

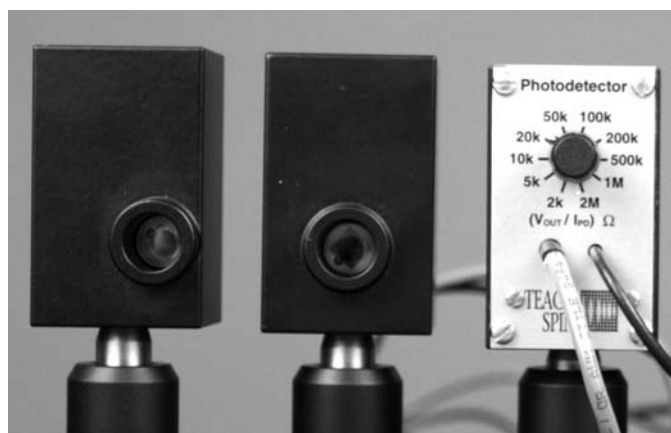
## Rugged, Reliable and Affordable TeachSpin Designed Component Parts Now Available for Instructional or Research Projects

Remember, in the “old” days when the research lab was providing components for the advanced lab? Well, the tide has turned and TeachSpin has been getting requests from research folks for some of the components that were designed for our teaching systems. We’ve also been providing parts for those building their own teaching systems.

Time and again, we found that items we needed for our experiments were unavailable, unreliable or unaffordable, so we built our own. Now you can incorporate these TeachSpin designed components into the student or research experiments you are creating.

The parts described here are the ones for which we have already been receiving requests. As interest is expressed we will be making other components individually available.

**Photodiode Photodetectors:** Designed by our Senior Scientist, Dr. George Herold, they are available in two detector surface areas. The small area detectors shown below are used in Diode Laser Spectroscopy and Optical Pumping.

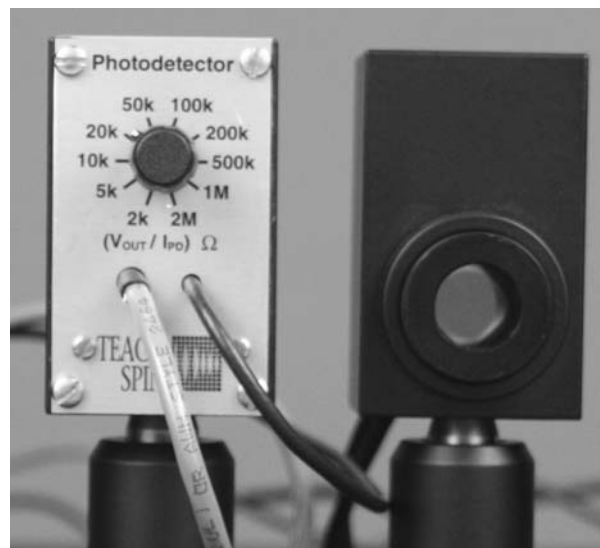


Photodetectors used in Diode Laser Spectroscopy

In addition to having the detector centered in the box, the small area detectors are available in right, and left “justified” configurations to make it possible to detect closely spaced beams simultaneously. Detailed specifications include:

- Active Area: 6.2 mm diameter, 31 mm<sup>2</sup>
- Spectral Range: 400 – 1,000 nm
- Responsivity at 800 nm: 0.6 A/W
- Gain 333 to 10<sup>7</sup> V/A (10 steps 1, 3.3, 10 sequence)
- Bandwidth 500 kHz to 5KHz (gain dependent)
- Power: ± 5 to ± 15 Volts user supplied

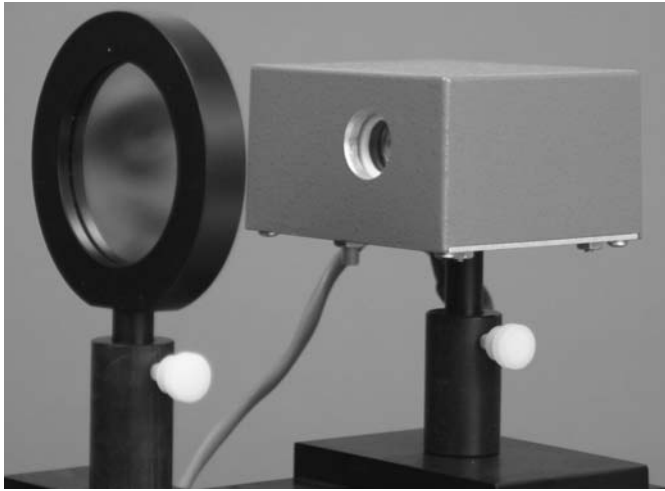
The large surface area unit shown below is used in Modern Interferometry.



Large Surface Photodetector Showing Gain Control

Specifications for this detector are:

- Active Area: 11.2 mm diameter, 100 mm<sup>2</sup>
- Spectral Range: 400 – 1,000 nm
- Responsivity at 800 nm: 0.6 A/W
- Gain: 2x10<sup>3</sup> to 12x10<sup>6</sup> V/A  
(10 steps 1, 2, 5, 10 sequence)
- Bandwidth 200 kHz to 5 kHz (gain dependent)



**Rubidium Lamp and Interference Filter**

**Rubidium Lamp:** Designed by our Senior Scientist, George Herold, for our Optical Pumping experiment, the RF discharge lamp sits in a 120 C temperature regulated oven.

- Rb bulb 9 mm diameter
- Natural isotopic concentration – 3 Torr Xenon buffer
- RF oscillator 75 – 90 MHz
- Optical Power at 795 nm > 1 mW/steradian
- Power requirements: 28 V @ 0.5 A, user supplied

**Interference Filter:** This mounted two inch diameter filter comes with a ?? standard metal or a 3/8" Delrin post.

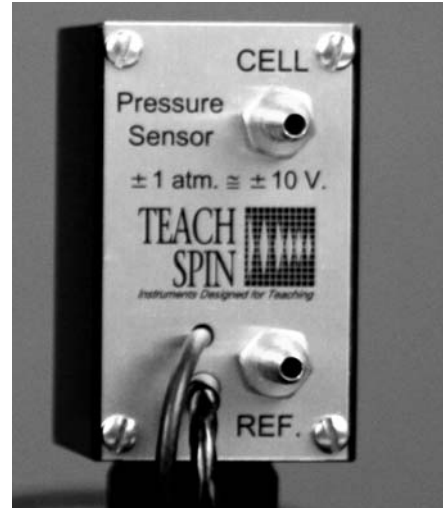
- Intor model #805/35/75-8U
- Center wave length: 805 nm, Spectral Width: 35 nm
- Peak Transmission 75%
- Transmission at 795 nm > 75%, at 780 nm < 5%



**High Stability Flexure Mirror Mount with Base**

**High-Stability Flexure Mirror Mounts with Base:** These proprietary mounts, which allow only one degree of freedom, were developed in collaboration with Scientific Research Laboratory, Inc., of

Somerville, MA under an NSF-SBIR grant. These proprietary mounts come with a companion base that allows them to be set parallel to either breadboard dimension or at a 45 degree angle. The Modern Interferometry Kit includes two mounts with vertical tilt and one with horizontal tilt. Order the combination you need. Each comes with one mirror already attached and an extra mirror just in case.



**Differential Pressure Transducer**

**Differential Pressure Transducer:** We think that this transducer will find uses in places other than interferometry experiments. A supply capable of ± 12 to ± 15 volts is required.

- Maximum pressure difference +/- 1 atmosphere
- Output: ± 10V ? ± 1 atmosphere



**Grating Stabilized Diode Laser Head**

**Grating Stabilized Diode Laser Head with Controller and three tested Diode Lasers:** Originally designed for Diode Laser Spectroscopy, this wonderfully reliable system has already made its way into a variety of labs.

# LABORATORY SECURITY

OK, you have built a world class advanced laboratory (with, we hope, some TeachSpin units) but the students complain that they are missing tools, scopes, meters, power supplies and even entire set-ups. What happened to all this equipment? Where did it go? You all know the answer. It is being used in the research labs. Our exhaustive survey of advanced lab instructors indicates that this perennial problem is on the rise, increasing an average of 5% per year. In fact, a careful statistical analysis of our polling data shows that the better the laboratory program the more this “thieving” is a problem.

TeachSpin has been wrestling with this problem for years. It makes no sense for us to sell an instrument to a college or a university and not have the students be able to use it. We must admit that it is flattering to find our equipment in the research lab, but, frankly, that’s not why it was purchased. Give the kids a break!!

Well, TeachSpin has decided to become pro-active. Here is the plan: we have created the ultimate in “*embarrassment*” labels with a remarkable adhesive on the back that will keep this label secure to the instrument to which it has been affixed. These metallic labels are reverse printed on a bright, china red, background so that they can be spotted easily across a typical research lab. Unfortunately we cannot afford color printing so we can only show you the labels full size in black and white. We firmly believe that no self-respecting research scientist could attach a piece of equipment bearing one of these labels onto his or her research apparatus. We are also convinced that the threat “Security Provided by TeachSpin” will deter even the most aggressive research thief. We back this threat up with a 100% guarantee!

*You are welcome to receive a free set of eight labels (two of each kind) by simply writing, calling, or emailing us and asking for a “Theft Proof Label Set.”* If you need additional sets, let us know. All these will be provided by TeachSpin at absolutely no cost to you. The funds for this project were provided by the “TeachSpin Foundation for a Secure and Operating Student Laboratory.” We want to thank them for their support of higher education.

**If I’m not in the Advanced Lab  
I’ve been stolen.**

SECURITY PROVIDED BY 

Label 1

**Buy your own  
Research Equipment...  
Leave me in the Student Lab!**

SECURITY PROVIDED BY 

Label 2

**Property of the Teaching Lab.  
Leave me there for the students.**

SECURITY PROVIDED BY 

Label 3

**Please return me to  
the Advanced Laboratory.**

SECURITY PROVIDED BY 

Label 4

**TEACH  
SPIN** 

# You are Cordially Invited to Attend The RALI Reception for **A**dvanced **L**aboratory Instructors (Satellite Session)

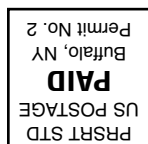
APS March Meeting – Denver, CO  
Adam's Mark Hotel – Governor's Square 14  
Wednesday, March 7, 2007  
6 pm to 8 pm

Sponsors: APS Educational Forum  
TeachSpin Inc.

The Event: To share ideas and plans for shining a spotlight on Advanced Laboratory Development and Instruction – while consuming some good wine and delicacies

Your Hosts: Barbara and Jonathan Reichert, Krishna Chowdary  
and others to be announced

Details: Look for further details in the next *Relaxation Times* which will arrive before the March meeting. Put it on your calendar.



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