High Accuracy Modular Primary Standard Gas Flow Calibrator Cal Labs & Industry

CalTrak® 800

FEATURES

- Primary standard, dimensionally based piston prover system
- Accuracy:
  - CalTrak® 800: +/- 0.15% of reading mass flow +/- 0.25% for the 3 series cell
- Flow Range: 0.5 sccm up to 100 slpm
- For all inert gases
- For mass or volumetric flow rate
- Manufactured to ISO 17025 standard at NIST-accredited lab (NVLAP)
- Modular Design: use only what you need; Add flow cells in future
- For flow calibration labs and general industry use:
  - Primary standard calibration of mass flow meters and controllers
  - Calibration and verification of variable area flow meters
  - Extremely wide flow range covers most air sampling calibration requirements
  - Precision in-situ calibration of industrial flow meters and controllers
- Field portable: battery powered
- Fast: readings in 1 to 60 seconds (flow dependent)
- Easy: push one button!
- CalSoft™ Software
- Hands-free auto mode
- RoHS and CE compliant

DESCRIPTION

Bring world class accuracy to your flow lab. Sierra's CalTrak® 800 is a modular piston prover that offers portability and lowmaintenance for customers who have many flow instruments needing to be validated or calibrated frequently. The CalTrak system comes with a base unit and choice of flow cells fitted with low massborosilicate glass pistons with a low friction coating that oscillate between two detectors to quickly and accurately measure gas flow rates. The design of the CalTrak 800 allows for increased flexibility and speed of reading.

The CalTrak 800 series consists of a base and five interchangeable flow cells. Each cell has a specific range. Cells can be easily changed (no tools needed) within seconds and can be purchased separately. Cells for the model 800 can be used only with the 800 base.

Flow measurements can be taken manually (one reading at a time), or automatically in continuous mode. CalTrak calibrators offer communications via RS-232 and USB and come with our CalSoft™ complete data collection software suite.

Make CalTrak a workhorse in your calibration lab and save money by doing your own flow calibration.

SIERRA®

www.sierrainstruments.com

WHY PRIMARY STANDARD?

CalTrak 800 is a true primary standard in every sense of the word, because its accuracy is based upon primary SI units: The interior diameter of the glass measuring cylinder; the length of piston travel within the cylinder; and the time it takes the piston to travel this distance, implying a known volume. Our patented technology, therefore, offers accuracies at the level of national laboratories in one portable device

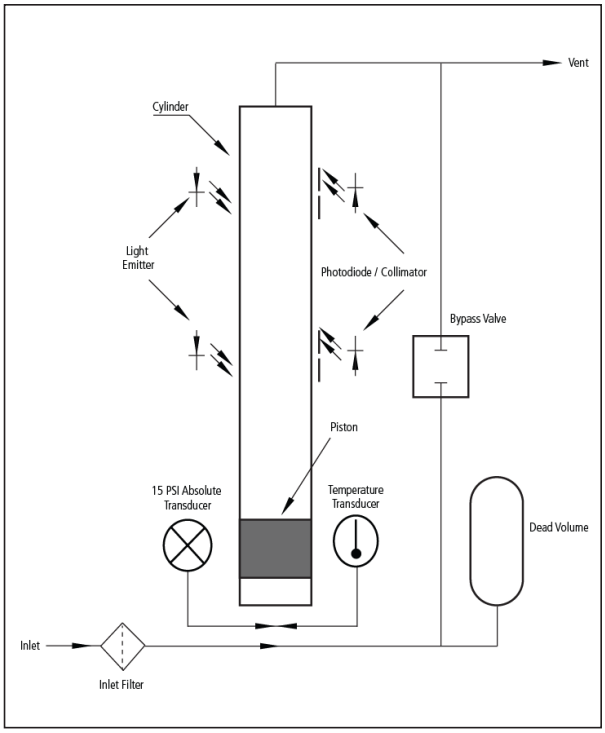
OPERATING PRINCIPLE

Sierra's CalTrak model contain a nearly frictionless graphite piston that moves freely inside a borosilicate glass tube. When the parallel bypass valve is closed, the gas flow is directed into the tube to push the piston up (see Figure 1).

Two photo-optic sensors detect the piston as it travels past. The distance the piston travels between the two sensors is precisely defined and represents a known volume. Accurate crystal-based timers drive a microprocessor which calculates the rate of rise. This defines the volumetric flow rate.

At the same time, extremely accurate temperature and absolute pressure sensors collect data used to calculate the mass flow rate.

Figure 1: CalTrak 800 - Standard



PERFORMANCE SPECIFICATIONS

Model 800	Range [5]	Accuracy[1] (% Reading)		Time Per Measurement (time in seconds)	Compression Fittings
		Mass[3]	Volumetric[2]		
SL-800-3	0.5 sccm to 50 sccm	+/- 0.25	+/- 0.25 plus 0.002 sccm	1 to 60	⅛-inch ID Swagelok®
SL-800-10	5 - 500 sccm (0.5 slpm)	+/- 0.15	+/- 0.15	3 to 135	¼-inch ID Swagelok®
SL-800-24	50 - 5000 sccm (5.0 slpm)	+/- 0.15	+/- 0.15	3 to 90	¼-inch ID Swagelok®
SL-800-44	500 - 50,000 sccm (50 slpm)	+/- 0.15	+/- 0.15	1 to 35	¼-inch inlet, ½-inch Swagelok®
SL-800-75	1000 sccm -100 slpm	+/- 0.15	+/- 0.15	1 to 50	½-inch Swagelok®

Table 1: Flow Cell Specifications

Note:
1. Using the averaging mode will increase accuracy
2. Temperature range 5°C to 40°C (41°F to 104°F)
3. Temperature range 15°C to 30°C (59°F to 86°F)
4. From 30-50 slpm: 0.45% standardized, 0.3% volumetric
5. At gas pressure of 760 mmHg (1 atm), and a gas temperature of 25°C (77°F) with standardization temperature set to 0°C (32°F)

OPERATION SPECIFICATIONS

Operating Temperature
Volume: 5°C to 40°C (41°F to 104°F)
Mass: 15°C to 30°C (59°F to 81°F)

Operating Pressure
15 psia (1.03 barA)

Ambient Temperature
15°C to 30°C (59°F to 86°F)

Storage Temperature
0°C to 70°C (32°F to 158°F)

Gas Compatibility
Non-corrosive, humidity less than 70% non-condensing

Flow Modes
Suction and pressure

Pressure & Suction Fittings
See Table 1 Flow Cell Specifications on page 2

Warranty
1 year; battery 6 months
Approvals
CE; RoHS compliant
Built and calibrated to ISO 17025 by NVLAP-certified laboratory. All calibrations traceable to NIST.

Digital Communication
RS-232Mass Flow Rates

PHYSICAL SPECIFICATIONS

Configuration
SL800: base with modular, interchangeable flow cells (five)

Display
Backlit LCD

Weight

800
Base: 4.5 kg (10 lbs)
Cells: 80 oz (2300 g) to 160 oz (4535 g) flow cell dependent

Dimensions

Model	Width mm (in.)	Depth mm (in.)	Height mm (in.)
800	152 (6)	280 (11)	436 (17)

OPERATION SPECIFICATIONS

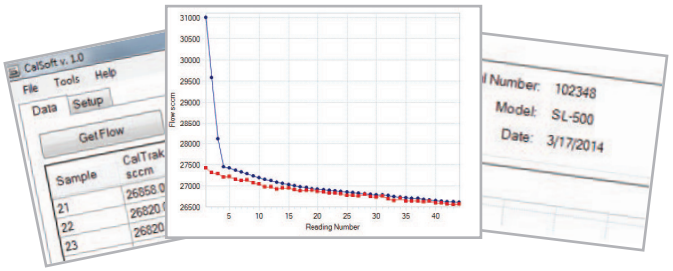
AC Power Adapter/Charger
100-240 VAC, 50-60 Hz
12V DC, >500ma, 2.5 mm, center positive,
North American standard, others available

Battery
Internal continuously chargeable sealed lead-acid battery
6 volt lead acid battery; battery Operational Time
(5 cycles/min)

Local Interface
Backlit LCD graphical display; Four directional arrow buttons on the control panel allow you to navigate through the menu; user selectable flow units plus time intervals

CalSoft™ Software
Software System Requirements
Windows® XP, and above
Microsoft Excel® 2003 and up

- Captures flow data from your CalTrak instrument for easy export into common software packages, a PC, or Microsoft enviornment.
- Real-time data monitoring
- Upload the latest version of the firmware to your CalTrak
- Enter flow rates from pumps or other flow source or flow meters and calibrate the flow source.
- Compare the flow measurements from your CalTrak precision calibrator.



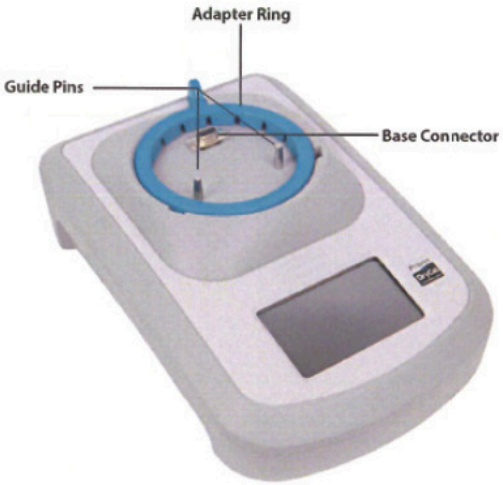
GAS FLOW SOURCE CONTROL

Mass Flow Controllers
Sierra's popular Smart-Trak® 100 Series Mass Flow Controllers are ideal for generating and maintaining a constant flow of gas so that any type of flow meter can easily be calibrated. Special versions of the SmartTrak are available to cover the range of each CalTrak flow cell. With the built-in display and controls, SmartTrak is a complete gas flow generation system.

SmartTrak 100 Mass Flow Controller

CalTrak 800 Back and Front View

Back



Front and Side

Features

800 – [ ]

Parent 1

Instructions: To order a CalTrak, please fill in the number block by selecting the codes from the corresponding features below.

Parent Number: CalTrak SL Bases	
SL-800-B	CalTrak +/-0.15% reading accuracy (flow cell dependent) gas flow calibrator (base only). The CalTrak base unit requires SL800 cell(s) to create an operational unit. Standard configuration includes: includes USB and touch screen

Feature 1: CalTrak SL Cells	
SL-800-3*	Ultra Low flow cell for use with SL-800-B unit. Flow range 0.5 sccm to 50 sccm; Accuracy: Volumetric: +/-0.25 % of reading plus 0.002 sccm / Mass: +/- 0.25% of reading; 1/8-inch compression fittings
SL-800-10	Low flow cell for use with SL-800-B unit. Flow range 5 sccm - 500 sccm (0.5 slpm); Accuracy: Volumetric: +/-0.15% of reading/ Mass: +/-0.15% of reading; 1/4-inch compression fittings
SL-800-24	Medium flow cell for use with SL-800-B unit. Flow range 50 sccm to 5000 sccm (5.0 slpm); Accuracy: Volumetric: +/-0.15% of reading/Mass:+/-0.15% of reading; 1/4-inch compression fittings
SL-800-44	High flow cell for use with SL-800-B unit. Flow range 500 sccm to 50,000 sccm (50 slpm); Accuracy: Volumetric: +/-0.15% of reading/Mass:+/-0.15% of reading; 1-4-inch inlet, 1/2-inch outlet compression fittings
SL-800-75**	High flow cell for use with SL-800-B unit. Flow range 1000 sccm - 100 slpm; Accuracy: Volumetric: +/-0.15% of reading/ Mass: +/-0.15% of reading; 1/2-inch compression fittings

*Note: SL-800-3 is only compatible with SL-800 bases loaded with firmware release of 2.07 or higher.
**Note: SL-800-75 is only compatible with SL-800 bases loaded with firmware release of 2.07 or higher.

Cases

PEL-1600: Pelican case with foam for SL800. Fits SL800 with one base, one cell and accessories

PEL-1650: Pelican case with foam insert & wheels. Fits SL800 with one base, two to three cells and accessories

Measurably Different™

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