ultracade™

Kit Installation Manual

ULTRACADE™

KIT INSTALLATION MANUAL

VERSION 3.0

- **Read this booklet before use.**
- **Keep this booklet with machine at all times.**

ULTRACADE KIT™

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ULTRACADE KIT™

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1. GETTING STARTED

1.1 INTRODUCTION

This manual is intended for game operators and service technicians and describes how to install and test your ULTRACADE kit. This manual contains information on the conversion or your existing cabinet into a functional ULTRACADE cabinet.

HyperWare, Inc. assumes no liability for any damages incurred while installing ULTRACADE. As such, only qualified service personnel should perform this installation.

1.2 KIT PACKAGE INVENTORY

Open the shipping package for your ULTRACADE kit and inspect it for damage. Next, check the kit inventory for missing components. Refer to Table 1-1 and Figure 1-1.

|	Description	Qty.	Part #
1	Ultracade Artwork Tube Kit	1	-
	Control Panel Overlay	1	885-0004-01
	Rightside Ultracade	1	885-0003-01
	Leftside Ultracade	1	885-0002-01
	Marquee Ultracade	1	885-0001-01
2	Bracket, Tower	1	850-0108-01
2	Bracket, Shelf	2	850-0109-01
3	Joystick, Ultracade Kit	2	255-0001-01
4	Power Cord	1	240-0001-01
4	AC Adapter Cord	1	115-0019-01A
5	Screw kit	1	-
	Nut, Kep, 10/24 Hex Joystick	8	102-0002-01
	Bolt, Carriage 10/24 x 1.5in	8	103-0001-01
	Washers Flat	8	101-0002-01
	Screw 6/32 with star washer	6	100-0001-01
6	Button kit	1	-
	Blue Push Buttons	12	250-0003-01
	Player 1 Start Button	1	250-0001-01
	Player 2 Start Button	1	250-0002-01
	Exit Button	1	250-0004-01
7	Manual, Ultracade Kit Installtion	1	865-0002-01
7	Manual, Ultracade Operation	1	865-0001-01
8	Cable, Video Pass Through	1	115-0016-01
8	Dongle, EGA Medium Res.	1	245-0002-01
8	Dongle, CGA Low Res.	1	245-0001-01
9	Cable, Jamma+ Harness	1	115-0006-01
10	CD, Ultracade OS	1	855-0001-01
10	CD, Game Pack, Base Install	1	930-0020-01
11	Graphite, Ultracade System	1	980-0002-01
	Graphite System	1	-
	USBlinx	1	-
	USBlinx Cover	1	-
	USBlinx Cable Harness	1	-

TABLE 1-1 KIT INVENTORY
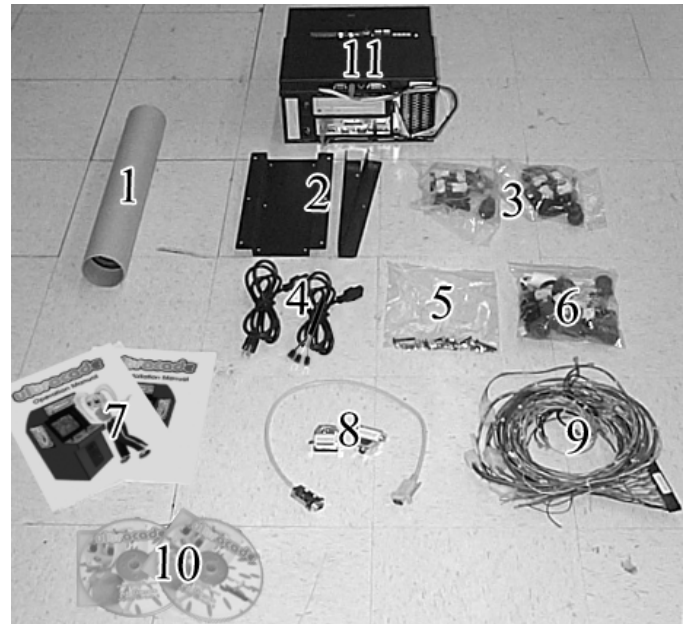
FIG. 1-1 KIT INVENTORY

If you suspect that any part of your kit is missing please contact HyperWare technical support at 408-895-0315.

Note: The Graphite, USBlinx, USBlinx cover, and USBlinx cable harness come pre-assembled. The OS and Gamepack CD come pre-installed.

1.3 RECOMMENDED TOOLS AND SUPPLIES

The following tools and supplies are recommended to complete the conversion of your existing cabinet into an ULTRACADE:

- Phillips and flat-head screwdrivers
- Wire cutters and strippers
- Pliers
- Nylon button wrench
- Power drill
- Tie wraps
- Wood or sheet metal screws
- Standardized socket set
- Razor blade
- Squeegee
- Electrical tape or heat shrink tubing
- Wire nuts
- Vacuum cleaner or air compressor
- Glass cleaner
- C-Clamps
- Rubber mallet or hammer
- Grease pencil
- Multimeter
- Assorted female spade connectors
- Crimpers
- Safety glasses
- Painting Supplies
  - Paint brush, roller, or power sprayer
  - Black semi-gloss paint and primer
  - Sand paper or electric sander
  - Putty knife and wood putty
  - Masking tape

2. CABINET PREPARATION

2.1 WARNINGS
When working on the cabinet always be sure that it is unplugged from the wall. Also, remember that even though your monitor is powered off it can still carry a high electrical charge which can result in severe injury or death. ULTRACADE kits should always be installed by a qualified technician.

2.2 PCB REMOVAL
If the cabinet you have chosen for your ULTRACADE still contains a PCB, it is suggested that the PCB be removed along with any cage or mounts that may also be inside the cabinet. If space allows, you may choose to leave the PCB in the cabinet.

2.3 WIRING REMOVAL
Your ULTRACADE kit is JAMMA compatible. If the cabinet you are installing the kit into is already a JAMMA cabinet, you may choose to leave the wiring intact. Some minor modifications may still be needed to take full benefit of all the options available to you with ULTRACADE.

      If using the existing wiring is not possible then remove all the old wiring from the control panel, test switches, coin door, speakers, and PCB power. **Do not remove any wires which supply power to your monitor or marquee light**. The video signal wires can be cut if you wish to splice into them or fully removed if you intend to wire a new molex connector for your monitor (your new ULTRACADE kit does not come with a molex connector for your monitor). If your monitor is VGA (15 pin connector) then nothing will need to be done to it.

2.4 JOYSTICK / BUTTON REMOVAL
Remove any joysticks and buttons from the control panel in preparation for the installation of the new control panel overlay.

2.5 ARTWORK REMOVAL
Remove the side art from the old cabinet. Sand down or remove the old control panel overlay. Remove any stickers from the monitor glass and bezel. Remove the marquee. If the old marquee has been silk-screened onto the plexiglass, you will need a new piece of plexiglass for your ULTRACADE marquee. Clean any glue residue left behind from old stickers.

2.6 DETERMINING YOUR MONITOR TYPE
It is important to know for the proper working order of your ULTRACADE what type of monitor is in your cabinet. ULTRACADE supports CGA (standard resolution/ 16.50 KHz), EGA (medium resolution / 25.00 KHz) or VGA (high resolution / 31.55 KHz) monitors. If you do not know what type of monitor you have then you will need to determine this. The easiest way is to check the monitor manual. In the event you no longer have your monitor manual, you will need to record the picture tube serial number and model and contact the manufacturer. When working on your monitor be sure to closely follow all warnings and precautions that come with it.

Note: ULTRACADE does not support vector monitors or any monitor that requires a color inverter.

2.6 CLEANING / PAINTING
You may also want to clean and/or paint your cabinet before installing your ULTRACADE kit. Any dust should be either vacuumed or blown out of the cabinet with an air compressor. If you decide to paint, any dents, chips, or other damage should be filled in with wood putty and sanded smooth. A black semi-gloss paint is recommended for painting an ULTRACADE kit cabinet.

3. CONTROL PANEL

3.1 CONTROL PANEL LAYOUT

ULTRACADE is optimally designed for an upright cabinet with two joysticks, six buttons for each joystick, and two start buttons. ULTRACADE will also support a single joystick configuration with six buttons and two start buttons. Additionally, ULTRACADE has cocktail support built in.

ULTRACADE kits also come with an exit button. This button is used by the player to exit a game and return to the main game selection screen. **If this button is not installed players will not be able to exit the game and select another!**

Note: When ULTRACADE is set to single or cocktail mode a two player simultaneous game will only start a single player game. Games which did not originally support a cocktail cabinet will not run in ULTRACADE cocktail mode.

If your control panel does not have the correct holes for the joysticks and/or buttons, then you will need to drill more button and/or joystick holes. Figure 3-1 illustrates the suggested layout for the ULTRACADE cabinet and a pull out sheet has been enclosed at the back of this manual which can be used as a template. Buttons will require a 1.13" diameter hole. Joysticks will require a 1 1/4" diameter hole for the stick and a 13/64" diameter hole for each mounting bolt. The exit button requires a 1.13" diameter hole for the button and 1/8" diameter holes for the button stabilization studs. Also, take into account whether you are drilling into wood, plexiglass, or metal and choose your drill bit accordingly.
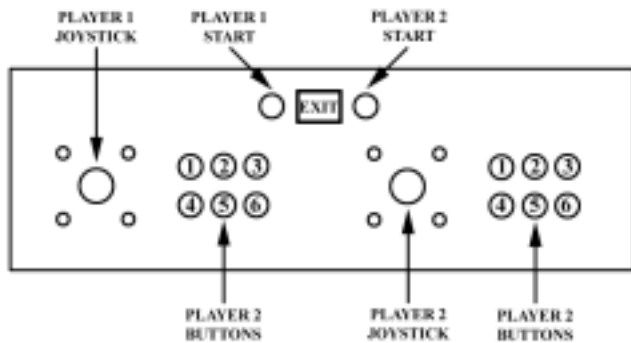

FIG. 3-1 CONTROL PANEL LAYOUT

3.2 CONTROL PANEL OVERLAY

Once the desired control panel layout has been achieved, the new overlay can be installed. The old overlay should be removed and the control panel should be cleaned. Use an X-acto knife or razor blade to cut the new overlay to the correct size. When applying the overlay carefully line it up and then use a squeegee or straight edge to remove any bubbles. Once the new overlay is on, you will need to carefully cut out holes for the joysticks and buttons.

3.3 JOYSTICK INSTALLATION

Your ULTRACADE kit comes with two 8-way joysticks. Joystick nuts and bolts are also supplied in the kit. When tightening the

joystick down use a 3/8" deep socket. The actuator on the joystick can be flipped for eight-way (the thick end) or four-way (the thin end) play. ULTRACADE is designed for use with eight-way joysticks. Games that originally used four-way joysticks will automatically have the four-way joystick simulated by the ULTRACADE software. Refer to Figure 3-2 when installing.
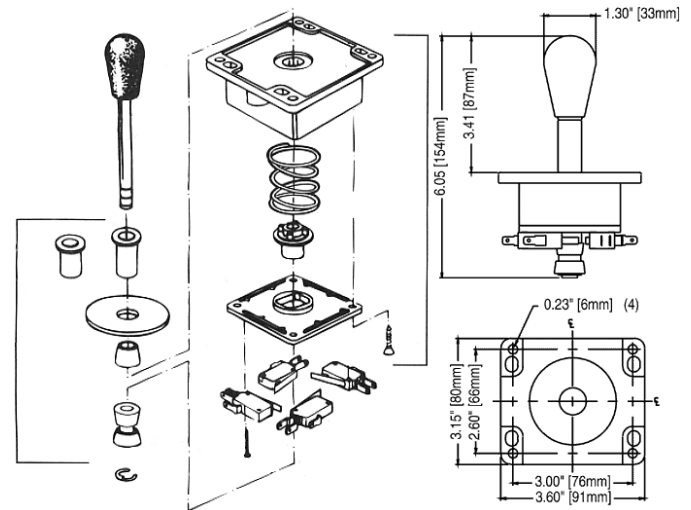

FIG. 3-2 JOYSTICK INSTALLATION

3.4 BUTTON INSTALLATION

Your ULTRACADE kit comes with 12 blue buttons, a player one start button, and a player two start button. Refer to Figure 3-3 when installing.

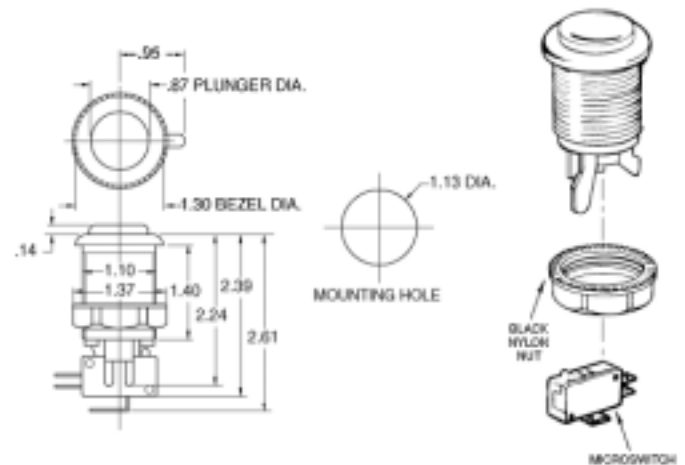**Note: Your control panel can be no thicker than .79" to install the button.**

FIG. 3-3 BUTTON INSTALLATION

3.5 EXIT BUTTON INSTALLATION

Your ULTRACADE kit comes with a lighted exit button. Refer to Figure 3-4 when installing.
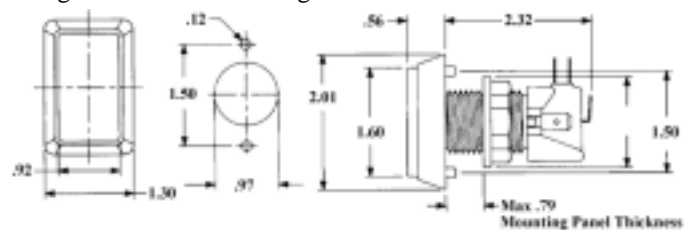

FIG. 3-4 EXIT BUTTON

4. GRAPHITE INSTALLATION

4.1 BRACKET INSTALLATION

When installing the Graphite in your cabinet you have a choice between a shelf (horizontal) or tower (vertical) mounting. See Figure 4-1 for examples. When choosing, look at the space available in your cabinet and determine the best location for the Graphite (you will need access to the CD-ROM and floppy drives). Once you have determined what orientation you will use, install the corresponding bracket(s) using the six 6/32" screws provided. Refer to Figure 4-1 if you have any problems attaching the brackets to your Graphite.

Note: You will need to leave at least a 2" clearance between the cabinet and the mounted Graphite to ensure proper air intake for cooling.
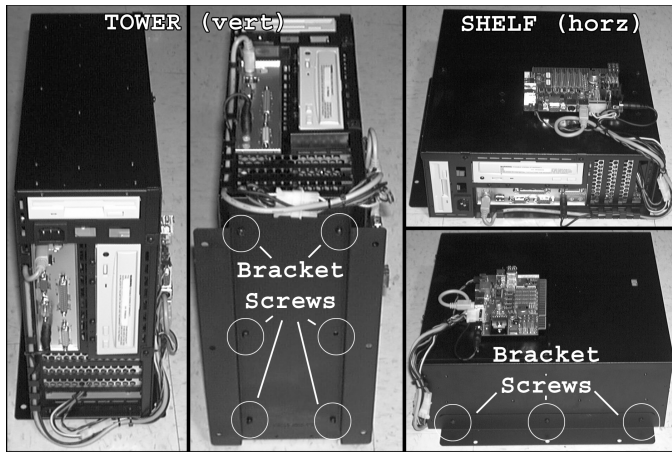

FIG. 4-1 BRACKET INSTALLATION

4.2 USBLINX CABLE HARNESS

The USBlinx cable harness comes pre-assembled to the Graphite. It contains four cables:

- PS2 keyboard cable
- Audio cable
- 4 -pin female molex power cable
- 2-pin female watchdog timer cable

      The USBlinx cable harness should never be removed unless specifically instructed to by a HyperWare technical support representative.
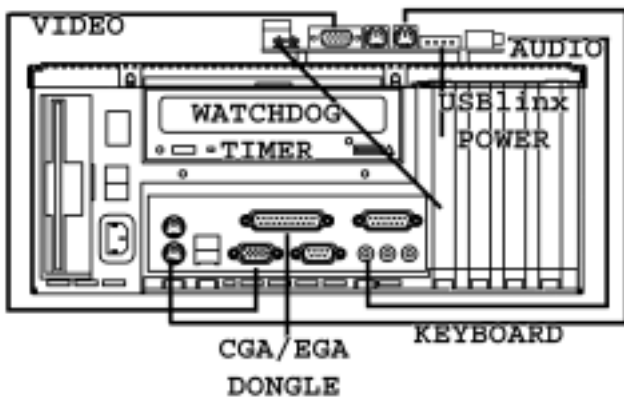

FIG. 4-2 USBLINX CABLES

4.3 CGA / EGA MONITOR DONGLE

If you have a CGA or EGA monitor then will need to plug the appropriate monitor dongle into the Graphite. If you have a VGA monitor you will not need either dongle.

      Both dongles are 25-pin male connectors and are clearly labeled. Plug the appropriate dongle for your monitor into the pink parallel port on the Graphite. When plugging in, refer to Figure 4-2 for the correct location. Use a small flat tipped screwdriver to tighten the screws to insure that the dongle does not come loose.

4.4 VIDEO PASS THROUGH CABLE

If you have a CGA or EGA monitor then the video pass through cable will need to be attached. Plug one end of the cable into the USBlinx and the other into the Graphite video port. This cable has a 15-pin male connector on each end and will pass the video signal coming from the Graphite to the USBlinx. The USBlinx will then amplify the red, green, and blue signals to the monitor, making the picture brighter. Refer to Figure 4-2 when attaching the cable.

      If you have a VGA monitor then the video pass through cable does not need to be attached. If the VGA cable is not long enough you may need to mount the Graphite in a different location or purchase a VGA extension cable from a local computer or electronics store.

4.5 MOUNTING THE GRAPHITE

When the Graphite is ready, place it inside the cabinet in the choosen spot and securely mount it down with six screws. Take into account whether you are mounting into wood, plastic, or sheet metal and use the appropriate screws. No mounting screws are provided. When finished, the Graphite should look something like Figure 4-3.
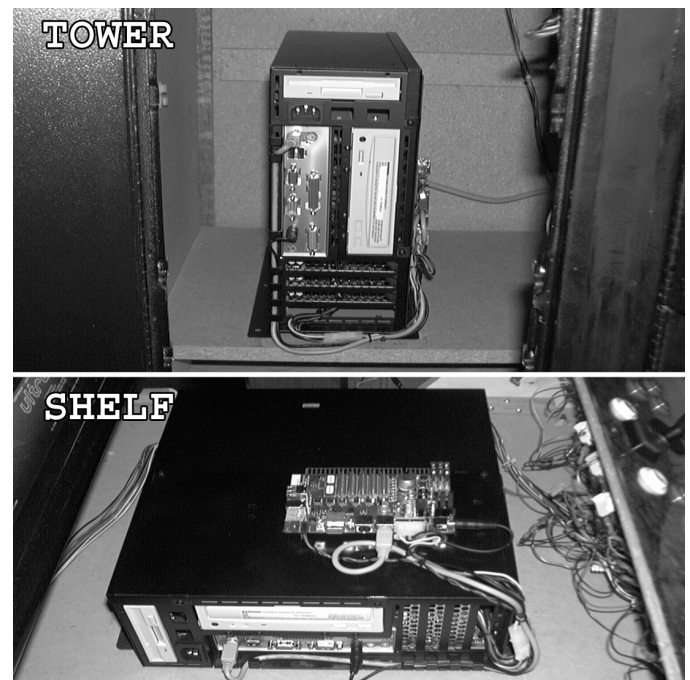

FIG. 4-3 MOUNTED GRAPHITE

5. POWER SETUP

5.1 AC ADAPTER CORD
Your ULTRACADE kit comes with an AC adapter cord (Figure 5-1) and a standard computer power cable. If the cabinet has a power strip you will be able to use the stanard power cord, otherwise the AC adapter cord will need to be wired into the main power supplied to the cabinet. The AC adapter wiring is as follows: Green - ground, White - neutral, Black -120V AC.
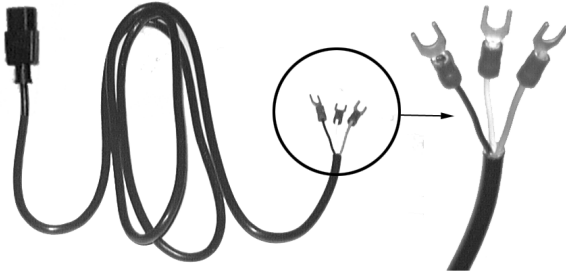

FIG. 5-1 AC ADAPTER CORD

The other end of your AC Adapter cord plugs into the Graphite next to the floppy drive (Figure 5-2). Before powering on, check the Graphite voltage switch to make sure it is set to the correct voltage (120V or 230V). The switch is located on the top of the Graphite behind the JAMMA edge.
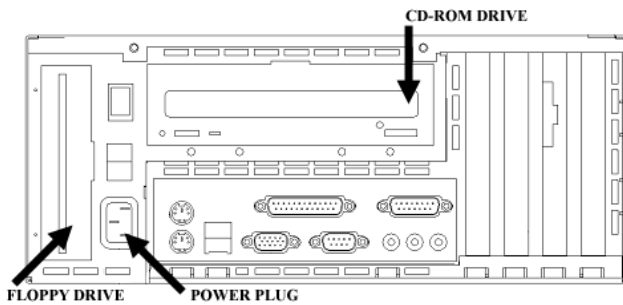

FIG. 5-2 GRAPHITE REAR PANEL

5.3 MONITOR POWER
The power for your monitor should already be wired. If you have installed a new monitor in the cabinet then you will need to supply power to it. When wiring the monitor, refer to the owner's manual for wiring instructions and/or schematics.

5.4 MARQUEE LIGHT POWER
The marquee light should already be supplied with power. If it is not, then you will need to wire it.

5.5 POWER ON TEST
Plug your cabinet in and turn it on. If the Graphite, monitor, or marquee light does not power on, you will need to check the wiring. Also check that the LEDs on the USBlinx are lit up. This insures that the USBlinx is being supplied with power. A multimeter can be used to check the continuity and voltages.

Note: Your Graphite should always power on once power is supplied

6. WIRING INSTALLATION

6.1 JAMMA HARNESS
Your ULTRACADE kit is JAMMA compatible. If you are installing the kit in a JAMMA cabinet you may have left your old wiring in. Use Table 6-1 to check the residual wiring. Take note of pins L,M,10 and 11 which are for the speaker wires and pins Ac and 25 which are for the fourth player buttons.

Your JAMMA+ harness connects directly into the edge of the USBlinx. The USBlinx is mounted on top of the Graphite with the edge facing the rear of the computer. The JAMMA edge is keyed so that the harness, if it has a white key in the seventh slot, can not be attached incorrectly to your USBlinx (Figure 6-1).

Your new JAMMA+ harness contains seven bundles of wire. The bundles are: player one, player two, exit button, speaker, video, and power.

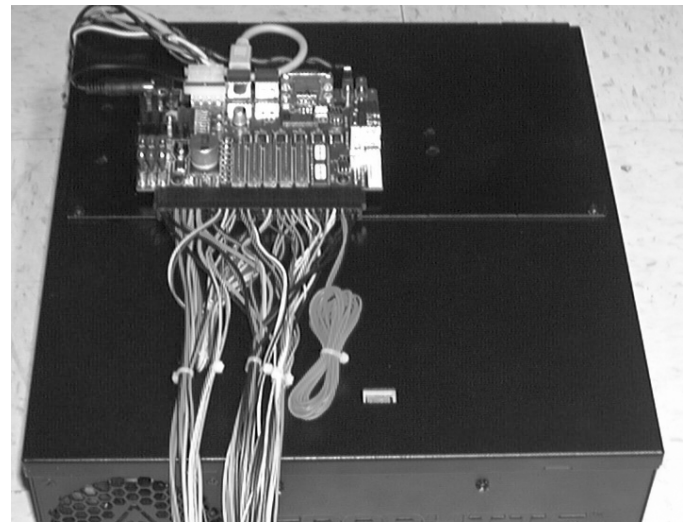The power bundle is not used and can be tie wrapped neatly out of the way.

FIG. 6-1 CONNECTING JAMMA HARNESS

6.2 CONTROL PANEL WIRING
On the player one and player two bundles, each bundle ends in spade connectors that easily interface with the joystick and button microswitches provided in your ULTRACADE kit (Figure 6-2). When connecting the wires, use Table 6-1 for reference.
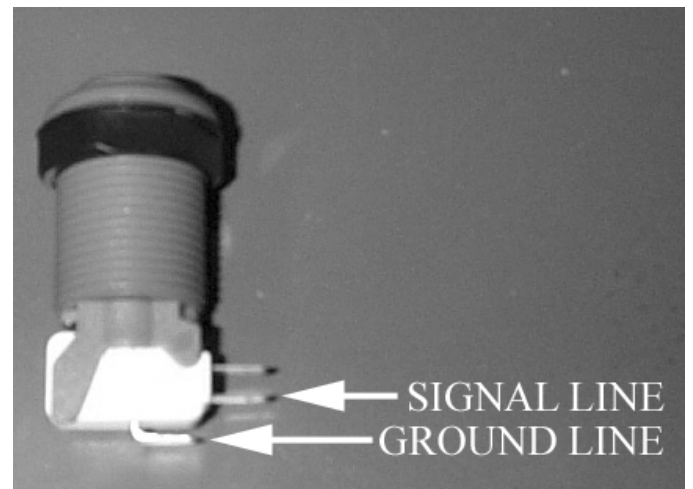

FIG. 6-2 MICROSWITCH WIRING

SOLDER					COMPONENT	
Ground	BLK	A		1	BLK	Ground
Ground	BLK	B		2	BLK	Ground
+5V	RD	C		3	RD	+5V
+5V	RD	D		4	RD	+5V
-5V	BL	E		5	BL	-5V
+12V	OR	F		6	OR	+12V
KEY		H		7		KEY
Not Used	WH/RD	J		8	WH/BLK	Meter 1
Not Used	BLK/GRN	K		9	BLK/YL	Not Used
Left Speaker -	BL/RD	L		10	RD/YL	Left Speaker +
Right Speaker -	BL/GR	M		11	RD/BLK	Right Speaker +
Video Green	GRN	N		12	RD	Video Red
Video Sync	WH	P		13	BL	Video Blue
Service Switch	WH/OR	Q		14	BLK	Video Ground
Not Used (Tilt)	BLK/WH	S		15	WH/BRN	Test Switch
Coin 2	BRN/BLK	T		16	YL/BLK	Coin1
P2 Start	RD/WH	U		17	RD	P1 Start
P2 Up	BL/WH	V		18	BL	P1 Up
P2 Down	GRN/WH	W		19	GRN	P1 Down
P2 Left	OR/WH	X		20	OR	P1 Left
P2 Right	YL/WH	Y		21	YL	P1 Right
P2 Button 1	BRN/WH	Z		22	BRN	P1 Button 1
P2 Button 2	PR/WH	Aa		23	PR	P1 Button 2
P2 Button 3	GRY/WH	Ab		24	GRY	P1 Button 3
P2 Button 4	GRN/YL	Ac		25	GRN/RD	P1 Button 4
Not Used	OR/BLK	Ad		26	OR/RD	Not Used
Ground	BLK	Ae		27	BLK	Ground
Ground	BLK	Af		28	BLK	Ground

TABLE 6-1 JAMMA PINOUTS

BL - Blue	OR - Orange
BLK - Black	PR - Purple
BRN - Brown	RD - Red
GRN - Green	WH - White
GRY - Grey	YL - Yellow
P1 - Player 1	P2 - Player 2

TABLE 6-2 JAMMA PINOUTS KEY

6.2.1 BUTTONS 5 & 6

Your ULTRACADE kit also contains an extra 5-pin molex connector for the fifth and sixth player buttons and the exit button. The wires which lead from this connector will break off into the appropriate player bundle. Refer to Table 6-3 when connecting to the microswitches.

Pin #	Color	Connects To
7	BL	Exit Button
8	GRN/WH	P1 Button 5
9	YL/WH	P1 Button 6
10	RD	P2 Button 5
11	BL/YL	P2 Button 6

TABLE 6-3 EXTRA MOLEX PINOUTS

The 5-pin molex connector now needs to be plugged into your USBlinx. Locate the bank of pins labeled "player 3" behind the the JAMMA edge of the USBlinx. The blue wire with a yellow stripe on the 5-pin molex connector goes on pin 11, which will be one pin in from the edge of the connector. Use Figure 6-3 for reference.
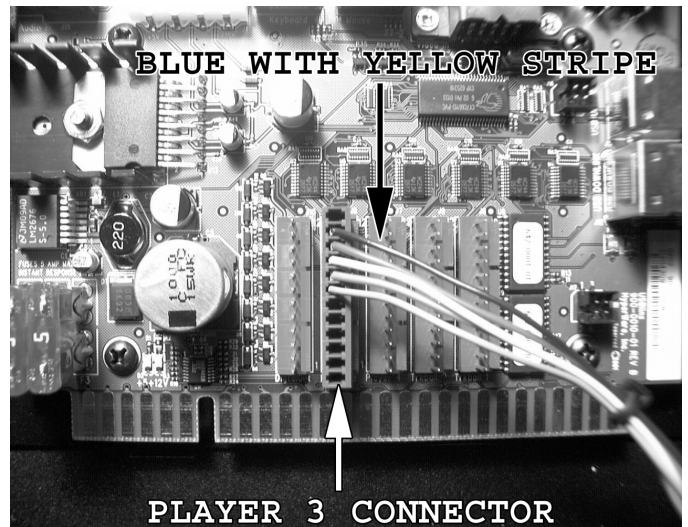

FIG. 6-3 CONNECTING 5-PIN MOLEX

6.2.2 EXIT BUTTON

When wiring the exit button, locate the wire bundle labeled "exit." The signal line is taken from the blue wiring stemming from the 5-pin molex connector. The 12 volt line necessary to light the exit button is colored orange and the ground line is black. Refer to Table 6-3 and Figure 6-4.
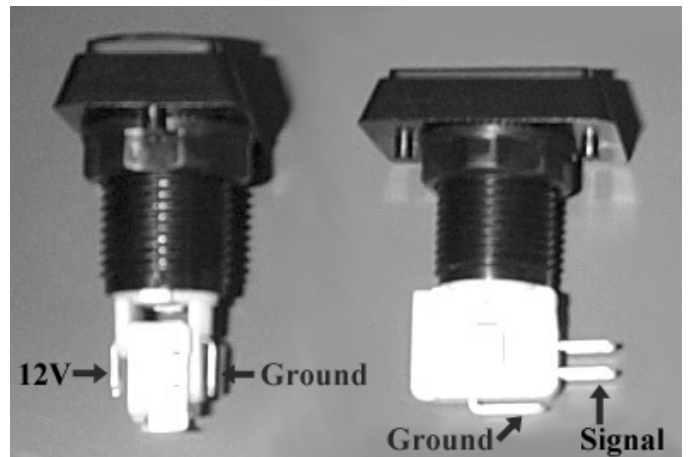

FIG. 6-4 EXIT BUTTON WIRING

6.3 VIDEO WIRING

You will only need to wire the video lines from the JAMMA harness if you have a CGA or EGA monitor. If you have a VGA monitor you may skip this section. To determine what type of monitor you have, refer to section 2.6 DETERMINING YOUR MONITOR TYPE.

Wiring your video will require you to either splice into the current video lines or wire an entirely new molex connector. To do this, the video bundle in the JAMMA harness is color-coded as follows:

• Red wire - Red signal
• Green wire - Green signal
• Blue wire - Blue signal
• Black wire - Video ground
• White wire - Composite sync

To determine the correct wiring pinout for your monitor refer to the owners manual or contact the manufacturer for a wiring schematic.

Note: HyperWare, Inc. is not liable for any damage done to monitors through incorrect wiring.

6.4 SPEAKER WIRING

ULTRACADE uses stereo audio. To determine the left and right speaker cables refer to Table 6-1 or Table 6-4. The wires coming from the speakers will need to be spliced into the speaker wires stemming from the JAMMA harness.

Pin #	Color	Connects To
L	BL/RD	Left Speaker -
M	BL/GR	Right Speaker -
10	RD/YL	Left Speaker +
11	RD/BLK	Right Speaker +

TABLE 6-4 SPEAKER BUNDLE

6.5 COIN DOOR WIRING

The coin door bundle on the JAMMA+ harness ends in two molex connectors. The 4-pin connector is used for the service/ test switch and the coin meter. The 9-pin connector is used for the coin switches, and coin door lights. Refer to Table 6-1 for the correct pinouts.

7. ARTWORK

The control panel overlay shoud already be installed when installing your joysticks and buttons. Refer to 3.2 CONTROL PANEL OVERLAY.

7.1 SIDE ART

Your ULTRACADE kit comes with left and right side art. Refer to Figure 7-1 for placement. Remember to remove old side art and clean any glue residue left behind before affixing the new art. When completed, use a squeegee or straight edge to remove any bubbles from the sticker.

FIG. 7-1 ARTWORK PLACEMENT

7.2 MARQUEE

Your new ULTRACADE marquee may need to be trimmed to fit into the cabinet. Use a razor blade and straight edge to trim it down. If your old marquee was silk screened onto the plexiglass, you will need a new piece of clear plexiglass.

8. FINAL CONFIGURATION

The ULTRACADE Operating System comes pre-installed but you may want to modify some of your settings. Below is a quick check list but you may wish to refer to your ULTRACADE Operation Manual for more details.

8.1 OPERATOR SETUP MENU

Your ULTRACADE kit is complete except for the final software configuration. Power on your ULTRACADE and press the service switch to enter the Operator Setup Menu. Refer to your ULTRACADE Operation Manual for help using the setup menus. If, after powering on, you are experiencing monitor problems refer to section 8.7 COMMON MONITOR PROBLEMS.

8.2 ACCOUNTING INFORMATION

Reset your accounting report data so that your ULTRACADE keeps proper accounting dates.

8.3 CREDITS / COINS

Change these settings to adjust the pricing for your ULTRACADE and to turn the bonus credit on or off. Your ULTRACADE's default setting is one coin drop to one play.

8.4 CABINET CONFIGURATION

In the cabinet configuration menu, set your screen orientation (vertical, horizontal, etc.), the cabinet orientation (upright, single, or cocktail), the location name, and the attract mode volume.

8.5 VOLUME

Adjust the volume so it is at a acceptable level for your location.

8.6 WIRING TEST

Your ULTRACADE software has built in JAMMA diagnostics which you can use to test all the wiring. To use these diagnostics refer to section 3.6.3 DIAGNOSTICS of your ULTRACADE Operation Manual.

8.7 COMMON MONITOR PROBLEMS

Refer to Table 8-1 for a list of common monitor problems and possible solutions.

PROBLEM		SOLUTION
Distorted or discolored image		Degauss monitor
Scrambled image		You may have used the wrong CGA / EGA monitor dongle
No raster		Make sure you have hooked up the Video Pass Through Cable if you have a CGA or EGA monitor
Vertical or horizontal sync is off		ULTRACADE uses a composite sync. Make sure your monitor can handle a composite sync. If it can not then you will need to jump the horizontal and vertical syncs on the monitior together.

TABLE 8-1 COMMON MONITOR PROBLEMS