
SMART-CAL™

CALIBRATION STATION

OPERATION MANUAL



851 Transport Drive
Valparaiso, IN 46383-8432

Phone: 888 4SENSIT
888 473 6748
219 465 2700

Fax: 219 465 2701
www.gasleaksensors.com

MADE IN USA

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SMART-CAL Station Set-up for SCal-N



SMART-CAL Station Set-up for SCal-D



Smart-Cal™ Calibration Station Operation Manual

Product Description-Smart Cal Station

The Smart-Cal™ Calibration Station performs automated calibration and record keeping for Sensit® HXG-3/3P, Sensit® Gold Series, Sensit® PMD and Trak®-It III Series Instruments. The calibrator communicates with those instruments that have the required two-way infrared communication link. Instruments that have this feature have a window on the right side of the housing. The Smart-Cal™ calibrator will calibrate all instrument sensors, reset the instrument clock, perform a pump flow block test, allow review of the data on screen and perform bump tests. The calibrator can be used as a stand-alone device or with SCal-D™ and SCal-N™ data management software. See Software Set-up section for specific requirements and instructions. The on-board memory can store up to 2450 records.

Product Description-SCal-D™ / SCal-N™ Data Management Software

The Data Management Software must be loaded onto a computer. This software is Windows® based and is compatible with Windows® 7 and XP. When the computer receives the information from the calibrator the data is sorted and stored. Various reports and alerts can be printed, e-mailed or just stored to automatically alert operators and supervisors of important data.

Specifications

Size (LxWxH):	10.75" x 6.75" x 4.5"
Weight (Lbs):	2.5
Operating Temperature:	32-120° F
Gas Connection-input:	¼ turn female luer
Gas Connection-output:	¼ turn male luer
Maximum pressure-input:	20 PSIG
Maximum gas-type inputs:	7
Maximum air-type inputs:	1

Standard Accessories

Calibrator Base w/cradle cut outs
 110vac power adapter
 Single line input (1/8" tubing - 5' long) with "Y(s)" to attach LEL, CO and H2S connections.
 Single line input (3/16" tubing - 5' long) for 100% methane or propane connection.
 Single line input 1/8" tubing 2' long with luer adapter for clean air below or away from station
 Instrument connection tubing with Luer adapter (24")
 Instruction Manual
 Data Management Software on CD (SCal-D™ or SCal-N™)
 For SCal-D™ - Serial to USB Converter
 For SCal-N™ - Serial to Ethernet Device

Accessories

20 PSI regulator w/4'tubing and male luer connection
 Demand-style regulators
 221 Liter cylinder/regulator adapter
 12vdc power outlet adapter

Factory Settable Features

Gas Supply pressure alert: This is set to alert the operator if the tank pressure is below what is adequate to properly calibrate the instrument. LEL, CO, H₂S and PRO are preset for a 2PSI minimum gas pressure. NAT is set at zero to allow connection to low pressure gas lines (6"wc). All gases can be piped using a zero pressure demand style regulator. Each of the pressure parameters is settable from the factory menu "Set Valves". These settings are in PSI. Valves 0=Air, 1=10 PPM HCN/Bal N₂, 2=LEL, 3=CO, 4=H₂S, 5=100%Methane, 6=0.1%Methane/Balance N₂, 7= 1.1% Propane. Please contact the factory for set up changes.

Hardware Set-up

Attach the appropriate gases to the gas sources. Inlet pressure must be no greater than 20PSI from any gas source. Ideal gas pressure is 2-5PSI. Combination gas bottles can be attached with the use of "T's" and/or "Y's" to attach to the various gas inputs. During the bump test only the LEL valve will open. It is therefore required to use "T's" and or "Y's" to connect a single gas bottle containing multiple gases if the bump test operation is used. Each of the connections is color-coded and has a female style luer. Be sure to check for gas tight connections.

- a. Green = Air
- b. Purple = 10 PPM HCN/Bal N₂
- c. Black = LEL
- d. Yellow = CO
- e. Orange = H₂S
- f. Red = 100% Methane
- g. Blue = 0.1% Methane/Balance N₂
- h. White = 1.1% Propane
- i. Instrument connection is stainless steel and is a male luer (opposite of gas connections).



Danger Fire or explosion risk from Flammable Gases that may be present. Do not use near spark or open flame.



Caution To prevent accidental leakage always shut off the gas supply to calibrator when not in use.

Plug the wall adapter into a 110vac with 1000ma output or greater or the valves will not operate (A cigarette lighter adapter can be used to supply 12vdc directly to the calibrator). Insert the power plug into the power receptacle on the back of the Calibrator. The Calibrator will now automatically power on.

Start Up

"SMART-CAL™" will be displayed on the top line and "Version X.XX" on the bottom line for 2 seconds. Serial number will be displayed on the bottom line for 2 seconds. "Date" on the top line and the "Time" on the bottom line for 2 seconds. "SMART-CAL™" will be displayed on the top line and "Ready..." on the bottom line continuous (this is the ready position). Display is always backlit.

Operational Buttons

The Smart-Cal Station has a three button operation. The Left Button is to start the calibration process (Calibrate) or to return to the “Ready...” display (Clear) after the previous instrument has been tested. The Right button is the Bump Test. This allows the operator to test the instrument between calibrations for proper operation. This will test the current calibration readings in the instrument memory against the sample gas. If the instrument readings are within 20% of the last calibration numbers the bump test is a pass. If they are not, “Fail” will appear on the screen and calibration is required. The Center button is the Menu button. From here you can review the test log, erase the memory and set the clock. To enter the menu, hold the MENU button for 5-6 seconds to access the options. This function is password protected.

Performing Calibration

Prepare the instrument by powering on the instrument followed by pressing the power button for 2-3 seconds and releasing until “Smart-Cal Communicating” is displayed on the instrument. Next place the instrument into the proper position of the cradle and attach the instrument hose to the proper location on the instrument. Press the left button and calibrator will display “Searching” for the instrument. If the instrument is communicating to the calibrator the process will continue.



Caution Only place one instrument at a time in the Smart-Cal™ mode within 4 feet of the Smart-Cal™ Calibrator.

After an instrument begins communicating (“Searching”) with the calibrator, the display on the calibrator will read “Device Found”. Next it will display the brand of instrument (i.e. Sensit or Trak-It) and its serial number. The version number of the instrument will automatically determine what gases should be calibrated. If the instrument and the calibrator do not communicate within 15 seconds press the “Calibrate/Clear” button on the calibrator. “IR Failed” will be displayed. Place the instrument in the working display, access the Smart-Cal feature and retry. If unsuccessful the instrument or calibrator may need service. Try another instrument to confirm calibrator is working. Contact manufacturer with any questions.

Testing will take place in the following order:

1. The calibrator will automatically reset the date and time of the instrument it is testing. This creates consistency for record keeping purposes.
2. “Autozero” to test the pump flow block and sensors for proper zero reading. Display will read “FAIL” followed by the type of sensor failed such as Pump Flow, LEL, NAT, PRO, O2, CO or H2S on the calibrator if any specifications are not met. Calibration cannot occur if any of these have failed. If this has failed the display will read “Autozero Fail” on the top line and sensor type on the bottom Line. This should remain on the display until the left button is pressed again at which point “Ready...” will show on the display. Pump flow is checked by all internal valves closing, instrument pump runs and looks for flow block parameters. Multiple sensor failures are displayed individually for 1-2 seconds each. If any of these failures occur the instrument will display “Calibration Failed” on its display. Pressing the left button two times will restart the calibration process.
3. The calibrator will automatically apply the gases to the instrument. Calibration occurs in the following order as the gases are required: 50% LEL Methane, CO, H2S, 100% methane or 50%LEL propane. The instrument will only calibrate to the gas it is set to in the case of

methane or propane. If the instrument is set to “NAT” the calibrator will not calibrate propane and vice versa. If the pressure from the gas supply is too low for any gas (bottle empty) the calibrator will display “Check gas supply”. Press any button on the calibrator to continue.

4. At the end of the calibration process for each gas (approximately 15 to 120 seconds for each gas) the calibrator will display “PASSED” or “FAIL”.
5. At the end of the completed calibration if any sensor has failed the calibrator will display “SN XXXXX” CAL FAIL” on the top line and the type of gas failed on the bottom. Pressing the left button (CLEAR) will clear the display and default to the “Ready...” position.
6. The instrument will now allow the pump to operate and purge the sensors of any gas. Press the power button two times to go to the working display.

Performing a Bump Test

To perform a bump test the instrument must be in the “Smart-Cal Communicating” mode. Pressing the right button will begin the process of testing LEL, CO, H2S (or combination required) sensors by applying the necessary gases (as determined by the instrument model number) for up to 30 seconds while looking for an instrument reading of at least 80% of the calibrated value. During the process the calibrator will display “Bump Test” on the top line and “TESTING...” on the bottom line. Autozero, will be done first, followed by CO, LEL, and finally H2S. 100% gas volumes are not tested during this operation.

If at the end of the Bump Test any gas has failed the display will read “Bump Test FAIL” on the top line and list the sensor type that failed on the Bottom line. Multiple sensor failures are displayed individually for 1-2 seconds each. Pressing the left button will return to the ready position. Pressing the left button one more time will start the calibration process. It is not necessary to change anything on the instrument at this time.

When no fail occurs then the calibration display will show “Bump Test Passed” on the top line and Serial Number on the bottom line and automatically return to the ready position.

The User Menu

The Center button is the Menu button. You may view the actual gas supply pressure by pressing the MENU button for 1-2 seconds and releasing. Pressure and the type of gas will be displayed on the top line and the pressure reading will be listed on the bottom line. Use the right button to scroll and review each gas pressure. Use the left button to exit and return to the main menu.

To access the user options hold the MENU button for 5-6 seconds. This is password protected. When the password is needed advance the displayed number (1000) by pressing the right button to 1122. Use the center button to reduce the number. The left button enters the number. If you do not put in the correct password the display will show “PASSWORD” on the top line and “FAILED” on the bottom line. It is necessary to press the MENU button for 5-6 seconds and attempt entering the password again.

After successfully entering the password the various menu items can be reviewed. At this time the top line will display “User Menu”. The bottom line will display various options including Time/Date, Clock Set, and Review. Use the left button to view the various options. Press the center button to access that option.

Clock set allows the adjustment of the date and time of the calibrator. Press the center button. The Day will flash. Use the center button to advance the number or month of the flashing location. Use the right button to advance to the next location to change. Use the left button to save the changes and return to the USER MENU. Pressing the left button two more times returns you to the ready position.

Review allows you to view the activities at this calibrator on the dates it was used. Press the center button to enter a particular date. Use the right button to scroll through the various serial numbers and test results for those serial numbers on that date. Use the left button to go back to the dates. Pressing the left button again gets you back to the User Menu. Pressing two more times puts the calibrator in the ready position.

Warranty

The Smart-Cal™ Calibration Station has a two-year limited warranty for defects in materials and workmanship. If within the warranty period the Smart Cal Calibration Station fails to operate from such defects return it postage paid to the address below. It will be repaired or returned at our option. This warranty covers normal use and does not cover damage which may arise from alteration, tampering, misuse, abuse, neglect or improper maintenance. SENSIT TECHNOLOGIES is not liable for lost data due to malfunction of Smart-Cal Calibration Station. Proof of purchase may be required before warranty is rendered.

Shipping Address
SENSIT TECHNOLOGIES
851 Transport Drive
Valparaiso, IN 46383

Phone: (219) 465-2700
Fax: (219) 465-2701
www.gasleaksensors.com

This warranty gives you specific legal rights, and you may also have other rights that vary from state to state.

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851 Transport Drive • Valparaiso, Indiana 46383 USA
Tel: 219/465-2700 • Fax: 219/465-2701

Email: info@gasleaksensors.com • Web: www.gasleaksensors.com