Gilian® Go-Cal™ Pro



AIR FLOW CALIBRATORS

Operation Manual

(This Manual Covers All Go-Cal Pro Kit Models)

Sensidyne Document No. 360-0266-01 - Rev D

SENSIDYNE®
Industrial Health & Safety Instrumentation

1000 112TH Circle N, Suite 100 • St. Petersburg, FL 33716 USA

(800) 451-9444 • +1 (727) 530-3602

www.Sensidyne.com • info@Sensidyne.com

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Firmware Version

Go-Cal™ Pro



Firmware Version 1.0.7 or Later

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Quality Policy Statement

At Sensidyne, we are committed to providing products and services that consistently meet customer needs and comply with all applicable statutory and regulatory requirements.

Our products are designed, manufactured and calibrated in accordance with standards ISO 9001:2015, ISO/IEC 17025:2017, ISO/IEC 80079-34, ATEX Directive 2014/34/EU, and IECEx, where applicable. Through ongoing review of our designs, supplier performance, and customer feedback we strive to ensure continuous improvement.

All employees at Sensidyne share the responsibility to provide products that are produced efficiently and economically representing the best value to our customers. We are committed to meeting or exceeding customer expectations in everything we do.

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Warranty

Sensidyne warrants that, at the time of delivery, the Go-Cal *Pro* shall be free of all defects in workmanship and material. Sensidyne will repair or replace, at its sole option, any Go-Cal Pro found to be defective by Sensidyne, if notified by Purchaser within the Warranty time period.

The warranty time period shall be for two (2) years from the date of original shipment by Sensidyne, except as noted below.

A. Exceptions to the above two year warranty time period:
   1. The rechargeable NCA battery assembly has a one (1) year warranty.

B. This warranty shall be null and void on any product which:
   1. is operated or used in excess of the product's operating specifications; or
   2. is not properly maintained in accordance with section 4.7 or specifications; or
   3. has been repaired or modified by persons other than authorized Sensidyne personnel or Factory Trained Service Centers, unless such work is authorized in advance in writing by Sensidyne; or
   4. has been damaged, abused, or misused.

C. Warranty on Service and Repairs:
   1. Goods, which have been repaired or replaced during the warranty period, are warranted only for the remainder of the unexpired portion of the original warranty period.
   2. Repairs or service provided not pursuant to warranty: 180 days from date of shipment by Sensidyne.

THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING BUT NOT BEING LIMITED TO THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR USE FOR A PARTICULAR PURPOSE, WHICH ARE EXPRESSLY DISCLAIMED, AND CONSTITUTES THE ONLY WARRANTY OF SENSIDYNE WITH RESPECT TO GOODS SOLD OR DELIVERED.

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SECTION ONE: Preface

Proprietary Notice

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The firmware and the associated PC application software installed in or provided with the Go-Cal Pro Air Flow Calibrator is the property of Sensidyne, LP and shall remain the property of Sensidyne, LP in perpetuity. The firmware/software is protected by U.S. and international copyright laws and is licensed for specific use with the Gilian Go-Cal Pro Air Flow Calibrator. The user may NOT reverse-engineer, disassemble, decompile, or make any attempt to discover the source code of the firmware/software. The firmware/software may NOT be translated, copied, merged or modified in any way. The user may NOT sublicense, rent, or lease any portion of the firmware/software. The right to use the firmware/software terminates automatically if any part of this license is violated.

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WARNINGS

READ AND UNDERSTAND ALL WARNINGS AND INSTRUCTIONS BEFORE USE

Failure to read, understand, and comply with **ALL** accompanying literature, instructions, product labels, and warnings could result in property damage, severe personal injury, or death.

Read and understand **ALL** applicable environmental health and safety laws and regulations before operating this product. Ensure complete compliance with **ALL** applicable laws and regulations before and during the use of this product.

UNDER NO CIRCUMSTANCES should this product be used except by qualified, trained, technically competent personnel and not until the warnings, *Operation Manual, Service Manual*, labels, and other literature accompanying this product have been read and understood. **DO NOT** remove, cover, or alter any label or tag on this product, its accessories, or related products.

The Go-Cal Pro Air Flow Calibrator is intended for both indoor and outdoor use. The unit is not waterproof. **NEVER** submerge the unit in water or draw liquids of any type into the unit, as failure, faulting or user injury may result.

Do Not operate this unit with corrosive gasses or gasses that condensate.

Do Not pressurize the calibrator.

The Go-Cal Pro Air Flow Calibrator is not intrinsically safe and should not be used in explosive atmospheres. Refer to the Certifications and Approvals section for approval ratings.

DO NOT operate this product should it malfunction, require repair, or have a cracked or broken case or other visible or known damage. Operation of a malfunctioning product, or a product requiring repair may result in serious personal injury or death.

DO NOT operate with a dirty or blocked inlet filter or kinked tubing.

DO NOT attempt to repair or modify the instrument, except as specified in the *Operation Manual*. If repair is needed, contact the Sensidyne Service Department or local authorized service center to arrange for a Returned Material Authorization (RMA).

Use **ONLY** genuine SENSIDYNE® replacement parts when performing any maintenance procedures described in this manual. *Failure to do so may seriously impair instrument performance*. Repair or alteration of the product beyond the scope of normal operation specified in this manual, or by anyone other than an authorized SENSIDYNE® Service Center, could cause the product to fail to perform as designed.

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This product uses rechargeable lithium nickel cobalt aluminum oxide (NCA) batteries. **Always fully charge before use**. **DO NOT attempt to deeply discharge the internal battery assembly.**

DO NOT open the Go-Cal Pro Calibrator, charge or replace batteries in an explosive atmosphere. Use only the charging cable provided for the Go-Cal Pro Air Flow Calibrator as specified. Battery is nominal 3.2V (3.6V max.). **Caution: The unit may become warm during charging.**

Go-Cal Pro batteries may only be replaced by an authorized Sensidyne Service Center. NCA batteries must be promptly disposed of in a manner that corresponds to local regulatory requirements for Lithium Batteries. Keep away from children. The battery used in this device may present a risk of fire or chemical burn if mistreated. Do no disassemble, heat above 140ºF (60ºC), or incinerate. Replace battery with Sensidyne Battery Assembly (P/N 615-1901-01-R) only. Use of another battery may present a risk of fire or explosion.

Do not disassemble or reconstruct battery assembly. The battery assembly has safety functions and a protection circuit to avoid danger. If those have serious damage, the assembly may generate heat, smoke, rupture, or burn.

Do not short-circuit battery assembly. Do not connect the + and - terminals with metals (such as wire). Do not carry or store the battery assembly with metal objects (such as wire, necklace, or hairpins). If the battery assembly is short-circuited, excessive large current will flow and then heat generation, smoking, rupture, or burning will occur. In addition, it causes heat generation at metals.

Do not incinerate or heat the battery assembly. These cause the melting of insulator, damage of gas release vent or safety function, or ignition of electrolyte. The above mentioned actions cause heat generation, smoking, rupture, or burning.

If the Go-Cal Pro Air Flow Calibrator comes into contact with a destructive substance(s) it is the responsibility of the user to take suitable precautions that prevent the unit from being adversely affected. Destructive substances include acidic liquids or gases that may attack metals, solvents that may affect polymeric materials, other solvents, or corrosives. Suitable precautions are regular checks as part of routine inspections and establishing from material data sheets that chemicals known to be present do not have an adverse effect on the material of the unit (polycarbonate, polyester, silicone, Buna-N, Neoprene, Stainless steel, brass and epoxy).

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Certifications, Approvals and Compliances

The Go-Cal Pro is EN 61010-1, CE, RoHS and EMC compliant. The Go-Cal Pro contains an internal battery which has been approved for shipping and transport per UN/DOT 38.3 and IEC 62133-2 (2nd Edition).

Examples of Product Labeling shown below:

Labels







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SECTION TWO: Introduction

2.1. Product Description

The Go-Cal Pro Air Flow Calibrator is an easy to use calibration system used for setting the flow rate of air sampling equipment. The system is comprised of a venturi/critical orifice flow path that uses highly accurate pressure differential sensor technology to derive precise airflow. There are three Go-Cal Pro models that cover ranges as follows:

- Low: 5 cc/min to 600 cc/min (0.005 LPM to 0.6 LPM)
- Standard: 600 cc/min to 5,000 cc/min (0.6 LPM – 5 LPM)
- High: 4,000 cc/min to 30,000 cc/min (4 LPM – 30 LPM)

Features of the Go-Cal Pro Air Flow Calibrator include an easy-to-read color touch screen LCD display; multi-screen user interface with drop down menus and screen keyboard input capabilities; corrections for standard temperature and pressure; statistical analysis via percent deviation of air flow; ability to save and name individual calibration records; and the ability to preview and export calibration records in Bitmap, PDF and CSV formats. You can also specify the duration of samples to be taken (5 to 5000 seconds) for averaging.

Go-Cal Pro Kits include an Air Flow Calibrator, Power Supply, USB-C Cable, Tubing, Adapters, Fittings and Flash Drive (Manual, Quick Start Guides and Software).

The Go-Cal Pro offers +/- 1% accuracy or +/- 2 cc/min, whichever is greater, across the full range of air flow at normal temperature and pressure (NTP). NTP is commonly used as a standard condition for testing and documentation of air flow. Normal Temperature and Pressure is defined as air at 20ºC (293.15 K, 68ºF), and 1 atm (101.325 kN/m2, 101.325 kPa, 14.7 psia, 0 psig, 29.92 in Hg, 407 in H2O, 760 torr), and density of 1.204 kg/m3 (0.075 pounds per cubic foot). The temperature accuracy is typically +/- 0.3^0C (Max= +/- 0.5^0C). The pressure accuracy is typically +/- 0.0025 atm.

The Go-Cal Pro has an operating temperature range of 0ºC (32ºF) to 40ºC (104ºF). Operating Time is 24 hrs (continuously with screen dimming function). The Go-Cal Pro achieves over 400 calibrations on a single charge (based on 30 second averaging and pump adjustments up to 2 minutes each).

Note: Temperatures extremes (Hot and Cold), and ambient pressure can impact the flow rate results perceived by all calibrators. The Go-Cal Pro Air Flow Calibrator is designed to compensate for changes in ambient temperature 0ºC (32ºF) to 40ºC (104ºF) and pressure 525 – 1160 mmHg, up to an altitude of 2,000 meters. Additionally, relative humidity must be within 90% RH non-condensing (Not for use in wet locations).

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2.2. Theory of Operation

The Go-Cal Pro uses venturi and orifice plate methods to create a steady air flow across two pressure sensors. This operation works by measuring the difference in pressure at two different locations. The pressure difference is created by reducing the diameter of the pipe causing the air to flow faster. The fast moving air has a lower pressure than the slower air in the larger section of the venturi or orifice plate. This pressure differential is then used for flow calculation within the instrument.

2.3. Go-Cal Pro Calibration Kit Descriptions

Kits are available in single and combination flow ranges. A matrix chart for the available kits are provided below.

Kit Type	• Low Flow (5 to 600 cc/min) • Standard Flow (600 to 5000 cc/min) • High Flow (4 to 30 LPM)	Carrying Case
Single Flow Meter Without Case	**One Flow Meter** 910-1910-EN-R: Go-Cal Pro Low Flow 910-1911-EN-R: Go-Cal Pro Low Flow w/ BT 910-1920-EN-R: Go-Cal Pro Standard Flow 910-1921-EN-R: Go-Cal Pro Standard Flow w/ BT 910-1930-EN-R: Go-Cal Pro High Flow 910-1931-EN-R: Go-Cal Pro High Flow w/ BT	No
Single Flow Meter With Case	**One Flow Meter** 910-1912-EN-R: Go-Cal Pro Low Flow 910-1913-EN-R: Go-Cal Pro Low Flow w/ BT 910-1922-EN-R: Go-Cal Pro Standard Flow 910-1923-EN-R: Go-Cal Pro Standard Flow w/ BT 910-1932-EN-R: Go-Cal Pro High Flow 910-1933-EN-R: Go-Cal Pro High Flow w/ BT	Yes
Combination Flow Meters With Case	**Two Flow Meters** 910-1940-EN-R: Go-Cal Pro Low and Standard Flow 910-1941-EN-R: Go-Cal Pro Low and Standard Flow w/ BT 910-1950-EN-R: Go-Cal Pro Low and High Flow 910-1951-EN-R: Go-Cal Pro Low and High Flow w/ BT 910-1960-EN-R: Go-Cal Pro Standard and High Flow 910-1961-EN-R: Go-Cal Pro Standard and High Flow w/ BT	Yes
Deluxe Kit With Case	**All Three Flow Meters** 910-1970-EN-R: Go-Cal Pro Deluxe Kit 910-1971-EN-R: Go-Cal Pro Deluxe Kit w/ BT	Yes

Note: Product numbers vary by region. Contact your local distributor to confirm correct product language versions.

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SECTION THREE: Set-Up

3.1. Go-Cal Pro Identifiers

The Go-Cal Pro Air Flow Calibrator contains the following components:

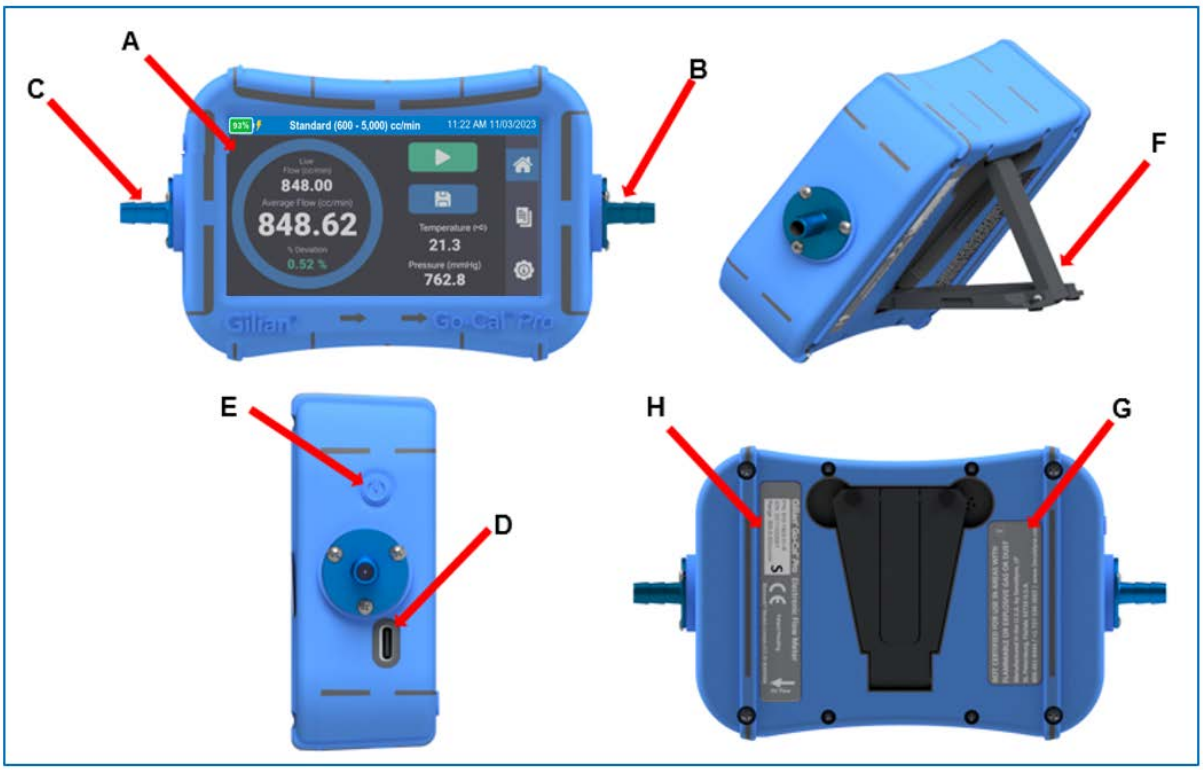


Figure 3.1

A	***LCD Display***
B	***Outlet Barb (Vacuum)***
C	***Inlet Barb (Pressure)***
D	***USB-C Port (Charging and Communication)***
E	**On/Off *Power Button***
F	***Kickstand (Rear Support)***
G	***Warning Label***
H	***Part Number, Serial and Model Label***

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3.2. Go-Cal Pro Components

The **ON/OFF Power Button**, located on left side of the unit, turns the unit on and off. Once turned on, the **LCD Display** screen that will illuminate and display the “Go-Cal Pro” insignia, along with the date of last calibration.

The Go-Cal Pro is powered by an internal lithium nickel cobalt aluminum oxide (NCA) battery and charging is powered from the **USB-C Port** below the Inlet barb on the left side of the unit. Communications to a computer is achieved via the **USB-C Port**, located on left side of the unit.

The Go-Cal Pro can be used with the Gilian GilAir Plus Pumps to perform SmartCal Calibrations. This is achieved by connecting the unit to the Gilian GilAir Plus docking stations using the accessory SmartCal cable kit (**Not Included** with Go-Cal Pro kits).

The **Inlet Barb** is located on the left side of the unit. The **inlet** is used for makeup air when calibrating a device in suction/vacuum mode (i.e. personal and area sampling pumps). The **inlet barb** can also be used to connect a hose to measure positive pressure flow.

The **Outlet Barb** is located on the right side of the unit. The **outlet** is used when calibrating a device in suction/vacuum mode. The **outlet barb** exhausts airflow when calibrating positive pressure flow through the inlet barb. See Figure 3.2.



Figure 3.2

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3.3. Preparation

The Go-Cal Pro Air Flow Calibrator arrives fully assembled. The kits include Air Flow Calibrator(s), Power Supply, USB-C Cable, Tubing, Adapters, and Flash Drive with Manual, Quick Start Guide and Software.

IMPORTANT
Before proceeding, you MUST charge the battery to full capacity prior to using the calibrator. The Go-Cal Pro calibrator is rated for 5VDC/1A. Use only the power adapter provided from CUI, Inc. (PN 811-0509-01-R/Mfg. PN SMI5-5-V-I138). Do not use alternate USB power supply source with differing power rating, as this may affect the safety protection of the device. To charge the calibrator, plug the USB-C Cable into the AC power supply. Connect the AC power supply to mains supply. The supply can accept 100-240 VAC at 50 or 60 Hz. Allow up to 6 hours for a complete charge. The Go-Cal Pro is categorized as Overvoltage Category: I, and Pollution Degree: 2.



Figure 3.3

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3.4. System Set Up

This section describes the steps necessary to set up the Go-Cal Pro Calibration System. This includes initial setup, connecting the tubing, and setting up the sampling source. Figure 3.4 shows how a complete Go-Cal Pro Calibration System may be configured.

NOTE: For proper setup and usage while calibrating your air sampling pump, ensure that the tube length between your media and the Go-Cal Pro does not exceed 9 inches in length.

If you plan to use the Go-Cal Pro in the field, make certain the unit is fully charged before operating the unit. If you plan to use the unit in the lab/office (i.e., near an AC wall outlet), you can continue with setup and operation immediately.



Figure 3.4

The flow source must not be connected when unit is powered on. The Go-Cal Pro must acclimate to the ambient temperature prior to starting the airflow. A pop-up window will appear if the calibrator detects airflow prior to taking the ambient readings. It is recommended to allow your calibrator to acclimate to the environment for up to 30 minutes prior to use.

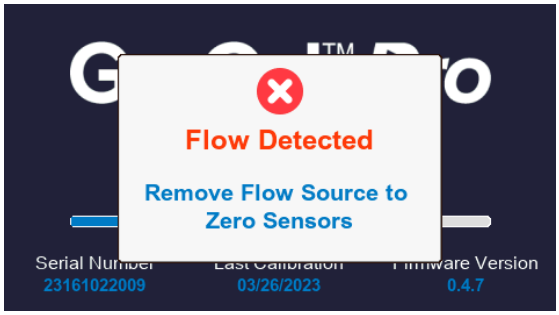


Figure 3.5

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3.5. Connecting the Sampling Source

The sampling source to be calibrated may be either a positive pressure device (exhausts air), connected to the left hose barb or a negative pressure device (i.e. suction pump) connected to the right hose barb. Tubing must be selected based on the flow range and inlet/outlet barb sizes. The High flow meters come with a 3/8 inch (OD) barb. The Standard flow meters come with a 1/4 inch (OD) barb and Low flow meters come with a 1/8 inch (OD) barb. Step-down adapters are provided with the kit, (1) 3/8” to 1/4” adapter, and (1) 1/4” to 1/8” adapter.

Note: If sampling source will be used with a filter media, ensure that the media is placed in between the sampling source and the calibrator to account for backpressure. Failure to do so will alter the flow rates of sample.

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SECTION FOUR: General Operation

4.1. Overview

The Go-Cal Pro has the capability of reading and recording flow rate over the range of 5 cc/min to 30,000 cc/min (30 LPM) by use of three distinct flow rate models (Low ranges: 5-600 cc/min, Standard: 600 – 5000 cc/min, and High: 4-30 LPM), that are selected based on the desired flow rate of the sampling source. The Go-Cal Pro contains a STP sensor that measures the ambient temperature and pressure and can correct sample flows to Standard conditions. Standard temperature and pressure can be set to desired values.

The calibrator may be set up to sample and average for user specified time, ranging from a 5 – 5000 seconds. While averaging, the calibrator will provide a percent deviation value that is ((Flow Reading 1 – Flow Reading 2)/(Flow Reading 1))*100% and lets the user evaluate the stability of the flow measurement in real-time. The user may select from a range between 0.5 – 5% for the threshold, so that the number is displayed GREEN if below, and RED if above.

The live flow measurement will always be displayed on the LCD for the user to make pump adjustments. Once the flow is stable, the user can press the “START” button to begin sampling data for the report. Once samples are collected, the SAVE button will be enabled to allow the user to save the report to internal memory. Reports can be downloaded from internal memory, using the Gilian Connect Pro software, for easy printing and spreadsheet applications.

Note: Do not have flow source running when unit is powered on. The flow meter must acclimate to the ambient temperature prior to starting the airflow. Prior to starting a sample, the flow source must be started and stable.

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4.2. Navigation

The Go-Cal Pro Air Flow Calibrator uses an intuitive touchscreen LCD Display for menu navigation and operation.

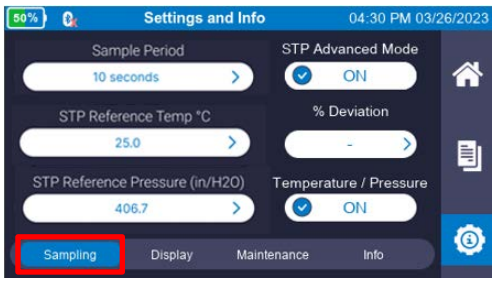
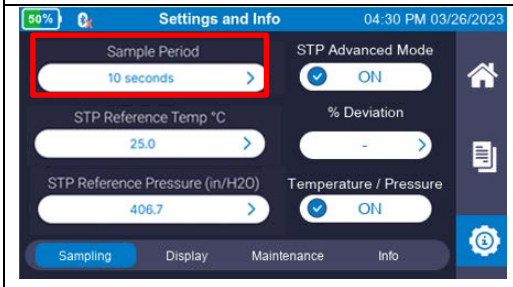
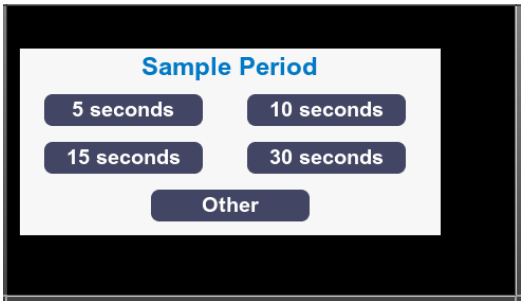
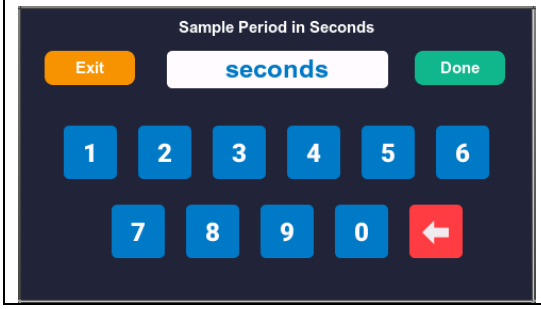
The menu bar is vertical and is located on the right edge of the screen. The menu bar tabs are summarized in the following table.

Symbol	Name	Tab Summary
	Home Screen	**Home Screen** displays: Battery Life, and Flow Cell type with flow range, Time, Date, Sample Timer Ring, Live Flow Rate, Average Flow Rate, Percent Deviation, Sample Start Button, Record Save Button, Ambient Temperature and Ambient Pressure.
	Reports Screen	**Reports Screen** displays: most recent calibration reports by date, allows for preview of reports, and for deletion of single or all reports.
	Settings Screen	**Settings Screen** toggles between four settings pages. • **Sampling Tab** allows selection of Sampling Period, Standard Temperature and Pressure (STP) Advanced Mode and Reference Values, Percent Deviation Threshold, and Temperature/Pressure display control. • **Display Tab** allows for selection of Language, Date Format, Brightness Control, and selection of Temperature, Pressure and Flow units of measurement. • **Maintenance Tab** allows user to set the Sleep Timer, set the Time and Date, and perform a Factory Reset. • **Info Tab** displays the flow meter's Serial Number, Firmware Version, Date of last calibration, service due date, and information on contacting a local service center.

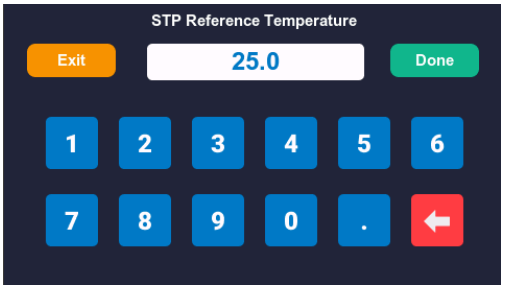
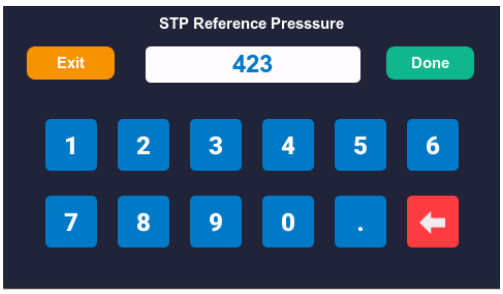
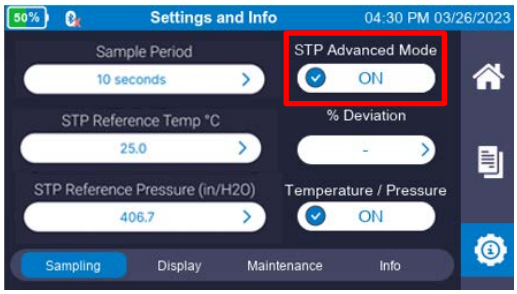
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4.3. Setting Operational Functions

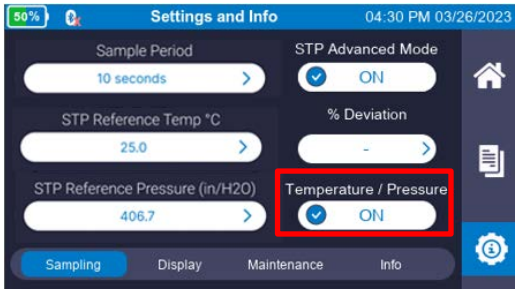
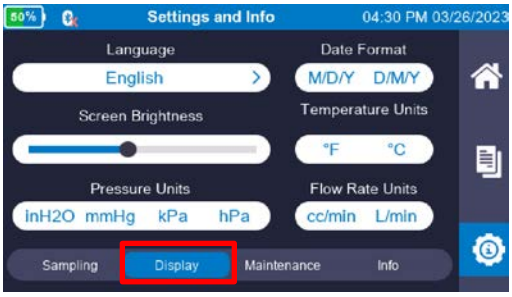
The operation of the calibrator is controlled by entering the **Settings** "⚙" menu tab and selecting the operational parameters that the user desires for sampling. The settings menu has submenus that allow control of related functions. After completing a change to the settings, touch the **Home** icon "🏠"on the menu bar to save the settings. A Settings reference display appears in the following table.

Display Image	Description
	**Settings Sampling Tab** allows selection of Sampling Period, Standard Temperature and Pressure (STP) Advanced Mode and Reference Values, Percent Deviation Threshold, and Temperature/Pressure display control.
  	Selecting Sample Period – This feature allows the user to select the time of samples within an averaging set. Touch the **Sample Period** button, and a window will appear. Choose from one of four pre-selected values, or select other to open a keyboard window and select a value from 5 to 5000. Type the number, ranging from 5 – 5000, of seconds you wish to have averaged in your sample set. Touch the **Done** Button to complete this selection.

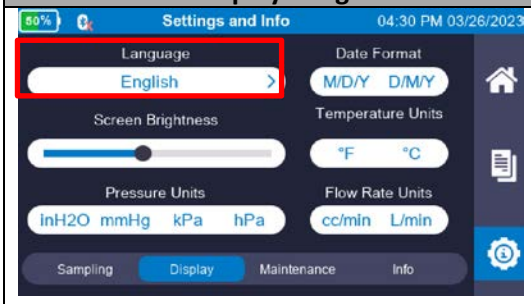
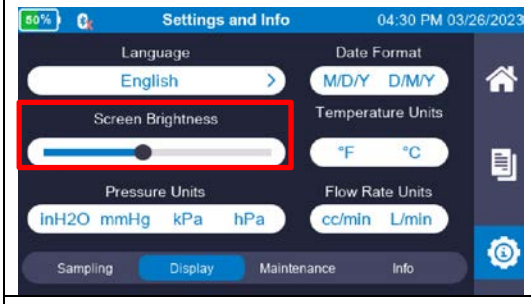
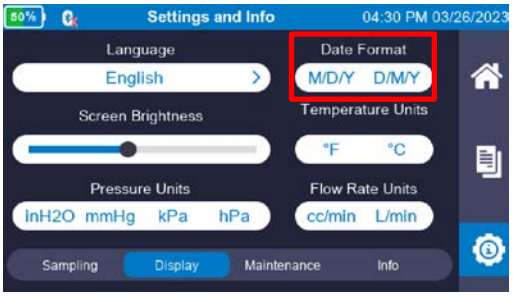
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Display Image	Description
  	Selecting Reference Temperature – Touch the reference temperature button on the screen below the text. The Input Keyboard will appear. **Note: User may change from ^{O}F to ^{O}C on Settings Display Tab.** Use keyboard to enter the reference temperature based on local accepted preferences and touch the **Done** button. Selecting Reference Pressure – Touch the reference pressure field on the screen below the text. The Input Keyboard will appear. **Note: User may select units from four units of pressure: in/H_2O mmHg, kPa, or hPa on Settings Display Tab.** Use keyboard to enter the desired reference pressure based on local accepted preferences and touch the **Done** button. **Note: STP Reference Temperature and Pressure will be reset to factory defaults when a firmware update is loaded or when Factory Reset has been initiated on the device.**
 	Selecting STP Advanced Mode – This feature allows the user to select between a simple volumetric calculation, and an adjusted calculation based upon the ambient pressure and temperature as related to the user's selected reference temperature and pressure. Touch the **STP Advanced Mode** button to turn this function "ON" or touch again to turn "OFF". **Note: The Flow Rate units will change to scc/min or sL/min when the calibrator is in STP Advanced Mode.**

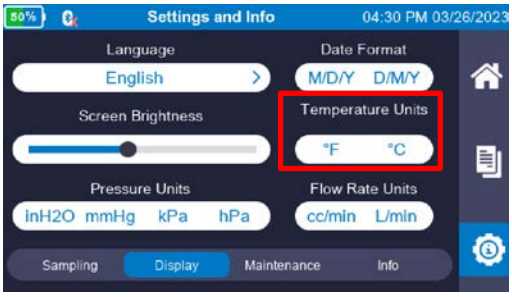
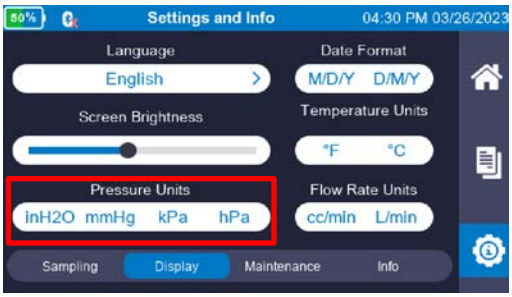
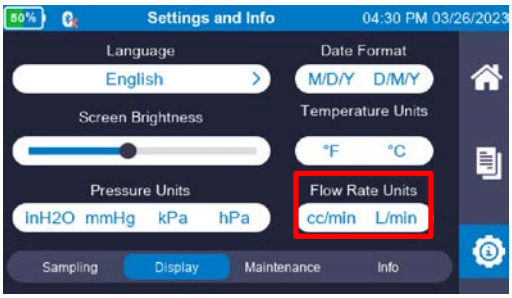
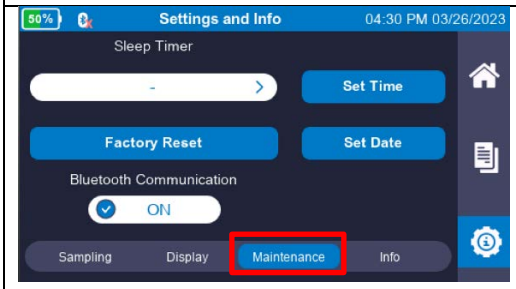
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Display Image	Description
	Selecting Percent Deviation – Touch the button on the screen below the text.
	A window will appear. Select a threshold from 0.5 – 5%. This threshold will be utilized until changed. Scroll to selections below the displayed values. **Note: When averaging sample set, the statistical information will appear on the Home Screen just below the sample's Average Flow Rate.**
	Selecting Temperature/Pressure display control – Touch the button on the screen below the text. This feature allows for viewing the ambient temperature and pressure on the **HOME SCREEN.** Touch the **Temperature/Pressure** button to turn this function "ON" or touch again to turn "OFF". **Note: User may change from ^{O}F to ^{O}C on Settings Display Tab.**
	**Settings Display Tab** allows for selection of Language, Date Format, Screen Brightness, and selection of Temperature, Pressure and Flow units of measurement.

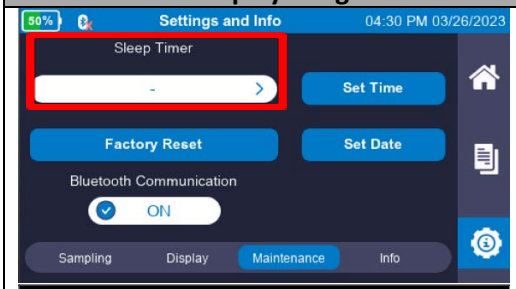
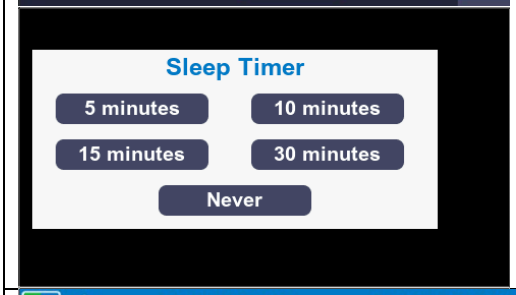
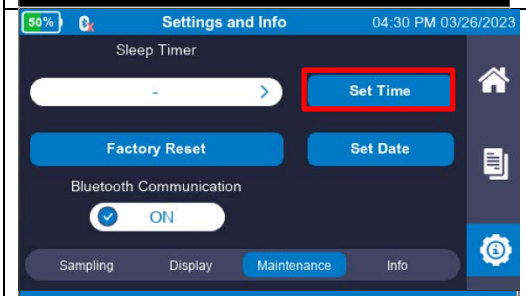
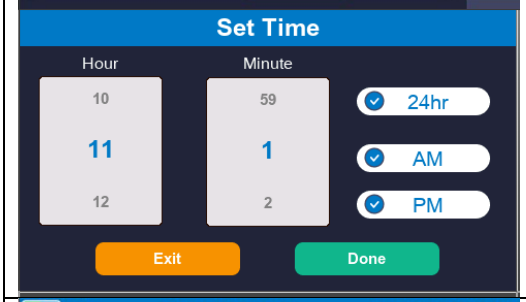
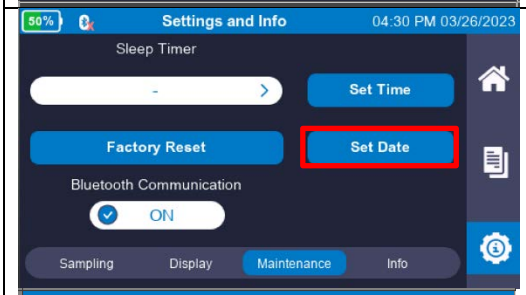
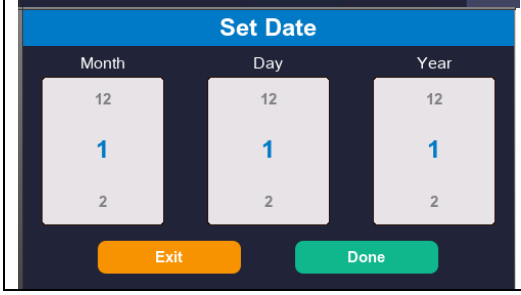
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Display Image	Description
	Selecting Language – Touch the button on the screen below the text. A window will appear with languages to choose from. Select the language preference and the button will now change to the selected language. **Note: Some languages are only enabled in specific market regions.**
	• English • Spanish • French • Portuguese • German • Dutch • Italian • Chinese • Polish • Turkish
	Selecting Screen Brightness – Touch the slider below the text to manually adjust screen brightness. Furthest right is Brightest, and Furthest left is Dimmest.
	Selecting Date Format - Touch the button on the screen below the text to switch from Month/Day/Year (M/D/Y) to Day/Month/Year (D/M/Y) format. **Note: The Date will be displayed in the select format on the Home Screen and corresponding records.**

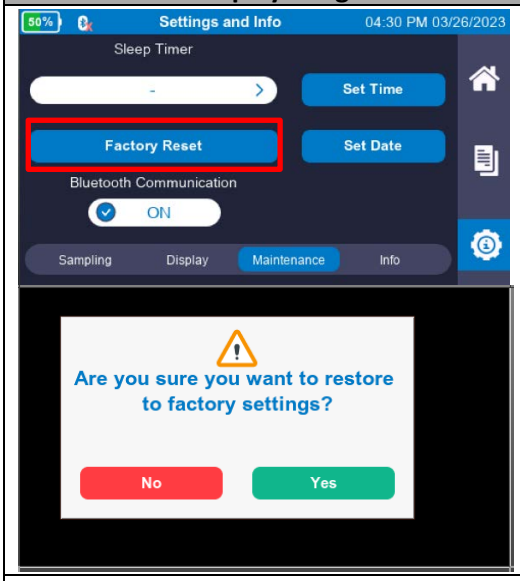
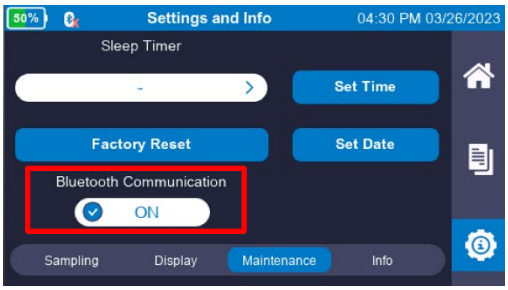
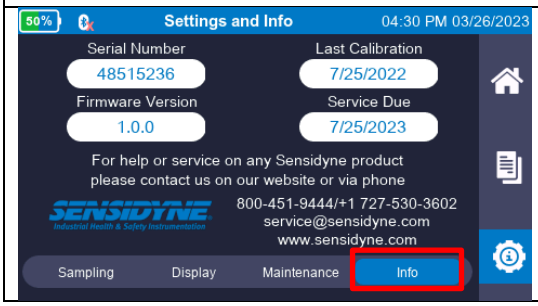
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Display Image	Description
	Selecting Temperature Units – Touch the button on the screen below the text to switch from degrees Fahrenheit (^{o}F) to degrees Celsius (^{o}C). **Note: The temperature will be displayed in the select units on the Home Screen and corresponding records.**
	Selecting Pressure Units – Touch the button on the screen below the text to select from four units of Ambient pressure; in/H_2O, mmHg, kPa, or hPa. **Note: The Ambient Pressure will be displayed in the select units on the Home Screen and corresponding records.**
	Selecting Flow Rate Units – Touch the button on the screen below the text to switch from cubic centimeters per minute (cc/min), recommended for ***Low Flow Rate*** sampling sources, to liters per minute (L/min), recommended for ***High Flow Rate*** sampling sources. **Note: The Air Flow will be displayed in the select units on the Home Screen and corresponding records.**
	**Settings Maintenance Tab** allows user to set the Sleep Timer, set the Time and Date, and perform a Factory Reset. A Bluetooth Communication button will also be present on Bluetooth models only.

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Display Image	Description
 	Selecting Sleep Timer - Touch the button on the screen below the text. This feature allows for the user to save power by setting a period of inactive time before the unit shuts down. A window will appear with five choices of Sleep Times to choose from. Select a pre-set time or Never option and the button will now display that selected Sleep Time option. **Note: To awaken the unit, press the On/Off power button on the left side of the Go-Cal Pro.**
 	Setting the Time – Touch the button on the screen to program in the local time. A pop-up window will appear. Select from a 24 hour format or 12 hour format using AM or PM. Once the time and format has been updated, touch the **Done** button.
 	Setting the Date – Touch the button on the screen to program in the local date. A window will appear. Scroll through the month day and year sections to select the current date. Once the date is correct, touch the **Done** button. **Note: The Date will be displayed in the selected format on the Home Screen and corresponding records.**

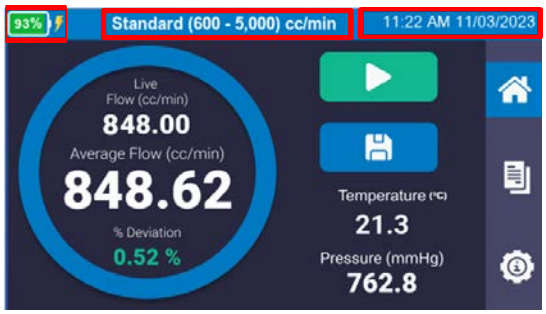
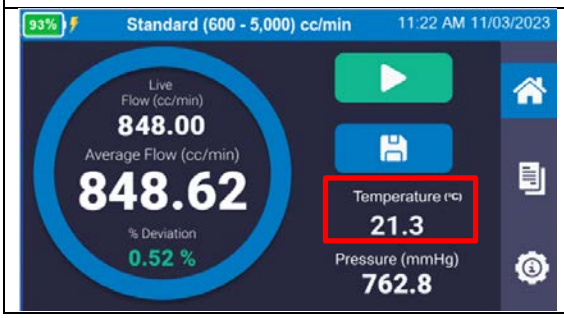
© 2023 Sensidyne, LP

Display Image	Description
	Factory Reset - Touch the button on the screen to reset the Go-Cal Pro to factory conditions. A window will appear asking the user to confirm the reset. Touch the **Yes** button to confirm or **No** button to cancel the reset. When the reset process is complete, the unit will automatically turn off. The user will then need to manually power the unit back on. **Note: Factory Reset will remove all sample reports and saved pump records. Check all of your preferred settings as they may have also been reset to factory default.**
	**Bluetooth Communication** – Touch the button on the screen below the text. This feature allows for Bluetooth connections to enabled devices with Sensidyne Bluetooth Applications. Touch the **Bluetooth Communication** button to turn this function “ON” or touch again to turn “OFF”. **Note: This feature is only available on Go-Cal Pro Bluetooth versions.**
	**Settings Info Tab –** Displays the flow meter’s Serial Number, Firmware Version, date of Last Calibration, Service Due date, and information on contacting a local service center. **Note: The website will display service centers locations and contact information outside of the U.S.**

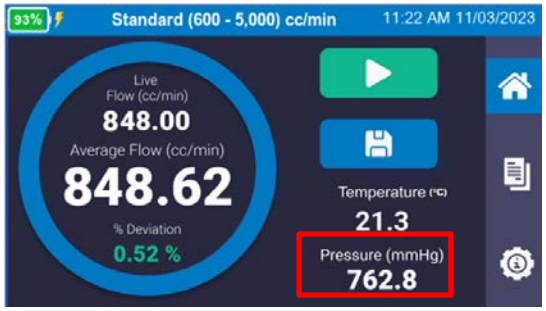
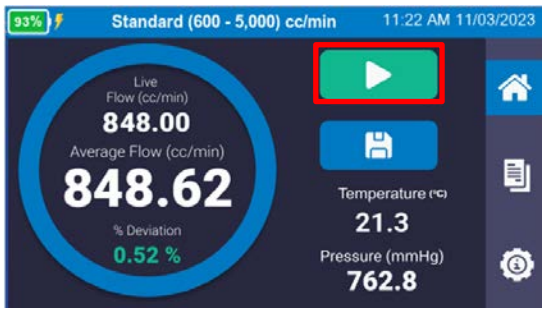
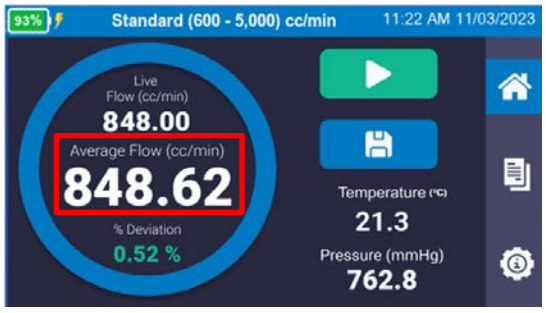
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4.4. Home Screen Displays and Operation Features

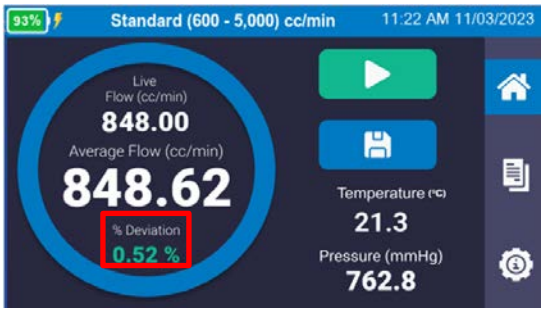
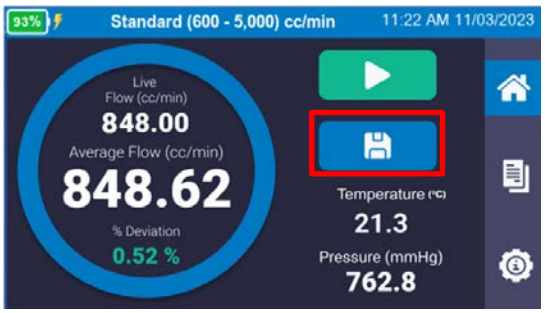
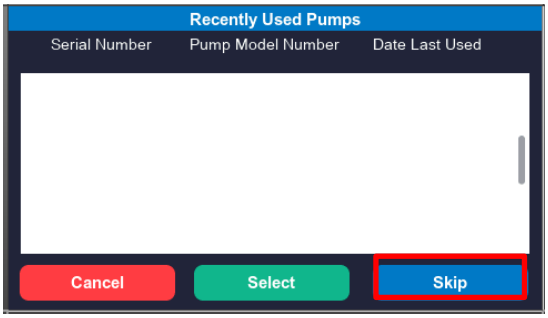
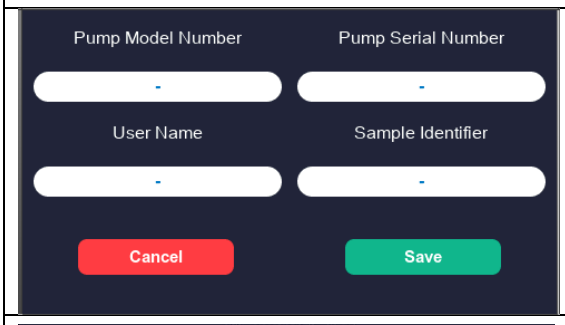
The access to Home screen is controlled by entering the Home "" menu tab. The Home Screen will adjust based on the user settings selected. Home Screen displays; Battery Life, and Model type with flow range, Time, Date, Sample Timing Ring, Live Flow Rate, Flow Average, Percent Deviation, Sample Start Button, Record Save Button, Ambient Temperature, Ambient Pressure, Pressure Mode, and STP Advanced Mode. A Home Screen reference display appears in the following table.

Display Image	Description
	Home Screen – Time and Date is displayed in the right corner of the top information bar. The time and date can be edited on the Settings Display page. The model type and flow range are displayed in the middle of the top information bar. The Battery Life power level is indicated in the left corner of the top information bar.
	Home Screen – STP Advanced Mode. This feature allows the user to select between a simple volumetric calculation, and an adjusted calculation based upon the ambient pressure and temperature as related to the user's selected reference temperature and pressure. Selection of this feature is on the Settings Sampling Tab. Regardless of this feature being turned on, the record will record both the **Volumetric** value as well as the **STP** value. **Note: The Flow Rate units will change to scc/min or sL/min when the calibrator is in STP Mode.**
	Home Screen – Temperature is displayed in degrees Celsius or Fahrenheit. The Temperature units can be edited on the Settings Display page.

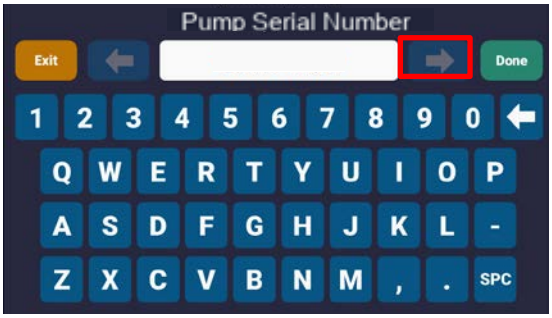
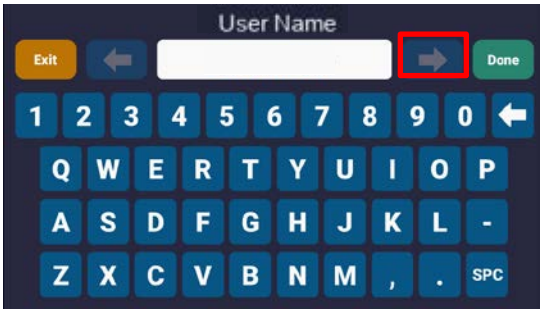
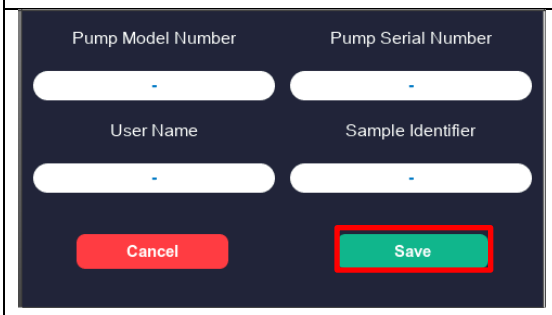
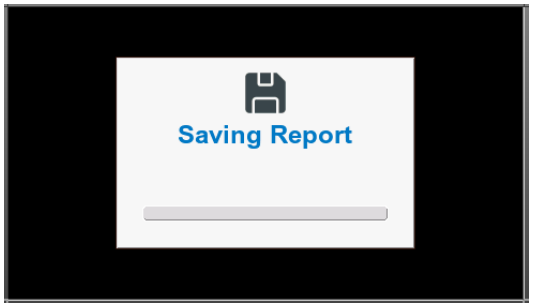
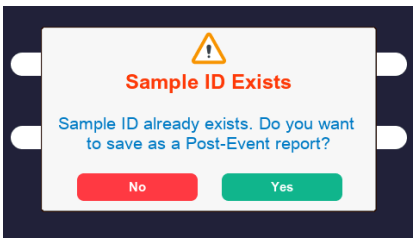
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Display Image	Description
	Home Screen – The Ambient Pressure is displayed in in/H_2O, mmHg, kPa, or hPa. The Pressure units can be edited on the Settings Display page.
	Home Screen Sample Start Button - To Start a Sample Set - Connect the flow source to the calibrator and touch the **Play** button icon "▶", to begin the averaging sample data set. **Note: Prior to starting a sample, the flow source must be running and the flow stabilized. Do not touch the Play button until the live flow reading appears stable.**
	Home Screen – Live Flow Rate displays the live flow rate measurement in the top section of the sample timer ring. Restart Sample Set - Touch the **Restart** button icon, "↻" to restart the averaging sample timer/data set. Stop Sample Set - Touch the **Stop** button icon, "■" to stop and reset the sample timer.
	Home Screen – Average Flow displays the flow rate average for the sample set being recorded. **Note: The Average Flow will appear once the Sample Timer reaches the completion of the sample ring designated time.**

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Display Image	Description
	Home Screen – Statistical information in the form of Percent Deviation is displayed for the averaging sample set. **Note: The statistical percentage font will turn from green to red if the percent difference between individual samples is outside the designated range.**
	Home Screen – Save Record Button. The save record button will become highlighted when the sample average time has been completed. Touch the **Save Record** button icon "" to begin input of the record detail. **Note: Selecting the Save Button will take you to the Recently Used Pumps screen.**
	Recently Used Pumps Screen – This screen will populate with recently used pump information. If unpopulated or the flow source name is not present, touch the button **Skip** to continue to input the record detail. If populated and the flow source is named, touch the field with the desired flow source, and the input detail will become pre-populated with that pumps model and serial number.
	Record Input Screen – The record detail contains four fields; Pump Model Number, Pump Serial Number, User Name, and Sample Identifier. Touch the field below the text "Pump Model Number" to continue to input the record detail. A keyboard will appear.
	Pump Model Keyboard – Enter in the Pump or Flow Source Model. Touch the forward arrow to advance to the Pump Serial Number keyboard.

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Display Image	Description
	Pump Serial Number Keyboard - Enter in the Pump or Flow Source Serial Number. Touch the forward arrow to advance to the Sample ID keyboard.
	User Name Keyboard - Enter in the operator information. Touch the forward arrow to advance to the Sample Identifier keyboard.
	Sample Identifier Keyboard - Enter in the unique sample identification. Touch the **Done** button to complete the record detail.
 	Record Input Screen – Review the record detail information. If correct, touch the **Save** button. The report saving window will appear. It may take up to 30 seconds to save the report file. **Note: If file name already exists, a window will appear asking if the sample set should be saved as a Post-Event report?** 

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4.5. Reports and Data Storage

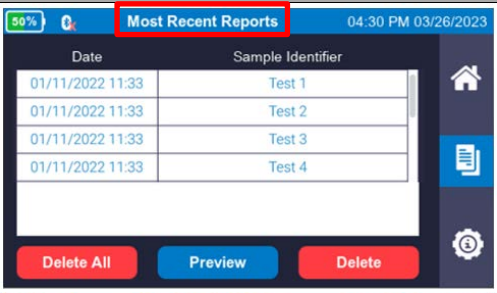
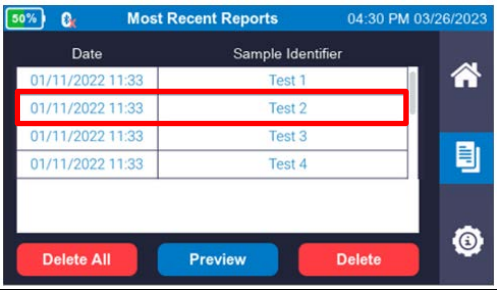
The access to reports is controlled by entering the **Reports "** **"** menu tab. The Most Recent Reports screen will update once you have saved your record. The screen displays the most recent calibration reports by date, allows for preview and for deletion of single or all reports.

If an existing sample ID is found in the internal memory when the SAVE button is pressed, the user is prompted to save this record as a post-cal linked to the first record denoted with a "_POST" behind the sample ID in the reports table (ex. Sample ID_POST).

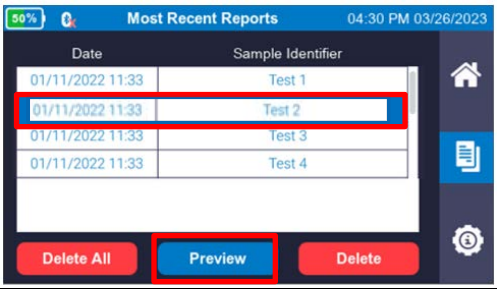
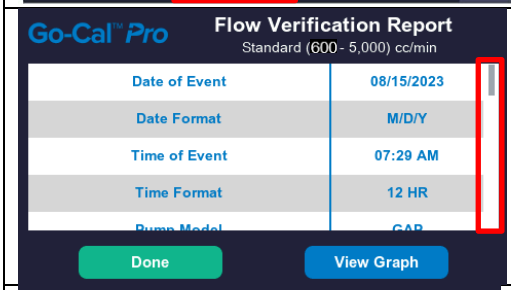
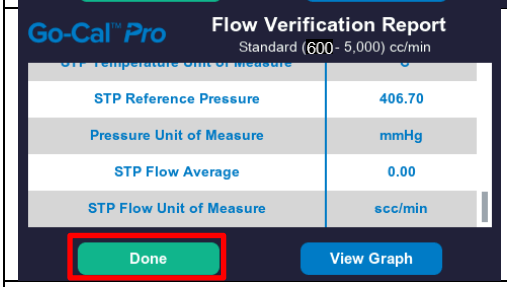
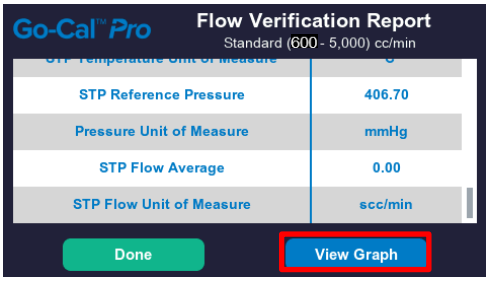
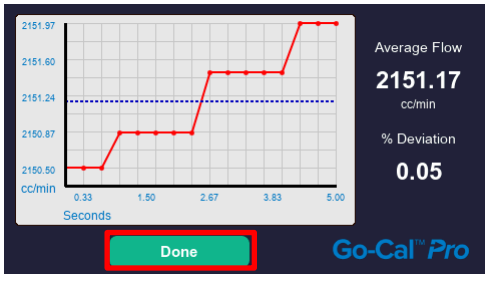
When a record is downloaded to Gilian Connect Pro software program, the Data file is created. A page will be displayed with the Date and Time, Sample ID, Pump Model, and a check box in the final column if it has a linked _POST file

If a linked post-event record is deleted, a new post-event record should be saved before downloading. If the initial record is deleted, the post-event record is deleted as well. When the memory is full, one or more records must be deleted prior to saving the new record.

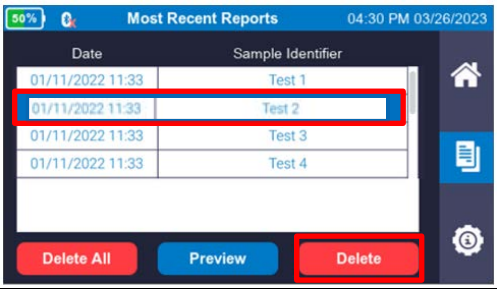
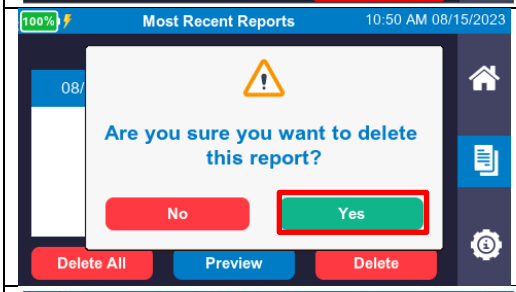
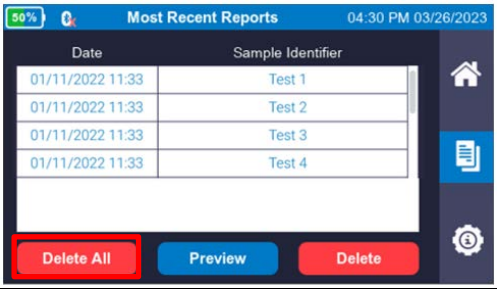
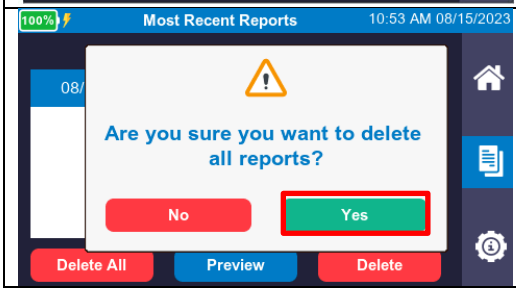
A Most Recent Reports screen reference display appears in the following table.

Display Image	Description
	Most Recent Reports Screen - Report Screen displays the most recent calibration reports. The reports are sorted by Date and Time, with the most recent at the top of the list. **Note: The Post-Event Reports are denoted with the _POST after the sample ID.**
	Scroll the page up and down using the touchscreen when seven or more records have been stored. **Note: The unit will store up to 100 reports in the active memory.**
	Touch the line of desired report to access options to preview or delete.

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Display Image	Description
	Preview a Report - With the report line highlighted, touch the **Preview** button.
	Report Preview Screen (Top Half) – displays the top portion of the report. Scroll down the display to view remainder of report.
	Report Preview Screen (Exit) –touch the **Done** button to return to the Most Recent Reports page.
	View Event Graph – touch the **View Graph** button to display a graph of the flow rate over time.
	View Graph Screen (Exit) –touch the **Done** button to return to the Flow Verification Report. **Note: All calibration report graphs will be shown in cc/min.**

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Display Image	Description
	Delete Single Report – with the report line highlighted, touch the **Delete** button on the display screen.
	Delete report window appears. Touch the **Yes** button to delete the single report.
	Deleting All Reports – To delete all reports, touch the **Delete All** button.
	The Deleting All Calibration Reports window will appear. Touch the **Yes** button to delete all reports.

4.5.1. Gilian Connect Pro

Gilian Connect Pro is a PC software application that provides a computer interface to help you manage and configure Gilian air sampling pumps and calibrators. The software manages data collected by the pump and allows linking flow verification events associated with the pump sampling event. Gilian Connect Pro can generate advanced calibration reports and advanced air sampling reports, which includes linked calibration records. Connection to the PC can be made using the included USB charging cable.

Gilian Connect Pro can be installed from the included thumb drive, or downloaded from the Sensidyne website (www.sensidyne.com).

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4.6. SmartCal

The Go-Cal Pro utilizes the USB-C port for use with the SmartCal function of the Gilian GilAir Plus pumps, by attaching to the pump docking station to the Go-Cal Pro using the SmartCal Calibration Kit P/N 911-1901-01-R (Not Included).

In order to use SmartCal with the GilAir Plus, select Go-Cal mode for SmartCal under the setup menu. Plumb the pump to the Go-Cal with your sample train, plug in the 780-0015-02-R cable to the back of the GilAir Plus Dock and the opposite end into the Calibration Adapter, plug the USB-C to USB-C cable into the Calibration Adapter and into the Go-Cal Pro USB-C port, set the pump in the dock position closest to the cables, set the flow rate, and start the calibration process. The pump will communicate with the Go-Cal Pro. Allow up to 2 minutes to complete the hands-free adjustments to the pump.

As measurements are sent to the pump, it will display the latest flow measurement on the screen. Allow the system to run until the calibration process is done and press the “Enter Key” button on the pump to save the calibration.

4.7. Maintenance

The Go-Cal Pro is designed so that little maintenance is required. However, annual calibration, cleaning, replacement of the battery assembly and replacement of the filter element may be required to ensure years of trouble-free operation. Surface cleaning should only be performed using a damp cloth and mild soap solution. Do not submerge any part of the instrument in water or place under running water.

Note: Go-Cal Pro Maintenance can only be performed by an authorized Sensidyne Service Center.

All electronic and battery components must be disposed of in a manner that corresponds to local regulatory requirements.

4.8. Short-Term Storage

Turn off the unit, the sampling source, and any attached output devices (if applicable). If the unit is not to be used daily, remove the sampling source connections. Prior to next use, plug in the power supply and connect it to the USB-C Port to recharge the unit for next day usage.

4.9. Long-Term Storage

If the Go-Cal Pro is not to be used for long periods of time, use the following procedures to keep the unit in proper working order.

1. Disconnect all cables from the unit.
2. Store unit indoors (Storage Temperature -10ºC to 60ºC/ 14ºF to 140ºF)
3. Recharge the unit (up to 6 hours) prior to next usage.

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4.10. Battery Charging and Capacity

The battery system in the Go-Cal Pro takes advantage of a new lithium chemistry known as NCA. This battery assembly is much safer than other lithium chemistries and provides a long service life.

The battery run time is strongly affected by the Screen Brightness, so if more operational time is needed, lower the Screen Brightness level in the Settings Tab.

4.11. Troubleshooting

If the firmware freezes up, power down the unit. Do not attempt to open the unit at any time. This may only be performed by an Authorized Service Center.

If the unit is powered on with an active flow source, the sensors will not be zeroed properly. Disconnect the flow source and power off the unit. Press the On/Off Power button again, with no flow source connected, and the unit's sensors will properly zero.

4.12. Icon Glossary

 **Battery Life**	 **Home Screen**	 **Reports Screen**	 **Settings Screen**
 **Play Button**	 **Save Record Button**	 **Restart Button**	 **Stop Button**
 **Low Battery**	 **Error**	 **Warning**	 **Bluetooth Icon**

4.13. Revision History

Revision	Description
A	Initial Release of Product. Firmware version 1.0.0
B	Updated Section 4.6 to new SmartCal Cable Kit Added Restart instructions to Section 4.3 - Factory Reset Firmware updated to version 1.0.1 to allow connection to Gilian Connect Pro
C	Section 4.5.1 Gilian Connect Pro – Added to Manual

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Revision	Description
D	Firmware Version updated to 1.0.7 Section 4.1 - Added to note to indicate that Flow Source must be stable before starting sample. Section 4.3 – Added Instructions to Touch Home icon after changing settings. Added Note to STP Reference Settings. Added Note to Check setting before Factory Reset. Section 4.4 – Added Note to Home Screen Sample Start Button. Section 4.5 – Added Note to View Graph Screen (Exit)

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NOTES

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Manufactured by:

Sensidyne, LP
1000 112th Circle N, Suite 100
St. Petersburg, Florida 33716
U.S.A.
800-451-9444 • +1 727-530-3602 • [fax] +1 727-539-0550
www.Sensidyne.com • info@Sensidyne.com

Authorized EU Representative

Schauenburg Electronic Technologies GmbH
Weseler Str. 35 · 45478
Mülheim-Ruhr Germany
+49 (0) 208 9 99 10 • +49 (0) 208 5 41 10 [fax]
www.schauenburg.com • international@schauenburg.com

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Gilian®

SENSIDYNE®
Industrial Health & Safety Instrumentation

1000 112th Circle N, Suite 100 • St. Petersburg, FL 33716 USA
(800) 451-9444 • +1 (727) 530-3602
www.Sensidyne.com • info@Sensidyne.com