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# Spectrum Tube—Carousel Power Supply

(Order Code ST-CAR)



## Introduction

The Vernier Spectrum Tube Carousel Power Supply offers a considerable improvement in safety, convenience, and tube life over conventional systems. It consists of a power supply and tube storage unit and a series of spectrum tubes filled with various gases for spectral inspection and measurement.

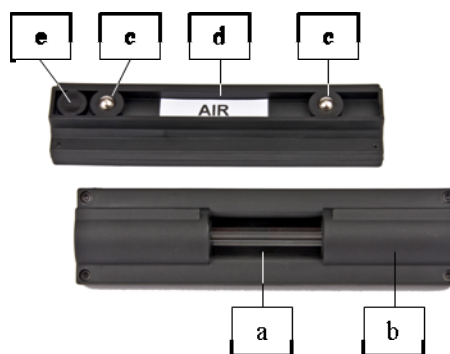
The system is available in two versions, differing in the style of the power supply and storage unit. In the Single Tube version, the power supply accommodates one tube and provision is made in the base for storage of up to six tubes. In the Carousel version, up to eight tubes are loaded into the power supply's tube carousel and the tube to be energized is selected by rotating the carousel until the required tube reaches the energizing station.

The spectrum tubes in the Spectrum Tube System offer extended life by having no internal electrodes and are protected against accidental breakage by a hard polymer shell. Both the Single Tube Power Supply and Carousel Power Supply's electrical parts are enclosed and a magnetic interlock system prevents application of the energizing voltage to the tube contacts unless a tube is correctly inserted. In the Single Tube version, the height of the tube above the bench can be adjusted to accommodate the differing heights of the inlet slits of the various models of spectrometer in current use.

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| <p><b>NOTE:</b> Vernier products are designed for educational use. Our products are not designed nor recommended for any industrial, medical, or commercial process such as life support, patient diagnosis, control of a manufacturing process, or industrial testing of any kind.</p> |
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**Power Supply & Storage Unit**



**Tube—Front & Back**

## System Parts

### Power Supply & Storage Unit

1. Wall mount power supply
2. Power supply base and electronics
3. Carousel with eight tube stations
4. Fixed cap
5. Tube insertion aperture
6. Fiber holder (pictured below)

### Tube

- a. Tube
- b. Hard polymer shell
- c. Spring-loaded contacts
- d. Gas species label
- e. Safety interlock magnet

## Specifications

|                                                        |                                                                                                                                                  |
|--------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|
| Wall mount power supply                                | input: 100-240 VAC, 50/60Hz; output: 15VDC, 1 A, UL listed<br>dimensions: 7 × 4.5 × 4 cm plus contact blades, 1.6 m cord length<br>weight: 100 g |
| Tube energizing supply:<br>Power Supply & Storage Unit | 1.8 kV AC (internal)<br>dimensions: 23 cm diameter × 23 cm high<br>weight: 1.55 kg                                                               |
| Fuse:                                                  | T1AL 250V, 5 × 20 mm miniature time delay/slow blow                                                                                              |
| Height of center of light-emitting region above bench: | 13.3 cm                                                                                                                                          |
| Length of light-emitting region:                       | 4.75 cm                                                                                                                                          |
| Tube                                                   | dimensions (in shell): 15.5 × 4.0 × 3.0 cm<br>weight: 88 g                                                                                       |

## Accessory

The Fiber Holder for the Spectrum Tube Carousel Power Supply securely holds an optical fiber in the proper position to carry light from the discharge tube to the spectrometer. Compatible with both Ocean Optics fibers and Vernier SpectroVis series fibers. The position of the fiber can be adjusted to optimize the light intensity. The Spectrum Tube Carousel Power Supply ships with one Fiber Holder. Additional holders can be purchased. Order code: ST-FHC



## Operation

**CAUTION: This unit is suitable for operation in dry locations only. The tube becomes hot in operation. Do not touch the hot tube.**

### Inserting a tube

Tubes can only be inserted into the carousel at one location. To ensure correct orientation of the tube in the tube well, the tube shell has a ridge along the front right side (see picture).

1. Rotate the carousel until an empty location aligns with the tube insertion aperture.
2. Match the ridge on the tube shell to the insertion aperture on the top of the power supply. The round magnet cover on the rear of the shell should be facing down.
3. Insert the lower end of the tube into the insertion aperture and slide the tube all the way down into the well so that it seats in the recess at the bottom of the well (see picture).
4. Load up to eight tubes in this way. The unit may be operated safely with one or more tube locations empty.



*Inserting a tube*



*End of tube –back view*

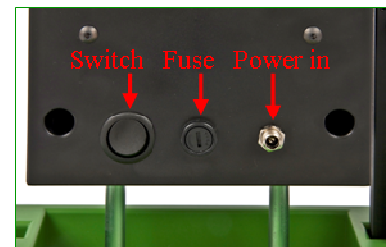


*Tube in place*

### Apply Power

The back of the power supply carries the power input socket, the fuse, and the on/off switch (see picture).

1. Insert the output connector of the wall mount power supply into the main power supply input socket.
  2. Insert the wall mount power supply into a 100-240 VAC electrical outlet.
  3. Rotate the carousel until the desired tube is at the energizing station located at the front of the unit (see picture).
  4. Turn on the power switch.
- The discharge will now strike and run.



*Power Supply—back*

### Changing the tube

The selected tube may be changed without turning the power supply off. Simply rotate the carousel (holding the partition between stations) until the new selection is in the energizing station. **CAUTION: Do not touch the hot tube that has just been running.** The previously selected tube will be automatically turned off and the new tube will be energized. The supply contacts are not energized if an empty location is at the energizing station.

### Removing the tube

To remove a tube, rotate the carousel until the tube to be removed aligns with the tube insertion aperture. The tube can then be removed by placing a finger under the top ledge of the illuminated area and lifting the unit until its top can be grasped from above and lifted out (see picture). **CAUTION: Always allow a hot tube to cool before removing it, because of the danger of burns.**



*Tube at energizing station*

## Maintenance

The Vernier Spectrum Tube Carousel Power Supply needs no special maintenance. It should be stored in a dry, dust-free environment.

**Note:** For some tubes the discharge may not strike immediately after turning on the power supply if the tube has not been operated for an extended period. *It may take up to 3 minutes for the discharge to strike for the first time. This is normal.* The discharge will then strike immediately.



**Changing the selected tube**

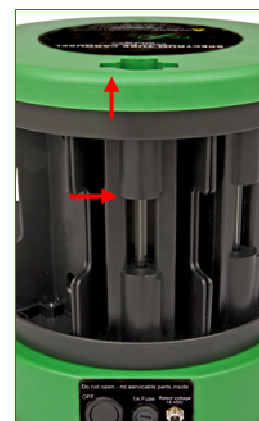


**Supply voltage contacts**

## Available Tubes

Tubes for the Spectrum Tube System are available with the following gases and vapor. Contact Vernier to obtain tubes.

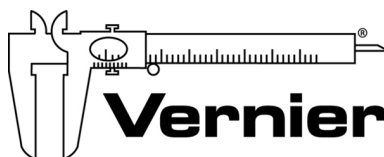
| Gas species    | Order code |
|----------------|------------|
| Hydrogen       | ST-H       |
| Helium         | ST-HE      |
| Neon           | ST-NE      |
| Carbon Dioxide | ST-CO2     |
| Air            | ST-AIR     |
| Argon          | ST-AR      |
| Nitrogen       | ST-N       |



**Removing a tube**

## Warranty

Vernier warrants this product to be free from defects in materials and workmanship for a period of two years from the date of shipment to the customer. This warranty does not cover damage to the product caused by abuse or improper use.



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Spectrum Tube - Carousel Power Supply patent pending

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