

# High Accuracy High Flow Primary Standard Gas Flow Calibrator Up to 1500 slpm

## FEATURES

- Primary standard: Dimensionally based piston prover system
- Accuracy:  $\pm 0.25\%$  reading mass flow from 5 to 500 slpm;  $\pm 0.30\%$  from 15 slpm to 1500 slpm
- For all inert gases
- For mass or volumetric flow rate
- Range: 5 slpm to 1500 slpm
- Manufactured to ISO 17025 standard at NIST-accredited lab (NVLAP)
- For flow calibration labs and general industry use
- Fast: readings in 1 to 60 seconds (flow dependent)
- Easy: push one button!
- Proven CalSoft™ Software
- Hands-free auto mode
- Fully traceable to NIST
- CE Approved, RoHS compliant

CalTrak<sup>®</sup> XL



## DESCRIPTION

**B**ring world class accuracy to your facility. Sierra's CalTrak<sup>®</sup> XL is the leading high flow primary gas flow calibrator on the market today. With increased demand for higher flows of process gas, there is a requirement to validate and calibrate high flow gas meters and controllers. Designed to replace aging bell provers, the XL meets that need with an impressive standardized accuracy of  $\pm 0.25\%$  of reading over a flow range of 5 slpm to 500 slpm or  $\pm 0.30\%$  from 15 slpm to 1500 slpm.

The flow cell is fitted with low mass borosilicate glass pistons with a low friction coating that oscillate between two detectors to quickly and accurately measure gas flow rates. The design of the allows for increased flexibility and speed of reading.

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

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



[www.sierrainstruments.com](http://www.sierrainstruments.com)



## WHY PRIMARY STANDARD?

CalTrak XL 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.

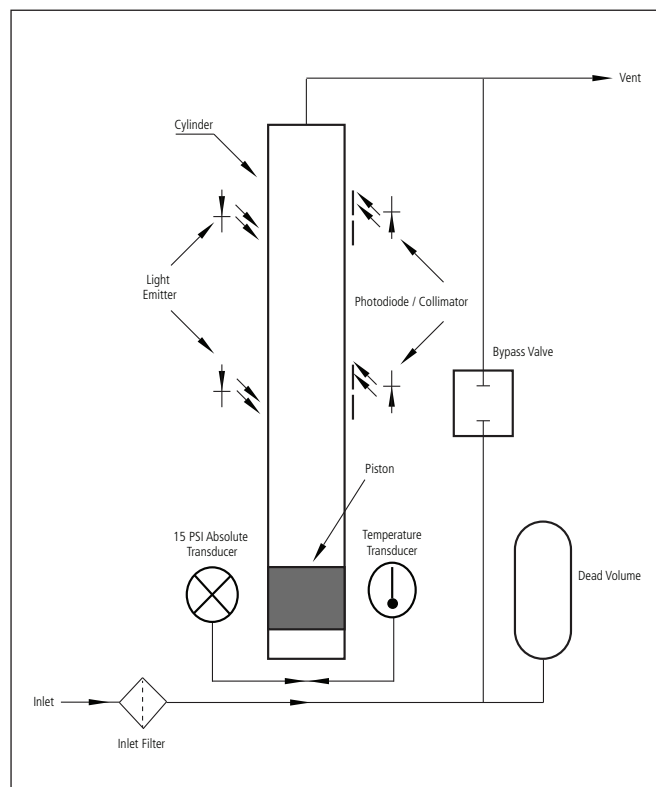
## OPERATING PRINCIPLE

Sierra's CalTrak models 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 micro-processor 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 XL Operating Principle



## PERFORMANCE SPECIFICATIONS

### Standardized Accuracy\*

$\pm 0.25\%$  of reading  $15^{\circ}\text{C}$  to  $30^{\circ}\text{C}$  ( $59^{\circ}\text{F}$  to  $86^{\circ}\text{F}$ ),  
from 5 slpm to 500 slpm  
 $\pm 0.30\%$  of reading  $15^{\circ}\text{C}$  to  $30^{\circ}\text{C}$  ( $59^{\circ}\text{F}$  to  $86^{\circ}\text{F}$ ),  
from 15 slpm to 1500 slpm

\*Note: Volumetric accuracy (lpm) is the same

### Time per Measurement

5 to 100 seconds (approximate)

### Type

Single, continuous or burst, with averaging function  
user-selectable from 1 to 100

## OPERATION SPECIFICATIONS

### Flow Ranges

5 slpm to 500 slpm\*

15 slpm to 1500 slpm\*

\*Note: At a gas pressure of 760 mmHg (1 atm), and a gas temperature of  $25^{\circ}\text{C}$  ( $77^{\circ}\text{F}$ ) with standardization temperature set to  $21.1^{\circ}\text{C}$  ( $69.98^{\circ}\text{F}$ )

### Gas Compatibility

Non-corrosive, non-combustible gases, less than 70% humidity, non-condensing

### Operating Pressure

19.5 psia (1344 mbarA) maximum pressure

Pressure Accuracy: 0.05% full scale

### Operating Temperature

$15^{\circ}\text{C}$  to  $30^{\circ}\text{C}$  ( $59^{\circ}\text{F}$  to  $86^{\circ}\text{F}$ )

### Ambient Humidity

0–70%, non-condensing

### Storage Temperature

$0^{\circ}\text{C}$  to  $70^{\circ}\text{C}$  ( $32^{\circ}\text{F}$  to  $158^{\circ}\text{F}$ )

### Flow Modes

Pressure or suction

### Pressure & Suction Fittings

1/2-inch Swagelok® compression tube fitting

### Flow Units

Volumetric: L/min, cf/min, mL/min

Flow: smL/min, scf/min, slpm

### Warranty

1 year; battery 6 months

### Approvals

CE RoHS compliant

### Digital Communication

RS-232 port and serial cable

## PHYSICAL SPECIFICATIONS

### Dimensions

Height: 34 inches (863.6mm)

Width: 32 inches (812.8 mm)

Depth: 12 inches (304.8 mm)

### Weight

90 lbs (41 kg)

### Configuration

Integrated flow measuring cell, valve and timing mechanism

### Display

Backlit graphical LCD

## POWER REQUIREMENTS

### AC Power Adapter/Charger

External power module

Input: 100-240 VAC, 1.6A (max), 50-60 Hz

Output: 12 VDC, 3.0A

## USER INTERFACE & SOFTWARE

### 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

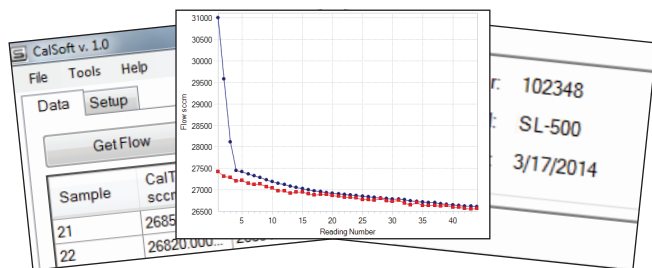
### CalSoft™ Software

Software System Requirements

Windows® XP, Windows® 7

Microsoft Excel® 2003 and up

- Captures flow data from your CalTrak instrument for easy export into common software packages, a PC, or Microsoft environment.
- 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

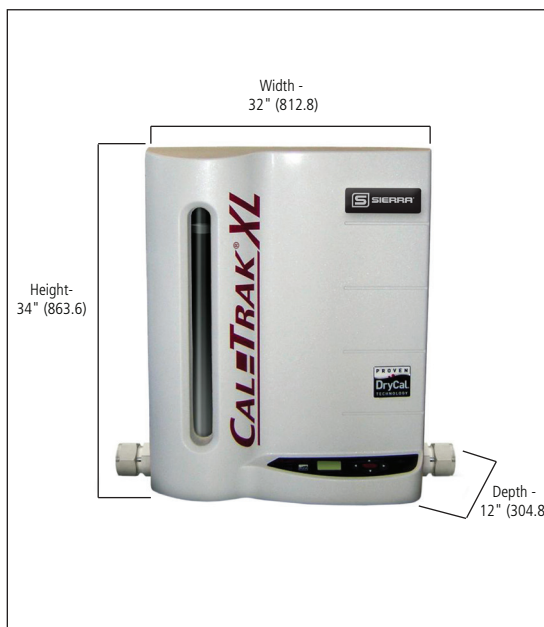
### Mass Flow Controllers

Sierra's popular SmartTrak® 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.

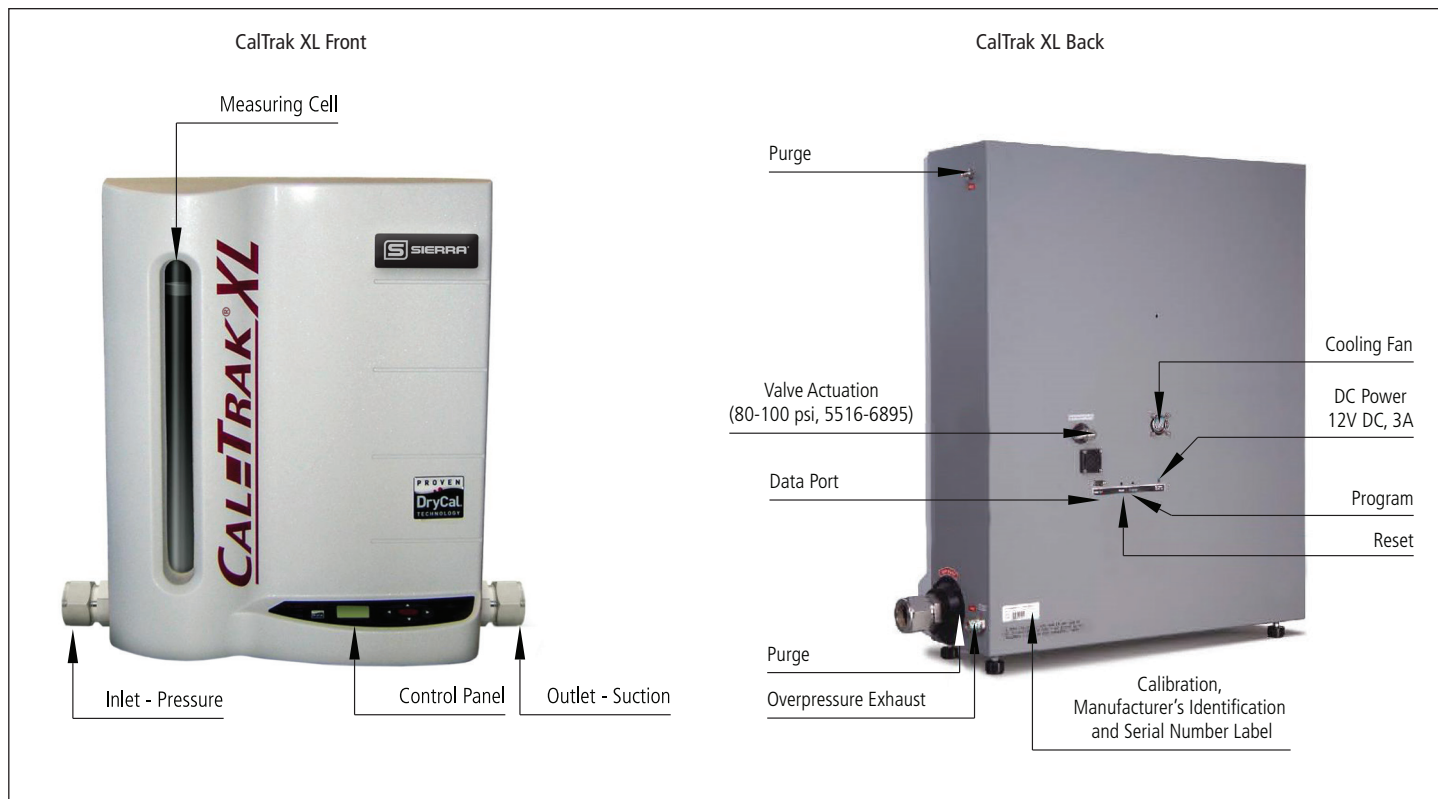
SmartTrak 100 Mass Flow Controller



## DIMENSIONAL DRAWINGS



CalTrak XL Front and Back view



## ORDERING THE CALTRAK® XL

Parent -

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

Parent Number CalTrak® XL Bases	
<b>CalTrak XL</b>	CalTrak high flow gas calibrator, complete system. Complete calibrator to measure flows from 5 slpm to 500 slpm with a standardized accuracy of $\pm 0.25\%$ reading and $\pm 30\%$ of reading from 15 slpm to 1500 slpm. Designed to replace aging Bell Provers, the CalTrak XL comes complete with power supply, shipping case, cables.