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

DryCal 1020/1500

FEATURES

- Primary standard: Dimensionally based piston prover system
- Accuracy: +/- 0.25% reading mass flow from 5 to 500 slpm; +/- 0.45 % of reading from 15 slpm to 1500 slpm
- Temperature accuracy of ± 0.2% all inert gases
- For mass or volumetric flow rate
- Range: DryCal 1200: 5 to 500 slpm; DryCal 1500 slpm: 15 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 DryCal Pro Software
- Hands-free auto mode
- Fully traceable to NIST
- CE Approved, RoHs compliant

DESCRIPTION

Bring world class accuracy to your facility. The DryCal® 1020 & 1500 Series 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 DryCal meets that need with an impressive standardized accuracy of +/- 0.25% of reading (model DryCal 1200) over a flow range of 5 slpm to 500 slpm or +/- 0.45 % from 5 slpm to 500 slpm (model DryCal 1500).

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. DryCal calibrators offer digital communications via RS-232 and USB and come with our DryCal Pro data collection software suite.

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

SIERRA®

www.sierrainstruments.com

WHY PRIMARY STANDARD?

The DryCal 1200 & 1500 Series 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.

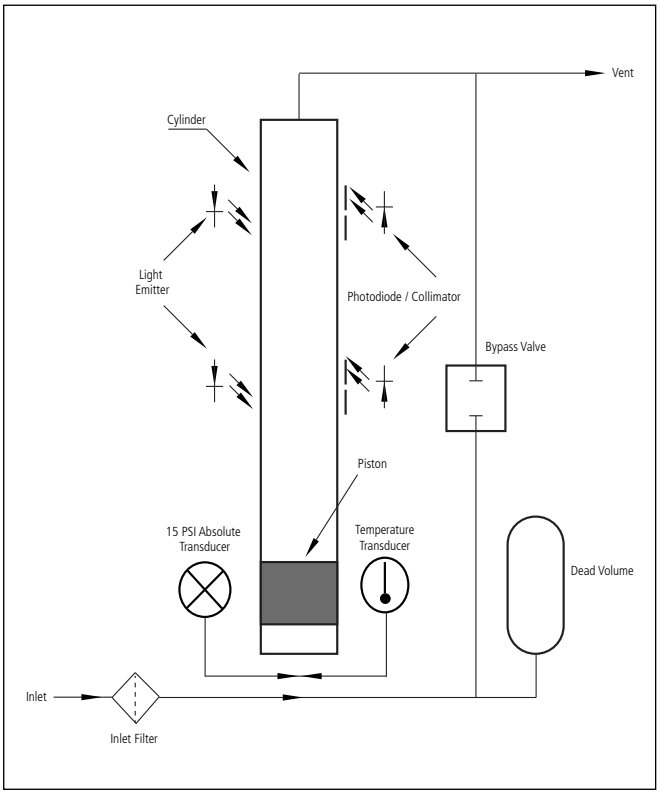
OPERATING PRINCIPLE

Sierra's DryCal 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: DryCal 1200 & 1500 Operating Principle



PERFORMANCE SPECIFICATIONS

Standardized Accuracy*
+/- 0.25% of reading 15°C to 30°C (59°F to 86°F), from 5 slpm to 500 slpm
+/- 0.45% of reading 15°C to 30°C (59°F to 86°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 splm to 500 slpm*
15 slpm to 1500 slpm*

***Note**: At a gas pressure of 760 mmHg (1 atm), and a gas temperature of 25°C (77°F) with standardization temperature set to 21.1 °C (69.98°F)

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

Operating Pressure (Absolute)
DryCal 1200: 10–19.5 psia
DryCal 1500: 14–45 psia
Pressure Accuracy: 0.05% full scale

Operating Temperature
15°C to 30°C (59°F to 86°F)
Temperature accuracy +/- 0.2% full scale

Ambient Humidity
0–70%, non-condensing

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

Flow Modes
Pressure or suction

Pressure & Suction Fittings
1 1/2-inch Swagelok® compression tube fitting
Reducing fittings are available for 1 inch, 3/4 inch and 1/2 inch connections

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

Display
Backlit graphical LCD

Dimensions
DryCal 1500: 32W" x 34H" x 12D"
DryCal 1020: 30W" x 34H" x 12D"

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

DryCal Pro™ Software
Software System Requirements
Windows® XP, Windows® 7
Microsoft Excel® 2003 and up

- Captures flow data from your DryCal 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 DryCal
- Enter flow rates from pumps or other flow source or flow meters and calibrate the flow source.
- Compare the flow measurements from your DryCal precision calibrator.

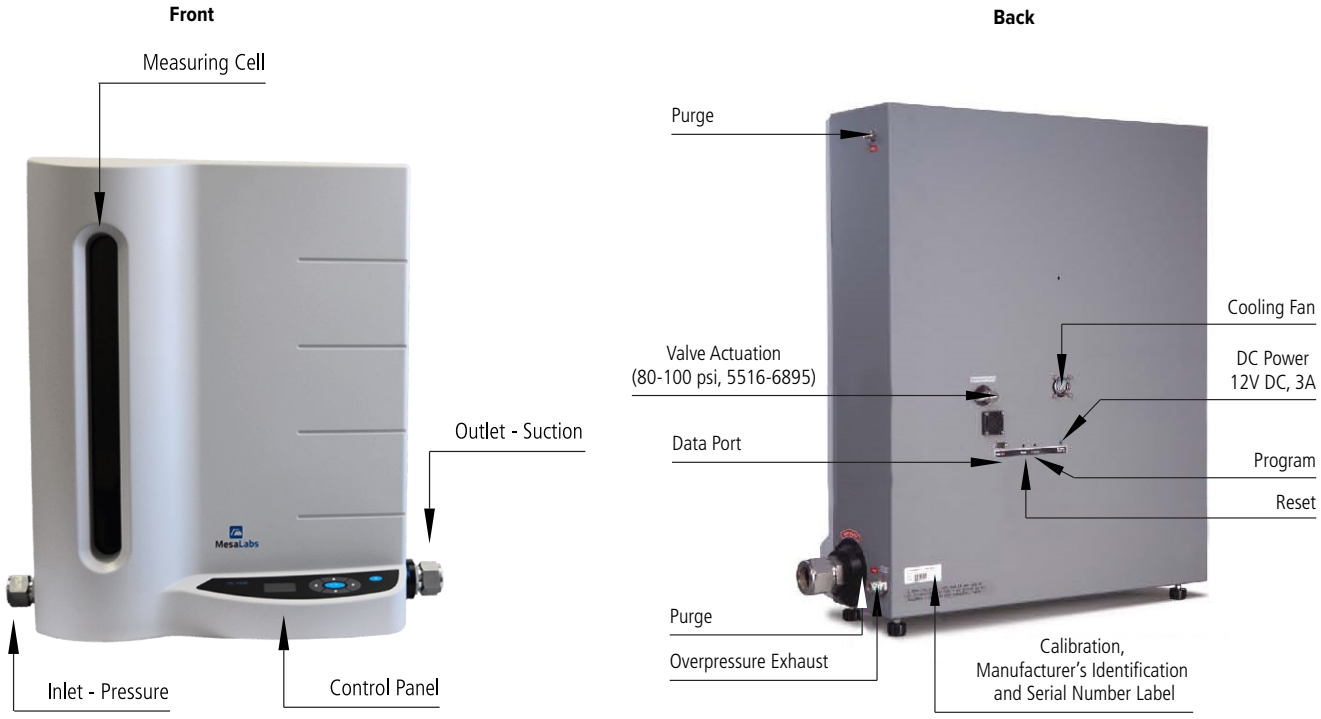
GAS FLOW SOURCE CONTROL

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

DRYCAL 1020 & 1500 FRONT AND BACK VIEW



ORDERING THE DRYCAL® 1020 & 1500

Parent -

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

Parent Model: DryCal ML Bases	
200-1020	DryCal ML-1020 high flow gas calibrator, complete system. Complete calibrator to measure flows from 5 slpm to 500 slpm with a standardized accuracy of +/-0.25% reading. Designed to replace aging Bell Provers, the DryCal ML-1020 comes complete with power supply, shipping case, cables.
200-1500	DryCal ML-1500 high flow gas calibrator, complete system. Complete calibrator to measure flows from 15 slpm to 1500 slpm with a standardized accuracy of +/-0.45% of reading. Designed to replace aging Bell Provers, the DryCal ML-1500 comes complete with power supply, shipping case, cables.

Note: Fittings on the ML-1020 are 1.5 inch diameter, so adapters recommended.

Note: Fittings on the ML-1500 are 1.5 inch diameter, so adapters recommended.

Measurably Different®

DryCal is a registered trademark of Mesa Labs.
DryCal ML-1020 and ML-1500, formerly named CalTrak XL, is manufactured by Mesa Labs for Sierra Instruments.

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