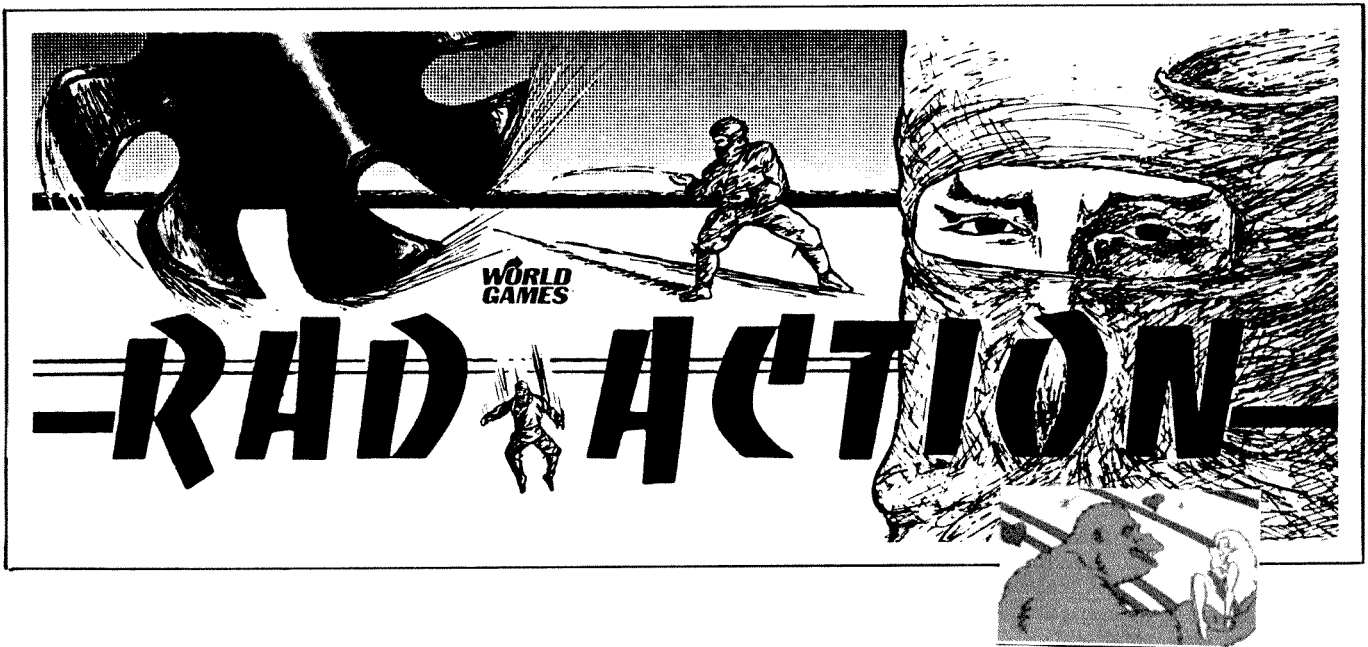# RAD ACTION™
INSTRUCTION
MANUAL

World Games
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WORLD GAMES™

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REQUIRED TOOLS

1. Screw Drivers
2. Wire Cutters
3. Drill and Drill Bits
4. Soldering Iron and Solder
5. Pliers
6. Hex Head Drivers
7. X-Acto Knife
8. Heat Shrink Tube
9. Jigsaw or Tablesaw
10. 1 1/8" Hole Saw and/or Chasis Punch

IMPORTANT F.C.C. WARNING

WARNING

This equipment generates, and can radiate radio frequency energy and if not installed and used in accordance with the instruction manual, may cause interference to radio communications. As temporarily permitted by regulation it has not been tested for compliance pursuant to subpart J of part 15 of FCC rules, which are designed to provide reasonable protection against such interference. Operation of this equipment in a residential area is likely to cause interference in which case the user, at his own expense, will be required to take whatever measures may be necessary to correct the interference.

POWER REQUIREMENTS		MONITOR REQUIREMENTS
+ 5 VDC	7 amp minimum	Horizontal Mount Raster Scan
+12 VDC	1 amp minimum	Negative Composite Sync

PREPARING THE CABINET

1. Remove the old P.C. board
2. Remove the control panel
3. Remove the marquee
4. Remove any other graphics
5. Remove the old wire harness

NOTE: If the power supply in the existing game does not clearly
(1)   identify the ground, +5 and +12 voltages, you will need to do so. This may be done by following the wire harness to the power supply section of the game and using a volt-ohm meter. With the meter set on the D.C. volt scale, put the black lead on the ground wire, (usually black) and the other lead on the other wires until you can identify the +5 and +12 volts. Label these for further reference.

NOTE: In installing the conversion kit, it will be necessary to
(2)   splice into the existing wires so we will need to save all existing connections. Cut the wire about six inches back of the current connectors to save them for future use.

NOTE: **Never under any circumstances perform any portion of the installation with the power on.**

INSTALLING THE NEW GAME

1. Attach the included mounting hardware to the Rad Action P.C. board, and attach it to the cabinet as far away from the power supply as possible.

2. Connect the wire harness to the P.C. board. Making sure the side labeled "Parts Side" is facing up.

    NOTE: The Rad Action wire harness is divided into six smaller bundles. These bundles are all labeled for easy reference.

Power
Supply
3. Find the bundle labeled power and connect the wires to the power supply in this manner.

    1.   Red wires to +5 V.D.C.
    2.   Yellow wires to +12 V.D.C.
    3.   Black wires to ground.

Monitor
4. Next find the bundle labeled video and connect the wires to the monitor in this manner.

    1.   Red wire to red input
    2.   Green wire to green input
    3.   Blue wire to blue input
    4.   Black wire to ground input
    5.   White wire to sync input

NOTE: Rad Action generates a negative composite sync signal. Composite means there will be only one sync wire supplied. If the monitor in your game requires two sync wires, you will need to splice the one sync wire into two parts and connect one part each to the horizontal and vertical sync inputs. Further, if the monitor can accept both a positive and a negative sync signal, then connect the sync wires to the negative section only. If further help is needed please refer to the following diagram.
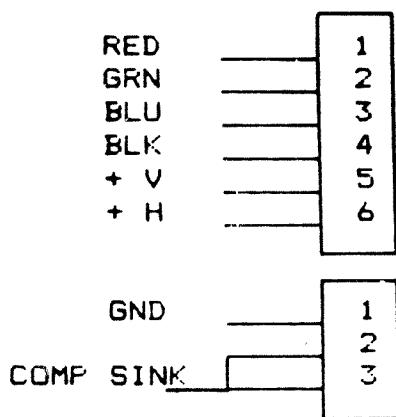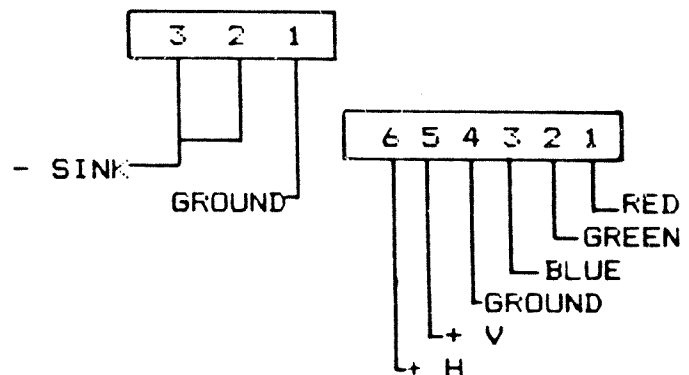
WELLS GARNER   ELECTRO HOME

INSTALLING THE NEW GAME

5.
Speakers Now find the small two wire bundles labeled speakers, and connect them to the two speaker wires from the cabinet. If you notice a hum in the sound of your Rad Action game you may want to reverse the connection on these two wires to reduce the hum.

6.
Coin
Door Next find the bundle labeled coin door and connect it to the coin door in this manner.

1. Black wire to the ground or common side of the coin switch(s).

2. Violet wire to the other side of the coin switch. If the coin switch on your game has 3 terminals make sure to connect this wire to the terminal marked N.O.

3. The tan wire is a second coin switch wire. This should be hooked up in the same manner as the first coin wire if you wish to use two separate coin switches. In most cases, both coin switches on a game would be wired together thus making this wire unnecessary.

4. The red wire is a +5 volt line. If you wish to use a coin meter make sure to use a 5 or 6 volt meter. Connect the +5 to one side of the meter and connect another wire providing a coin "pulse" to the other side.

   NOTE: Always make sure to use a diode when connecting a coin meter to prevent any chance of damage to the P.C. board.

7.
Control
Panel
1. Remove the old joystick and buttons.

2. Make the position for any new holes, if necessary.

3. Drill the new holes.

4. Using the control panel as a template, cut the included lexan to the correct size, and mark the location of the button holes.

   NOTE: It is advisable to include some 3/16" or 1/4" holes towards the outside corners of the plexi. These will be used to help secure the plexi to the control panel to avoid any chance of breaking in the future.

5. Drill the holes.

6. To remove any burrs from the new holes use a fine toothed file.

7. Now remove the old control panel overlay from the panel, and install the new World Games overlay.

8. Locate and install the button labels and instructions in their correct places.

9. Place the new cover over the panel and install the

10. To connect the control panel, now locate the portion of the wire harness labeled. Cont. #1 and connect it in this manner.

   1. Black wire to one side of the buttons, (it doesn't matter which sides). You must now make a continuous loop with this ground wire between all of the buttons.

   2. Brown to the one player start button.

   3. Red to the two player start button.

   4. Blue to the joystick RIGHT POINT.

   5. Green to the joystick LEFT POINT.

   6. Orange to the joystick UP POINT.

   7. Yellow to the joystick DOWN POINT.

   8. Violet to the weapons button.

   9. Gray to the jump button.

8. Control Panel #2.
   These wires are to be used only for cocktail games.
   Please follow the same wire colors.

9. Marquee Installation.
   1. Using the old marquee sign as a template, cut the Rad Action marquee to the proper size. This may be done on a table saw, or with a jigsaw with a plexi glass blade, or by deeply scoring the marquee with a razor knife and breaking it on the corner of a table.

"RAD ACTION" DIP SWITCH INSTRUCTIONS

DIP SWITCH #1		1	2	3	4	5	6	7	8
LANGUAGE	JAPANESE	OFF							
	ENGLISH	ON							
NUMBER OF PLAYERS	3		OFF						
	4		ON						
GAME LEVEL	NORMAL			OFF					
	DIFFICULT			ON					
DEMO SOUND	NO SOUND				OFF				
	WITH SOUND				ON				
CONTINUATION	CONTINUAL					OFF			
	RENEWAL					ON			
EXTRA KID	30000 EVERY 50000						OFF	OFF	
	20000 EVERY 50000						OFF	ON	
	50000 EVERY100000						ON	OFF	
	NIL						ON	ON	
FLIP FLOP	NO								OFF
	FLIP FLOP								ON

DIP SWITCH #2		1	2	3	4	5	6	7	8
COIN SHUTE "A"	1 COIN 1 PLAY	OFF	OFF	OFF					
	1 COIN 2 PLAY	OFF	OFF	ON					
	1 COIN 3 PLAY	OFF	ON	OFF					
	1 COIN 4 PLAY	OFF	ON	ON					
	2 COIN 1 PLAY	ON	OFF	OFF					
	3 COIN 1 PLAY	ON	OFF	ON					
	4 COIN 1 PLAY	ON	ON	OFF					
	5 COIN 1 PLAY	ON	ON	ON					
COIN SHUTE "B"	1 COIN 1 PLAY				OFF	OFF			
	1 COIN 2 PLAY				OFF	ON			
	1 COIN 3 PLAY				ON	OFF			
	2 COIN 1 PLAY				ON	ON			
CREDIT MODE	SERVICE						OFF		
	NORMAL						ON		
GAME STYLE	TABLE							OFF	
	UPRIGHT							ON	
NOT USED									

RAD ACTION
EDGE CONNECTOR

Wire Color	Solder Side	No.	No.	Component Side	Wire Color
BLACK	GND	A	1	GND	BLACK
BLACK	GND	B	2	GND	BLACK
RED	+5V	C	3	+5V	RED
RED	+5V	D	4	+5V	RED
BLUE	NOT USED	E	5	NOT USED	BLUE
YELLOW	+12V	F	6	+12V	YELLOW
	(POST)	H	7	(POST)	
		J	8		
	–	K	9	–	
BLACK	SPEAKER (-)	L	10	SPEAKER (+)	WHITE
		M	11	–	
GREEN	VIDEO – GREEN	N	12	VIDEO – RED	RED
WHITE	VIDEO – SYNC	P	13	VIDEO – BLUE	BLUE
	–	R	14	VIDEO – GND	BLACK
	–	S	15	–	
TAN	COIN SWITCH – 2	T	16	COIN SWITCH – 1	VIOLET
RED	2P START	U	17	1P START	BROWN
ORANGE	2P CONTROL – UP	V	18	1P CONTROL – UP	ORANGE
YELLOW	2P CONTROL – DOWN	W	19	1P CONTROL – DOWN	YELLOW
GREEN	2P CONTROL – LEFT	X	20	1P CONTROL – LEFT	GREEN
BLUE	2P CONTROL – RIGHT	Y	21	1P CONTROL – RIGHT	BLUE
VIOLET	2P CONTROL – WEAPON	Z	22	1P CONTROL – WEAPON	VIOLET
GRAY	2P CONTROL – JUMP	a	23	1P CONTROL – JUMP	GRAY
	–	b	24	–	
	–	c	25	–	
	–	d	26	–	
BLACK	GND	e	27	GND	BLACK
BLACK	GND	f	28	GND	BLACK