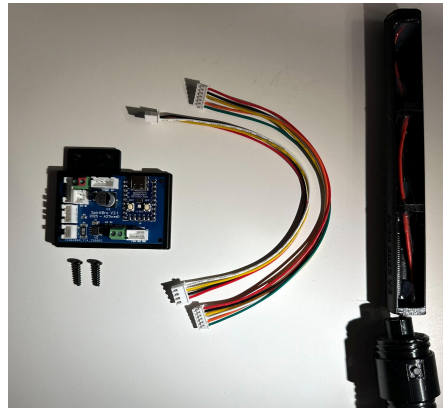# SpiritBro Installation and Operations

FrankenGeek Electronics Version

Thank you for purchasing the A2ThreeD SpiritBro adapter kit! This kit will allow you to use a Hasbro 1984/Spengler wand to control your Spirit Life Size Proton with FrankenGeek electronics kit. We have additional versions that also allow the control of the factory Spirit electronics kits as well.

Kit Contents

Depending on the version of the kit you ordered, you should have the following (from left to right): Spirit Bro board (revisions vary), interface cables (4-pin and 6-pin), wand battery eliminator sled with hose/wiring and end-cap, and optionally a function button (attached to hose end cap). This kit does not include the FrankenGeek electronics board or Hasbro wand.

ESD Warning

The circuit board included in this kit contains sensitive electronics that may be damaged by electrostatic discharge (and stray proton streams!). It is best to handle this board by its edges or in the 3D printed carrier it is installed on. Only work on your pack/board when on a table and not a carpet or rug. You can additionally ground yourself by touching a metallic object before working with this kit.

Preparation

In order to install this kit, you will need some basic tools and have to mostly just connect different connectors and attach a few wires to screw terminals. You will also need to provide a good regulated 5V USB power source like a battery bank. We recommend the Talentcell 3000mAh or 6000mAh batteries as they are a community tested favorite, and can be purchased on Amazon.com. This kit assumes you already have a FrankenGeek board installed with the proper power setup. This kit cannot be powered by a 9V battery as it is too weak to power the Hasbro wand.

Required Tools

- Screwdrivers - Philips and Flat-head in various sizes such as micro-drivers, hex bits and possibly star bits (for pack screws, Spiritbro electronics screws and button box screws)
- Wire cutters
- Wire strippers
- Heatgun or Hairdryer

Important Warnings

This kit MUST run on a 5V power source. If you're attaching this to a FrankenGeek electronics kit, the 6-pin interface cable gets the correct voltage from the actual FrankenGeek board, and you don't have to worry about this. If you attempt to power it directly with higher voltages (TalentCells have a 12V barrel plug) you may damage or destroy this kit, your factory electronics and Hasbro wand. We are not responsible for any damage to your equipment or person due to the use of improper voltage, or reversed/shorted wiring. Always be sure any connections you make are clean and secure with no frayed or strands of wire sticking out or touching other wires.

Installation

Be sure to check out our installation video here!
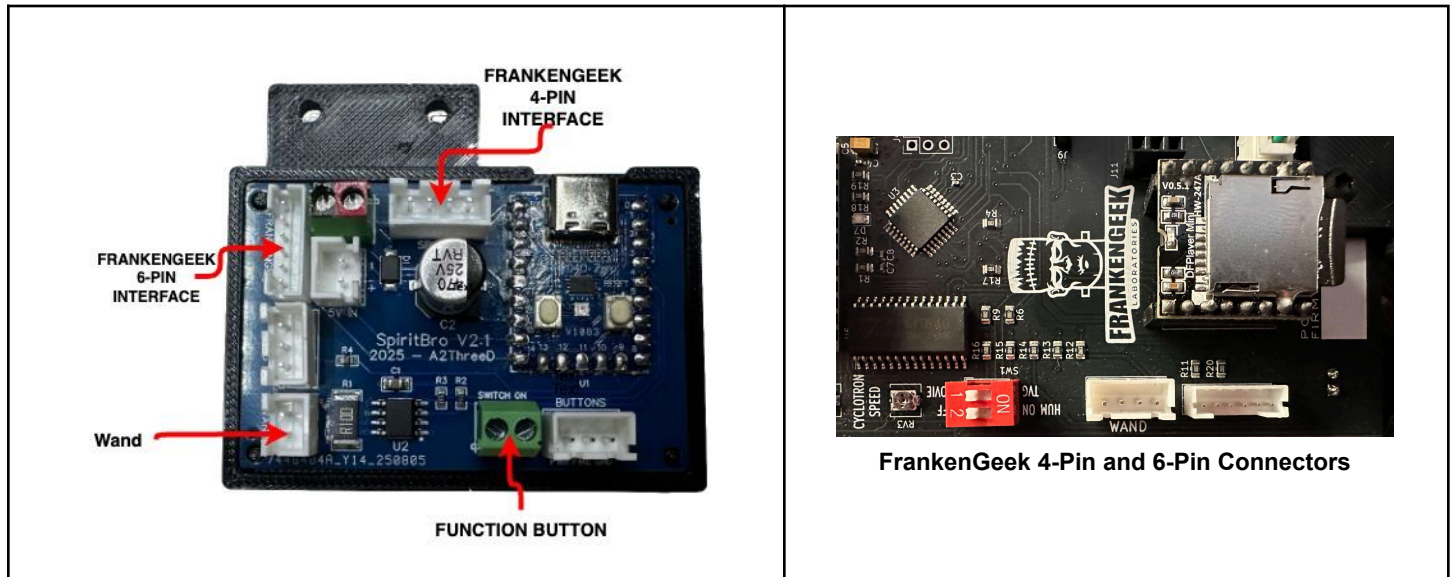
Removing Back of Spirit Pack

Remove the back of the Spirit Life-Size proton pack. This may vary based on modifications that you have done to the pack (like a new motherboard, frame, etc.) At the simplest stock configuration, you will need to remove the black back padding. After that you have to remove the back panel (motherboard) by unscrewing it. There are six screws total you will need to remove located on the top, sides and bottom. The original motherboard is also secured with hot glue that may require a hair dryer or heat gun to soften the glue.

Original Wand Removal

Unplug the 4-pin (JST-XH) connector that comes into the pack from the wand hose from the original circuit board. Unscrew the wand hose retaining screw from the hose on the lower right of the pack. You will also have to remove some hot glue to remove the wire. Remove the factory hose/wiring by gently pulling it out of the pack.

The image following this will show how you make all of the connections. The board shown is V2.1.

FRANKENGEEK
4-PIN
INTERFACE

FRANKENGEEK
6-PIN
INTERFACE

Wand

FUNCTION BUTTON

FrankenGeek 4-Pin and 6-Pin Connectors

FrankenGeek Electronics Connections
Attach the two provided interface cables between the FrankenGeek board and the SpiritBro board. On the left side of the FrankenGeek board there is a 4-pin connector labeled **SPIRIT 4P** and 6-pin connector labeled **FRANKENGEEK**. Attach the appropriate cables to each one, and into their respective spots on the SpiritBro board as shown above. You do not need to connect any additional power in or out of the SpiritBro board with this method.
NOTE: This is the configuration required for current shipping boards with V1.02 firmware. Future versions may only require you to use the 6-pin connector.

Secure SpiritBro Board
Remove the original screws from the bottom of the FrankenGeek circuit board carefully. Take the SpiritBro board and line it up over the holes on the FrankenGeek electronics board and use the new screws to go through the two together into the plastic studs on the pack. Do not overtighten.

Wire/Hose routing
Thread the wires from the wand hose into the pack. You may only have one wire with a connector or two sets of wires. The second set of smaller wires with bare ends is the function button. Work the new hose into the pack carefully. You can secure it to the original plastic stud in the pack like the factory hose by making holes in the hose being careful not to damage the wires inside.

Wand and function button connection
Finally, attach the wand power connector to the SpiritBro's connector labelled WAND on the left bottom side. Attach the optional function button's wires to the green screw terminal block on the bottom labeled "SWITCH ON".

Installing Wand Components

To install the wand battery eliminator, simply unscrew the original battery door on the wand. Remove the battery holder, and slide in the new part. Screw in the new wand end cap carefully so as to not damage the wiring.

Operation

The operation instructions below are based on boards running the SpiritBro "Universal" Firmware V1.01 or higher.

Powering the SpiritBro on/off

The SpiritBro turns on automatically when it gets 5V power applied to it. In most cases this means the unit is on or off when you switch your pack's battery pack on or off. The FrankenGeek electronics are powering the SpiritBro, so as long at it has power, it will also power the SpiritBro board.

Wand Functions

The SpiritBro doesn't change any of the functionality of your wand, it just relays what it thinks the wand is doing back to the Spirit electronics. The following table shows you what will happen based on what you do with the wand:

Wand Action	SpiritBro / FrankenGeek Behavior
30-second sleep timeout (shuts down from inactivity)	Pack shuts down
All 3 toggle switches turned on in order from bottom right, upper right and lower left (Activate)	Pack starts up
All 3 toggle switches randomly flipped in different orders	No effect unless the above combination happens
Lower left "Activate" switch turned off	Pack shuts down
Upper right switch turned on/off	No effect
Lower right switch turned off	Pack shuts down
Wand overheats and turns off	Pack shuts down
Orange hat video game mode changed	No effect
Power knob adjusted	No effect
Barrel extended/closed	No effect

Note: Sometimes powering off the wand with the lower left switch can cause the pack to think it's firing for a second and then shuts down. Also sometimes adjustment of the power level knob can trigger a false startup. These are known issues that we are trying to address.

LED Indicator

The SpiritBro has an RGB LED indicator on it that shows what is happening based on what the wand is doing.

LED Color	Information
Green	Powered on and waiting for input
Blue	Wand is powered on and running
Red	Wand is firing
Yellow	Music mode started.
Purple	Music Mode stopped

Function Button

On the SpiritBro, there is a green two-pin screw terminal that you can use to attach a pushbutton switch to. In some versions of the SpiritBro, it's labelled "Switch On". If you've purchased the optional button (in the wand end-cap) from us in your kit, you would unscrew the terminals and insert each wire into a terminal, and securely screw them down. If you don't have our button, you can attach any normally-open momentary push-button switch.

Function Button Operation

In the shipping version of this product, the button will perform the following functions:

Button Press Type	Duration of press	Function
Long Press	1 second or longer	Sends a command to FrankenGeek to put the unit into music mode. This takes about 3 more seconds to start. A second long press takes the unit out of music mode. During music mode, the wand won't power on or off the pack if you turn it on (but firing the wand will act as a track skip)
Single-Click	Less than 1 second	If the pack is in music mode, each press skips to the next track. If the pack is not in music mode, a single press will send the power on/off signal to the pack. This is useful if you pack and wand get out of sync and you don't want to take your pack off to reset the battery.
Double-Click	Two rapid presses under 1s	Performs the manual vent function on the FrankenGeek board. The pack must be started up and in the on state by either the wand OR the "Switch Me On" switch attached to the FrankenGeek board.

Resources

Contact Methods

For technical support, please contact us via any of these methods:

Email: A2ThreeDStore@gmail.com
Facebook: A2ThreeD
Etsy: https://a2threed.etsy.com
YouTube channel: https://www.youtube.com/watch?v=CHvJ83VoknI

Firmware Update Repository / Documentation

https://github.com/A2ThreeD/SpiritBro