns to the Main Menu.

# KEYPAD SCAN CODES

The utility's default keypad keycodes are listed in the following table.

Default Keypad Keycodes

3015KPM	F/A Key LED Off (Function Mode)			F/A Key LED On (Alpha Mode)		
	Keyboard Equivalent	Make Codes	Break Codes	Keyboard Equivalent	Make Codes	Break Codes
PF1 / A	F21	14 05	F0 05 F0 14	A	1C	F0 1C
PF2 / B	F22	14 06	F0 06 F0 14	B	32	F0 32
PF3 / C	F23	14 04	F0 04 F0 14	C	21	F0 21
PF4 / D	F24	14 0C	F0 0C F0 14	D	23	F0 23
PF5 / E	F25	14 03	F0 03 F0 14	E	24	F0 24
PF6 / F	F26	14 0B	F0 0B F0 14	F	2B	F0 2B
PF7 / G	F27	14 83	F0 83 F0 14	G	34	F0 34
PF8 / H	F28	14 0A	F0 0A F0 14	H	33	F0 33
PF9 / I	F29	14 01	F0 01 F0 14	I	43	F0 43
PF10 / J	F30	14 09	F0 09 F0 14	J	3B	F0 3B
F1 / K	F1	05	F0 05	K	42	F0 42
F2 / L	F2	06	F0 06	L	4B	F0 4B
F3 / M	F3	04	F0 04	M	3A	F0 3A
F4 / N	F4	0C	F0 0C	N	31	F0 31
F5 / O	F5	03	F0 03	O	44	F0 44
F6 / P	F6	0B	F0 0B	P	4D	F0 4D
F7 / Q	F7	83	F0 83	Q	15	F0 15
F8 / R	F8	0A	F0 0A	R	2D	F0 2D
F9 / S	F9	01	F0 01	S	1B	F0 1B
F10 / T	F10	09	F0 09	T	2C	F0 2C
F11 / U	F11	12 05	F0 05 F0 12	U	3C	F0 3C
F12 / V	F12	12 06	F0 06 F0 12	V	2A	F0 2A
F13 / W	F13	12 04	F0 04 F0 12	W	1D	F0 1D
F14 / X	F14	12 0C	F0 0C F0 12	X	22	F0 22
F15 / Y	F15	12 03	F0 03 F0 12	Y	35	F0 35
F16 / Z	F16	12 0B	F0 0B F0 12	Z	1A	F0 1A
F17 / :	F17	12 83	F0 83 F0 12	:	12 4C	F0 12 F0 4C
F18 / /	F18	12 0A	F0 0A F0 12	/	4A	F0 4A
F19 / \	F19	12 01	F0 01 F0 12	\	5D	F0 5D
F20 / *	F20	12 09	F0 09 F0 12	*	12 3E	F0 12 F0 3E
PF11 / (	F31	11 05	F0 05 F0 11	(	12 46	F0 12 F0 46
PF12 / )	F32	11 06	F0 06 F0 11	)	12 45	F0 12 F0 45
PF13 / ?	F33	11 04	F0 04 F0 11	?	12 4A	F0 12 F0 4A
PF14 / ^	F34	11 0C	F0 0C F0 11	^	12 36	F0 12 F0 36
PF15 / %	F35	11 03	F0 03 F0 11	%	12 2E	F0 12 F0 2E
PF16 / \$	F36	11 0B	F0 0B F0 11	\$	12 25	F0 12 F0 25
PF17 / @	F37	11 83	F0 83 F0 11	@	12 1E	F0 12 F0 1E
PF18 / <	F38	11 0A	F0 0A F0 11	<	12 41	F0 12 F0 41
PF19 / >	F39	11 01	F0 01 F0 11	>	12 49	F0 12 F0 49
PF20 / ~	F40	11 09	F0 09 F0 11	~	12 0E	F0 12 F0 0E
CTRL	CTRL	14	F0 14	CTRL	14	F0 14

SHIFT	SHIFT	12	F0 12	SHIFT	12	F0 12
ESC	ESC	76	F0 76	ESC	76	F0 76
ALT	ALT	11	F0 11	ALT	11	F0 11
TAB	TAB	0D	F0 0D	TAB	0D	F0 0D
DEL	DEL	E0 12 E0 71	E0 F0 71 E0 F0 12	DEL	E0 12 E0 71	E0 F0 71 E0 F0 12
F/A						
SPACE	SPACE	29	F0 29	SPACE	29	F0 29
BACK SPACE	BACK SPACE	66	F0 66	BACK SPACE	66	F0 66
1	1	16	F0 16	1	16	F0 16
2	2	1E	F0 1E	2	1E	F0 1E
3	3	26	F0 26	3	26	F0 26
4	4	25	F0 25	4	25	F0 25
5	5	2E	F0 2E	5	2E	F0 2E
6	6	36	F0 36	6	36	F0 36
7	7	3D	F0 3D	7	3D	F0 3D
8	8	3E	F0 3E	8	3E	F0 3E
9	9	46	F0 46	9	46	F0 46
.	.	49	F0 49	.	49	F0 49
0	0	45	F0 45	0	45	F0 45
=	=	55	F0 55	=	55	F0 55
PgUp	PgUp	E0 12 E0 7D	E0 F0 7D E0 F0 12	PgUp	E0 12 E0 7D	E0 F0 7D E0 F0 12
up arr	up arr	E0 12 E0 75	E0 F0 75 E0 F0 12	up arr	E0 12 E0 75	E0 F0 75 E0 F0 12
+	+	79	F0 79	+	79	F0 79
left arr	left arr	E0 12 E0 6B	E0 F0 6B E0 F0 12	left arr	E0 12 E0 6B	E0 F0 6B E0 F0 12
HOME	HOME	E0 12 E0 6C	E0 F0 6C E0 F0 12	HOME	E0 12 E0 6C	E0 F0 6C E0 F0 12
right arr	right arr	E0 12 E0 74	E0 F0 74 E0 F0 12	right arr	E0 12 E0 74	E0 F0 74 E0 F0 12
PgDn	PgDn	E0 12 E0 7A	E0 F0 7A E0 F0 12	PgDn	E0 12 E0 7A	E0 F0 7A E0 F0 12
down arr	down arr	E0 12 E0 72	E0 F0 72 E0 F0 12	down arr	E0 12 E0 72	E0 F0 72 E0 F0 12
-	-	7B	F0 7B	-	7B	F0 7B
ENTER	ENTER	5A	F0 5A	ENTER	5A	F0 5A
END	END	E0 12 E0 69	E0 F0 69 E0 F0 12	END	E0 12 E0 69	E0 F0 69 E0 F0 12
Left Start	Mouse click (windows start menu)	E0 12 E0 1F	E0 F0 1F E0 F0 12		E0 12 E0 1F	E0 F0 1F E0 F0 12
Explorer	Mouse click (windows pop-up menu)	E0 12 E0 2F	E0 F0 2F E0 F0 12		E0 12 E0 2F	E0 F0 2F E0 F0 12

**NOTES:**

- F11-F20 = SHIFT F1-F10
- F21-F30 = CTRL F1-F10
- F31-F40 = ALT F1-F10
- END, LEFT START, and EXPLORE keys are 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., 3015KPM.PKM for 3015KPM) from the File/Open menu and then download it from the download menu. **Do not save any changes to the default files.**

# 5 Maintenance

## 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.

- Clean the 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).
- 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 air flow 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.

## XYCOM RECOMMENDED HARD DRIVE PREVENTATIVE MAINTENANCE

Xycom Automation 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 preventative 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.

The purpose of this message is to merely bring this to our customer's attention, 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@xycom.com](mailto:support@xycom.com).

*Please note Xycom recommends frequent back ups of your hard drive, especially before beginning any preventative maintenance procedures.*

## CHEMICAL COMPATIBILITY

Certain combinations of chemical environments, temperature, and stress can adversely affect parts made from thermoplastic resin. For this reason, material which may come in contact with 3015KPM monitors should be carefully evaluated under end-use

conditions for compatibility. You should also follow the use and compatibility recommendations of the material manufacturer.

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 85° C (185° F). Some contain aromatic hydrocarbons which should be avoided.

## Compatible Lubricants

Lubricants	Manufacturer
DC® 230 Molykote® 33	Dow Corning Midland, MI 48640 (800) 248-2345
Harmony® 68 Security® 68	Gulf Oil Petroleum Prod. Dept. Pittsburgh, PA 15230 (412) 655-6247
Lubriplate® Aero	Fisher Bros. Refinery 129 Lockwood Street Newark, NJ 07105
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
SF® 1147 Versilube® F-50	GE Silicone Products Waterford, NY 12188 (518) 237-3330
Terrestic ® 77	Exxon P.O. Box 2180 Houston, TX 77092 (713) 680-5712

If you want to use a lubricant that is not listed, contact the appropriate manufacturer to determine compatibility.

## Compatible Cleaning Agents

Type	Agents
Aliphatics	Hexane, Heptane, White Kerosene Mineral Spirits, Petroleum Ethers (65° 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®

If you want to use an agent that is not listed, contact the appropriate manufacturer to determine compatibility.

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

## Noncompatible, Detrimental Cleaning Agents

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

## PRODUCT REPAIR PROGRAM

Xycom Automation's Product Repair and Customization Department (PR&C) restores equipment to normal operating condition, and implements engineering changes that enhance operating specifications. Returned products are tested with standard Xycom Automation test diagnostics.

### To prepare the unit for shipment

1. Obtain an RMA number for your unit by calling your nearest Xycom Automation Repair Department or Xycom Automation, Inc. at 1-800-289-9266 or 734-429-4971. Please have the following information available:
  - Company name and shipping and billing addresses
  - 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
2. Make sure the front panel assembly is properly attached to the unit.
3. Attach failure information to the unit to speed processing.
4. Place the unit securely in its original packaging or an equivalent heavy-duty box.
5. Mark the RMA number on your purchase order and on the outside of the box.
6. Send the unit to the address given when you receive your number.

## SPARE PARTS

The following replacement kits are available for the 3015KPM monitor. Touchscreen controllers are included with the 3015KPM(T) front panel replacement kit. See page 5 for instructions on removing the front panel and accessing the touchscreen controller card.

Description	Xycom Part Number
3015KPM front panel replacement kit	140621-001 (3015KPM)
3015KPM(T) front panel replacement kit	140622-001 (3015KPM(T))
Rear unit assembly replacement kit	140628-001 (3015KPM(T))

# 6 Troubleshooting

This chapter is intended to supplement the rest of the manual. It provides charts of general operational problems, their possible causes, and corrective actions that can be taken. Refer to Chapter 2 for installation and Chapter 5 for maintenance information.

**Note:** When replacing a particular unit or performing service procedures on a unit that was customized, or on which options were installed, make sure you maintain configuration changes that support these customizations or options.

## REPAIRING THE UNIT

In some cases, a problem will indicate that you should replace a component. If the unit is under warranty, we recommend ordering a complete replacement unit rather than replacing only the damaged part. If you replace a part instead of replacing the entire unit, you may find that other parts are defective and additional downtime may occur.

If the unit is no longer under warranty, the customer may wish to replace only the defective part to reduce costs. Spare parts (see page 39) can be ordered directly from Xycom Automation. We do not recommend third-party replacement components because they may not be compatible with the unit's hardware and software.

When a failed unit is returned to Xycom Automation for repair, a detailed and accurate problem description must accompany it (see page 39).

## TROUBLESHOOTING CHARTS

Following is a troubleshooting chart to help diagnose and correct problems. The chart provides one or more probable causes and a corresponding course of action for each problem. The causes listed are not necessarily complete, and the recommended action may not necessarily be appropriate for a particular situation.

Possible causes are ordered by the simplicity of the corrective action. Items that are usually the easiest to check are listed first.

The chart is only a guideline and does not replace proper diagnostic procedures. It remains your responsibility to verify that the actions taken to correct a problem are appropriate.

Also, you should try to determine the failure's root cause. For example, if the line fuse has blown, you should try to establish the reason for the excess current that caused the fuse to blow, to prevent it from recurring.

## General Operational Problems

During normal operation no error messages will occur. If you encounter a problem use the following chart to try to diagnose your problem.

Problem	Cause	Action
Blank Screen	Power disconnected	Check power supply voltage and connection integrity
	Video cable disconnected	Check video cable and connection integrity
	Line fuse blown	Replace fuse and determine cause
	Faulty RAM in host computer	Replace SIMMs
Screen color or picture is distorted	Video drivers were not loaded	Load correct video drivers
Touchscreen inoperable	Touchscreen driver changed	Update touchscreen drivers
	Controller failed	Call factory
COM2 inoperable	Touchscreen conflict under Windows NT operating system	Find alternate port for serial device

# A

# Pinouts and Ports

This appendix provides the pinouts for the remote switch, power, video, and touchscreen connectors.

## CONNECTORS

### Remote Switch Connector

Pin Number	Remote Switch Connector
1	SWITCH 0 = ENTER KEY
2	SWITCH 1 = F1 KEY
3	SWITCH 2 = Upper Case Y KEY
4	SWITCH 3 = "=" KEY
5	SWITCH 4 = Upper Case N KEY
6	SWITCH 5 = F2 KEY
7	SWITCH 6 = TAB KEY
8	SWITCH 7 = ESC KEY
9	NC
10	NC
11	NC
12	NC
13	NC
14	GND
15	GND
16	GND
17	GND
18	GND
19	GND
20	GND
21	GND
22	NC
23	NC
24	NC
25	NC

## Touch Serial Connector

Pin Number	Description
1	NC
2	TXD
3	RXD
4	NC
5	GND
6	NC
7	NC
8	NC
9	NC

## Video Connector

Pin Number	Description
1	RED
2	GREEN
3	BLUE
4	NC
5	GND
6	GND
7	GND
8	GND
9	VCC
10	GND
11	NC
12	DDCDAT
13	HSYNC
14	VSYNC
15	DDCCLK

## Power Connector

AC Pin Number	AC Description
1	L
2	N
3	AC_GND

## XYCOM STANDARD KEYPAD CODES REV C

### Xycom Keypad Codes for Non-shifted Letters Main Set

Symbol	Edit Sequence	AT Make	AT Break	XT Make	XT Break
A	1C	1C	F0 1C	1E	9E
B	32	32	F0 32	30	B0
C	21	21	F0 21	2E	AE
D	23	23	F0 23	20	A0
E	24	24	F0 24	12	92
F	2B	2B	F0 2B	21	A1
G	34	34	F0 34	22	A2
H	33	33	F0 33	23	A3
I	43	43	F0 43	17	97
J	3B	3B	F0 3B	24	A4
K	42	42	F0 42	25	A5
L	4B	4B	F0 4B	26	A6
M	3A	3A	F0 3A	32	B2
N	31	31	F0 31	31	B1
O	44	44	F0 44	18	98
P	4D	4D	F0 4D	19	99
Q	15	15	F0 15	10	90
R	2D	2D	F0 2D	13	93
S	1B	1B	F0 1B	1F	9F
T	2C	2C	F0 2C	14	94
U	3C	3C	F0 3C	16	96
V	2A	2A	F0 2A	2F	AF
W	1D	1D	F0 1D	11	91
X	22	22	F0 22	2D	AD
Y	35	35	F0 35	15	95
Z	1A	1A	F0 1A	2C	AC

## Xycom Keypad Codes for Left-Shifted Letters Main Set

Symbol	Edit Sequence	AT Make	AT Break	XT Make	XT Break
A	12 1C	12 1C	F0 1C F0 12	2A 1E	9E AA
B	12 32	12 32	F0 32 F0 12	2A 30	B0 AA
C	12 21	12 21	F0 21 F0 12	2A 2E	AE AA
D	12 23	12 23	F0 23 F0 12	2A 20	A0 AA
E	12 24	12 24	F0 24 F0 12	2A 12	92 AA
F	12 2B	12 2B	F0 2B F0 12	2A 21	A1 AA
G	12 34	12 34	F0 34 F0 12	2A 22	A2 AA
H	12 33	12 33	F0 33 F0 12	2A 23	A3 AA
I	12 43	12 43	F0 43 F0 12	2A 17	97 AA
J	12 3B	12 3B	F0 3B F0 12	2A 24	A4 AA
K	12 42	12 42	F0 42 F0 12	2A 25	A5 AA
L	12 4B	12 4B	F0 4B F0 12	2A 17	97 AA
M	12 3A	12 3A	F0 3A F0 12	2A 24	A4 AA
N	12 31	12 31	F0 31 F0 12	2A 31	B1 AA
O	12 44	12 44	F0 44 F0 12	2A 18	98 AA
P	12 4D	12 4D	F0 4D F0 12	2A 19	99 AA
Q	12 15	12 15	F0 15 F0 12	2A 10	90 AA
R	12 2D	12 2D	F0 2D F0 12	2A 13	93 AA
S	12 1B	12 1B	F0 1B F0 12	2A 1F	9F AA
T	12 2C	12 2C	F0 2C F0 12	2A 14	94 AA
U	12 3C	12 3C	F0 3C F0 12	2A 16	96 AA
V	12 2A	12 2A	F0 2A F0 12	2A 2F	AF AA
W	12 1D	12 1D	F0 1D F0 12	2A 11	91 AA
X	12 22	12 22	F0 22 F0 12	2A 2D	AD AA
Y	12 35	12 35	F0 35 F0 12	2A 15	95 AA
Z	12 1A	12 1A	F0 1A F0 12	2A 2C	AC AA

## Xycom Keypad Codes for Non-Shifted Special Keys Main Set

Symbol	Edit Sequence	AT Make	AT Break	XT Make	XT Break
`	0E	0E	F0 0E	29	A9
1	16	16	F0 16	02	82
2	1E	1E	F0 1E	03	83
3	26	26	F0 26	04	84
4	25	25	F0 25	05	85
5	2E	2E	F0 2E	06	86
6	36	36	F0 36	07	87
7	3D	3D	F0 3D	08	88
8	3E	3E	F0 3E	09	89
9	46	46	F0 46	0A	8A
0	45	45	F0 45	0B	8B
-	4E	4E	F0 4E	0C	8C
=	55	55	F0 55	0D	8D
[	54	54	F0 54	1A	9A
]	5B	5B	F0 5B	1B	9B
\	5D	5D	F0 5D	2B	AB
;	4C	4C	F0 4C	27	A7
'	52	52	F0 52	28	A8
,	41	41	F0 41	33	B3
.	49	49	F0 49	34	B4
/	4A	4A	F0 4A	35	B5

## Xycom Keypad Codes for Left-shifted Special Keys Main Set

Symbol	Edit Sequence	AT Make	AT Break	XT Make	XT Break
~	0E	0E	F0 0E	29	A9
!	16	16	F0 16	02	82
@	1E	1E	F0 1E	03	83
#	26	26	F0 26	04	84
\$	25	25	F0 25	05	85
%	2E	2E	F0 2E	06	86
^	36	36	F0 36	07	87
&	3D	3D	F0 3D	08	88
*	3E	3E	F0 3E	09	89
(	46	46	F0 46	0A	8A
)	45	45	F0 45	0B	8B
_	4E	4E	F0 4E	0C	8C
+	55	55	F0 55	0D	8D
{	54	54	F0 54	1A	9A
}	5B	5B	F0 5B	1B	9B
	5D	5D	F0 5D	2B	AB
:	4C	4C	F0 4C	27	A7
"	52	52	F0 52	28	A8
<	41	41	F0 41	33	B3
>	49	49	F0 49	34	B4
?	4A	4A	F0 4A	35	B5

## Xycom Keypad Codes for Control and Miscellaneous Keys

Symbol	Edit Sequence	AT Make	AT Break	XT Make	XT Break
Tab	0D	0D	F0 0D	0F	8F
Left Shift Tab	12 0D	12 0D	F0 0D F0 12	2A 0F	8F AA
Caps Lock	58	58	F0 58	3A	BA
Left Shift	12	12	F0 12	2A	AA
Right Shift	59	59	F0 59	36	B6
Left Cntrl	14	14	F0 14	1D	9D
Right Cntrl	E0 14	E0 14	E0 F0 14	E0 1D	E0 9D
Left Alt	11	11	F0 11	38	B8
Right Alt	E0 11	E0 11	E0 F0 11	E0 38	E0 B8
Space Bar	29	29	F0 29	39	B9
Backspace	66	66	F0 66	0E	8E
Left Enter	5A	5A	F0 5A	1C	9C
Esc	76	76	F0 76	01	81
Insert	E2	E0 12 E0 70	E0 F0 70 E0 F0 12	E0 2A E0 52	E0 D2 E0 AA
Home	E3	E0 12 E0 6C	E0 F0 6C E0 F0 12	E0 2A E0 47	E0 C7 E0 AA
][	E3	E0 12 E0 6C	E0 F0 6C E0 F0 12	E0 2A E0 47	E0 C7 E0 AA
Page Up	E4	E0 12 E0 7D	E0 F0 7D E0 F0 12	E0 2A E0 49	E0 C9 E0 AA
PREV	E4	E0 12 E0 7D	E0 F0 7D E0 F0 12	E0 2A E0 49	E0 C9 E0 AA
Delete	E5	E0 12 E0 71	E0 F0 71 E0 F0 12	E0 2A E0 53	E0 D3 E0 AA
End	E6	E0 12 E0 69	E0 F0 69 E0 F0 12	E0 2A E0 4F	E0 CF E0 AA
Page Down	E7	E0 12 E0 7A	E0 F0 7A E0 F0 12	E0 2A E0 51	E0 D1 E0 AA
NEXT	E7	E0 12 E0 7A	E0 F0 7A E0 F0 12	E0 2A E0 51	E0 D1 E0 AA
Up Cursor	E8	E0 12 E0 75	E0 F0 75 E0 F0 12	E0 2A E0 48	E0 C8 E0 AA
Left Cursor	E9	E0 12 E0 6B	E0 F0 6B E0 F0 12	E0 2A E0 4B	E0 CB E0 AA
Right Cursor	EA	E0 12 E0 74	E0 F0 74 E0 F0 12	E0 2A E0 4D	E0 CD E0 AA
Down Cursor	EB	E0 12 E0 72	E0 F0 72 E0 F0 12	E0 2A E0 50	E0 D0 E0 AA
/	EC	E0 12 E0 4A	E0 F0 4A E0 F0 12	E0 2A E0 35	E0 B5 E0 AA
Print Screen	ED	E0 12 E0 7C	E0 F0 7C E0 F0 12	E0 2A E0 37	E0 B7 E0 AA
Pause/Break	EE	E0 12 E0 7E	E0 F0 7E E0 F0 12	E0 2A E0 46	E0 C6 E0 AA
SysRq PS2	ED	E0 12 E0 7C	E0 F0 7C E0 F0 12	E0 2A E0 37	E0 B7 E0 AA
SysRq 88 #1	84	84	F0 84	54	D4
SysRq 88 #2	7F	7F	F0 7F	54	D4
Scroll Lock	7E	7E	F0 7E	46	C6
Num Lock	77	77	F0 77	45	C5
Left Start	E1	E0 12 E0 1F	E0 F0 1F E0 F0 12	E0 2A E0 5B	E0 DB E0 AA

Right Start		E0 12 E0 27	E0 F0 27 E0 F0 12	E0 2A E0 5C	E0 DC E0 AA
Explore	EF	E0 12 E0 2F	E0 F0 2F E0 F0 12	E0 2A E0 5D	E0 DD E0 AA
Right *	7C	7C	F0 7C	37	B7
Right -	7B	7B	F0 7B	4A	CA
Right +	79	79	F0 79	4E	CE
Right Enter	E0 5A	E0 5A	E0 F0 5A	E0 1C	E0 9C

## Xycom Keypad Codes for Numeric/Control Combo Keys with Numlock On

Symbol	Edit Sequence	AT Make	AT Break	XT Make	XT Break
.	71	71	F0 71	53	D3
0	70	70	F0 70	52	D2
1	69	69	F0 69	4F	CF
2	72	72	F0 72	50	D0
3	7A	7A	F0 7A	51	D1
4	6B	6B	F0 6B	4B	CB
5	73	73	F0 73	4C	CC
6	74	74	F0 74	4D	CD
7	6C	6C	F0 6C	47	C7
8	75	75	F0 75	48	C8
9	7D	7D	F0 7D	49	C9
Del	12 71	12 71	F0 71 F0 12	2A 53	D3 AA
Ins	12 70	12 70	F0 70 F0 12	2A 52	D2 AA
End	12 69	12 69	F0 69 F0 12	2A 4F	CF AA
Down Cursor	12 72	12 72	F0 72 F0 12	2A 50	D0 AA
PgDn	12 7A	12 7A	F0 7A F0 12	2A 51	D1 AA
Left Cursor	12 6B	12 6B	F0 6B F0 12	2A 4B	CB AA
Blank	12 73	12 73	F0 73 F0 12	2A 4C	CC AA
Right Cursor	12 74	12 74	F0 74 F0 12	2A 4D	CD AA
Home	12 6C	12 6C	F0 6C F0 12	2A 47	C7 AA
Up Cursor	12 75	12 75	F0 75 F0 12	2A 48	C8 AA
PgUp	12 7D	12 7D	F0 7D F0 12	2A 49	C9 AA

## Xycom Keypad Codes for Function Keys F1-F20

Symbol	Edit Sequence	AT Make	AT Break	XT Make	XT Break
F1	FF 01	05	F0 05	3B	BB
F2	FF 02	06	F0 06	3C	BC
F3	FF 03	04	F0 04	3D	BD
F4	FF 04	0C	F0 0C	3E	BE
F5	FF 05	03	F0 03	3F	BF
F6	FF 06	0B	F0 0B	40	C0
F7	FF 07	83	F0 83	41	C1
F8	FF 08	0A	F0 0A	42	C2
F9	FF 09	01	F0 01	43	C3
F10	FF 0A	09	F0 09	44	C4
F11 IBM	78	78	F0 78	57	D7
F11 XYCOM	FF 0B	12 05	F0 05 F0 12	2A 3B	BB AA
F12 IBM	07	07	F0 07	58	D8
F12 XYCOM	FF 0C	12 06	F0 06 F0 12	2A 3C	BC AA
F13	FF 0D	12 04	F0 04 F0 12	2A 3D	BD AA
F14	FF 0E	12 0C	F0 0C F0 12	2A 3E	BE AA
F15	FF 0F	12 03	F0 03 F0 12	2A 3F	BF AA
F16	FF 10	12 0B	F0 0B F0 12	2A 40	C0 AA
F17	FF 11	12 83	F0 83 F0 12	2A 41	C1 AA
F18	FF 12	12 0A	F0 0A F0 12	2A 42	C2 AA
F19	FF 13	12 01	F0 01 F0 12	2A 43	C3 AA
F20	FF 14	12 09	F0 09 F0 12	2A 44	C4 AA

## Xycom Keypad Codes for Function Keys F21-F40 or PF1-PF20

Symbol	Edit Sequence	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	1D3C	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	FF28	11 09	F0 09 F0 11	38 44	C4 B8

### HOST PS/2 PORTS

The host ports are for connection to a host computer, and look to the host as if only one device is connected to each. The Keyboard Host and Mouse Host must connect to the Host CPU mouse and keyboard ports with the cable supplied. Additional host cable lengths are available.

### TOUCH SCREEN SUPPORT

The touch screen is used when the touch serial port is connected to a host COM port. A touch screen driver (supplied) must be loaded on the Host CPU.

## REMOTE SWITCHES

The 3015KPM(T) is capable of monitoring eight remote switches. The switches selected by the user should be +5 volt logic compatible. A normally open, momentary, low-level switch can be found in most switch catalogs. This port will allow the user to wire up to eight push-button switches alongside the 3015KPM(T). A 25DB connector on the back of the unit is provided for these connections. See pin out for key codes associated with each switch. As an example, to implement a remote switch for the ENTER key the user could simply connect a switch between pins 1 and 14 on the DB25 connector.

## VIDEO INPUT

The Video Input has a standard VGA input connector. The Video Input must be connected to the VIDEO Output on the Host CPU with the supplied cable. Most standard video modes are supported.

# **B** Hazardous Location Installations

Xycom Automation designed the 3015KPM to meet Class I and Class II, Division 2 Hazardous Location application requirements. Division 2 locations are locations that are normally non-hazardous, but could become hazardous due to accidents that may expose the area to flammable vapors, gases, or combustible dusts.

These units have been designed as nonincendive 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 units 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 Xycom Automation design intent. Xycom Automation accepts no responsibility for installations of this equipment or any devices attached to this equipment in Division 1 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 units.

**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.

**RISQUE D' EXPLOSION** La substitution de composants peut rendre ce matériel inacceptable pour les emplacements 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.

**RISQUE D' EXPLOSION** Avant de deconnecter l'equipement, coupler le courant ou s'assurer que l'emplacement est designe non dangereux.

**Warning: EXPLOSION HAZARD** When operating in hazardous locations, disconnect power before replacing or wiring modules.

**RISQUE D' EXPLOSION** Dans les situations hasardees, couper la courant avant de remplacer ou de cabler les modules.

**Warning:** To maintain a safe condition, do *not* use an external keyboard or mouse 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 responsible for 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:** Xycom Automation units 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 units from which they can escape only in cases of accidental rupture or breakdown of such enclosures or units, 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 units.
- 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 units 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 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 per the instructions in the section, "*Mounting the Unit.*"

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 units do not have a power switch. The amount of input power required by these units classifies the power switch as an incendive 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.

## 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.

All communication cables should include a chassis ground shield. 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.

## OPERATION AND MAINTENANCE

The units have been designed to comply with relevant spark ignition tests.

**Warning:** To maintain a safe condition, do *not* use an external keyboard or mouse 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.

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