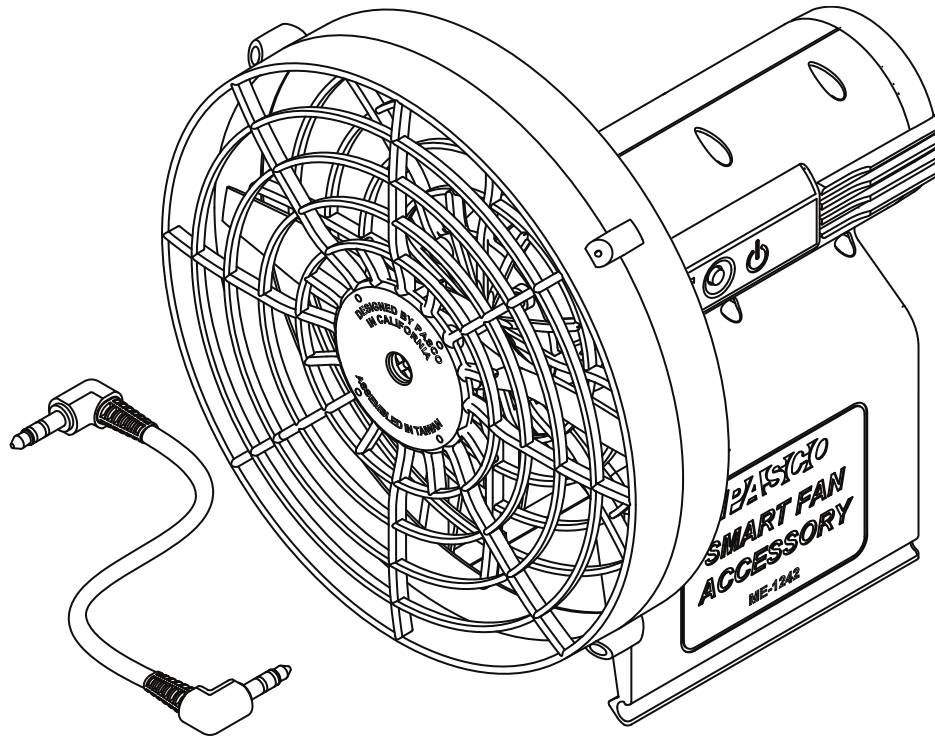# Smart Fan Accessory

ME-1242

About the Product

The Smart Fan Accessory mounts on any PASCO cart for use with or without a track. The fan accelerates the cart by applying a constant force on the cart. The force can be adjusted by changing the fan thrust using the power button. The fan speed can also be controlled with PASCO data collection software when used with a Wireless Smart Cart.

What's Included

- Smart Fan Accessory
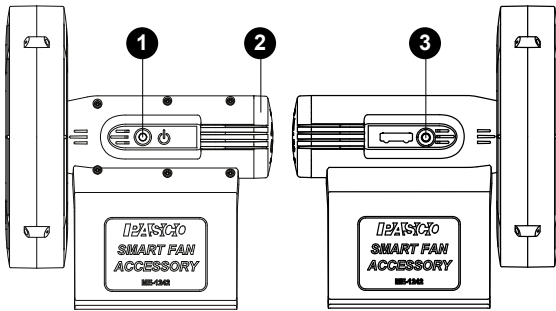- Smart Cart Accessory Cable
- Battery, AA-Cell (4)

Required Items

Manual Mode

- **PASCO Cart**
  The fan can be attached to any PASCO cart.

Software Mode

- **Wireless Smart Cart**
  Either the red (ME-1240) or blue (ME-1241) Wireless Smart Cart is required to connect the fan with PASCO software.

- **PASCO Data Collection Software**
 PASCO Capstone or SPARKvue can be used to control the fan.

Components

1 Power Button
Press to turn on the fan. Press again to change the fan speed. Press and hold to turn off the fan.

2 Battery Cover
Press the sides of the cover and pull away from the accessory to access the battery compartment.

3 Smart Cart Port
Use with the Smart Cart accessory cable to connect the fan to a Smart Cart.

Install the batteries

The Smart Fan Accessory requires four AA batteries. Use either alkaline (included) or rechargeable batteries.
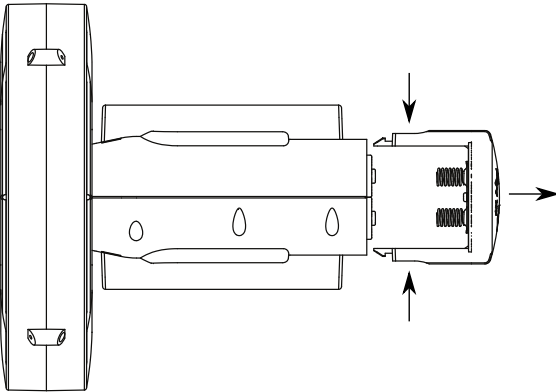
1. Remove the battery cover from the end of the Smart Fan Accessory. Press the sides of the cover and pull away from the accessory.
2. Insert four AA batteries into the battery compartment. Insert the positive (+) end of the battery into the section that does not have a spring.
3. Place the battery cover back on the accessory and press until it clicks into place. Make sure that the springs on the cover are aligned with the negative ends of the batteries.

Attach to a cart

The Smart Fan Accessory attaches to the rails of the cart accessory tray.
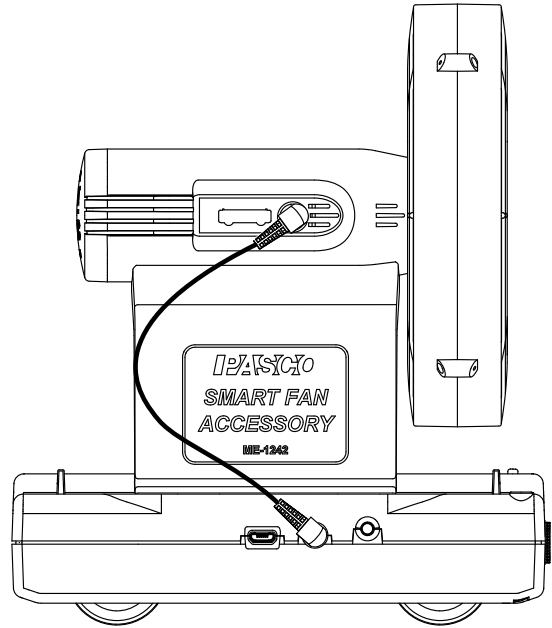
1. Position the fan over the cart so that the fan points toward the rear of the cart.
2. Place the fan over the rails of the cart accessory tray. Press down until the fan snaps into place.
3. If using a Smart Cart, connect the Smart Cart Accessory Cable to the ports on the fan and the cart.

Control the fan thrust (manual mode)

Set the fan thrust at three different levels using the power button.

1. Press the power button to turn on the fan.
2. Press the power button again to change the fan thrust. Three different thrust levels are available.
3. Press and hold the power button to turn off the fan.

Control the fan thrust (software mode)
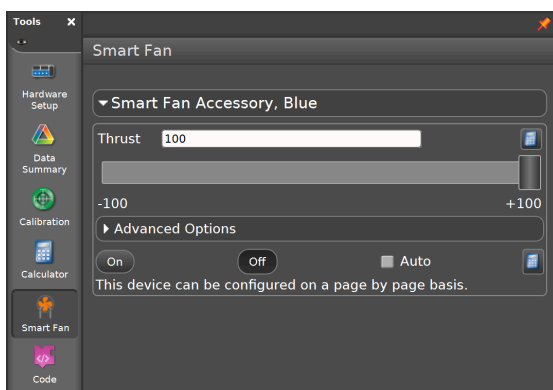
Access the Smart Fan control panel

Use the Smart Fan control panel to set the fan thrust magnitude and direction.

::: **SPARKvue**

1. Connect the Smart Cart to SPARKvue.
2. Click ⊞ to build a new experiment page.
3. Select any layout.
4. Select the Smart Fan display 🌀.

PASCO Capstone

1. Connect the Smart Cart to Capstone.
2. Select **Smart Fan** 🌀 in the **Tools** palette.

Control the fan manually

Set the fan's thrust magnitude and direction using manual software controls.

Turn the fan on or off

Click the **On** or **Off** buttons to manually turn the fan on or off.

Alternatively, set the fan to turn on automatically while collecting data:

1. Select the **Auto** checkbox.
2. Start data collection to turn on the fan.
3. Stop data collection to turn off the fan.

Set the thrust magnitude and direction

The thrust can be set at a value between -100 and +100. Setting the thrust to a negative value will reverse the thrust to apply a force in the opposite direction. To set the thrust, enter a value in the text box or drag the slider.

Create a program

Use the **Code** tool to control the Smart Fan by building a program using Blockly.

1. **:::** **SPARKvue** Click 🔷 on the Experiment Screen.

    PASCO Capstone Select **Code** 🔷 on the **Tools** palette.

2. Drag one of the Smart Fan blocks from the **Hardware** group to the workspace:
    - **On/Off Block** turn Smart Fan Accessory ▾ on: true ▾
      Use this block to turn the fan on when its parameter is set to `true` and off when set to `false`. A **Logic** block can be used in place of the true/false block to create a logical expression to turn the fan on or off.

    - **Thrust Block** set Smart Fan Accessory ▾ to 1
      Use this block to set the thrust of the Smart Fan between -100 and +100. You can set the thrust using the default number block or replacing it with a block from the **Math** group.

3. Add additional blocks from the Blockly toolbox to build a program to control the fan.

Create a calculation

Create an equation to control the Smart Fan Accessory using a sensor measurement.

PASCO Capstone

1. In the **Smart Fan** panel, click 🖩.
2. Select **Create Calculation**.
3. Enter an equation to control the fan. Press `[` to enter a sensor measurement.

To exit calculation mode, click 🖩 then deselect **Use Calculation**.

Set a start or stop condition

Set a measurement or time based condition to turn on (start) or turn off (stop) the fan.

PASCO Capstone

Measurement Based

Use this condition to start or stop the fan based on the value of a sensor measurement.

1. Click **Advanced Options**.
2. Click a condition menu then select **Measurement Based**.
3. Click the **Data Source** menu then select a **Measurement**.
4. Click the **Condition** menu then select the type of condition. The type of condition is based on the number entered under **Value**.
5. Under **Value**, enter the conditional value.

Time Based

Use this condition to start or stop the fan based on the time elapsed after starting data collection.

1. Click **Advanced Options**.
2. Click a condition menu then select **Time Based**.
3. Enter a value under **Duration**.

Additional Resources

Software Help

Additional information on how to use the Smart Fan Accessory with SPARKvue and Capstone can be found in the SPARKvue and PASCO Capstone Help. The help can be accessed within the software or online.

SPARKvue

Software: Click ☰ then select **Help**.

Online: pasco.com/help/sparkvue

PASCO Capstone

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

Online: pasco.com/help/capstone

Product Information

Visit the product web page at **pasco.com/product/ME-1242** for additional information including:

- Specifications
- Buying Guide
- Experiments
- Documents
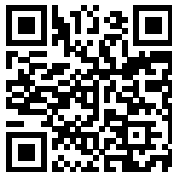
Technical Support

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**.

Copyright

This document is copyrighted with all rights reserved. Permission is granted to non-profit educational institutions for reproduction of any part of this manual, providing the reproductions are used only in their laboratories and classrooms, and are not sold for profit. Reproduction under any other circumstances, without the written consent of PASCO scientific, is prohibited.

Trademarks

PASCO and PASCO scientific are trademarks or registered trademarks of PASCO scientific, in the United States and/or in other countries. All other brands, products, or service names are or may be trademarks or service marks of, and are used to identify, products or services of, their respective owners. For more information visit **www.pasco.com/legal**.

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 and on the product or its packaging indicates that this product must not be disposed of in a standard waste container.

Battery Disposal Instructions

Batteries contain chemicals that, if released, may affect the environment and human health. Batteries should be collected separately for recycling and recycled at a local hazardous material disposal location adhering to your country and local government regulations. To find out where you can drop off your waste battery for recycling, please contact your local waste disposal service, or the product representative. The battery used in this product is marked with the International symbols to indicate the need for the separate collection and recycling of batteries.

FCC Statement

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

CE Statement

This device has been tested and found to comply with the essential requirements and other relevant provisions of the applicable EU Directives.

Patents

The Smart Cart (ME-1240 and ME-1241) is covered by U.S. Patent No. 10,481,173.

The Smart Fan Accessory is covered by U.S. Patent No. 10,482,789.