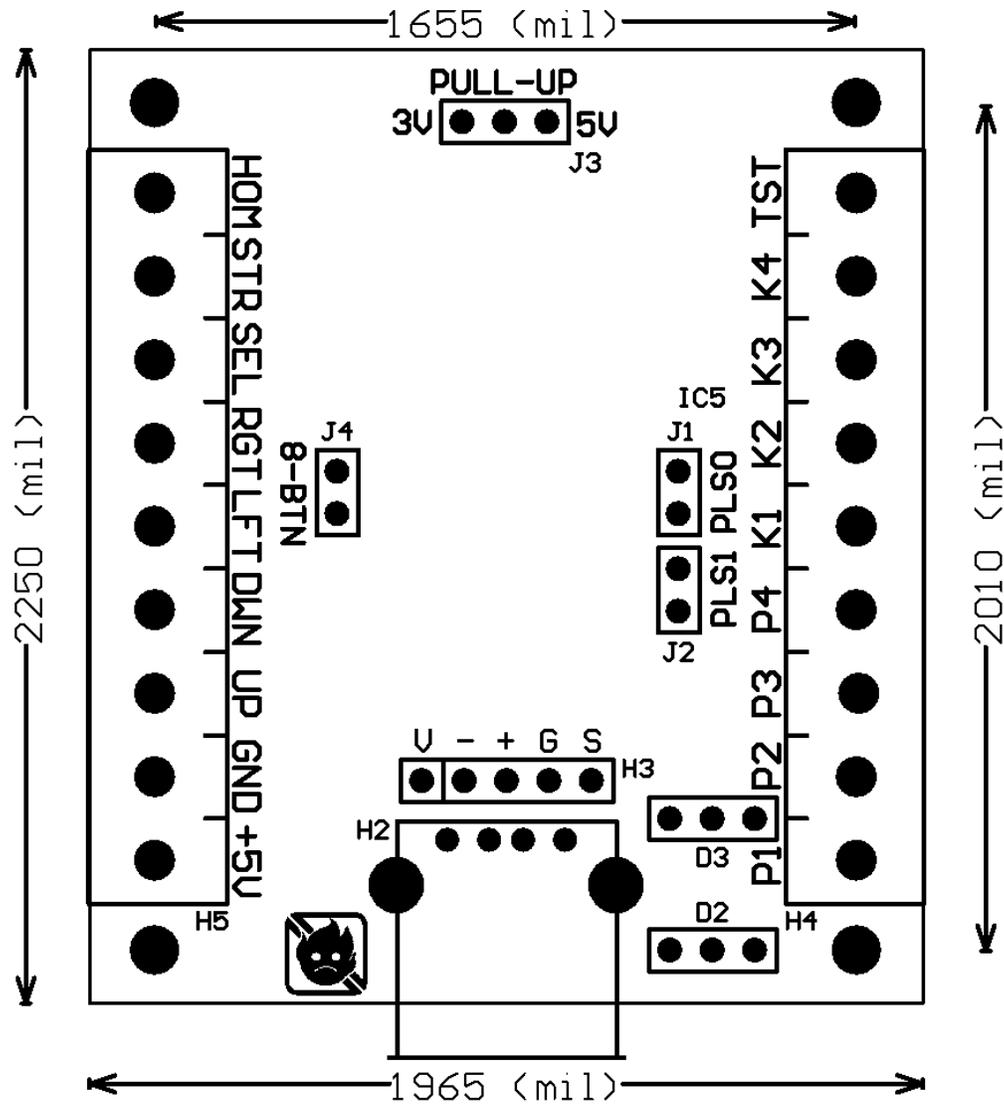


# UD-USB Decoder (Terminal Block Version)



## Introduction:

This product is designed to “decode” the USB signals from your X360 or PS3 controller and output discrete digital button/joystick signals. Those signals can be used to control many other digital systems or devices, from Superguns to robots.

## Button & Direction Signals:

All button and direction signals are active low, common ground, as is typical for arcade cabinets. The logic level (the voltage of the button signal when it is not pressed) is selectable via Pull-Up jumper J3 which sets 5V or 3V, depending on the jumper position. Most arcade systems use 5V logic for the control inputs. For non-arcade applications, be sure to verify the logic levels used by the other device(s) to determine the proper setting for J3 before wiring them together.

## Test Signal:

The Test signal is dual purpose. When the decoder is first powered up, the Test signal acts as an input and if held low (~0V), puts the decoder in a firmware update mode. Under normal operation, the Test signal is an output, just like the other button signals, and can be activated by holding down all 6 action buttons + Select/Back & Start (Note: if using with arcade games, remember that some Test/Service menus only allow Player 1 to navigate or may require buttons pressed by both Player 1 & 2, so though Player 2 could enter the Test/Service menu by pressing the appropriate buttons, they won't necessarily be able to navigate once inside the menu).

## LED Indicator:

The LED indicator should be exposed in your installation. It reports important information that will allow you to know the state of the decoder. Below is a list of states:

Solid GREEN – Game Controller detected/ready

Flashing GREEN - Button Re-Mapping mode

Solid YELLOW - When the decoder was powered up, another 5V source on the USB port was detected (not permitted)

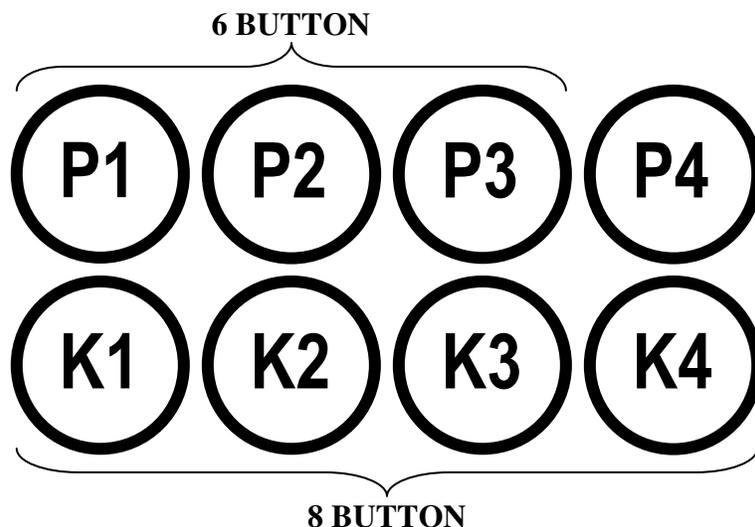
Flashing YELLOW - Unsupported device plugged in

Flashing RED - USB power problem (possibly a damaged device was plugged in)

Flashing RED/GREEN - Bootloader mode

## Button Mapping:

The standard button mapping for the UD-USB Decoder is to follow that of classic Street Fighter 2 where the P1, P2, and P3 would be the top row of buttons on the controller layout and K1, K2, and K3 would be the bottom row (or if J4 is set for 8 button mode, P1, P2, P3, and P4 would be the top row and K1, K2, K3 and K4 would be the bottom row).



Some controllers do not follow this standard button mapping scheme and will require manually mapping the buttons. Any button on any compatible controller except for Select/Back, Start, and Home/Guide can be re-mapped to any of the other 6 or 8 (depending on the setting of J4) action button output signals on the decoder. To re-map the buttons on your controller, hold down any 3 buttons\* when you plug in the controller, wait for the LED indicator to flash GREEN (after

about 3 seconds), then release the 3 buttons and press in sequence the buttons you wish mapped to P1, P2, P3, K1, K2, and K3 (for 6 button mode or P1, P2, P3, P4, K1, K2, K3, and K4 for 8 button mode). At this point the LED indicator should stop flashing and go solid GREEN. Re-mapping is not stored in the decoder after the controller is unplugged or the decoder is powered down. This is so that during tournament play, one player's button mapping doesn't affect the next player.

\*Some controllers may not be properly handled by the firmware yet and may not enter re-mapping mode due to not all buttons being recognized. If you encounter this, try holding more than 3 buttons when plugging in the controller.

### **Player Select Jumpers:**

Jumpers J1 and J2 configure the UD-USB Decoder to send a message to the controller, telling it which player it belongs to. This is usually indicated on the controller by a set of LEDs (PS3, being a bar of LEDs, X360 being a circle of LEDs). Here are the possible jumper settings:

J2	J1	
OFF	OFF	- Player 1
OFF	ON	- Player 2
ON	OFF	- Player 3
ON	ON	- Player 4

This doesn't affect the way the decoder handles the actual controller data (you could have all decoders set to Player 1 and it wouldn't matter), it's simply a nice way indicating which controller is which in a 2+ player setup.

### **Alternate Connections:**

There are alternate connections for the USB port (H3) as well as the LED indicator (D2). These allow for more flexible mounting of the UD-USB Decoder in that you are not constrained to mount the decoder against an exterior wall of your project case. You can use extensions to mount an external USB port and LED indicator wherever you please. There are off-the-shelf extensions for the LED indicator, but they can also be constructed simply with 3 wires, a proper bi-color LED (3-pin, common cathode, 0.100" pitch), and a 3-pin connector (0.100" pitch). USB extensions are readily available and inexpensive.



## **Firmware Update Procedure (files available upon request):**

1. Power down the UD-USB Decoder
2. Attach USB cable (Male A to Male A) to both your PC and the decoder
3. Open the Windows bootloader application
4. Connect the "Test" terminal to GND (or simply hold the Test button on your supergun or cabinet, if you have already connected that signal to your decoder) and power it up
5. Verify the LED indicator on the connected controller port is flashing RED & GREEN (if not, power down and re-try Step 4)
6. From the Windows bootloader, select the desired firmware file
7. Click "Program/Verify" button and wait until complete
8. Remove USB cable from the controller port
9. If multiple decoders are connected to the same system, attach USB cable to other controller port and repeat steps 5-7
10. Power down the decoder
11. Remove USB cable from both your PC and the decoder

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