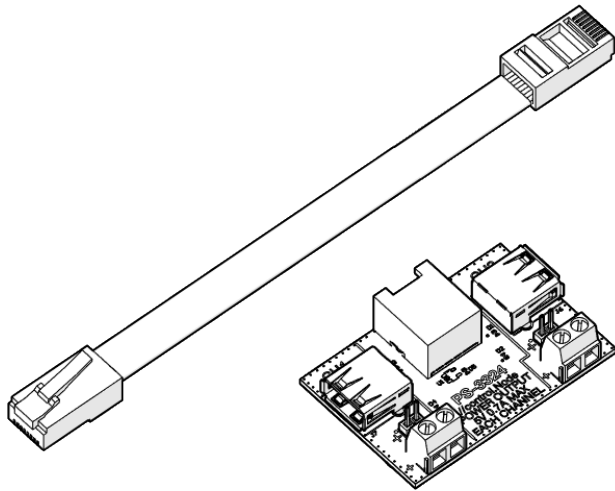# PASCO
Power Output Board
PS-3324

What's included

- Power Output Board
- Power Out cable

Getting started

Required items

- //control.Node (PS-3232)
- SPARKvue or PASCO Capstone software

1. Connect the Power Output Board to a **Power Out** port on the //control.Node using the included cable. Push the plug into each port until you hear a click.
2. Connect a device to **CH1** on the board using either the USB port, terminal pins, or terminal block.
3. Repeat previous step for **CH2**, if desired.
4. Turn on the //control.Node and connect it to SPARKvue or PASCO Capstone software.
5. In the software, open the **Code** tool and select the **Hardware** group. Drag the **set power output** block to the workspace.


6. Configure the block according to your setup:

   a. Select the //control.Node port (`A` or `B`) and Power Output Board channel (`CH1` or `CH2`) your device is connected to.
   b. Select the type of connection (`USB` or `terminal`).

   > ⚠ **Important:** Make sure that `terminal` isn't selected when a USB device is connected. The USB device might get damaged.

   c. Enter a value for the power:

   - **USB:** Select `true` to have the power on or `false` to have the power off.
   - **terminal:** Enter a power value between `-100` and `100`%. The percentage indicates the duty cycle of the pulse width modulation (PWM) signal.

Features

The Power Output Board includes two channels to control up to two devices. You can connect a device to each channel using the USB port or terminals. Each channel provides 5 volts with up to 0.7 amps of current.
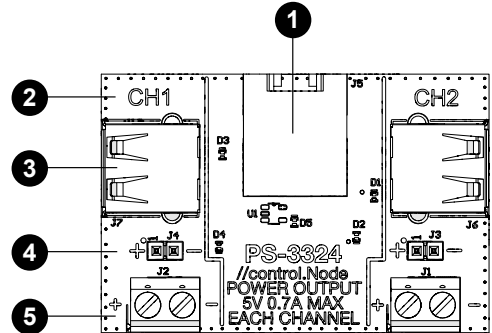
① Power Out port
Use this port with the included cable to connect the board to a Power Out port on the //control.Node.

② Channel ID
Reference the channel ID when configuring the **set power output** block in the **Code** tool.

③ USB port
Connect a device that can be powered using USB. You can set the power to on (5 volts) or off (0 volts) using the **set power output** block in the **Code** tool.

④ Terminal pins
Connect jumper cables to the pins to control a device. The //control.Node provides power using pulse width modulation (PWM). You can set the duty cycle between -100 and +100% using the **set power output** block in the **Code** tool.

⑤ Terminal block
Insert bare wires into the terminal block to control a device. Turn the screws to hold the wire in place. The //control.Node provides power using pulse width modulation (PWM). You can set the duty cycle between -100 and +100% using the **set power output** block in the **Code** tool.

Download an experiment

Download one of several student-ready activities from the PASCO Experiment Library that use the Power Output Board. Experiments include editable student handouts and teacher notes. Go to pasco.com/freelabs/PS-3324 to access the files.

If you want to explore on your own, check out the SPARKvue and PASCO Capstone help guides to search for specific topics.

SPARKvue

Software: Go to the **Main Menu** then select **Help**.

Online: Go to pasco.com/help/sparkvue.

PASCO Capstone

Software: In the menu bar, click **Help** then select PASCO Capstone Help.

Online: Go to pasco.com/help/capstone.

Specifications and accessories

Visit the product page at pasco.com/product/PS-3324 to view the specifications and explore accessories. Experiment files and support documents can also be found on the product page.

Technical Support

Need more help? Our knowledgeable and friendly Technical Support staff is ready to provide assistance with this or any other PASCO product.

Phone (USA)	1-800-772-8700 (Option 4)
Phone (International)	+1 916 462 8384
Online	pasco.com/support

Regulatory information

Warranty, Copyright, and Trademarks

Limited Warranty

For a description of the product warranty, see the Warranty and Returns page at **www.pasco.com/legal**.

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Product end of life disposal instructions

This electronic product is subject to disposal and recycling regulations that vary by country and region. It is your responsibility to recycle your electronic equipment per your local environmental laws and regulations to ensure that it will be recycled in a manner that protects human health and the environment. To find out where you can drop off your waste equipment for recycling, please contact your local waste recycle or disposal service, or the place where you purchased the product.

The European Union WEEE (Waste Electronic and Electrical Equipment) symbol on the product or its packaging indicates that this product must not be disposed of in a standard waste container.