BIO-SHIP

PALADIN

Manual

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GAME OVERVIEW

You command Bio-Ship Paladin, a heavily armored battleship with impressive firepower and defense. When the right items are attained, the Paladin will "grow" in size and armor capacity. Special items will also enable ship to use pod-cannons, as well as automatic tracking and firing from the ships special defense - the cursor. With the ship in a stationary position, the Paladin cursor can move around and destroy hard-to-reach targets, or protect the Paladin from enemy fire. The ships last offensive weapon is the Super-Fire (a blast of photons which will blaze through nearly anything).
The object of the game is to take the Paladin into an enemy solar system and destroy its many heavy warships. This is not easily accomplished since smaller fighters, attack cruisers, missiles, mazes and asteroids stand in your way.

EXPLANATION OF GAME PLAY

Bio-Ship Paladin is a horizontal, one or two player interactive game with full continuation and buy-in. The player fires the Paladin cannons with the fire button, and activates the cursor with the cursor button. To activate the Super-Fire, the player must hold down the fire button until the meter at his lower end of the screen is full. While the cursor button is pressed, the cursor is moved by the joystick, and the Paladin stays still.

CONTROLS

Each player controls one 8-way joystick and two buttons. One for firing and the other a cursor.

KIT CONTENTS

Paladin PCB
Paladin Marquee
Control panel overlay
Button labels
Instruction label
JAMMA wiring harness
Monitor bezel
Eight-way joysticks   (2)
Button and switch assemblies (6)
"A" button tags   (2)
"B" button tags   (2)
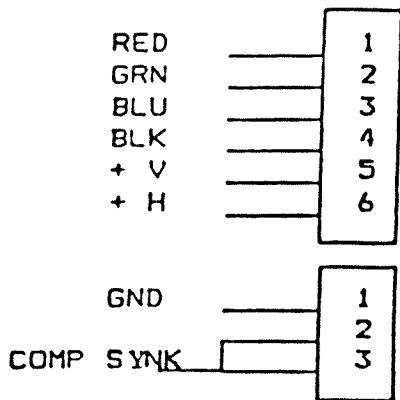FCC compliance sticker
Instruction manual

CONVERSION PROCEDURE

1. **PREPARING THE CABINET**

    A. Remove the old circuit board.
    B. Remove the control panel, marquee, and any side graphics.
    C. Remove the old wiring harness being careful to leave the A/C wiring to monitor, power supply, on/off switches, and transformer circuitry.
        **NOTE: If the game being converted is "JAMMA" standard, no rewiring is necessary, simply plug the PALADIN into the existing harness.
    D. Clean the cabinet thoroughly an repair any visible cabinet defects. Painting the cabinet will give your game a "new game" look and will enhance the earning power of your game.
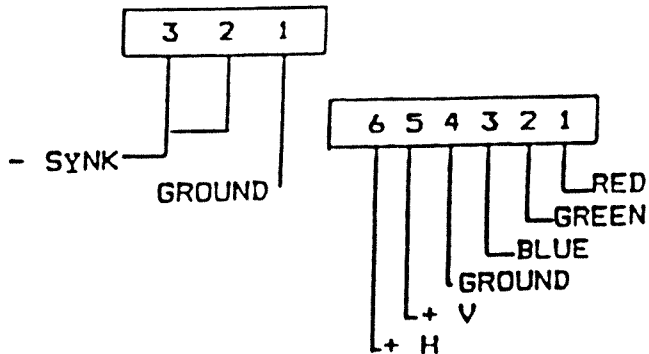   E. If the monitor glass or plexi is scratched it should be replaced.

2. **KIT INSTALLATION**

    A. Securely mount the PCB to the inside of the cabinet.
    B. Attach the wiring harness to the PCB. The JAMMA label on the connector should face the component side of the PCB.
    C. Route the wires labeled "VIDEO" up to the monitor. Connect the wires to the monitor's main circuit board, as shown below.

```
Red Wire    ------- Video Red
Green Wire  ------ Video Green
Blue Wire   ------- Video Blue
Black Wire  ------ Video Ground
White Wire  ------ Negative Composite Sync
```

RED —— 1
GRN —— 2
BLU —— 3
BLK —— 4
+ V —— 5
+ H —— 6

GND —— 1
COMP SYNK —— 2 / 3

3 2 1
- SYNK
GROUND

6 5 4 3 2 1
RED
GREEN
BLUE
GROUND
+ V
+ H

WELLS GARNER   **ELECTROHOME**

D.   Route the wires labeled "POWER' to the power supply. Connect them as follow:

        Red Wire ----- +5VDC
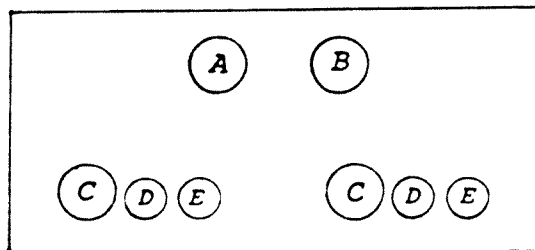   Yellow Wire -- +12VDC
        Black Wire --- Ground

The blue wire is for -5VDC which is not required for this game. You can use the -5V to power the coin door lights if desired.

E.   Find the two wires labeled "SPEAKER" and connect to the speaker. If the sound is scratchy or distorted, try reversing the wires.

F.   Find the wires labeled "COIN" and route to the coin door. Coin switch 1 and 2 are wired to N.O. (normally open) terminal of the microswitch. A ground wire will go to the common terminal.

3.   CONTROL PANEL

A.   Remove the old control panel buttons and joystick(s). Do not remove the old overlay until the new holes have been drilled.

B.   Mark and drill the new holes. File any burrs so that the control panel surface is smooth. Remove the old overlay

C.   Using the control panel as a template, drill the holes for the control panel plexi. To cut the plexi to size, score deeply with a razor knife of plastic cutter. Break away the excess with pliers.

D.   Peel the top half of the protective backing off of the new overlay. Start from the center and smooth the overlay as you go. Leave about one inch of the overlay coming off the top of the control panel. Cut off the excess with a razor.

SUGGESTED CONTROL PANEL LAYOUT

```
┌─────────────────────────────────────┐
│                                     │
│      (A)        (B)                 │
│                                     │
│   (C)(D)(E)        (C)(D)(E)        │
│                                     │
└─────────────────────────────────────┘
```

A: one-player start   B: two-player start   C: eight-way joystick
D: fire button   E: cursor-fire button

E.   Adhere the control panel function labels.
F.   Install the control panel plexi and mount the new buttons and joystick.
G.   Hook up the control panel wires. Use the existing control panel harness if possible.

4.   MARQUEE INSTALLATION

A.   Use the original marquee as a template. Score the new marquee deeply and break off the excess with pliers. Before installing the new marquee, make sure the light fixture behind it is working.

TROUBLE SHOOTING

1.   NO SOUND, NO PICTURE
* Check for +5 volts at pin #4 (red) and pin #1 (black) with a voltmeter.
* Refer to monitor manual and check monitor for proper voltage.

2.   GAME HAS SOUND BUT NO PICTURE
* Check AC supply to monitor
* Check 5 wires to monitor: red, green, blue, sync, and monitor ground.

3.   GAME HAS PICTURE BUT NO SOUND
* Check the two speaker wires. (Pin #10 and L)
* Check for +12 volts at pin #6.
* Make sure both speaker wires are isolated from ground.

4.   GARBAGE ON THE SCREEN
* Adjust power supply so that you have exactly +5 volts at pin #4.
* Make sure all socketed EPROMS are securely seated.

5.   PICTURE SCROLLS
* Recheck connections of SYNC and GROUND between the monitor and the edge connector.
* Change sync polarity of your monitor by using a 74LS-04 invertor.

6.   PICTURE UPSIDE DOWN
* Turn the picture tube 180 degrees, or switch the two horizontal yoke wires and then the two vertical wires.
* See dip switch settings in this manual for screen inversion.

PALADIN WIRING DIAGRAM

CONFORMS TO JAMMA STANDARD

SOLDER SIDE			COMPONENT SIDE
GND	A	01	GND
GND	B	02	GND
+5V	C	03	+5V
+5V	D	04	+5V
	E	05	
+12V	F	06	+12V
	H	07	
COIN COUNTER 2	J	08	COIN COUNTER 1
	K	09	
SPEAKER (−)	L	10	SPEAKER (+)
	M	11	
VIDEO (GREEN)	N	12	(RED)
VIDEO (SYNC)	P	13	(BLUE)
	R	14	(GND)
	S	15	
COIN SW 2	T	16	COIN SW 1
START SW 2	U	17	START SW 1
2P CONTROL 1 UP	V	18	1P CONTROL 1 UP
2P CONTROL 2 DOWN	W	19	1P CONTROL 2 DOWN
2P CONTROL 3 LEFT	X	20	1P CONTROL 3 LEFT
2P CONTROL 4 RIGHT	Y	21	1P CONTROL 4 RIGHT
2P CONTROL 5 PUSH 1	Z	22	1P CONTROL 5 PUSH 1
2P CONTROL 6 PUSH 2	a	23	1P CONTROL 6 PUSH 2
	b	24	
	c	25	
	d	26	
GND	e	27	GND
GND	f	28	GND

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"BIO-SHIP PALADIN" DIP SWITCH INSTRUCTIONS

DIPSW−1		1	2	3	4	5	6	7	8
FIRST SHIPS	*3	OFF	OFF						
	5	OFF	ON						
	4	ON	OFF						
	2	ON	ON						
DEMO SOUND	*ON			OFF					
	OFF			ON					
NIL (NOT USE)					OFF				
					ON				
TEST MODE	OFF					OFF			
	ON					ON			
DIFFICULTY	* NORMAL						OFF	OFF	
	HARD						ON	OFF	
	HARDEST						OFF	ON	
	EASY						ON	ON	
FLIP	*UP								OFF
	DOWN								ON

DIPSW−2	RATE A			RATE B			7	8
	1	2	3	4	5	6		
1 COIN 1 PLAY	OFF	OFF	OFF	OFF	OFF	OFF		
1 COIN 2 PLAY	ON	OFF	OFF	ON	OFF	OFF		
1 COIN 3 PLAY	OFF	ON	OFF	OFF	ON	OFF		
1 COIN 4 PLAY	ON	ON	OFF	ON	ON	OFF		
2 COIN 1 PLAY	OFF	OFF	ON	OFF	OFF	ON		
3 COIN 1 PLAY	ON	OFF	ON	ON	OFF	ON		
4 COIN 1 PLAY	OFF	ON	ON	OFF	ON	ON		
5 COIN 1 PLAY	ON	ON	ON	ON	ON	ON		
NIL (NOT USE)							OFF	OFF
							ON	OFF
							OFF	ON
							ON	ON

* indicates factory settings