



Plug N Play Shaker INSTALLATION & USE





BEFORE YOU BEGIN

Working with electricity comes with huge risks that should never be taken lightly, safety should always come first.

To avoid personal injury, possible damage to equipment or danger of fire, all work on electronic equipment should be conducted following these safety procedures.

General Safety

Before working on any electronics, consider following these basic safety precautions to help reduce any hazards.

- Remove any electronic equipment you're testing or working on from the power source.
- Never assume the power circuit is off. Test and test again with a voltmeter to confirm.
- Remove fuses and replace them only after the power to the circuit is disconnected.
- Don't connect power to a circuit until you're done working on it and rechecked the work.
- Always ensure that all electronics equipment is properly grounded
- If it's damaged, replace it. For instance, replace cables instead of repairing with insulating tape.
- Always use the right electronics repair and maintenance tools.
- Always return covers after removing them to reduce the risk of electric shock.
- Make sure your circuit is not overloaded.
- Always have safety equipment like a fire extinguisher, a basic first aid kit and a mobile phone nearby.

Personal Safety

Here are some personal safety precautions to keep in mind:

- Always keep your work area dry.
- Always work in a well-ventilated area.
- Don't wear flapping or loose clothing when working.
- Don't work with metallic jewelry on your hands like watches, rings and bracelets.
- Always wear non-conductive shoes.
- Always remove power to a circuit before connecting alligator clips.
- Always wear safety goggles.
- Be careful when handling large capacitors as they can still hold high voltage even after you've disconnected the circuit from power.

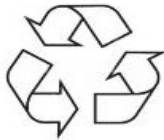
Static Damage Prevention

Static electricity can damage electronic devices and your system. To avoid damage, keep static-sensitive devices in their static-protective bags until you are ready to install them.

To reduce the possibility of electrostatic discharge, observe the following precautions:

- Limit your movement. Movement can cause static electricity to build up around you.
- Handle the device carefully, holding it by its edges or frame.
- Do not touch solder joints, pins, or exposed printed circuitry.
- Do not leave the device where others can handle and possibly damage the device.
- While the device is still in its antistatic bag, touch it to an unpainted metal part of the system unit for at least 2 seconds. (This action removes static electricity from the package and from your body).
- Remove the device from its package and install it directly into your system, without putting it down. If it is necessary to put the device down, place it onto its static-protective bag. (If your device is an adapter, place it component-side up.) Do not place the device onto the cover of the system or onto a metal table.
- Take additional care when you handle devices during cold weather. Indoor humidity tends to decrease in cold weather, causing an increase in static electricity.

Disposal



Observe the approved methods and ordinances of your locality with regard to proper disposal of used electronic appliances.

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Kit Includes

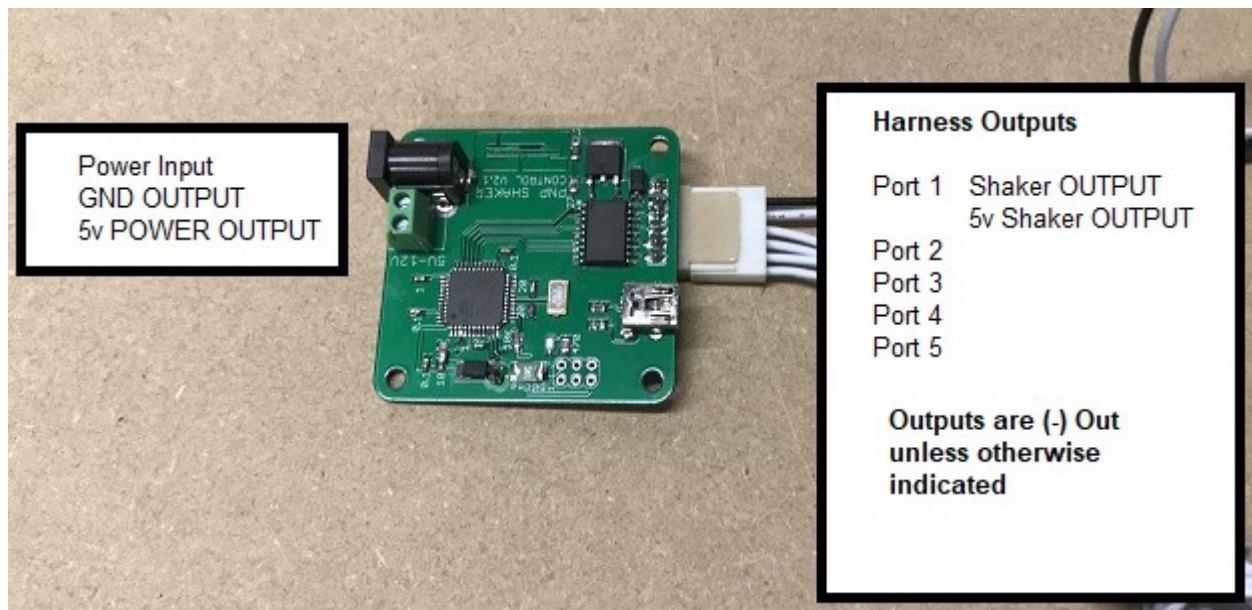
- 1pc Shaker Motor
- 1pc Shaker Motor Control Board
- 1pc 5v 5A Power Supply – 110v/220v compatible (110v North American power cord included)
- 1pc 6' USB2.0 Cable

Theory of Operation

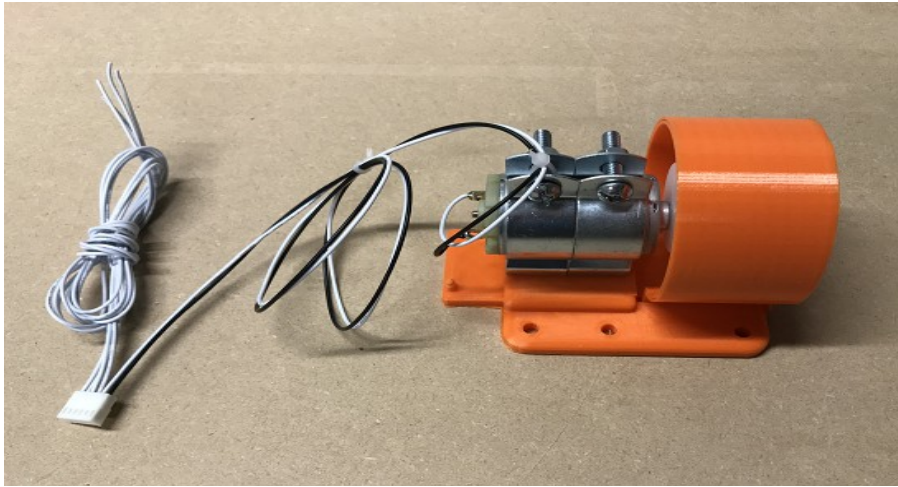
The PlugNPlay Shaker Motor is controlled by a 5 port Zebboards LEDWiz compatible controller that is natively recognized by the mjr DOF R3++ Grander Unified build of the Direct Output Framework (referred to hereafter as DOF).

Setup involves both the installation of the hardware and some basic software fully configurable through the DOFconfigTool located at www.vpuniverse.com

Board Layout



Mounting & Connection



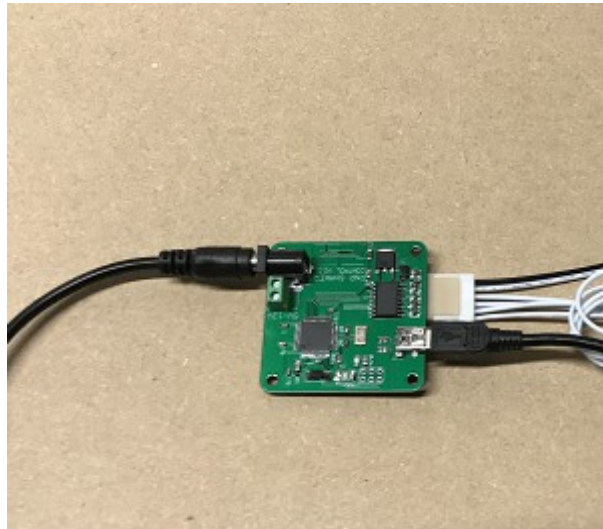
Pick a suitable location for the shaker motor and securely attach it to the cabinet using 6 x mounting screws (not included). The motor can be mounted in any orientation (horizontal / vertical) and should be located forward in the cabinet for the best feedback results. Typical locations include but are not limited to:

- Coinbox floor area
- Coinbox crossbar/bracing/divider
- inside side panel walls
- inside front cabinet panel

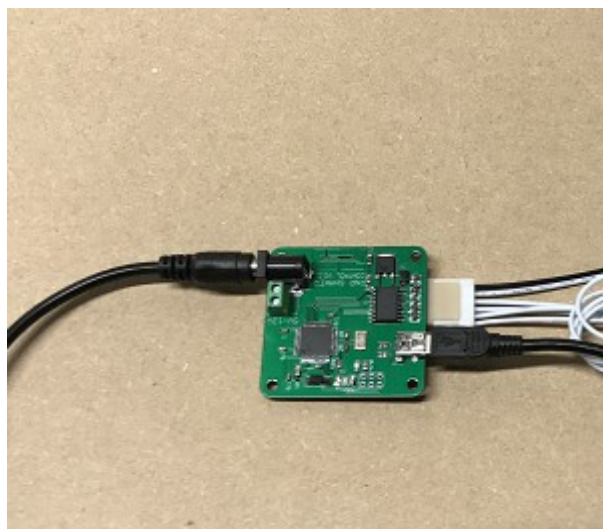
Locate a convenient area to mount the control board that is within range of both the computer for USB connection (6' cable included) and motor mounting location (30" harness included). Mount the control board on the mounting bracket with 2 x mounting screws (not included). Connect the motor harness to control board as illustrated below.



Connect the 5v 5A power adapter to the control board as shown below.
DO **NOT** PLUG POWER ADAPTER INTO MAINS VOLTAGE AT THIS TIME.



Connect the USB2.0 cable to the control board as shown below.
Connect the other end to an open USB2.0 port on your computer. No drivers are required for controller board.



Finally, plug the power adapter into mains power.

SOFTWARE SETUP

For Installation of DOF from scratch:

Download and run the installer from either the link below or directly from the source

mjrnet.org/pinscape/dll-updates.html

This will install mjr's Grandeur Unified R3++ build of DOF. All ZB controller boards are natively supported by this build and will be auto-detected.

[Click HERE to download](#)

For existing DOF installations:

1. Download the ledwiz.dll file

[click HERE to download](#)

2. Extract the dll file and right click on the the extracted file in the folder it created.

3. Left click on the properties selection in the menu that pops up.

4. At the bottom of the properties window that opens, tick the box that unblocks the file if necessary.

5. Close the window and replace the ledwiz.dll in the directoutput folder on your computer with the unblocked one from the extraction folder.

DOF Configuration

Open an account here at <http://configtool.vpuniverse.com/login.php>

Create an account and set the number of LEDWiz Devices to 4 (kit ships as DEVICE 4 by default).

Change to the Port assignments for LEDWiz Device 4 and set to match this ...

The screenshot shows the configuration interface for a DOF device. At the top, there is a navigation menu with options: Home, Port Assignments, Table Configs, Version History, My Account, Stats, Combine Toys, and Logout. Below the menu, the device is identified as 'Ledwiz 5 - directoutputconfigini5'. There are buttons for 'Save Config', 'Generate Config', and 'Clear Fields'. The main configuration area is divided into several sections:

- Shaker Motor:** Min Intensity: 5, Max Intensity: 16.
- Fan:** Min Intensity: 48, Max Intensity: 48.
- Custom Brightness:** Strobe: 48, PF Strobe MX: F4, Flasher: F4, Ledstrip Flasher: F4.
- Contactors variables:** Set Intensity and Duration to 0 if you don't want feedback to these events.
- Targets:** Duration: 60, Intensity: 48.
- Drop Targets:** Duration: 60, Intensity: 48.
- Ledstrip variables:** Includes a 'Revert Default' button and a link 'Check here for explanation of the positioning parameters'. The table below lists various LED strip settings:

Device	Port	Assignment
Port 1	Shaker	Port 17
Port 2		Port 18
Port 3		Port 19
Port 4		Port 20
Port 5		Port 21
Port 6		Port 22
Port 7		Port 23
Port 8		Port 24
Port 9		Port 25
Port 10		Port 26
Port 11		Port 27
Port 12		Port 28
Port 13		Port 29
Port 14		Port 30
Port 15		Port 31
Port 16		Port 32

Parameter	AH	AL	AT	AW	Color	SHP
Strobe MX Left	100	0	0	9	White	Circle3
Strobe MX Right	100	39	0	9	White	Circle3
Flasher MX Left Out	100	0	0	19		Circle3
Flasher MX Left	100	20	0	19		Circle3
Flasher MX Center	100	40	0	19		Circle3
Flasher MX Right	100	60	0	19		Circle3
Flasher MX Right Out	100	80	0	19		Circle3
Flasher MX Character Left Out	100	0	0	14		

Port Assignments:

Port 1	Shaker Motor	SHAKER
Port 2 - 5	Open for expansion	MIN Intensity 5
Port 6 - 32	Not Available	MAX Intensity 16

Shaker Intensity can be adjusted later by altering the above values.

Click on Save Config button and then on Generate Config button – a directoutputconfig zip file will be automatically downloaded. Unzip the files and put the Tablemappings.xml file in your tables folder in visual pinball and the rest of the files in the directoutput\config folder in your c: drive.

Testing of Operation

LEDBLINKY SimpleLEDtest

Download and unzip the modified LEDBlinky package from the link below

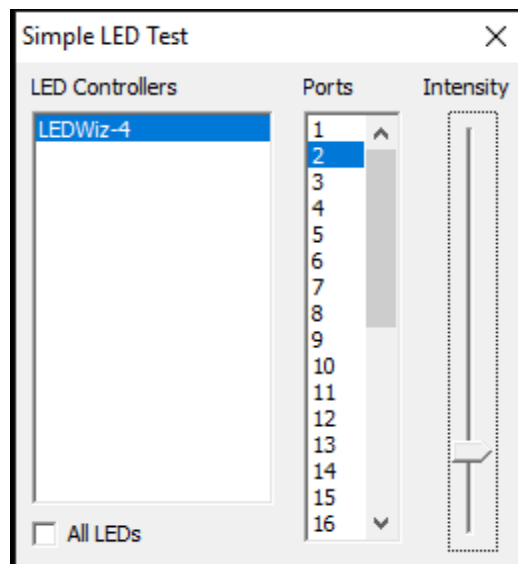
Click [HERE](#) to go to download page

Open the LEDBlinky directory and double click on the SimpleLEDTest icon.

In the window that opens select the LEDWiz device that you want to test (device 4) and then click on the 2st entry in the list to the right to turn off shaker (shaker will start at full voltage).

DO NOT LET SHAKER RUN AT FULL SPEED FOR LONGER THAN IT TAKES TO MOVE TO PORT 2 IN THE LIST. DAMAGE TO MOTOR MOUNT MAY OCCUR.

While on Port 2 move the slider to the right to the bottom as shown below.

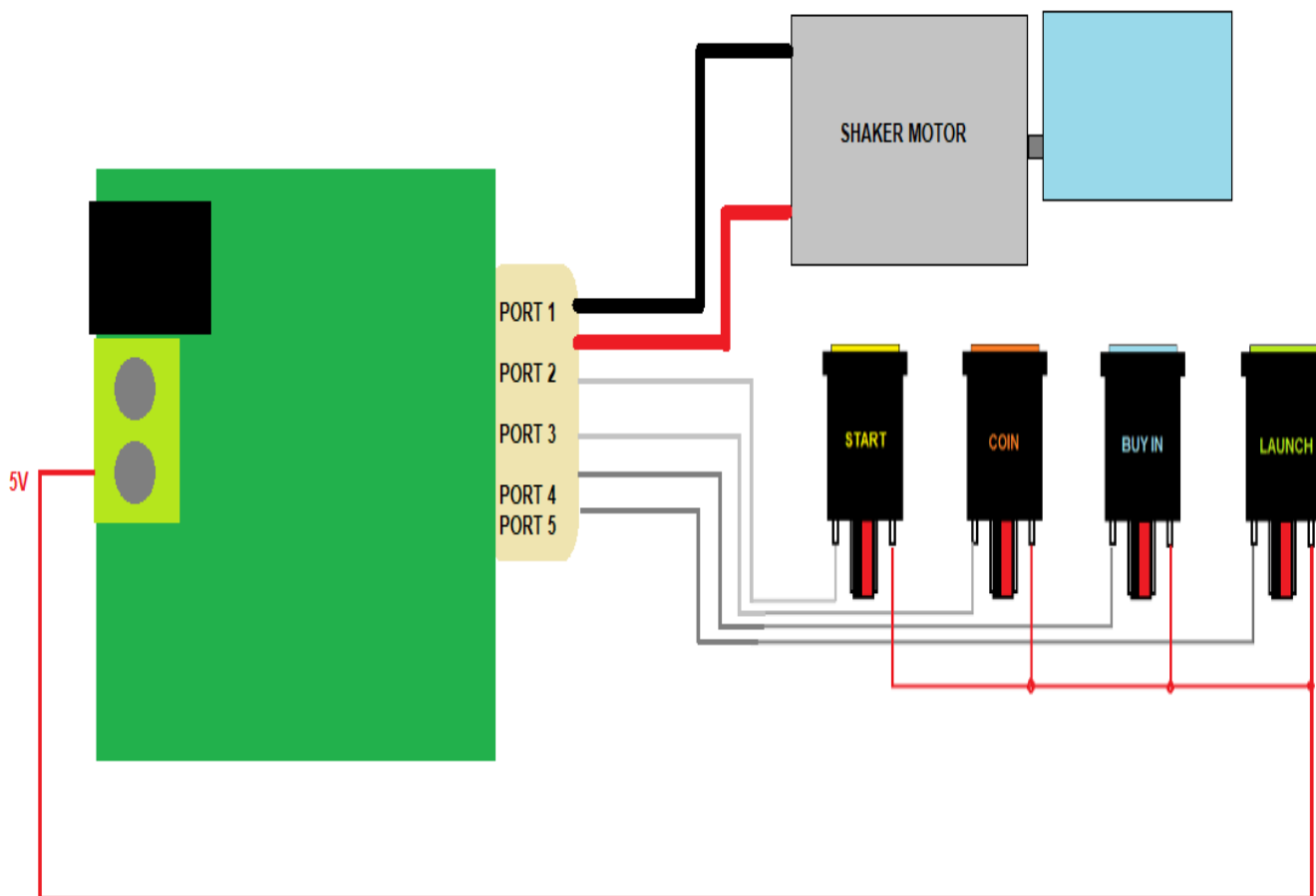


Move up the list to Port 1. Shaker will start at a reduced speed and will increase as the slider is moved back up toward the top of the scale.

Expansion

There are 4 ports available for light duty loads such as strobes, button LEDs, etc. These outputs are rated for a maximum of 500ma each. Power output terminals (green terminal block beside the Power Input connection) have been provided to provide 5v and ground.

Wiring Example



Using the above example, the DOF configuration page would then look as below.

Device: Ledwiz 5 - directoutputconfigini5 ▾

Save Config

Port 1	Shaker ▾	Port 17	▾
Port 2	Start Button ▾	Port 18	▾
Port 3	Coin ▾	Port 19	▾
Port 4	Extra Ball ▾	Port 20	▾
Port 5	Launch Button ▾	Port 21	▾
Port 6	▾	Port 22	▾
Port 7	▾	Port 23	▾
Port 8	▾	Port 24	▾
Port 9	▾	Port 25	▾
Port 10	▾	Port 26	▾
Port 11	▾	Port 27	▾
Port 12	▾	Port 28	▾
Port 13	▾	Port 29	▾
Port 14	▾	Port 30	▾
Port 15	▾	Port 31	▾
Port 16	▾	Port 32	▾

Shaker Motor
Min Intensity: 5 ▾ Max Intensity: 16 ▾

Fan
Min Intensity: 48 ▾ Max Intensity: 48 ▾

Custom Brightness
Strobe 48 ▾ PF Strobe MX F4 ▾ Flasher F4 ▾

Contactor variables
Set Intensity and Duration to 0 if you don't want feed

Targets
Duration: 60 ▾ Intensity: ▾

Ledstrip variables Revert Default Cl

Strobe MX Left	AH	100 ▾
Strobe MX Right	AH	100 ▾
Flasher MX Left Out	AH	100 ▾
Flasher MX Left	AH	100 ▾
Flasher MX Center	AH	100 ▾
Flasher MX Right	AH	100 ▾