VIRTUATILT BASIC CONFIGURATION AND SETUP

Following some basic instructions to have your VirtuaTilt up and running quickly.

VirtuaTilt controller is powered by FRDM KL25Z board with Pinscape software already installed.

Please always refer to official Pinscape build guide available here:

http://mjrnet.org/pinscape/BuildGuideV2/BuildGuide.php?sid=kl25zSoftwareSetup

KL25Z Software Setup

VirtuaTilt comes with a KL25Z "microcontroller", which is basically a tiny computer. **Pinscape firmware is already installed (latest version - August 19, 2024)**. That serves as both the operating system and the application software. It controls all of the virtual pinball functions of the KL25Z, including the sensors, buttons, and feedback devices, and it handles communications with Windows.

In addition to the Pinscape firmware that runs on the KL25Z, there's a separate Pinscape program that runs on your Windows PC, called the **ConfigTool**. This provides an interactive interface for setting up the device, configuring it, and testing it. You don't need to leave the ConfigTool running all the time; it's only needed to set up and test the device. You can also run it again at any time to change options, update the firmware, or troubleshoot problems (it includes some testing features that can help debug the hardware setup).

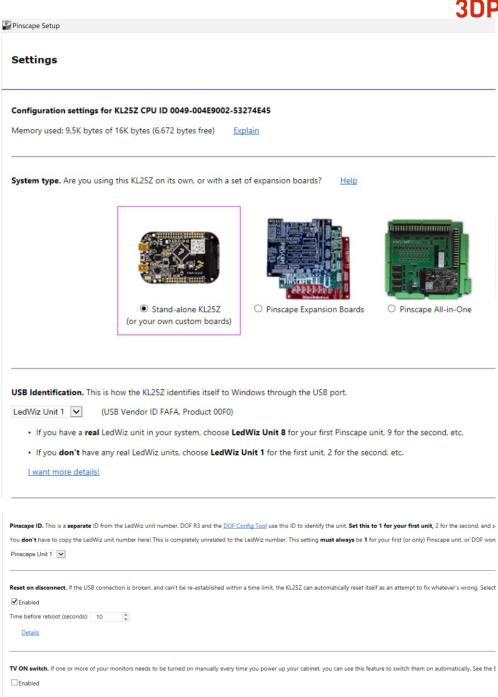
The software installation process is all controlled from the PC. The Config Tool handles the KL25Z software setup, so the first step is to install the Config Tool on your PC. You can download it from official page:

http://mjrnet.org/pinscape/swversions.php

To install, download the ZIP file above, unblock it (**very important!**) and unpack it into a folder on your hard disk. Use any location that's convenient. Open the folder and double-click the "**PinscapeConfigTool.exe**" application.

VirtuaTilt default config

Following is the default VirtuaTilt config in Pinscape. We recommend to leave it as-is for testing buttons, potentiometer, feedback devices, etc. You can obviously change it afterwards, according to your personal preferences. We also recommend to save it, in case you need to revert back to original configuration.



IR Remote Control. The controller can send and/or receive IR remote control signals if you attach some additional components. This can be used with the TVON feature to turn your cab details on the components required and how to connect them. If you don't have any IR components attached or wish to disable them, simply set the pin assignments here to "Not Connect them."

Requires a PWM-capable pin

Requires an interrupt-capable pin

IR LED (transmitter) pin: Not Connected

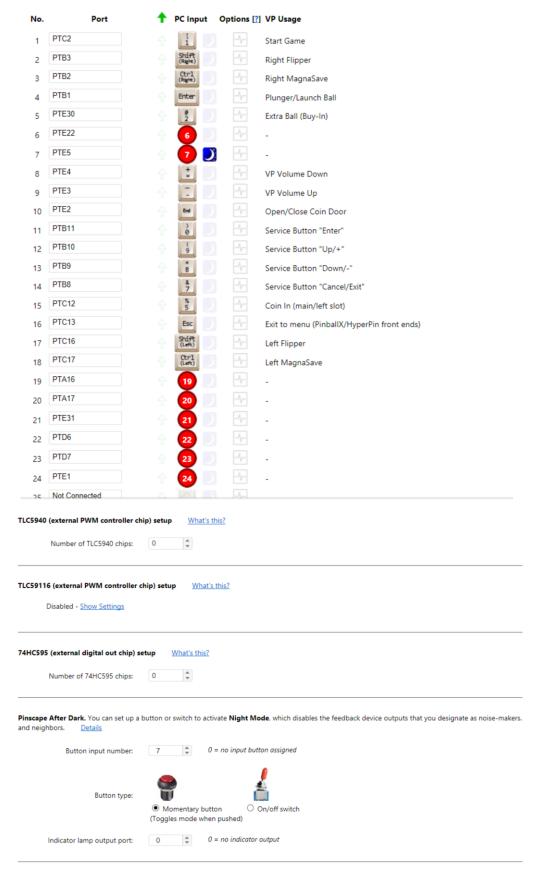
IR receiver input pin:



Joystick input. The controller acts like a Windows USB Joystick in order to send the plunger position, accelerometer readings (for nudging), and ✓ Enable joystick input Why would I want to disable this? Joystick axis format: X/Y/Z What's this? Joystick report interval (milliseconds): 8.333 Explain Accelerometer "stutter": 2 Explain Accelerometer orientation. If you're using the accelerometer (for nudge sensing), the software needs to know how the KL25Z is oriented in the cabinet so ti below, level with the floor of the cabinet, with the chips and LEDs facing up. O Ports facing front O Ports facing left O Ports facing right O Ports facing rear **Dynamic range.** Select the range for accelerometer readings. Ranges above ±2G have lower precision. Details ±1G (original Pinscape setting, highest precision) O ±2G (same precision as ±1G but with wider range) O ±4G (reduced precision, wider range) • ±8G (lowest precision, widest range) Auto-centering. The controller automatically zeroes the accelerometer after it's been sitting still for a while. This compensates for any tilt in the mounting pc Joystick Viewer O Manually center only (no auto-centering) Auto-center with default time (5 seconds) O Auto-center with custom time Plunger sensor setup Sensor type: Potentiometer Live Sensor View Potentiometer. This uses a slide potentiometer, which is a variable resistor with a control knob that moves linearly across the length of the device. Attach pot's electrical resistance changes as the knob moves, proportionally to the position, so the controller can determine the plunger position by reading the v Pin assignments: PTB0 Requires an ADC (analog in) pin Plunger calibration button. If you wish, you can install a pushbutton in your cabinet to activate plunger calibration mode. This is optional, since you can a PTE29 ☐ Enabled Button input: PTE23 ☐ Enabled Indicator lamp output: ZB Launch Ball setup. You can set up your mechanical plunger to act as a "virtual" Launch Ball button for tables that use a button instead of a plunger. ☐ Enabled Button inputs. You can use the KL25Z as a key encoder to connect pinball-style buttons on your cabinet to the PC. Set up the wiring connections and key pin or key assignment to change a setting. **Test Buttons** Shift button number: Shift OR Key mode O Shift AND Key mode

Set standard joystick buttons | Set standard keyboard keys | View standard key assignments

NOTE: Button ports could be different for every VirtuaTilt machine



Feedback device outputs. Pinball software on the PC can control output devices connected to the KL25Z to create special effects during play, such as tactile fee address the outputs. Use these port numbers when you set up your <u>DOF configuration</u>. For each port, you can select the physical output pin that the port is wirer

Test Outputs Port No. Type Digital KL25Z J1-2 PTA1 J1-4 PTA2 PWM KL25Z J1-6 PTD4 KL25Z KL25Z J1-8 PTA12 Digital KL25Z J1-10 PTA4 5 PWM KL25Z J1-12 PTA5 6 PWM KL25Z J2-2 PTA13 PWM KI 257 12-4 PTD5 8 PWM 9 PWM KL25Z J2-6 PTD0 10 KL25Z J2-10 PTD3 11 Digital KL25Z J2-8 PTD2 Digital KL25Z J1-14 PTC8 12 Digital KL25Z J1-16 PTC9 13 J1-1 PTC7 14 Digital KL25Z 15 Digital KL25Z J1-3 PTC0 16 Digital KL25Z J1-5 PTC3 17 KL25Z J1-7 PTC4 Digital J1-9 PTC5 18 Digital KL25Z Digital KL25Z J1-11 PTC6 19 Digital KL25Z J1-13 PTC10 20 Digital KL25Z J1-15 PTC11 + x 1 21

Digital KL25Z J2-18 PTE0



Pinscape Setup

Back up & Restore

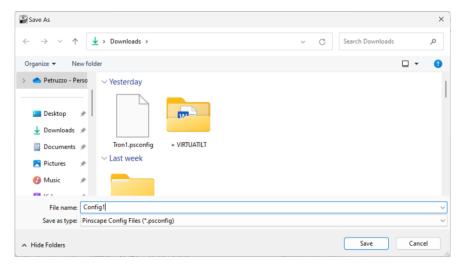
Pinscape Unit #1 | LedWiz Unit #1 | CPU ID 001A-004F9002-53274E45



Saves the configuration settings from the KL25Z to a file on your PC. You can use this file as a data backup in case of hardware problems or data loss on the KL25Z. You can also use it to duplicate this device's settings on other devices, or share your setup with othe people.



Restores the KL2SZ to the settings saved in a backup file. You can use this to recover from data loss or hardware failures, or to restore working settings after making experimental or unwanted change



Installing DOF

Install DOF using .msi files from official page: http://mjrnet.org/pinscape/dll-updates.html and follow installation instructions.

Latest version (1 September 2024) allows merging of X86 and X64 installs. <u>64bit versions only of both VPX and DOF are highly recommended</u>.

NOTE: unblock files after download (very important!)

The official step-by-step guide for DOF configuration is available here: Pinscape Build Guide (mjrnet.org)

Configuring DOF for VirtuaTilt

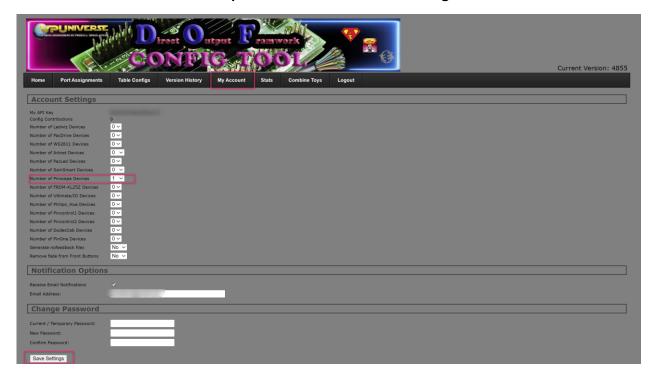
In order to configure DOF you need to setup a configuration file. You can create an account and login to the **DOF Config tool** page or **you can just download provided config files from our GitHub repository** and copy/move the files into your **C:\DirectOutput** directory (or wherever DOF is installed on your PC), overwriting existing files.

Changing DOF Configuration

Select your device

Once you have an account setup, go to My Account and select the number of devices for your setup.

Select 1 for Number of Pinscape Devices and then Save Settings





Creating a config file

When creating a config file for your setup, its simply a matter of selecting the outputs for each device in your cabinet. VirtuaTilt is already configured this way:

- Port1 Solenoid Combo for bumpers and slingshots
- Port2 Shaker Motor
- Port3 Left Flipper Solenoid
- Port4 Right Flipper Solenoid



The **Combo1** config is assigned to slingshot and bumpers:



You can change it according to your personal preferences. To do this, simply navigate to the "**Combine Toys**" section in the config tool and enter your new combos.



NOTE: Shaker Motor Intensity is already set at Maximum (48). You can change it according to your personal preferences:

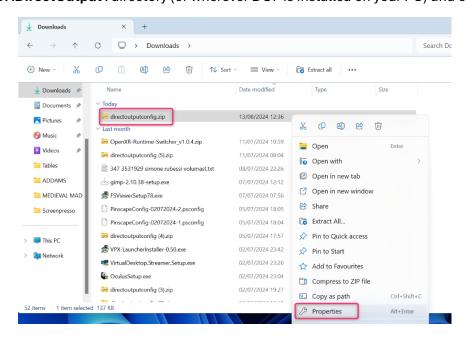


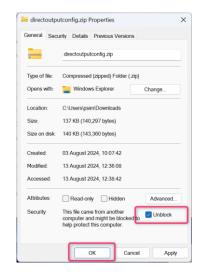
Setting your config in DOF

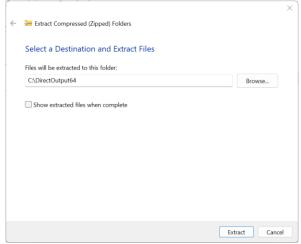
Once you have everything set in the config tool, click the **Save Config** button, then **Generate Config** button:

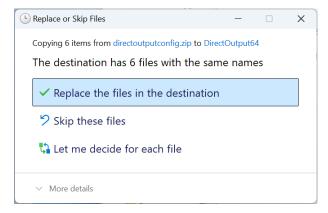


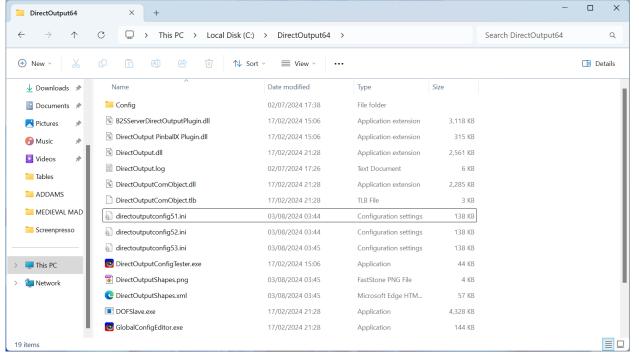
This will download a copy of the configuration files onto your PC. All you need to do now is to extract the zipfile into your **C:\DirectOutput** directory (or wherever DOF is installed on your PC) and overwrite all files:





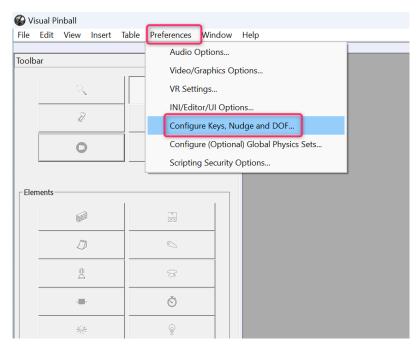


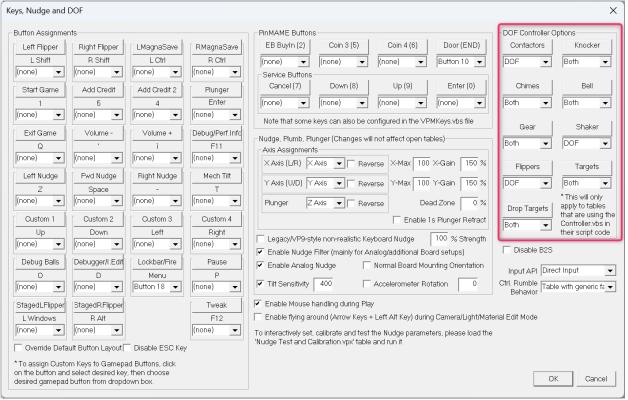




Visual Pinball configuration

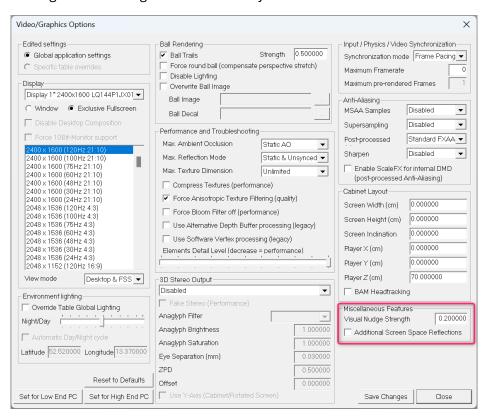
Replicate the following configuration in Visual Pinball settings:

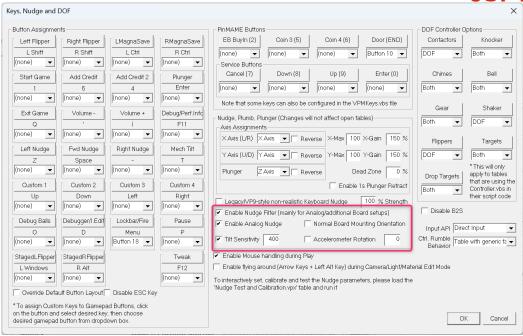




Nudge/Tilt configuration in Visual Pinball

We recommend starting with following values and modify them afterwards:





Your VirtuaTilt should now be able to play Visual Pinball and have feedback on all supported tables!