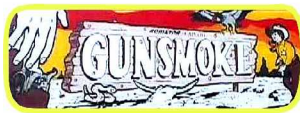


HAPP CONTROLS

ARCADE CLASSICS



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technologies

HAPP CONTROLS

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Arcade Classics™

KIT INSTALLATION MANUAL

VERSION 1.0

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

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ARCADE CLASSICS™ KIT

TABLE OF CONTENTS

1. GETTING STARTED	5	4.3	EGA / CGA Monitor Dongle	8
1.1 Introduction	5	4.4	Video Pass Through Cable	8
1.2 Kit Package Inventory	5	4.5	Mounting the SUMICOM	8
1.3 Recommended Tools and Supplies	5			
2. CABINET PREPARATION	6	5. POWER SETUP		9
2.1 Warnings	6	5.1 External Power Supply	9	
2.2 PCB Removal	6	5.2 Monitor Power	9	
2.3 Wiring Removal	6	5.3 Marquee Light Power	9	
2.4 Joystick / Button Removal	6	5.4 Power On Test	9	
2.5 Artwork Removal	6			
2.6 Determining Your Monitor Type	6	6. WIRING INSTALLATION		9
2.7 Cleaning / Painting	6	6.1 JAMMA Harness	9	
3. CONTROL PANEL	7	6.2 Control Panel Wiring	9	
3.1 Control Panel Layout	7	6.2.1 Buttons 5 and 6	10	
3.2 Control Panel Overlay	7	6.2.2 Exit Button	10	
3.3 Joystick Installation	7	6.3 Video Wiring	11	
3.4 Button Installation	7	6.4 Speaker Wiring	11	
3.5 Exit Button Installation	7	6.5 Coin Door Wiring	11	
4. PROTON III INSTALLATION	8	7. ARTWORK		11
4.1 SUMICOM Computer Setup	8	7.1 Side Art	11	
4.2 USBlinx Cables	8	7.2 Marquee	11	
		8. FINAL CONFIGURATION		12
		8.1 Operator Setup Menu	12	

ARCADE CLASSICS™ KIT

TABLE OF CONTENTS

8.1	Cabinet Configuration	12
8.2	Volume	12
8.3	Wiring Test	12
8.4	Common Monitor Problems	12

1. GETTING STARTED

1.1 INTRODUCTION

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

Happ Controls assumes no liability for any damages incurred while installing ARCADE CLASSICS. As such, only qualified service personnel should perform this installation.

1.2 KIT PACKAGE INVENTORY

Open the shipping package for your ARCADE CLASSICS 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 Power Supply	1	285-0001-01
2 SUMICOM Computer	1	980-0200-01
2 USBlinx	1	910-0010-01
3 PS/2 Cable	1	115-0015-01
3 3.5mm Audio Cable M-M	1	114-0113-01
4 Joystick, UltraCade Kit	2	255-0001-01
5 Button Kit	1	
Blue Push Button	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
6 Cabinet Artwork Tube	1	
Control Panel Overlay	1	885-0004-01
Rightside	1	885-0003-01
Leftside	1	885-0002-01
Marquee	1	885-0001-01
7 Cable Jamma+ Harness	1	115-0006-01
8 Cable, Video Pass Thru	1	115-0016-01
8 Dongle CGA Low Res.	1	245-0001-01
8 Dongle EGA Med Res.	1	245-0002-01
9 Manual, Kit	1	865-0002-01
9 Manual, System	1	865-0001-01
10 CD, Arcade Classics OS	1	855-0001-01
10 CD, Base Pack	1	855-0001-01
11 Screw Kit	1	
Nut, Kep, 10/24 Hex	8	102-0002-01
Bolt, Carriage 10/24 x 1.5in	8	103-0001-01
Washers Flat	8	101-0002-01
Screw, Wood, #8 x 9/16	4	100-0010-01
Velcro	3	104-0001-01

TABLE 1-1 KIT INVENTORY



FIG. 1-1 KIT INVENTORY

If you suspect that any part of your kit is missing please contact Happ Control technical support at 408-436-8885.

Note: The SUMICOM Computer, and USBlinx, come pre-assembled. The Arcade Classics CD is 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 ARCADE CLASSICS:

- 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

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. ARCADE CLASSICS kits should always be installed by a qualified technician.

2.2 PCB REMOVAL

If the cabinet you have chosen for your ARCADE CLASSICS 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 ARCADE CLASSICS 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 harness intact. Some minor modifications may still be needed to take full benefit of all the options available to you with ARCADE CLASSICS. You must remove any wires that provide power to your existing Jamma Harness. **Not removing the power wires in your existing jamma harness could damage or harm your USBlinx**

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. Happ Controls strongly recommends using the Jamma harness provided in the kit to prevent wiring errors. **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 them into the new Jamma harness or fully removed if you intend to wire a new molex connector for your monitor (your new ARCADE CLASSICS kit does not come with a molex connector for your monitor). If your monitor is VGA with a 15-pin connector it will connect directly to the computers 15-pin VGA port; nothing will need to be done to the video cable.

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 ARCADE CLASSICS marquee. Clean any glue residue left behind from old stickers.

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

2.6 DETERMINING YOUR MONITOR TYPE

It is important to know for the proper working order of your ARCADE CLASSICS what type of monitor is in your cabinet. ARCADE CLASSICS supports CGA (standard resolution/ 15.75 KHz), EGA (medium resolution / 24.5 KHz) or VGA (high resolution / 31.5 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.

2.7 CLEANING / PAINTING

You may also want to clean and/or paint your cabinet before installing your ARCADE CLASSICS 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 ARCADE CLASSICS kit cabinet.

3. CONTROL PANEL

3.1 CONTROL PANEL LAYOUT

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

ARCADE CLASSICS 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 ARCADE CLASSICS 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 ARCADE CLASSICS 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 ARCADE CLASSICS 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

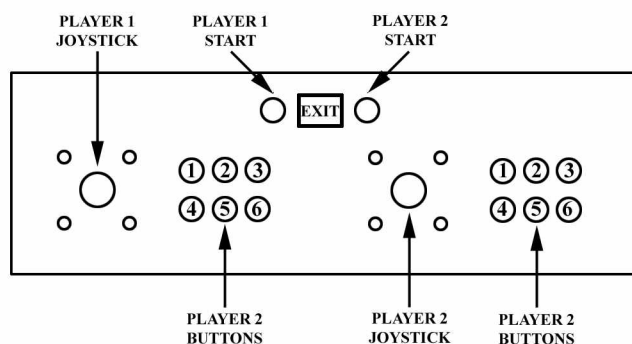


FIG. 3-1 CONTROL PANEL LAYOUT

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 ARCADE CLASSICS 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.

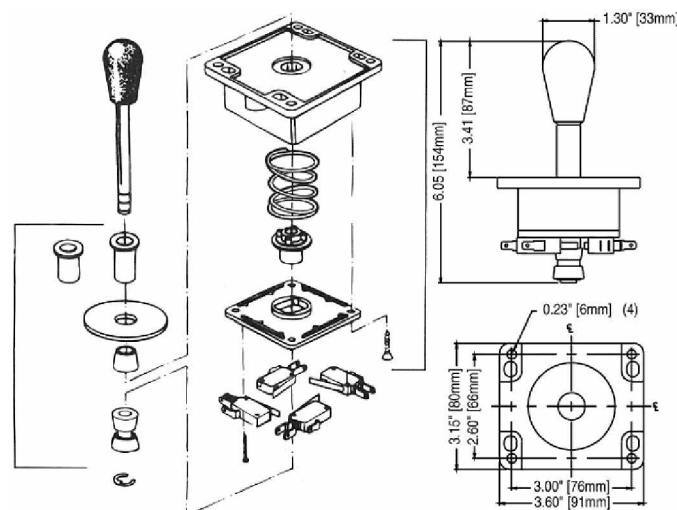


FIG. 3-2 JOYSTICK INSTALLATION

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.

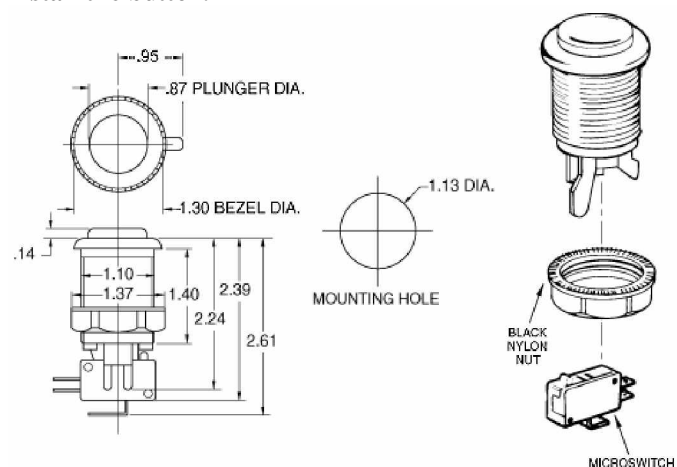


FIG. 3-3 BUTTON INSTALLATION

3.5 EXIT BUTTON INSTALLATION

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

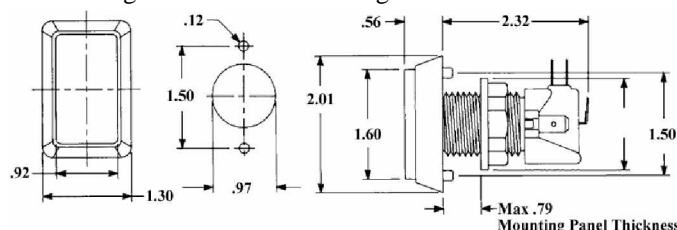


FIG. 3-4 EXIT BUTTON

4. SUMICOM INSTALLATION

4.1 SUMICOM Computer Setup

You will need to install two velcro strips across the bottom of the SUMICOM to secure it to the cabinet. Remove one side of the adhesive back and place the velcro strips at the front and back end of the computer shown in Figure 4-1. Next connect the PS/2 cable and Audio cable from the SUMICOM to the USBlinx. Section 4-2 shows how to connect the USBlinx cal

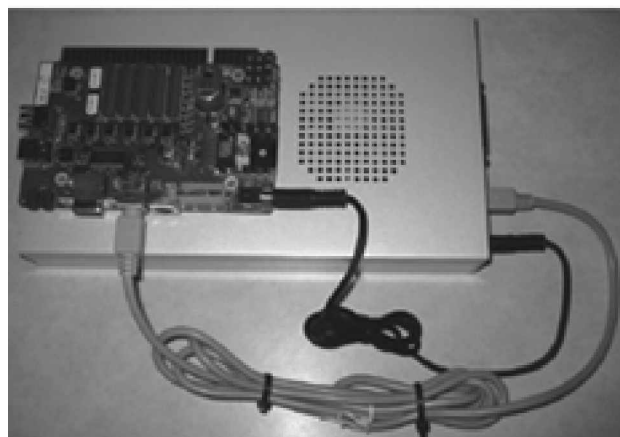


FIG. 4-1 VELCRO AND CABLE INSTALL

4.2 USBLINX CABLES

The USBlinx cable harness will need to be assembled to the SUMICOM. It contains three cables that are used to send the video and control signals from the USBlinx to the SUMICOM computer.

- A PS2 keyboard cable Male to Male
- B Audio cable 3.5mm Male to Male
- C Video Pass Thru Cable is only used for CGA or EGA monitors

Connect each cable listed above to the corresponding letter shown below in Figure 4-2 A to A, B to B, and C to C

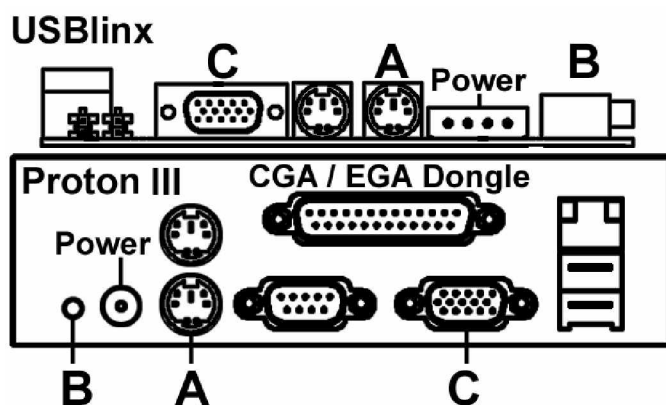


FIG. 4-2 USBLINX CABLES

4.3 CGA / EGA MONITOR DONGLE

If you have a CGA or EGA monitor then you will need to plug the appropriate monitor dongle into the Proton III computer. You will not use either dongle if you have a VGA monitor.

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 SUMICOM. 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 video port on the computer. This cable has a 15-pin male connector on each end and will pass the video signal coming from the computer to the USBlinx and out through the Jamma harness. 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, and the VGA monitor cable is connected to the video port on the computer. If the VGA cable is not long enough you may need to mount the SUMICOM in a different location or purchase a VGA extension cable from a local computer or electronics store.

4.5 MOUNTING THE SUMICOM

When the SUMICOM and power supply is ready, remove the adhesive back on the velcro strips for the computer. Place the computer inside the cabinet leaving plenty of room in front of the computer to open and close the CD-ROM. Press firmly down to adhere the adhesive to the cabinet. Next remove the adhesive back on the velcro strip for the power supply and mount it next to the computer. Be sure the power supply cables can reach the USBlinx and computer. When finished, the SUMICOM computer with power supply should look something like Figure 4-



FIG. 4-3 MOUNTED SUMICOM WITH POWER SUPPLY

5. POWER SETUP

5.1 EXTENAL POWER SUPPLY

Your ARCADE CLASSICS kit comes with an external computer power supply to power both the USBlinx and Proton III computer. Place one piece of velcro on the power supply where you plan to mount it to your cabinet. The 4-pin molex power connector connects to the power port on the USBlinx, and the pigtail power connector connects to the power port on the Proton III computer shown in Figure 4-2.

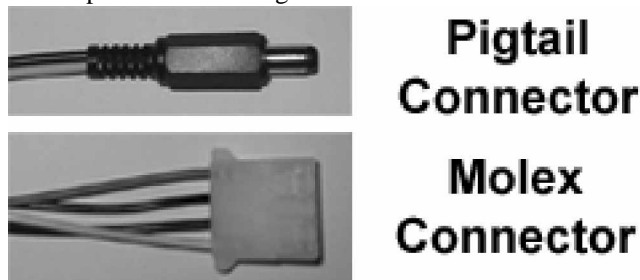


FIG. 5-1 AC ADAPTER CORD

If the cabinet has a A/C power strip you will be able to plug the A/C cord directly in. The AC cord can also be spliced into the main power supplied to the cabinet. The AC cord wiring is as follows: Green - ground, White - neutral, Black - 120V. The other end of your AC adapter cord plugs into the power supply shown in Figure 5-2. Before powering on, check the voltage switch to make sure it is set to the correct voltage (120V or 230V). The switch is located next to power plug shown in Figure 5-2.



FIG. 5-2 POWER SUPPLY REAR PANEL

5.2 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.

5.3 MARQUEE LIGHT POWER

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

5.4 POWER ON TEST

Plug your cabinet in and turn it on. If the computer, 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: The Power Supply and Proton III should always power on once power is supplied

6. WIRING INSTALLATION

6.1 JAMMA HARNESS

Your ARCADE CLASSICS 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 Proton III with the edge facing the side 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. Never connect an external power supply to the power bundle on your jamma harness you will damage the USBlinx

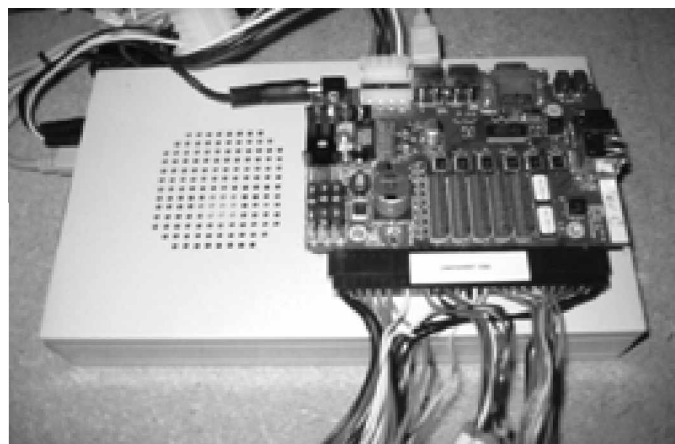


FIG. 6-1 CONNECTING JAMMA HARNESS

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 ARCADE CLASSICS kit (Figure 6-2). When connecting the wires, use Table 6-1 for reference.

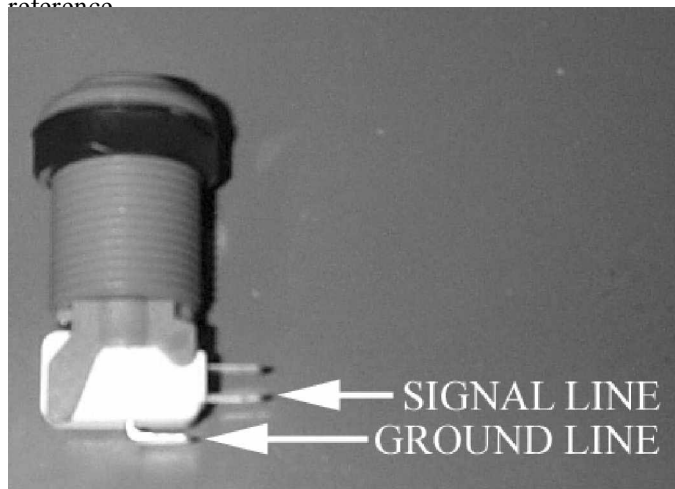


FIG. 6-2 MICROSWITCH WIRING

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	P1Start
P2 Up	BL/WH	V			18	BL	P1Up
P2 Down	GRN/WH	W			19	GRN	P1Down
P2 Left	OR/WH	X			20	OR	P1Left
P2 Right	YL/WH	Y			21	YL	P1Right
P2 Button 1	BRN/WH	Z			22	BRN	P1Button 1
P2 Button 2	PR/WH	Aa			23	PR	P1Button 2
P2 Button 3	GRY/WH	Ab			24	GRY	P1Button 3
P2 Button 4	GRN/YL	Ac			25	GRN/RD	P1Button 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 ARCADE CLASSICS 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.

P i n #	C o l o r	C o n n e c t s T o
7	B L	E x i t B u t t o n
8	G R N / W H	P 1 B u t t o n 5
9	Y L / W H	P 1 B u t t o n 6
10	R D	P 2 B u t t o n 5
11	B L / Y L	P 2 B u t t o n 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.

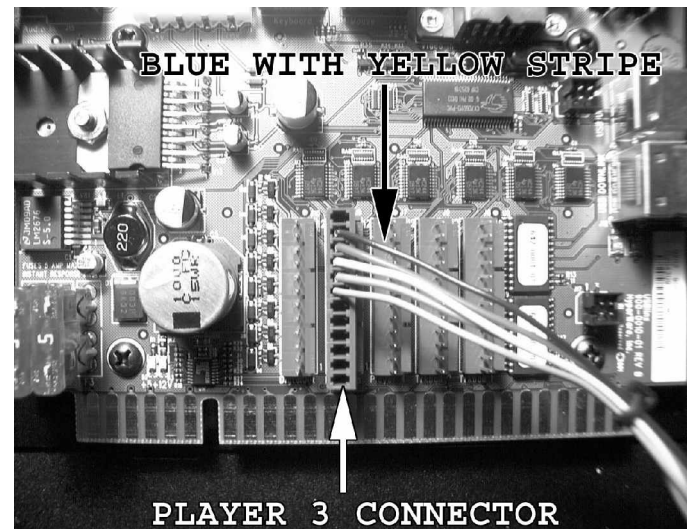


FIG. 6-3 CONNECTING 5-PIN MOLEX

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.

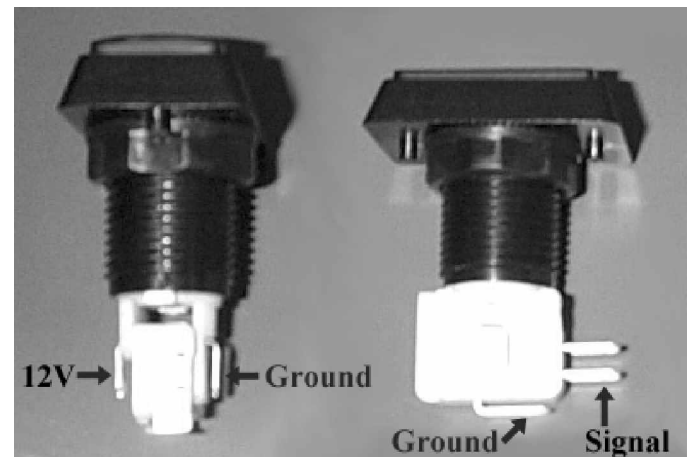


FIG. 6-4 EXIT BUTTON WIRING

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: Happ Controls is not liable for any damage done to monitors through incorrect wiring.

6.4 SPEAKER WIRING

ARCADE CLASSICS 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	B L / R D	Left Speaker -
M	B L / G R	Right Speaker -
10	R D / Y L	Left Speaker +
11	R D / B L K	Right Speaker +

TABLE 6-4 SPEAKER BUNDLE

7. ARTWORK

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

7.1 SIDE ART

Your ARCADE CLASSICS 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 ARCADE CLASSICS 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 ARCADE CLASSICS 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 ARCADE CLASSICS Operation Manual for more details.

8.1 OPERATOR SETUP MENU

Your ULTRACADE kit is complete except for the final software configuration. Power on your ARCADE CLASSICS and press the service switch to enter the Operator Setup Menu. Refer to your ARCADE CLASSICS Operation Manual for help using the setup menus. If, after powering on, you are experiencing monitor problems refer to section 8.5 COMMON MONITOR PROBLEMS.

8.2 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.

8.3 VOLUME

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

8.4 WIRING TEST

Your ARCADE CLASSICS 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 ARCADE CLASSICS Operation Manual.

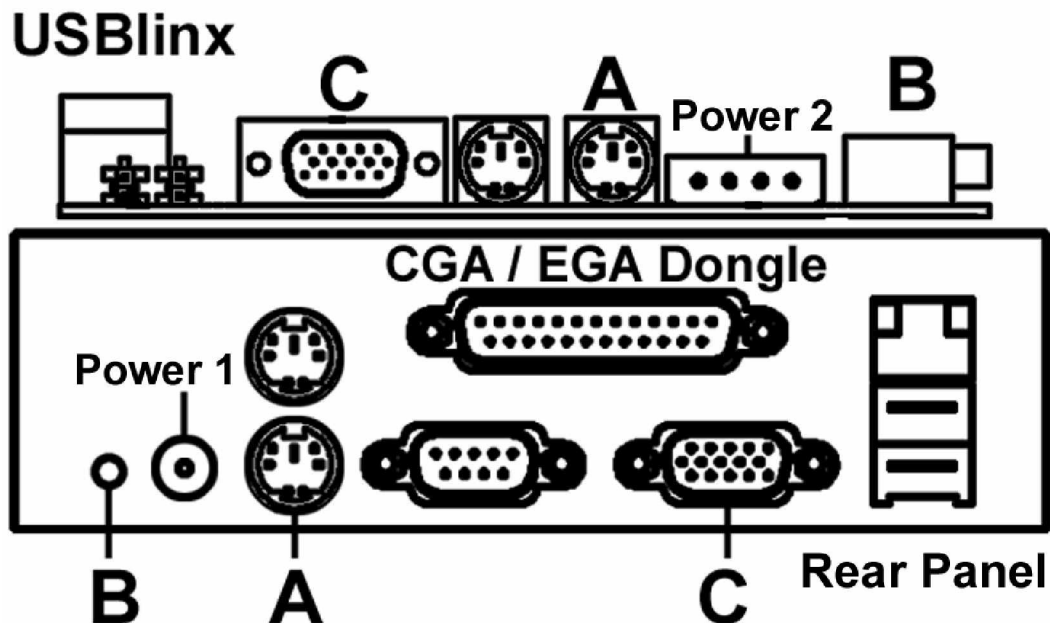
8.5 COMMON MONITOR PROBLEMS

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

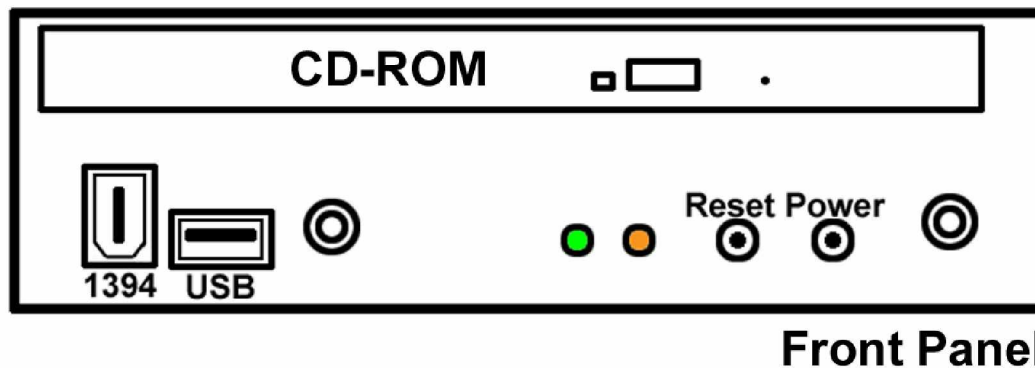
PROBLEM	SOLUTION
Distorted or discolored image	Degauss monitor
Scrambled image	You may have used the wrong CGA / EGA monitor dongle
No raster	Make sure you have hooked up the Video Pass Through Cable if you have a CGA or EGA monitor
Vertical or horizontal sync is off	ULTRACADE uses a composite sync. 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 monitor together.

TABLE 8-1 COMMON MONITOR PROBLEMS

FIGURE 8-1 - SUMICOM WITH USBLINX



- A - Connect a PS/2 cable from A to A
- B - Connect a 3.5mm Audio cable from B to B
- C - Connect the VGA Pass Thru cable from C to C, only used for CGA and EGA monitors



Front Panel

ID	Description
Power 1	SUMICOM Power uses 12 volts at 5amps
Power 2	USB Linx Power uses 5volts / 2amps, and 12volts / 1amp
CD-ROM	CD-ROM is used to load UltraCade OS and Game Packs
CGA / EGA Dongle	EGA or CGA Dongle is used along with the Video pass through cable to select the monitor resolution for your cabinet
A	PS/2 Port used to connect player controls between USBlinx and Proton III
B	AUDIO Port used to connect sound between USBlinx and Proton III
C	Video Port 15-pin VGA signal used to connect between USBlinx and SUMICOM for CGA and EGA monitors only

