

# System FPGA



**WSF – System FPGA**

**Setup Guide**

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# Option Setup Menu

The option setup menu can be accessed from either the Main Menu, if "SETUP" is enabled, or at boot time by two methods

1. Press and hold 1P start and 2P start together when powering on the machine, or after pressing RESET.
2. Hold down the "SERVICE" ( Advance ) switch during power on or after pressing RESET.

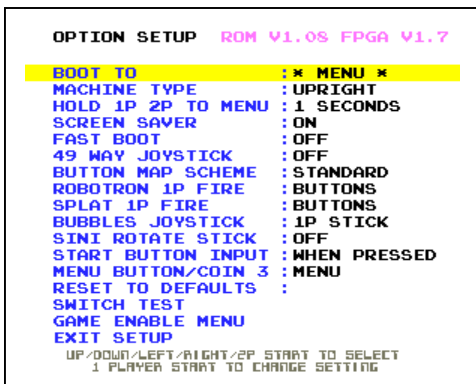
### Controls

2 Player Start ( 2P Start ) is used to move down through each option, or using the joystick inputs up/down/left/right.

1 Player Start ( 1P Start ) is used to change a setting, or step through the available values.

NOTE: the 49 way stick can not be used to move through the menu options !

# System Functions



### BOOT TO:

Select the game the board will automatically start when powered on.

### MACHINE TYPE: Cocktail / Upright

Cocktail mode enables the 2 player inputs and screen flipping for cocktail tables. This mode is only supported for Defender, Stargate, Robotron & Bubbles.

**HOLD 1P+2P TO MENU: OFF / 1 / 2 / 4 SECONDS**

Number of seconds that holding down 1P & 2P start button together will force a jump back to the game main menu.

OFF disables the option to jump to then main menu when holding 1P + 2P start buttons.

**NOTE:** Even if “boot to” is set to a specific game holding 1P + 2P Start will jump back to the main menu unless this option is set to “OFF”

**SCREEN SAVER: ON/OFF**

If no buttons are pressed on the game select screen for 10 minutes the screen saver will automatically kick in. When in screen saver mode any button press will restart the menu.

The screen save does not start when in the setup or game enabled menu.

**FAST BOOT: ON/OFF**

When “ON” the self test of each game is disabled. There will be no ‘rug pattern’ or initial test message when this option is “ON”.

**49 WAY JOYSTICK: ON/OFF**

Enable 49 way joystick through expansion pin header.

- **ON** = 49 way joystick support for a stick connected to the pin header on the board.
- **OFF** = Standard 8 way joystick input is translated into a 49 way joystick input.

**NOTE:** This option is ONLY available for Sinistar & Blaster.

**BUTTON MAP SCHEME: STANDARD / MULTI WMS**

Standard Mapping uses player inputs and buttons 1 through 6.

Multi-WMS uses both 1P and 2P buttons 1 through 3.

**NOTE:** For Cocktail Mode ONLY Standard mapping should be used.

**ROBOTRON 1P FIRE: BUTTONS / 2P JOYSTICK**

Inputs used for firing direction.

Buttons: Inputs for buttons 1 through 4 are used for firing directions and should be connected to a joystick

2P Joysticks: The player 2 joystick is used for the firing directions.

**NOTE:** In cocktail mode this should be set to Buttons.

**SPLAT 1P FIRE: BUTTONS / 2P JOYSTICK**

Inputs used for firing direction.

Buttons: Inputs for buttons 1 through 4 for each player are used for firing directions and should be connected to a joystick.

2P Joystick: The player 2 joystick is used for the firing directions. This limits the game to 1 player mode only.

NOTE: For true two player support the Buttons mode should be used and second pair of joysticks is required for player 2.

**BUBBLES JOYSTICK: 1P STICK / 2P STICK**

Select which joystick should be used for control in Bubbles.

**SINI ROTATE STICK: ON / OFF**

Rotates the joystick 90 degrees for Sinistar in both 49way and 8way mode.

This allows sinister controls to be used when playing in a horizontal cabinet.

NOTE: When playing in a horizontal cabinet the screen will be sideways. Sinistar still requires a vertically mounted monitor to play correctly.

\*This feature is only available with FPGA version 1.1 or later.

### **START BUTTON INPUT:            WHEN PRESSED / ON RELEASE**

Controls how the 1P and 2P start buttons operate after a game is selected.

- **WHEN PRESSED:**  
The input for 1P and 2P start are passed directly into the game.
- **ON RELEASE:**  
1P and 2P inputs are only passed as "ON" into the game for ¼ of a second AFTER the button is released.

In this mode the 1P and 2P start inputs DO NOT REGISTER AS PRESSED WHEN THE BUTTON IS HELD DOWN.

The purpose of this setting is that it allows 1P and 2P buttons to be held down, to jump back to the main menu, without a new game starting.

\*This feature is only available with FPGA version 1.2 or later.

### **MENU BUTTON / COIN 3:        MENU / CENTER COIN**

The "menu" button can be configured as a third coin input for 'Center Coin'.

In "Menu" mode this will force a return to the main selection menu when button is grounded. It is an alternative way to get to the menu other than hold 1P & 2P Start buttons.

In "coin 3" mode this input behaves as the 'Center Coin', this feature is for early version of Defender which featured a 3<sup>rd</sup> 'Center Coin' input.

\*This feature is only available with FPGA version 1.3 or later

### **RESET TO DEFAULTS**

Hold down the 1P start button for approximately 2 seconds to clear the boot menu NVRAM settings back to the defaults.

**NOTE:** This does not reset the individual game settings.

### **SWITCH TEST**

Shows status of all switched inputs. With FPGA version 1.1 and above a ROM checksum test can also be carried out from this screen.

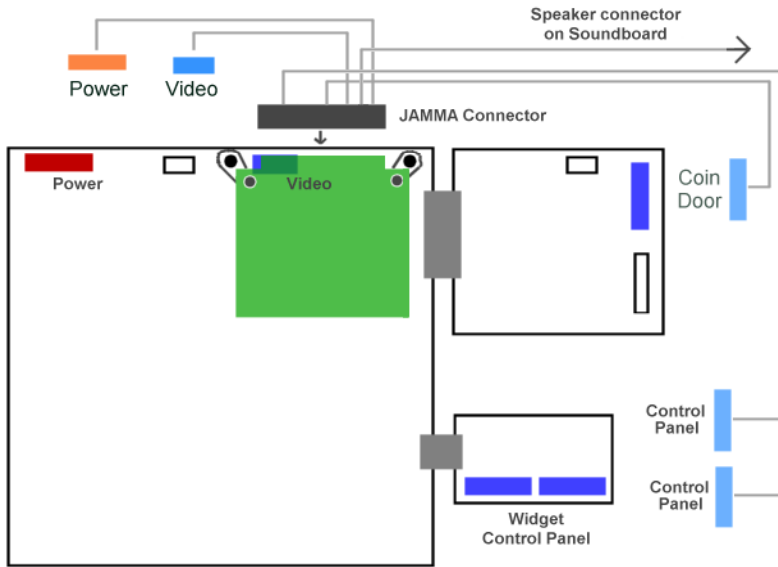
### **GAME ENABLE MENU**

Turn on or OFF which games appear on the game selection main menu.

# JAMMA to Original Harness Adapter

The connectors for Power, Video, Coin Door and Controls should be plugged into the keyed connectors of the original cabinet harness.

Use the diagram to locate the plugs which should be removed from the original boards. Power, Video, Coin Door, Widget/Control Panel



**Blue** Connectors to be unplugged from the original board  
**Red** then plugged into the JAMMA adapter harness

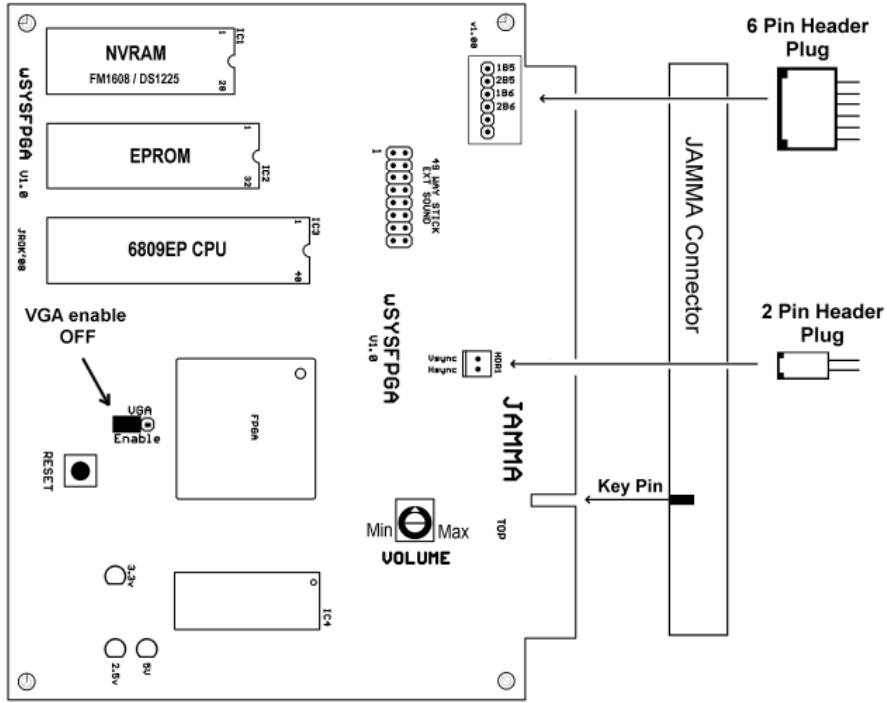
Use the two mounting feet to secure the board over the top of the original gameboard, note the location of the two mounting screws.

The video header on the original board will be blocked by the WSF board. Be sure to remove the video connector plug first.

Two pin headers are also required for wiring the board to an original harness.

2 pin plug = required for the Horizontal and Vertical Sync

6 pin plug = required for the "high-score-reset" input and button 6 for Stargate.

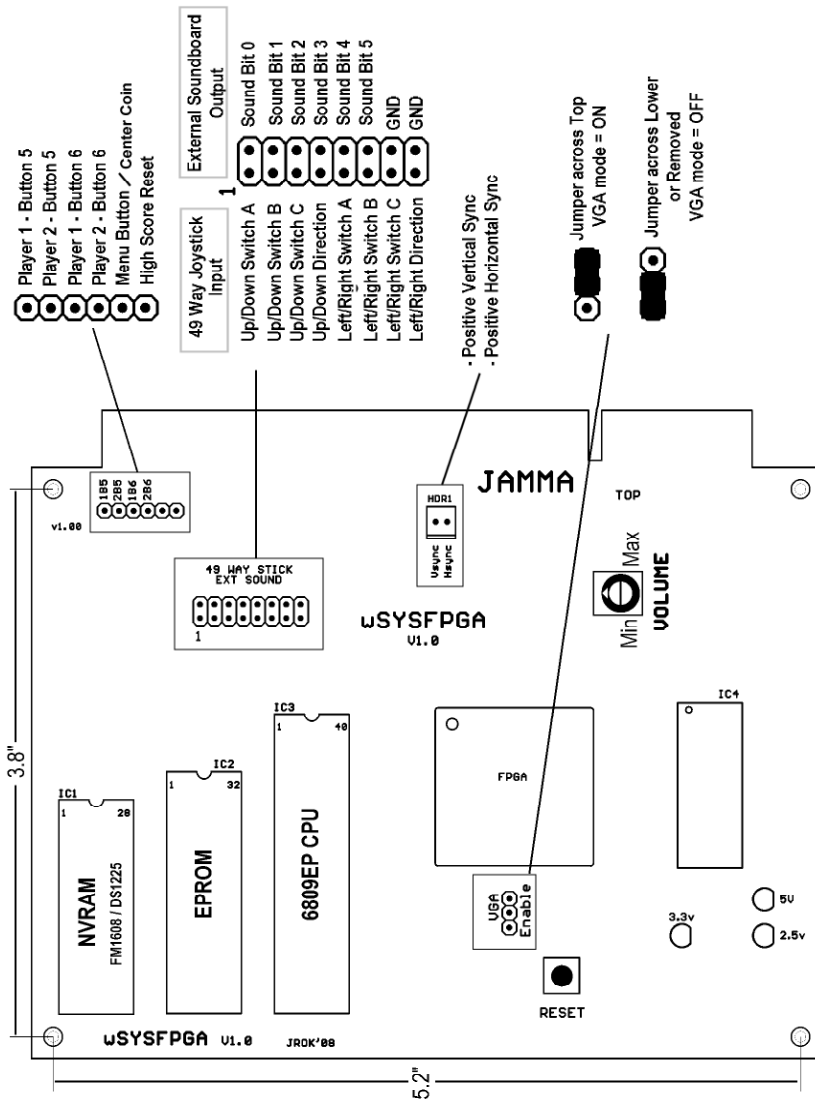


**NOTE:** Ensure the VGA enable is OFF when used in an original cabinet !

**NOTE:** Ensure the Keying Pin on the JAMMA adapter lines up with the board. Do NOT use an unkeyed JAMMA adapter.

Plugging in an un-keyed JAMMA adapter the wrong way around **will DESTROY the board !**

# SYSFPGA Board Layout & Connectors





# JAMMA Button Mappings

As each game uses different button mapping this table shows which button inputs work for each game.

Joystick controls are consistent across ALL games for up-down-left-right. Except for Defender/Stargate which do not use left & right and Joust which does not use Up/Down.

In Cocktail mode player 2 buttons are used as inputs for a second player, only for games which support it. Defender, Stargate, Robotron.

## Player 1 Button Inputs

	Defender	Stargate	Robotron	Joust	Bubbles	Splat	Blaster	Sinistar
			<b>BUTTONS Setting</b>			<b>BUTTONS Setting</b>		
1	P1 Fire	P1 Fire	P1 Fire Up			P1 Throw Up	Thust 2	
2	P1 Thrust	P1 Thrust	P1 Fire Down			P1 Throw down	Thust 1	Fire
3	P1 Reverse	P1 Reverse	P1 Fire Left	P1 Flap		P1 Throw Left		
4	P1 Smartbomb	P1 Smartbomb	P1 Fire Right	P2 Flap		P1 Throw Right	Fire	Sinibomb
5	P1 Hyperspace	P1 Hyperspace						

## Player 2 Button Inputs

Sinistar	Blaster	Splat	Bubbles	Joust	Robotron	Stargate	Defender	
		P2 Throw Up			P2 Fire Up*	P2 Fire*	P2 Fire*	1
		P2 Throw down			P2 Fire Down*	P2 Thrust*	P2 Thrust*	2
		P2 Throw Left		P2 Flap	P2 Fire Left*	P2 Reverse*	P2 Reverse*	3
		P2 Throw Right			P2 Fire Right*	*P2 Smartbomb	*P2 Smartbomb	4
						*P2 Hyperspace	*P2 Hyperspace	5

\*Cocktail mode inputs ONLY

## Additional Buttons Header

Molex 6 pin Header

		Defender	Stargate
1	P1 Button 5	P1 Hyperspace	P1 Hyperspace
2	P2 Button 5	*P2 Hyperspace	*P2 Hyperspace
3	P1 Button 6		P1 Invisio
4	P2 Button 6		*P2 Invisio
5	Menu	Main Menu	Main Menu
6	High Score Reset	High Score Reset	High Score Reset

\*Cocktail mode inputs ONLY

# Revision History

## FPGA Revisions

- 0.0 - BETA release
- 1.0 - Initial release
- 1.1 - Sinistar joystick rotation option  
- Start button 'pressed/released' option
- 1.2 - Unreleased
- 1.3 - Menu or Center Coin option

## BOOT ROM Revisions

- 1.05 Initial Release ( FPGA 1.0 )
- 1.06 Sinistar Joystick rotation ( FPGA 1.1 )
- 1.07 Start Button option ( FPGA 1.1 )
- 1.08 Center Coin or Menu Button support ( FPGA 1.3 )  
Screen saver enabled even when JAMMA Test input (Auto-Up) is in the 'On' position

Notes:

BOOT ROM functionality is tied to a FPGA version for support of the menu features. Using a later ROM revision with an earlier FPGA version will not enable new features.

Newer ROM versions are backwards compatible with older FPGA revisions. However newer hardware features will not be available.