SMART-CAL 360

CALIBRATION STATION

INSTRUCTION MANUAL

READ AND UNDERSTAND INSTRUCTIONS BEFORE USE.

SENSIT Technologies

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CE

QUICK START INSTRUCTIONS

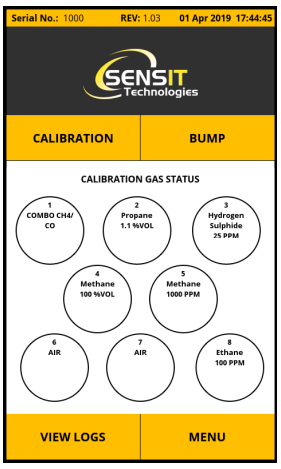
PLEASE REFER TO THE REST OF THE INSTRUCTION MANUAL FOR MORE DETAILED INFORMATION.

1. Find a suitable location that is clean, dry, and in a gas-free area. Install the SMART-CAL 360 base on the bottom of the station with the provided screws, as pictured. Place the assembly onto a flat surface.

2. If SCAL-360–D (desktop) or –N (network) software is to be used, attach the appropriate USB or Ethernet cable(s). Refer to instruction manual if utilizing Wi-Fi.
3. Attach the appropriate blade adapter to the power supply and plug it into the power source and the back of the station. The station will power on automatically, indicated by a blue status LED on the top of the unit.
4. Allow the station to complete the start-up process and reach the main display. Press the CONTINUE button on the System Check screen to acknowledge and move on to the Home Screen.
5. Prepare the calibration gas:

   a. Attach the regulators to the gas bottles.
   b. Attach the included hoses in the hose kit to the regulators, the unit hose to the metal fitting on the back of the station, and the fresh air hose(s) to the appropriate "Air" port connection(s) shown as shown on-screen.
   c. Attach the fittings on the hoses to the appropriate gas port connections on the back of the station as shown on-screen. If the configuration shown does not match your needs, it can be re-configured in the Supervisor Menu (refer to the instruction manual and contact SENSIT Technologies for the password).
   d. If using positive pressure regulators with ON/OFF knobs, turn them on.

6. Attach the WI-FI/Bluetooth Antenna.
7. Power on a compatible SENSIT instrument to be calibrated or bump tested. After the instrument completes the warmup process, put it into SMART-CAL mode by pressing and holding the "A" button (left) for 1-2 seconds. If performing a calibration, allow an additional 5-10 minutes of warmup time.
8. Place the instrument in the cradle and attach the instrument hose. Press the CALIBRATION or BUMP button on the Home Screen of the station.
9. Allow the calibration or bump test process to complete. The result will be given on-screen at the end, and the LED on the top of the unit will reflect the result:



   • WHITE – ready
   • BLUE – busy / in progress
   • YELLOW – check gas supply
   • GREEN – calibration passed
   • RED – calibration failed

FOR YOUR SAFETY

⚠ **NOTICE**: This safety symbol is used to indicate a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.

⚠ **WARNING**: Read and understand this manual fully before use.

⚠ **WARNING**: Any disassembly or repair of the instrument must be done by a factory certified technician.

⚠ **WARNING**: Follow the manual instructions and testing methods.

⚠ **WARNING**: Only use in areas that are known to be free of combustible gas hazards.

⚠ **WARNING**: Only for use in areas that are clean and dry.

⚠ **WARNING**: Turn all regulators and/or gas valves off when the SMART-CAL 360 is not in use.

⚠ **WARNING**: If your calibration setup has line gas plumbed directly into the station (instead of bottled 100% volume methane), it is recommended to use an on-demand regulator.

CONTENTS

PARTS AND ACCESSORIES

STANDARD ACCESSORIES (INCLUDED)

Instrument Cradle 365-00532

Screw for calibrator base (2) 331-00189

Power adapter 190-00007

Hose Kit 880-00064

Instruction Manual 750-00086

Calibrator protective dust cover 360-00636

SD Card 360-00243

SCAL 360 Data Management Software 500-SC360-01

DESKTOP VERSION

USB Cable 360-00637

NETWORK VERSION

Ethernet Cable 360-00027

Wi-Fi/Bluetooth Antenna 360-00481

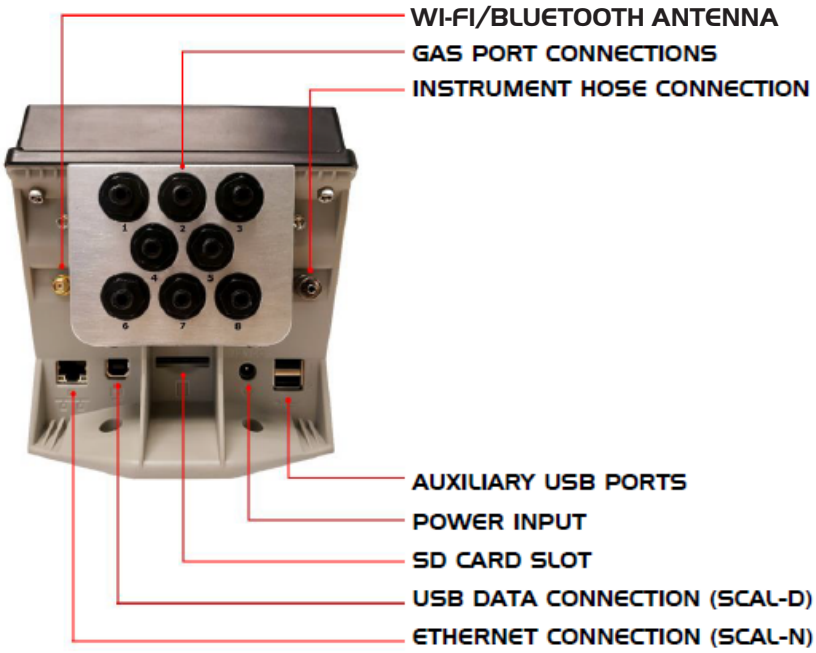
ACCESSORIES AND REPLACEMENT PARTS

SCAL 360 License Renewal 500-SC360-02

Gas Input Fittings (with filter) 360-00520

SMART-CAL 360 PRODUCT DESCRIPTION AND FEATURES

The SMART-CAL 360 performs automated bump testing, calibration, and record keeping for Sensit instruments through a touch screen user interface (for instrument compatibility list, refer to the specification page). The 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 360 Data Management Software. See software setup section for specific requirements and instructions. The calibrator automatically records all calibration and bump test attempts, whether pass or fail, to ensure 100% compliance. The on-board memory can store up to 6,000 calibration records and 12,000 bump test records.



SCAL DATA MANAGEMENT SOFTWARE PRODUCT DESCRIPTION

SENSIT offers data management software that is used to download and manage calibration and bump testing records from any of our calibration stations. This allows for automatic data transfer and notification for compliance reports as well as many other features listed below. There are two different versions of the software, depending on the needs of the customer.

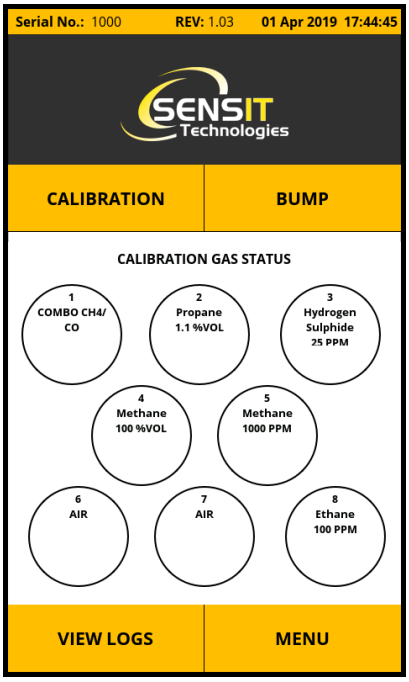
SCAL-D 360 (SOLD SEPARATELY)

The desktop version of the software (SCAL-D 360) is single-user software and generally used with a single station or only a few stations. Each station communicates directly with the computer that SCAL-D 360 is installed on via a serial connection.

SCAL-N 360 (ADMIN AND USER) (SOLD SEPARATELY)

The network version of the software (SCAL-N 360) can remotely communicate to any number of stations over a company's network, regardless of their physical locations.
SCAL-N 360 operates within the network and does not require an internet connection. All stations share one central SQL server database, allowing instrument users to calibrate/bump test their instruments at any location.

- The administrator, using SCAL-N 360 Admin, adds stations and locations, downloads data, and can assign supervisors and instrument users. SCAL-N 360 Admin software is the link between stations in the field and the database where information is stored.
- Any number of supervisors, using SCAL-N 360 User, can view and manage instruments specific to them, assign instrument users, and claim unassigned instruments. SCAL-N 360 users have limited access to the database and do not have the ability to download from stations, ensuring there are no conflicts.



NOTE: For calibration and bump test records to be downloaded from the SMART-CAL 360 with either SCAL-D 360 or SCAL-N 360, the station must be powered on and on the "Home Screen", as pictured.

SPECIFICATIONS

Size (station only):	10.6” x 5.4” x 6.1” (269mm x 137mm x 155mm)
Size (with instrument cradle):	11.0” x 15.2” x 6.1” (280mm x 386mm x 155mm)
Weight (station only):	4.1 lbs. (1.86 kg)
Weight (with instrument cradle):	6.1 lbs. (2.77 kg)
Power adapter:	Input: 110 – 240 VAC
	Output: 15 VDC
Operating & Storage Temperature:	32°F to 122°F (0°C to 50°C)
Maximum Input Pressure:	30 PSI (2 Bar)
Supported Instruments (as of 27-Mar-20):	Legacy - IR Communication
	SENSIT HXG-3* / HXG-3P
	SENSIT GOLD / GOLD 100 / GOLD CGI
	TRAK-IT III CGI
	SENSIT CO / HCN
	SENSIT GOLD G2
	TRAK-IT IIIa
	SENSIT PMD / IRED
Data Storage Capacity:	6,000 Calibration Records
	12,000 Bump Test Records
	120 Gas Cylinder Logs

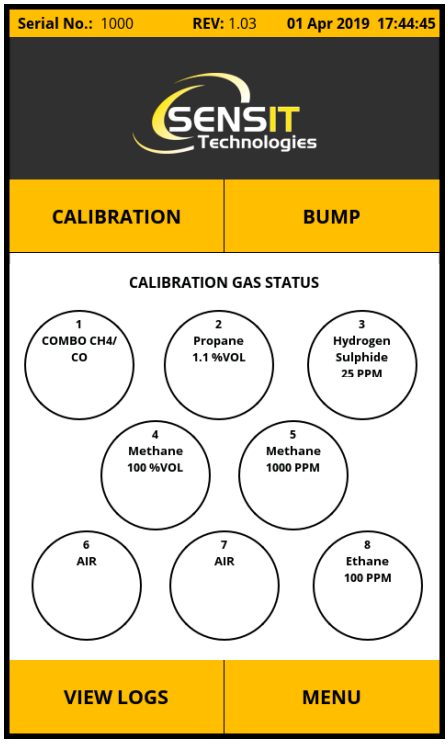
* If using an on-demand style regulator with the HXG-3 (non-pump version), the SMART-CAL 360 must be equipped with a pump.

INSTALLATION AND SETUP

The SMART-CAL 360 requires very minimal setup before use. From opening the box to calibrating an instrument takes approximately 20 minutes.

1. Choose a location for the SMART-CAL 360 that is relatively clean, dry, and in an area known to be free of combustible gases. One power outlet is required. If the network version of Data Management software will be used, either an Ethernet connection to the station or access to a Wi-Fi network will be required.
2. Secure the instrument base to the station via 2 bolts on the bottom.
3. Plug in the provided AC wall adapter to the SMART-CAL 360. It will power on automatically, indicated by a blue LED on top of the station. The screen will remain blank for a few seconds as the system boots. The splash screen will then be displayed followed by the system check. Press CONTINUE after the system check is complete.
4. Attach the WI-FI/Bluetooth Antenna.

   NOTE: If any failures occur during the system check, contact SENSIT Technologies for assistance.



5. After the start-up process on the station is complete, the main display should be shown. On this display will be the default valve configuration, which covers most standard calibration kits. If you need to change this configuration based on the calibration gas you will be using for your instruments, first follow the steps listed in the next section for valve configuration, then proceed with these instructions.
6. Attach the calibration adapter hoses to each regulator and attach the regulators to the cylinders of calibration gas.

   NOTE: If you are not using a calibration kit provided by SENSIT, any gas supplied to the SMART-CAL 360 must (1) be the correct value and balance listed in the instruction manual of the instrument you are calibrating, (2) have a flow rate of between 0.3 - 0.5 lpm, and (3) not exceed 30 psi.
7. Following the on-screen valve configuration, attach each calibration adapter hose to the appropriate fitting on the back of the SMART-CAL 360. Each fitting on the back of the station is marked with a number that corresponds to valve list on the main display.

The setup is complete. The hardware will need to be tested by performing either a calibration or bump test (refer to “Operation and Use” section).

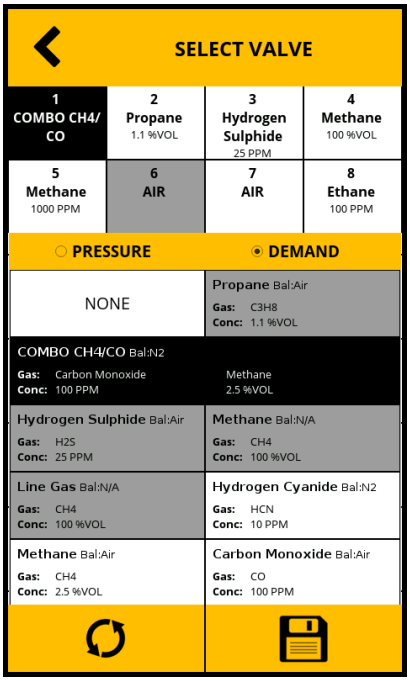
VALVE CONFIGURATION

Seven out of the eight valve inlet connections on the back of the SMART CAL 360 are fully configurable (valve 6 is reserved for fresh air). By default, valves will be setup for the most common configurations:

Valve 1: 2.5%V/V Methane / 100ppm CO combo gas
Valve 2: Line Gas (for 100% V/V Methane calibration)
Valve 3: 25ppm H2S
Valve 4: 0.1% V/V (1000ppm) Methane
Valve 5: 1.1% V/V Propane
Valve 6: Clean air (not configurable)
Valve 7: Clean air
Valve 8: 100ppm Ethane

If any of your instruments require calibration gas that isn't listed above, or if you need to change the existing configuration, configure the valves by following the instructions below.

1. From the main display, select the menu button on the bottom right.
2. Enter the supervisor password (contact SENSIT if you need the password). "Supervisor Menu" should appear at the top of the screen.
3. Locate and select "Valve Configuration" from the list.
4. For each gas you want to setup, select one of the valves from the top of the list, whether you will be using a demand or positive pressure regulator, and the appropriate gas from the list.
5. After all the valves are configured, hit the save icon on the bottom right. Hit the arrow in the upper left to return to the main display.



OPERATION AND USE

NOTE: The below instructions for performing a calibration and bump test are generalized to include all instruments manufactured by SENSIT that the SMART-CAL 360 supports. For more specific and in-depth instruction, check the instruction manual for your specific instrument, or check www.gasleaksensors.com to see if an instructional video exists.

PERFORMING A CALIBRATION

INSTRUMENTS WITH IR COMMUNICATION

1. Power on the instrument and allow the warmup to complete. Turn on the regulators/valves for the gas supply.
2. Put the instrument into SMART-CAL mode by pressing and holding the power button for 1-2 seconds while on the working display, and releasing. The screen will show "Smart-Cal Communicating", or a similar message. If necessary, check the instruction manual for your specific instrument.

3. Place the instrument into the proper cutout position of the cradle and attach the instrument hose to the inlet of the instrument. For Trak-It instruments, a pig-tail assembly is required.
4. On the SMART-CAL 360, press the CALIBRATION button. "Searching" will be displayed while the station and instrument establish communication. After it has been established, and the model type and serial number of the instrument are displayed, no other input is required. Calibration will proceed and give a result after completion.

Calibration will go through the following steps:

1. Establish communication, transfer data, and automatically set the date and time on the instrument.
2. Flow check.
3. Fresh air purge and Autozero.
4. Calibration.

The status LED light on top of the SMART-CAL 360 indicates:

- WHITE – ready
- BLUE – busy / in progress
- YELLOW – check gas supply
- GREEN – calibration passed
- RED – calibration failed

PERFORMING A BUMP TEST

INSTRUMENTS WITH IR COMMUNICATION

1. Power on the instrument and allow the warmup to complete. Turn on the regulators/valves for the gas supply.
2. Put the instrument into SMART-CAL mode by pressing and holding the power button for 1-2 seconds while on the working display, and releasing. The screen will show “Smart-Cal Communicating”, or a similar message. If necessary, check the instruction manual for your specific instrument.
3. Place the instrument into the proper cutout position of the cradle and attach the instrument hose to the inlet of the instrument. For Trak-It instruments, a pig-tail assembly is required.
4. On the SMART-CAL 360, press the BUMP button. “Searching” will be displayed while the station and instrument establish communication. After it has been established, and the model type and serial number of the instrument are displayed, no other input is required. Calibration will proceed and give a result after completion.

Bump testing will go through the following steps:

1. Establish communication, transfer data, and automatically set the date and time on the instrument.
2. Flow check.
3. Fresh air purge and Autozero.
4. Bump test.

The status LED light on top of the SMART-CAL 360 indicates:

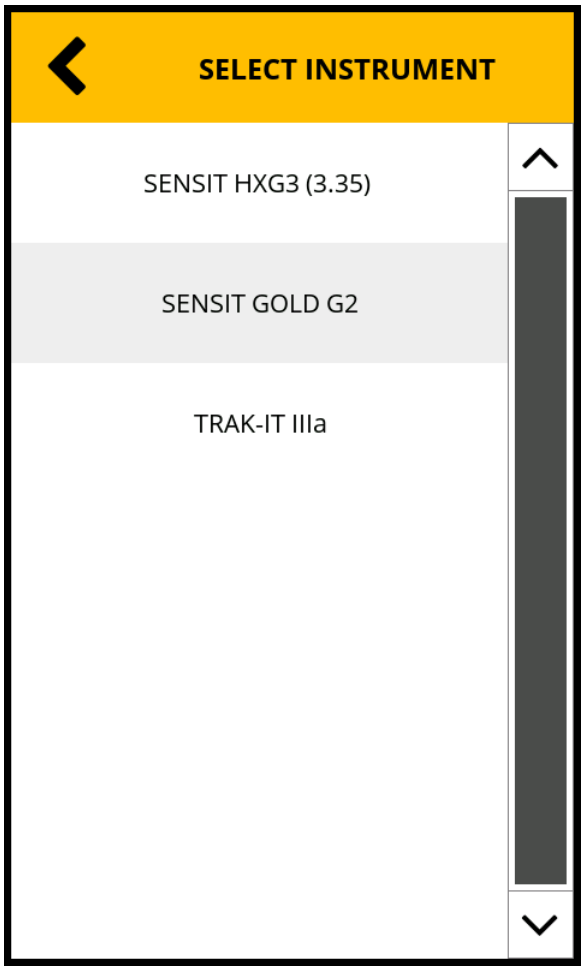
- WHITE – ready
- BLUE – busy / in progress
- YELLOW – check gas supply
- GREEN – bump test passed
- RED – bump test failed

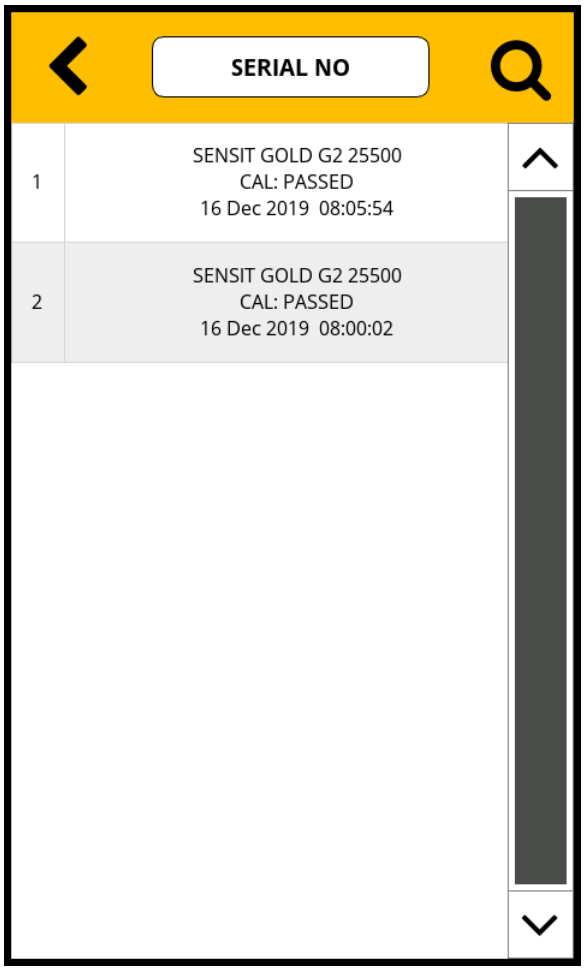
VIEWING LOGS

Anytime a calibration or bump test is attempted using the SMART-CAL 360, a record of that attempt is saved on the internal memory (whether the result is a pass or fail). These records can either be viewed directly on the station through the user interface or uploaded to a computer or server and viewed using the Data Management software.

To view the records directly on the station, select the VIEW LOGS button from the main display. The view logs menu will be displayed, which organizes records by first by instrument type. After the appropriate instrument type is selected, all records for that type are displayed organized by date and time. Each record will also show the instrument serial number, whether the record is for a calibration or bump test, and what the result was. When a record is selected, a breakdown is shown for the result of each test performed. For the color-coded sections, green indicates pass, red indicates fail, and yellow indicates a gas supply or flow issue.

Additionally, if you are looking for a record pertaining to a specific instrument, you can search for it using the serial number of the instrument.





SD CARD FEATURES

The SMART-CAL 360 introduces two new features that utilize the built-in SD card slot: backing-up the data that is stored on the station and updating the software.

An SD card is provided with every station and is installed in the slot below the manifold on the back of the station.

DATABASE BACKUP AND RESTORE

The SMART-CAL 360 by default has the Auto Backup feature enabled, which means that once per day the station will automatically create and save a backup. This will be done up to 10 times before the oldest backup is erased. Backups can also be created manually from the "Backup/Restore Database" menu in the Supervisor menu.

Contact SENSIT Technologies if you need assistance with this feature.

SOFTWARE UPDATES

SMART-CAL 360 software can be updated by the user through the SD card slot. The software is loaded onto the card and then updated through the user interface. Contact SENSIT Technologies if you need assistance with this feature.

SUPERVISOR MENU

The supervisor menu has options that may need to be changed or adjusted in the field. To access the supervisor menu, select the menu button in the bottom right of the main display. Enter the supervisor password. "Supervisor Menu" should appear at the top of the display.

NOTE: This menu is password protected. If you do not have the password and need to access this menu, contact SENSIT Technologies for assistance.

SET DATE/TIME

Adjustment for date and time of the station. The date and time are used to timestamp records and update the date and time of any instrument connected to the station.

SET TIME ZONE

Adjustment for the time zone of the station.

NETWORK SETTINGS

Network setup for LAN/WAN, IP address, gateway, etc. Only available for stations configured as SCAL-N.

BACKUP/RESTORE DB

Allows user to take manual backups of the database and restore the database using a backup. Normally backups are done automatically (if the "Auto Backup" option is enabled) and does not need to be done manually.

VALVE CONFIGURATION

Setup for how gas cylinders are attached to the manifold on the back of the station.

RESET VALVE CONFIGURATION

Resets the valve configuration to the default setup.

CYLINDER TRACKING

Enable or disable cylinder tracking feature. This allows the user to enter details about each gas cylinder attached to the station such as expiration date and lot numbers. This information can then be retrieved by SCAL 360 Data Management software to send alerts related to gas usage.

ERASE CAL/BUMP LOGS

Password protected option that permanently erases all records. Contact SENSIT Technologies before using this option.

RESET SETTING

Password protected option that resets all settings in the station to default values.

CALIBRATE PRESSURE SENSOR

Calibration procedure for the internal pressure sensor of the station. Generally, this is only done once at the factory and does not need to be reset.

SET LANGUAGE

Change display language used in the user interface of the station. Currently supported languages are English and Turkish.

SET BACKLIGHT

Adjustment for brightness of the display backlight.

TLS 1.2 SUPPORT

Option to enable or disable TLS 1.2 security support (applies to SCAL-N only)

SYSTEM REBOOT

Reboots the station.

SHUT DOWN

Shuts down power to the station. This is the preferred method to power the station off, rather than unplugging it.

ABOUT SYSTEM

Displays the system and application software revisions numbers as well as license information.

MAINTENANCE AND CARE

To keep the SMART-CAL 360 clean, and to protect and extend the life of the touchscreen, it is recommended to keep the provided dust cover on the station when it is not in use.

It is recommended to turn all regulators and/or gas valves off when the SMART-CAL 360 is not in use.

If your calibration setup has line gas plumbed directly into the station (instead of bottled 100% volume methane), it is recommended to use an on-demand regulator.

FILTER REPLACEMENT

The SMART-CAL 360 incorporates a hydrophobic dirt and water filter on each of the 8 hose connections on the back of the station. Over time is it possible these filters may become clogged with debris or oils from inside the gas cylinders, which would result in "Check Gas Supply" errors. If this happens, or if the filter looks damaged or frayed, the filter will need to be replaced.

To replace a filter:

1. Disconnect the tubing from the fitting and remove the old filter using a 9/16" (15mm) wrench or socket. The plastic housing and filter are one piece and will be replaced together.
2. Discard the old O-ring and place the new one in the cavity as pictured.
3. Install the new filter (do not overtighten) and reconnect the tubing.

4. Test that the filter is sealed and working properly by performing either a bump test or calibration using any compatible instrument that would utilize that connection.

TROUBLESHOOTING

FLOW BLOCK CHECK ISSUES

For every calibration and bump test of pump-driven instruments, the SMART-CAL 360 will perform a flow block check to ensure the sampling system of the instrument is sealed. This is done by restricting air flow to the instrument and checking if the built-in flow block error message of the instrument is triggered. This is no different than manually checking the instrument for flow block by blocking the inlet with a finger.

If the flow check fails, it is important to verify there is not an issue with either the instrument or instrument hose, because either is more likely to have a compromised seal than the SMART-CAL 360.

To check the instrument, disconnect the instrument hose and press and release the A button to return to the working display. First, make sure there is no buildup of dirt or debris on the inlet fitting. If there is, that could cause the connection between the instrument hose and the inlet to not seal properly. Clean the fitting if necessary. If the fitting looks good, place a finger over the inlet of the instrument. Within 5 seconds, a flow blocked message should appear on screen. If that message does not appear, or if it takes a significant amount of time, the sampling system of the instrument isn't sealed properly.

If the instrument shows the flow block message properly, check the instrument hose by attaching it to the instrument as you normally would, and disconnecting the end of the hose that is attached to the station. Perform the same flow block check as outlined above by blocking the end of the hose. If a flow block message is not achieved, replace the instrument hose.

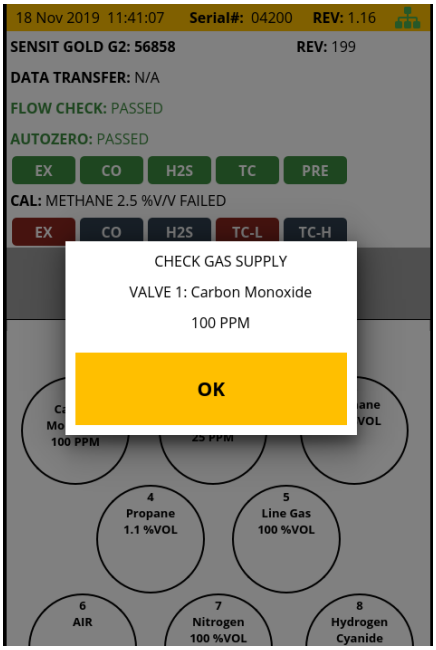
COMMUNICATION ISSUES

If communication issues are experienced between the SMART-CAL 360 and the instrument, try the following steps. Contact SENSIT Technologies for assistance if issues persist.

1. Ensure that nothing is blocking the space between the IR window on the side of the station and the instrument, such as any tubing, gooseneck, carrying case strap, etc.
2. Ensure there is no dirt buildup or other debris on the IR window on either the station or instrument.
3. Rule out interference from overhead fluorescent light sources (if applicable) by temporarily covering the top of the station and instrument.

CHECK GAS SUPPLY ERRORS

The SMART-CAL 360 incorporates a pressure sensor that is used to alert the operator if a problem is detected with the gas supply for each port. This is indicated by a message on screen and a yellow light in the dome on the top of the unit during calibration or bump testing. Follow these steps resolve this issue:



1. If the check gas supply error was triggered for the 100% methane valve, and you are using line gas, that valve should be setup to reflect that. If it doesn't say "line gas", refer to the valve configuration section in this manual or Contact SENSIT Technologies for assistance.
2. Ensure that the gas supply for the valve that gives the error message is turned on and that gas is flowing (applies to positive pressure regulators only).
    a. If you are not sure if gas is flowing, temporarily remove the hose connection from the port on the back of the station, block the end of the hose with your finger for a couple seconds, and release. You should hear and/or feel a release of pressure.
3. Inspect the filter fitting on the valve that is giving the error and the fitting on the hose that attaches to it. Make sure the connection isn't loose and neither fitting has a visible crack. If no obvious issues are found, temporarily replace the filter, either with a new one or from a valve position that isn't being used:

    a. Disconnect the tubing from the fitting and remove the current filter using a 9/16" (15mm) wrench or socket.
    b. Remove the O-ring and place the new one in the cavity as pictured.
    c. Install the new filter (do not overtighten) and reconnect the tubing.
    d. Continue the operation by pressing "OK" on the screen. If replacing the filter fixes the issue it will need to be replaced permanently.
4. If you verified there is no issue with the gas supply or filter and the error was still shown, press "OK" on the screen. The calibration will attempt to proceed.
    a. If calibration completes successfully, the check gas supply message was displayed when it shouldn't have been. This could be because the valve configuration is incorrect. Refer to that section in this manual or contact SENSIT Technologies for assistance.

NOTES

EU WASTE ELECTRICAL AND ELECTRONIC EQUIPMENT (WEEE) DIRECTIVE

In August of 2005, the European Union (EU) implemented the EU WEEE Directive 2002/96/EC and later the WEEE Recast Directive 2012/19/EU requiring Producers of electronic and electrical equipment (EEE) to manage and finance the collection, reuse, recycling and to appropriately treat WEEE that the Producer places on the EU market after August 13, 2005. The goal of this directive is to minimize the volume of electrical and electronic waste disposal and to encourage re-use and recycling at the end of life.

Sensit Technologies LLC has met its national obligations to the EU WEEE Directive. Sensit Technologies LLC has also elected to join WEEE Compliance Schemes in some countries to help manage customer returns at end-of-life. If you have purchased. Sensit Technologies LLC branded electrical or electronic products in the EU and are intending to discard these products at the end of their useful life, please do not dispose of them with your other household or municipal waste. Sensit Technologies LLC has labeled its branded electronic products with the WEEE Symbol (figure above) to alert our customers that products bearing this label should not be disposed of in a landfill or with municipal or household waste in the EU.

WARRANTY

Your SMART CAL 360 is warranted to be free from defects in materials and workmanship for a period of two years after purchase. If within the warranty period, your instrument should become inoperative from such defects, the unit will be repaired or replaced at our option.

This warranty covers normal use and does not cover damage which occurs in shipment or failure which results from alteration, tampering, accident, misuse, abuse, neglect or improper maintenance. Proof of purchase may be required before warranty is rendered. Units out of warranty will be repaired for a service charge. Internal repair or maintenance must be completed by a SENSIT Technologies authorized technician. Violation will void warranty. Units must be returned postpaid, insured and to the attention of the Service Dept. for warranty or repair. This warranty gives you specific legal rights and you may have other rights which vary from state to state.

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MADE IN THE USA
WITH GLOBALLY SOURCED COMPONENTS

SENSIT Technologies