Instructions

Thank you for purchasing the AKI 秋 3.0 USB Control Interface. Within these pages, you will find important instructions for wiring your controls to the interface board. Please read the instructions carefully before proceeding, as proper wiring is important for correct operation of the board.

The AKI board is compatible with Windows 98SE and up, MacOS X, and Linux, with proper USB HID support installed. Please note, however, that the configuration application is presently only available for Windows XP. A MacOS 10.5 port of the application is presently in development. Support for other platforms is possible, and will be based on demand.

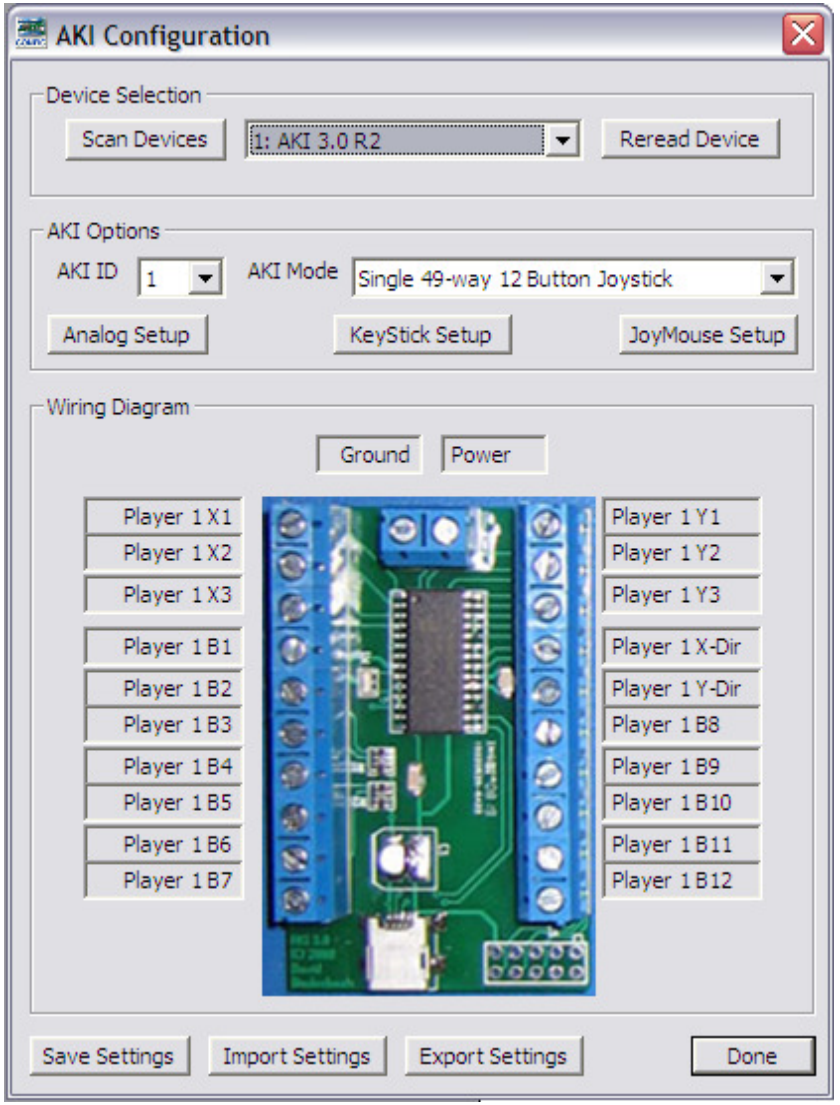
Features and Settings

AKI 3.0 has a number of additional features when compared with previous versions. Chief among these is the new AKI Configuration application, shown to the right. This application allows you to customize the behavior of the AKI board in a number of different ways.

The Configuration application is broken down into 3 sections. First, is 'Device Selection'. This provides a list of AKI 3.0 boards that are connected to your PC. It also lists the current firmware revision of each detected board. Configuring a particular AKI 3.0 board is as simple as selecting the device you'd like to configure, choosing your options in the 'AKI Options' section, and clicking the 'Save Settings' button.

The AKI Options section allows you to configure your AKI board. The AKI ID menu allows you to choose among 4 different unique AKI USB IDs. The AKI Mode menu allows you to place the AKI into one of the following operational modes:

- Single Analog 6-Axis 14-Button Joystick
- Dual Analog 3-Axis 7-Button Joysticks
- Single Digital 10-Button Joystick
- Single 49-way 12-Button Joystick
- Single Analog 2-Axis 14-Button KeyStick



Clicking the 'Analog Setup' button allows you to enable / disable the Analog inputs on an individual basis. If you have the AKI board in an Analog mode, it is highly recommended that you disable any unconnected or unused analog inputs. Alternatively, unused analog inputs may be wired to ground.

The 'KeyStick Setup' button provides a configuration menu for KeyStick mode. KeyStick mode, one of the new features of AKI 3.0, allows you to activate keyboard keys with the joystick and

buttons you have connected to your AKI board. In this menu, you can determine the size of the joystick 'dead zone' to prevent keys from being activated accidentally, as well as select the desired keyboard keys you would like to activate from the AKI board.

Finally, the last button in the 'AKI Options' section is the 'JoyMouse Setup' button. This allows you to enable / disable JoyMouse mode, which allows you to control your mouse using the joystick you have connected to the AKI board. The JoyMouse menu has settings for mouse speed, as well as the joystick dead zone.

Underneath the 'AKI Options' section, you will find the 'Wiring Diagram'. This provides a list of all of the functions of the external pins on the AKI board, based on the operational mode you have selected.

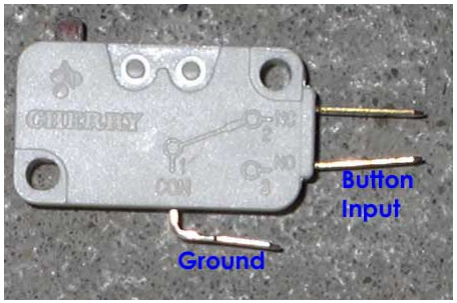
Once you are finished configuring your AKI, you must click the 'Save Settings' button, which stores your settings on the AKI board itself, in flash memory. You also have the option of exporting your currently selected settings to a file, or importing settings from a previously saved file. Please note that after importing settings, it is required to click 'Save Settings' to apply the settings you have loaded.

Terminals/Connection Points

On your AKI board, you will find a number of wire terminals or connection points. The function of these terminals depends on the currently selected operation mode of the AKI board. The AKI mode may be selected through the configuration application as described above. The pinouts for each AKI mode can be found both in the configuration application, and in Appendix A of this document.

Wiring the Buttons

To wire a button input to a microswitch or similar momentary contact switch, simply wire the 'Common' tab on the switch to the ground terminal of the AKI board, and wire the 'Normally Open' tab (i.e. the tab for which there is no connected circuit when the button is not depressed) to your choice of button input on the AKI board. Capacity for up to 14 buttons is provided, depending on AKI mode. Please note that older operating systems, such as Windows 98, require that at least one button is wired for each joystick, to progress through the calibration process.



Wiring a Digital Joystick

Wiring a digital joystick is much like wiring buttons. The 'Common' tab for each of the 4 switches in the joystick must be wired to ground, while the 'Normally Open' tabs must be wired to the corresponding Up, Down, Left, and Right inputs.

Wiring the Analog Axes

To wire an analog axis to the AKI board, it is recommended that you use a multimeter. You will need to wire to all three pins on your analog control's potentiometer. The AKI interface works equally well with 5k and 100k potentiometers.

Use your multimeter to find the two pins which range from 0 ohms resistance to the potentiometers maximum value as the axis control is adjusted from its lowest position to its highest position. One of these pins will be an edge pin, and the other is the center pin. Wire the edge pin to the ground terminal of the AKI board, and the center pin to the analog input of the AKI board. Finally, wire the remaining edge pin to the +5v terminal on the AKI board.

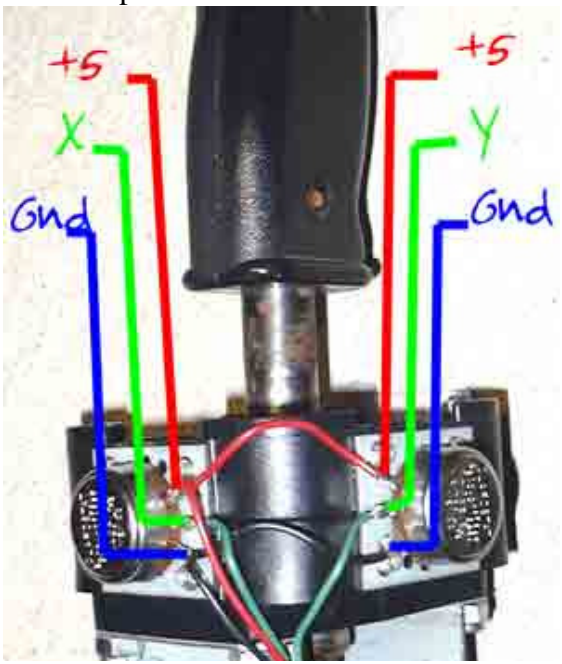
If you have multiple controls that return to a center position via a spring (most joysticks, steering wheels), it is recommended that you connect them to the X/Y axes, rather than the Z axis.

Important: If you are not using a particular analog axis it is required that you either wire that axis's input to ground on the AKI board, or disable it in the Analog Settings menu. If you fail to do so, unexpected behavior may result.

Wiring an Analog Joystick

When wiring a Joystick, the basic procedure is the same as above. Measure the resistance across the center and an edge pin of the x potentiometer when the x-axis is in the leftmost position. If the edge pin reads the potentiometer's minimum value, wire it to the ground terminal. Wire the center pin to the analog input of the AKI board, and wire the remaining edge pin to +5v. When wiring the y-axis, the same procedure is followed, with the exception that the joystick should be held in the topmost position when measuring the potentiometer.

A typical example is shown below:

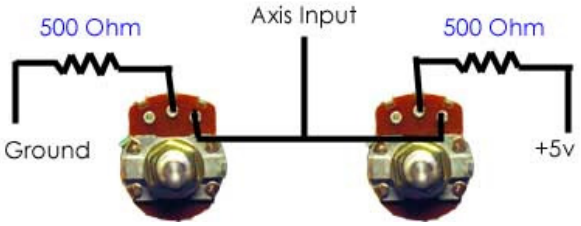


Wiring Pedals: Dual Axis configuration

To wire dual axis pedals to the AKI board, simply wire each potentiometer to its own axis input according to the general instructions above.

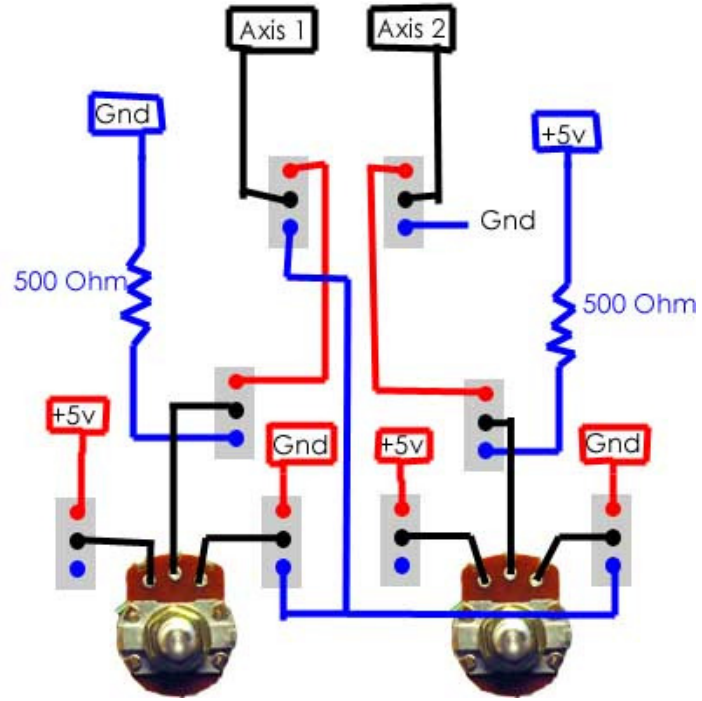
Wiring Pedals: Single Axis configuration

Wiring single axis pedals to a single analog input will require the use of two 500 ohm resistors. Larger resistors may deteriorate performance. Wire your potentiometers according to the following diagram. If behavior is not as expected, reverse +5v and Ground connections.



Single/Dual Axis Pedal switching

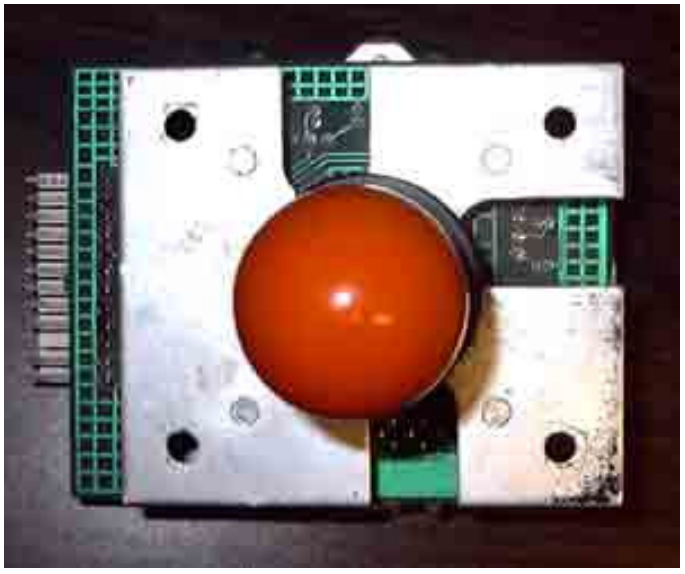
It is possible to wire a single/dual axis pedal switch, with either one 8PDT (8-Pole Dual Throw) switch, two 4PDT switches, 4 DPDT switches or 8 SPDT switches. The use of a single 8PDT switch is highly recommended.

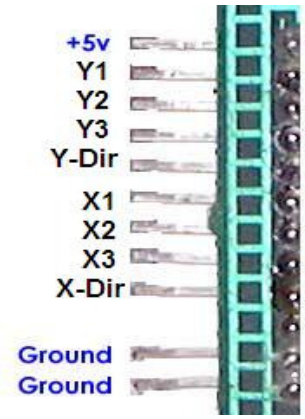


Each gray box represents a pole of a switch. When wires of different colors cross, they are NOT connected. When the switch is in the Dual Axis setting, the black pins and red pins are connected. When the switch is in Single Axis mode, the black pins and blue pins are connected.

Wiring a 49-Way Joystick

To wire a 49-way joystick to the AKI board simply wire the terminals with the same label to each other. For example, pin X1 on the Sinistar joystick connects to pin X1 on the AKI board. Pictures of the supported joystick types are below. Both Happ Controls/Midway and Sinistar type sticks are supported. When wiring these joysticks, please note the proper orientation of the stick, as shown below.





The pinouts for both stick types are shown in the diagram to the left. Note that only one of the ground terminals needs to be connected to the AKI board.

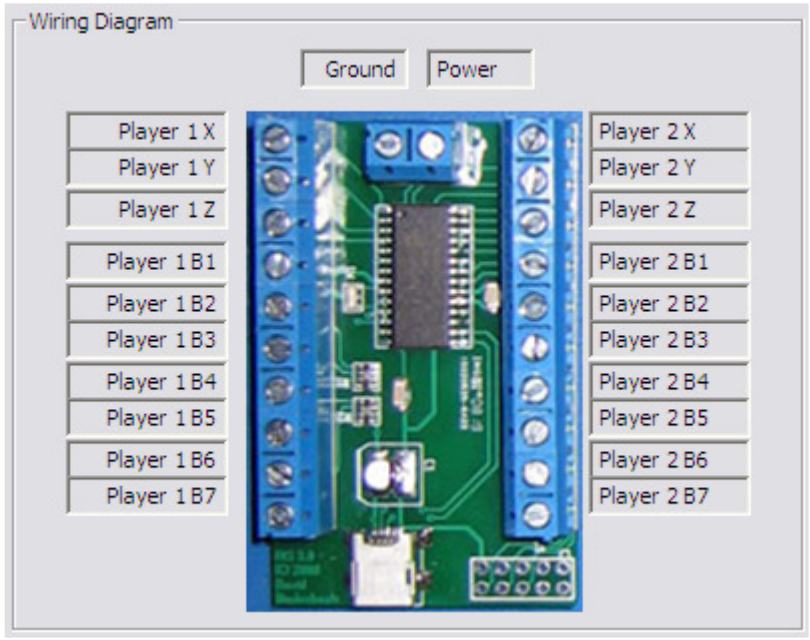
Presently, there is no support for changing the joystick scaling method, however this feature will be provided via firmware update in the near future.

Firmware Updates

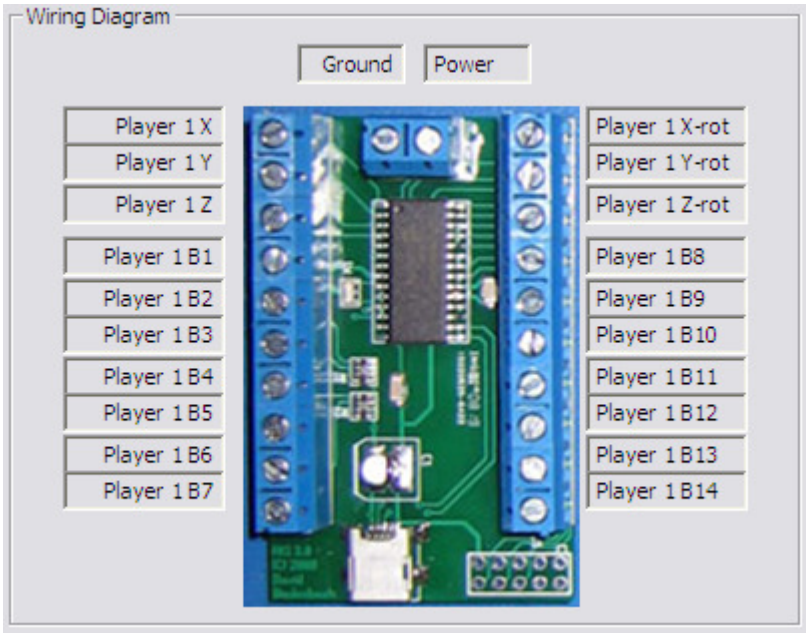
From time to time, a new AKI firmware will become available. When this happens, instructions for upgrading the firmware will be provided on the AKI website.

Appendix A: Wiring Diagrams

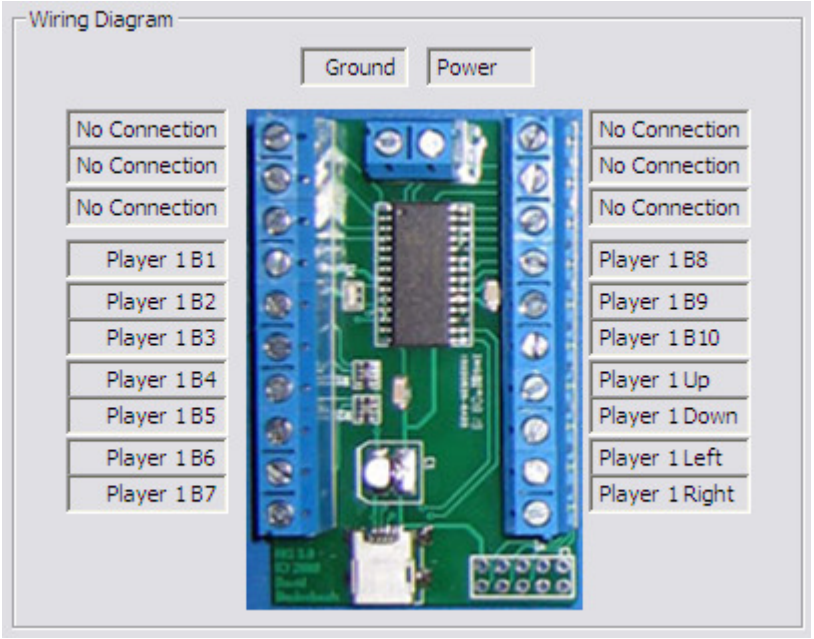
Dual Analog 3-Axis 7-Button Joysticks



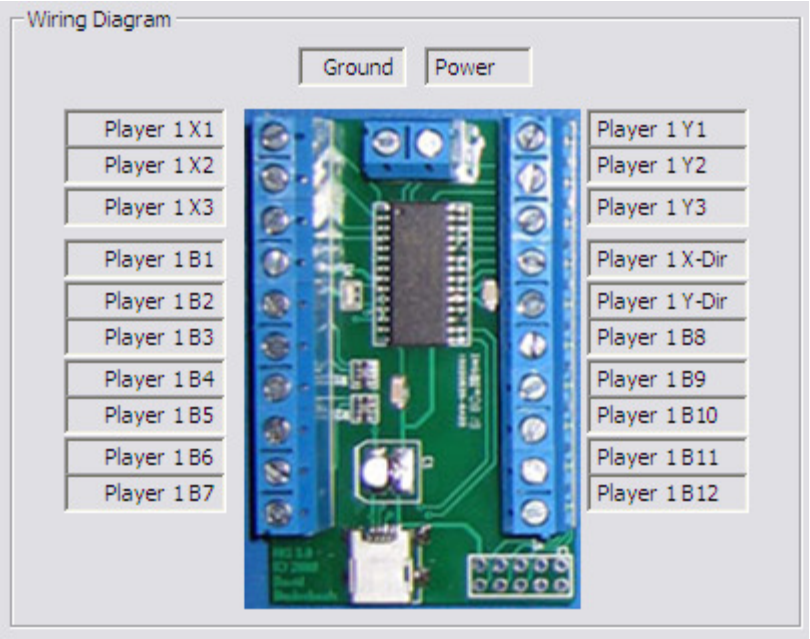
Single Analog 6-Axis 14-Button Joystick



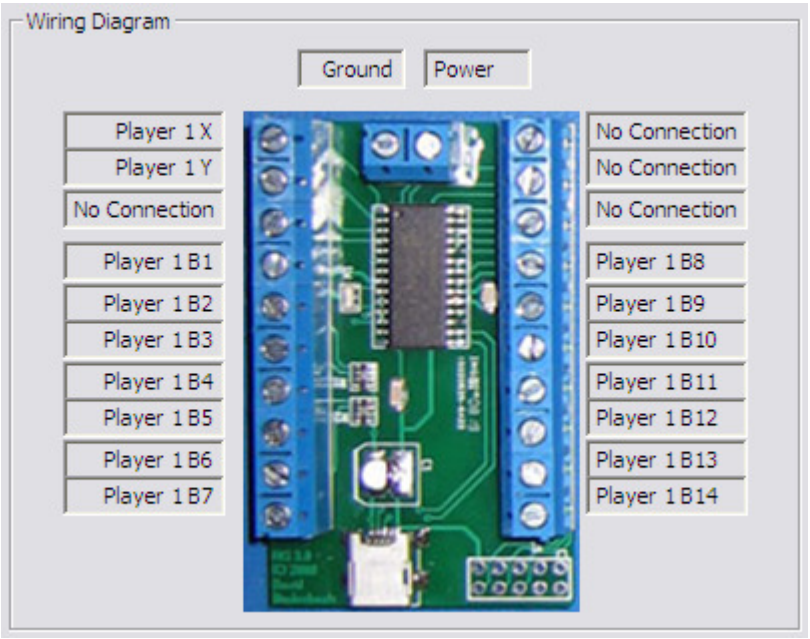
Single Digital 10-Button Joystick



Single 49-way 12-Button Joystick



Single Analog 2-Axis 14-Button KeyStick



Appendix B: MAME Button Codes

For those of you who specify their own MAME controller .ini files, it is helpful to note that AKI buttons are reported as follows:

Joystick 1 Button 1: J1_BUTTON0, or JOYCODE_1_BUTTON1
Joystick 1 Button 2: J1_BUTTON1, or JOYCODE_1_BUTTON2
Joystick 1 Button 3: J1_BUTTON2, or JOYCODE_1_BUTTON3
Joystick 1 Button 4: J1_BUTTON3, or JOYCODE_1_BUTTON4
Joystick 1 Button 5: J1_BUTTON4, or JOYCODE_1_BUTTON5
Joystick 1 Button 6: J1_BUTTON5, or JOYCODE_1_BUTTON6
Joystick 1 Button 7: J1_BUTTON6
Joystick 1 Button 8: J1_BUTTON7
Joystick 1 Button 9: J1_BUTTON8
Joystick 1 Button 10: J1_BUTTON9
Joystick 1 Button 11: J1_BUTTON10
Joystick 1 Button 12: J1_BUTTON11
Joystick 1 Button 13: J1_BUTTON12
Joystick 1 Button 14: J1_BUTTON13

Joystick 2 Button 1: J2_BUTTON0, or JOYCODE_2_BUTTON1
Joystick 2 Button 2: J2_BUTTON1, or JOYCODE_2_BUTTON2
Joystick 2 Button 3: J2_BUTTON2, or JOYCODE_2_BUTTON3
Joystick 2 Button 4: J2_BUTTON3, or JOYCODE_2_BUTTON4
Joystick 2 Button 5: J2_BUTTON4, or JOYCODE_2_BUTTON5
Joystick 2 Button 6: J2_BUTTON5, or JOYCODE_2_BUTTON6
Joystick 2 Button 7: J2_BUTTON6