RKI
INSTRUMENTS

SDM-6100
Docking Station
Operator's Manual

RKI Instruments, Inc.
www.rkiinstruments.com

WARNING

Read and understand this instruction manual before operating instrument. Improper use of the gas monitor could result in bodily harm or death.

Periodic calibration and maintenance of the gas monitor is essential for proper operation and correct readings. Please calibrate and maintain this instrument regularly! Frequency of calibration depends upon the type of use you have and the sensor types. For most applications, typical calibration frequencies are between 3 and 6 months but can be more often or less often based on your usage.

Product Warranty

RKI Instruments, Inc. warrants gas alarm equipment sold by us to be free from defects in materials, workmanship, and performance for a period of one year from the date of shipment from RKI Instruments, Inc. Any parts found defective within that period will be repaired or replaced, at our option, free of charge. Parts must be returned to RKI Instruments, Inc. for repair or replacement. This warranty does not apply to those items which by their nature are subject to deterioration or consumption in normal service, and which must be cleaned, repaired or replaced on a routine basis. Examples of such items are:

- Absorbent cartridges
- Fuses
- Pump diaphragms and valves
- Batteries
- Filter elements

Warranty is voided by abuse including mechanical damage, alteration, rough handling, or repair procedures not in accordance with instruction manual. This warranty indicates the full extend of our liability, and we are not responsible for removal or replacement costs, local repair costs, transportation costs, or contingent expenses incurred without our prior approval.

THIS WARRANTY IS EXPRESSLY IN LIEU OF ANY AND ALL OTHER WARRANTIES AND REPRESENTATIONS, EXPRESSED OR IMPLIED, AND ALL OTHER OBLIGATIONS OR LIABILITIES ON THE PART OF RKI INSTRUMENTS, INC. INCLUDING BUT NOT LIMITED TO, THE WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. IN NO EVENT SHALL RKI INSTRUMENTS, INC. BE LIABLE FOR INDIRECT, INCIDENTAL, OR CONSEQUENTIAL LOSS OR DAMAGE OF ANY KIND CONNECTED WITH THE USE OF ITS PRODUCTS OR FAILURE OF ITS PRODUCTS TO FUNCTION OR OPERATE PROPERLY.

This warranty covers instruments and parts sold to users only by authorized distributors, dealers and representatives as appointed by RKI Instruments, Inc.

We do not assume indemnification for any accident or damage caused by the operation of this gas monitor and our warranty is limited to the replacement of parts or our complete goods. Warranty covers parts and labor performed at RKI Instruments, Inc. only, and does not cover field labor or shipment of parts back to RKI.

Table of Contents

CAUTION: *Read and understand this manual before using the SDM-6100. Also read and understand the GX-6100 Operator's Manual.*

Chapter 1: Introduction

Overview

This chapter briefly describes the SDM-6100 Docking Station. This chapter also describes the *SDM-6100 Docking Station Operator's Manual* (this document). Table 1 at the end of this chapter lists the SDM-6100's specifications.

About the SDM-6100

The SDM-6100 docking station is an advanced, reliable system that can charge, bump test, calibrate, alarm check, and provide test records for GX-6100 instruments. Up to 10 SDM-6100s can be connected together to a single gas source. It is designed for desktop or bench top use (standalone functionality).

When used in the standalone configuration, test records are stored in the SDM-6100's memory.

The purpose of this manual is to explain how to set up and use the SDM-6100 in a standalone configuration. It also explains how to use the sections of the PC Program associated with standalone use. You will learn how to:

 • prepare the SDM-6100 for use
 • perform a bump test
 • perform a calibration

NOTE: Only the standard 4-gases + PID can currently be calibrated with the SDM-6100. Improvements that allow for calibration of any gas combination and with other gases are expected Q2 2026.

In addition, the 5-gas IBL cylinder cannot be used to calibrate a 4-gas + PID instrument. Separate 4-gas and isobutylene cylinders must be used.

 • perform an alarm check
 • download instrument data to the supplied USB drive
 • use the SDM-6100 to charge a GX-6100

CAUTION: *The GX-6100 detects oxygen deficiency and elevated levels of oxygen, combustible gases, carbon monoxide, and hydrogen sulfide, all of which can be dangerous or life threatening. When using the GX-6100, you must follow the instructions and warnings in the GX-6100 Operator's Manual to assure proper and safe operation of the instrument and to minimize the risk of personal injury.*

CAUTION: *The operator of this instrument is advised that if the equipment is used in a manner not specified in this manual, the protection provided by the equipment may be impaired.*

About this Manual

The *SDM-6100 Docking Station Operator's Manual* uses the following conventions for notes, cautions, and warnings.

NOTE: Describes additional or critical information.

CAUTION: *Describes potential damage to equipment.*

WARNING: *Describes potential danger that can result in injury or death.*

Cautions & Safety Information

* Use only polyurethane sample tubing with the SDM-6100. Consult RKI Instruments, Inc. for other materials.
* Do not expose the SDM-6100 to water.
* Do not subject the SDM-6100 to any hard impact.

Specifications

Table 1: Specifications

Input Power	• 5.0 VDC • Accessory AC adapter input: 100 to 240 V AC, 50/60 Hz
Environmental Conditions	• For Indoor Use Only • 0°C to 40°C (Non-Fluctuating) • below 95% Relative Humidity, Non-Condensing
Applicable Instrument	GX-6100
Memory Capacity	1 MB
Max Number of Records Saved	Up to 500 records (bump test, gas adjustment, alarm check)
Max Number of Calibration Gas Cylinders	3 gas cylinders plus a zero air cylinder, if needed
Standard Accessories	• *SDM-6100 Docking Station Operator's Manual* • Inlet Air Filter • 10-Foot Long Exhaust Tube • 3-Foot Long Calibration Tube • Single-Station AC Adapter Cable • Instrument USB-C Cable • USB Type-A to Type-B Cable • 5-Foot LAN/Ethernet Cable • USB Drive (1 GB) • Connection Brackets (set of 2)
Available Accessories	• SDM-PC3 Controller Software* • Wall Mounting Brackets and Screws • Cylinder Holder • Demand Flow Regulator • Calibration Cylinder

* *Not available until Q2 of 2026 and is not sent with SDM-6100. Download from www.rkiinstruments.com/product/sdm-6100-calibration-station/*

Building a System

Bundles

Various accessories are included with the SDM-6100 depending on the bundle. See the table below for what's included with each basic bundle. The accessories are described in more detail in "Chapter 2: Description" on page 10.

Accessories	81-SDM6100-01	81-SDM6100-02	81-SDM6100-03	81-SDM6100-04
Docking Station	X	X	X	X
Exhaust Tube, 10 ft.	X	X	X	X
Calibration Tubing, 3 ft.	X	X	X	X
Instrument USB-C Cable	X	X	X	X
USB Type-A to Type-B	X	X	X	X
Ethernet Cable, 5 ft.	X	X	X	X
Single-Station AC Adapter	X	X	X	X
USB Drive	X	X	X	X
Demand Flow Regulator		X	X	X
Calibration Cylinder Holder			X	X
58 Liter Aluminum 4-Gas Calibration Cylinder			X	
34 Liter 4-Gas Calibration Cylinder				X

Chapter 2: Description

Overview

This section describes the SDM-6100 docking station's components, standard accessories, and optional accessories.

SDM-6100

The instrument cradle is a recessed area in the middle of the SDM-6100 that is designed to accept the GX-6100. Insert the GX-6100 in the instrument cradle with the display facing down before you perform a bump test, calibration, alarm check or charge the GX-6100.
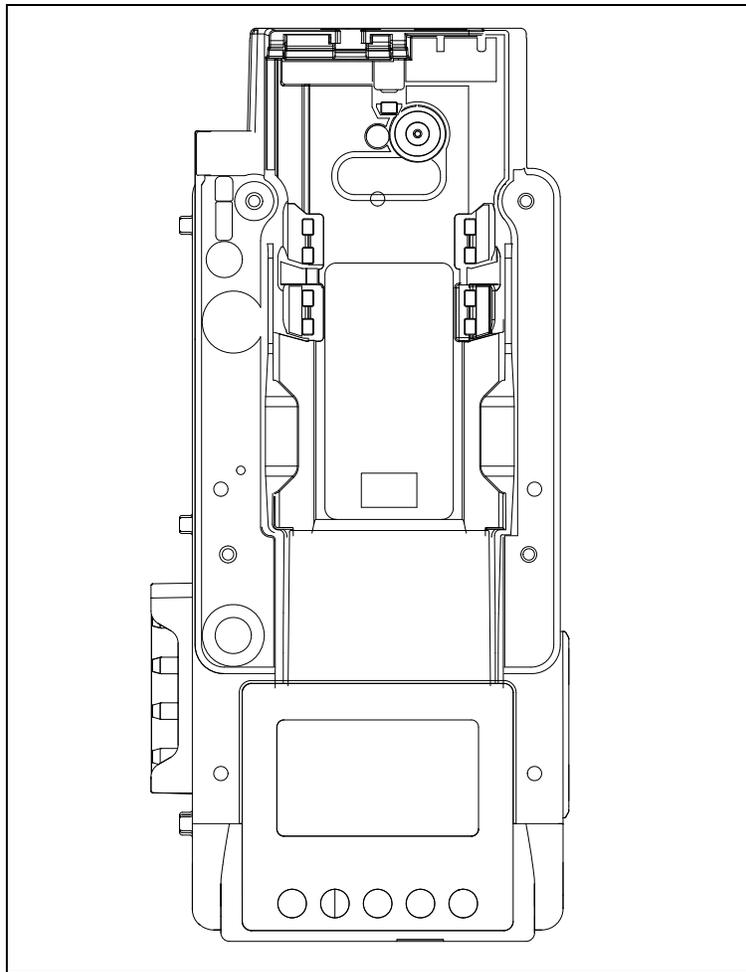

Figure 1: Instrument Cradle

Control Buttons and LEDs

Use the control buttons to initiate docking station functions as outlined in the table below. The LEDs above the control buttons indicate the button function's status. The CHARGE LED functions as a pilot LED and a system failure LED.
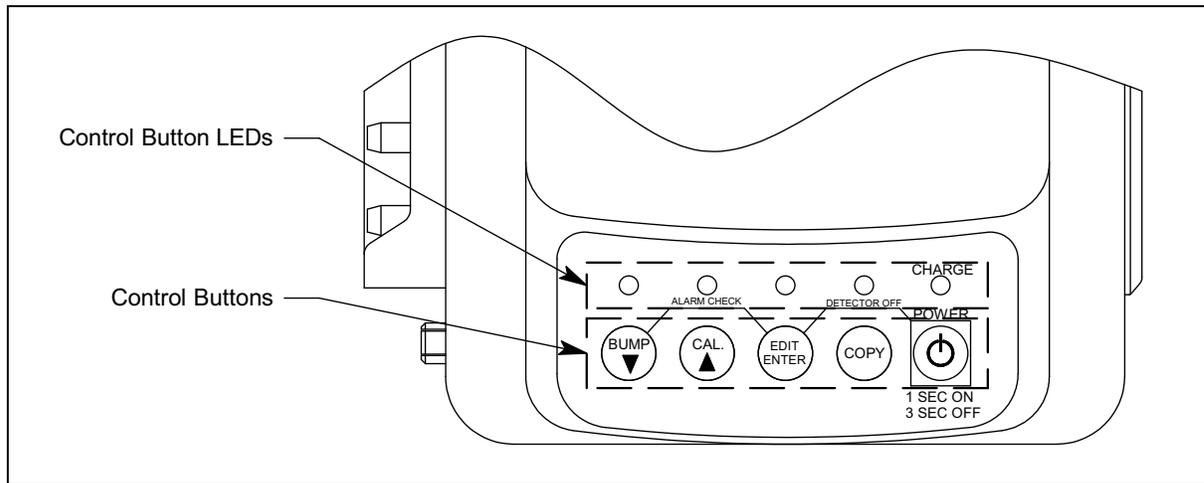
Figure 2: Control Buttons and LEDs

Control Button	Function	LED Meaning
BUMP ▼	• Initiates/cancels a bump test • Initiates/cancels an alarm check when used with EDIT ENTER	Flashing: bump test in process Green: bump test passed Red: bump test failed
CAL ▲	• Initiates/cancels a calibration • Clears SDM-6100 memory when use with COPY	Flashing: calibration in process Green: calibration passed Red: calibration failed
EDIT ENTER	• Enters Configuration Menu • Initiates an alarm check when used with BUMP ▼ • Turns off GX-6100 when used with POWER	Green: alarm check passed Red: alarm check failed
COPY	• Copies bump test, calibration, and alarm check records to a USB drive • Clears SDM-6100 memory when use with CAL ▲	Off: no records saved Green: More than 20% of SDM-6100 memory remains Orange: Less than 20% of SDM-6100 memory remains Red: No memory available. Oldest records will be deleted as new records are created.
POWER	• Turns SDM-6100 on/off • Turns off GX-6100 when used with EDIT ENTER	(POWER button's LED is labeled "CHARGE") Solid green: GX-6100 fully charged Flashing orange: GX-6100 charging Solid red: SDM-6100 problem detected

Tubing

Air Filter and Sample Tubing

A cylindrical particle filter with a short length of tubing is supplied with the SDM-6100 for installation to the AIR fitting on the side panel. The filter keeps particulate contamination out of the docking station.

Two types of sample tubes are included with the docking station. A 3 foot length of 3/16 inch ID polyurethane tubing is provided to connect the regulator on a calibration cylinder to the GAS fittings on the side panel. In addition, a 10 foot length of 5/16 inch ID polyurethane tubing is provided for connection to the exhaust fitting on the back panel to allow routing of the exhaust to a location such as an open window where the exhaust can disperse.

WARNING: **Do not use an exhaust tube that is longer than 10 feet. The increased flow restriction caused by a longer tube may affect gas response and cause inaccurate calibration and bump test results.**

Instrument Inlet and Exhaust Tubes

A set of two tubes with mating fittings are provided to install onto the GX-6100's metal inlet fitting (on the top of the instrument) and the internal exhaust fitting (next to the inlet fitting). These tubes must be installed correctly onto the SDM-6100 and GX-6100 as shown in the following figure before proceeding with operation.
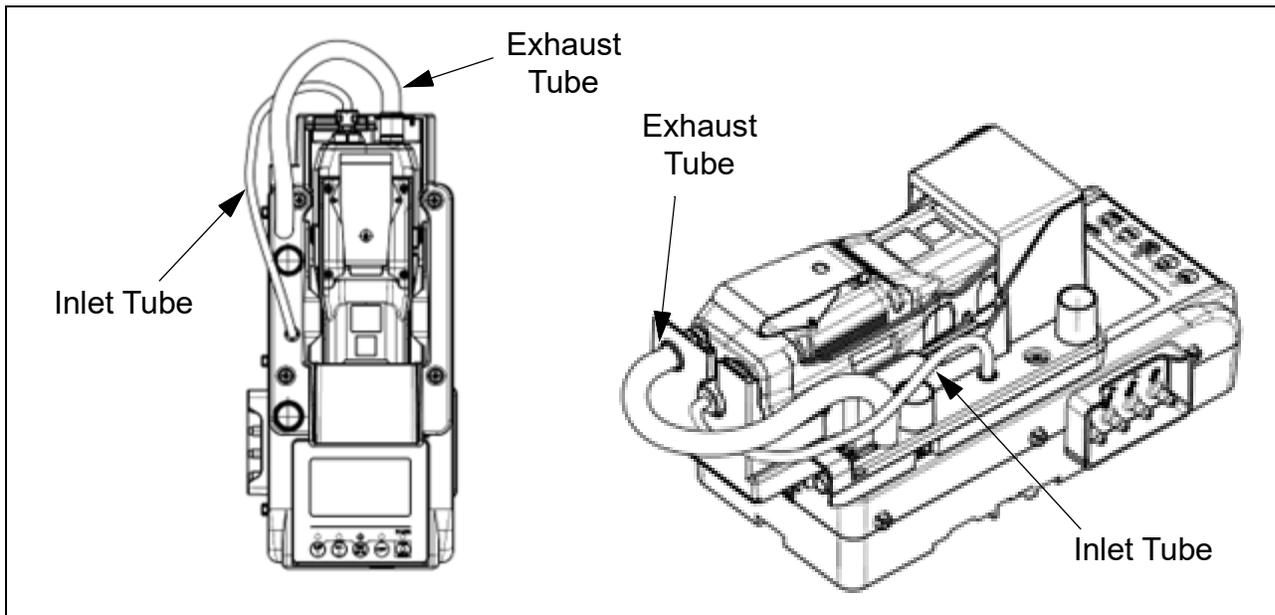
Figure 3: Inlet and Exhaust Tubes Connected

Cylinder and SDM Connections (Side Panels)

NOTE: When multiple SDM-6100 docking stations are connected together, they only share sample connections. They are not connected electronically.

Four gas fittings are located on the left side of the SDM-6100. Three are for gas cylinders and one is for the particle filter or a zero air cylinder. The left to right order is GAS 3, GAS 2, GAS 1, and AIR. All four fittings accept 3/16 inch ID tubing.

The right side of the SDM-6100 is shipped from the factory with a small panel attached to it with two screws. That panel should remain in place if the SDM-6100 is being used alone or if it is the right-most station in a bank of connected stations. The panel needs to be removed in order to connect another SDM-6100 to it. Beneath the panel are plugged fitting connections that mate to the stubs on the left side of another SDM-6100. See "Connecting Multiple SDM-6100 Docking Stations Together, Optional" on page 18.
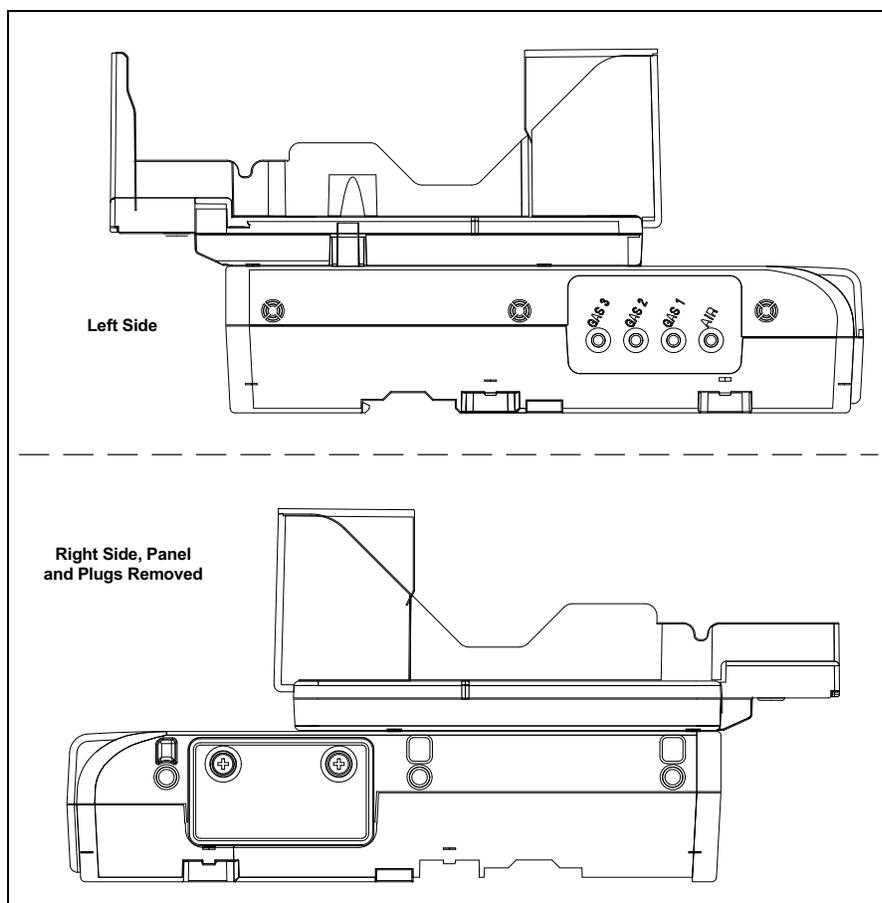
Figure 4: Cylinder and SDM Connection Panels

Power, Network, and Data Connections
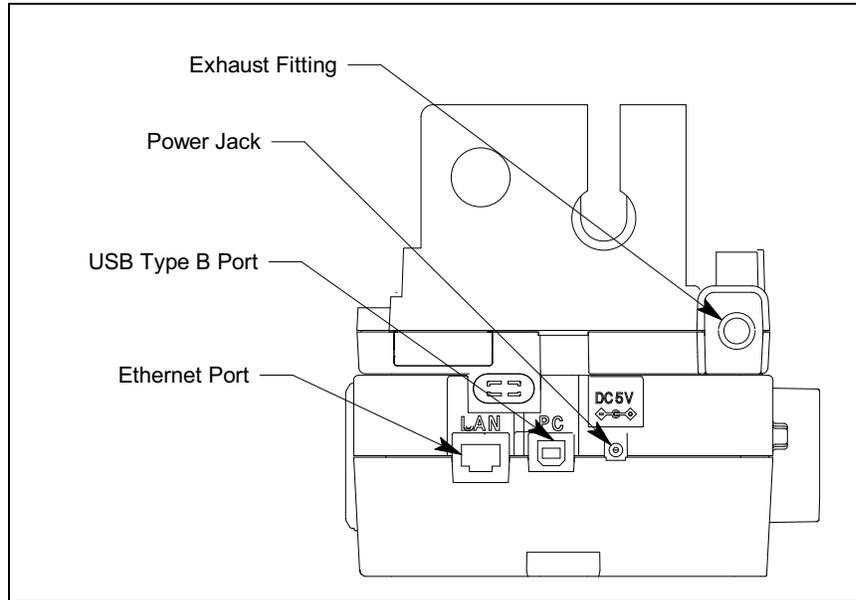
Figure 5: SDM-6100 Docking Station Back Panel

USB PC Connector

A type B USB connection on the back of the dock allows for the SDM-6100 to be connected to a PC using a Type A to Type B USB cable. Connection to a PC is necessary for setting up the LAN function and for using the SDM-6100 in its PC controlled configuration. This manual explains how to set up the LAN function but does not cover PC controlled configuration.

NOTE: Functionality with the PC controller program will be available starting in Q2 2026.

LAN Connector

The LAN connector allows for the SDM-6100 to be connected to an available network port using an Ethernet cable. This function allows for the SDM-6100's data to be downloaded to a computer connected to the same network.

NOTE: Functionality with the PC controller program will be available starting in Q2 2026.

Power Jack

The power jack is located on the right side of the back panel. The plug on the end of the AC adapter cable mates to the power jack.

Exhaust Fitting

An exhaust fitting is located on the far right side of the back panel. It allows routing of the exhausted calibration gas to a convenient location. This fitting accepts 5/16 inch ID tubing. Even though the exhaust gas can be routed to an area to be safely dispersed, the docking station should still be installed in a well-ventilated area.

USB A Port (Data Transfer)

On the front of the docking station next to the RKI Instruments label is a USB A port reserved for data transfer to a flash drive and uploading new firmware updates to the docking station.
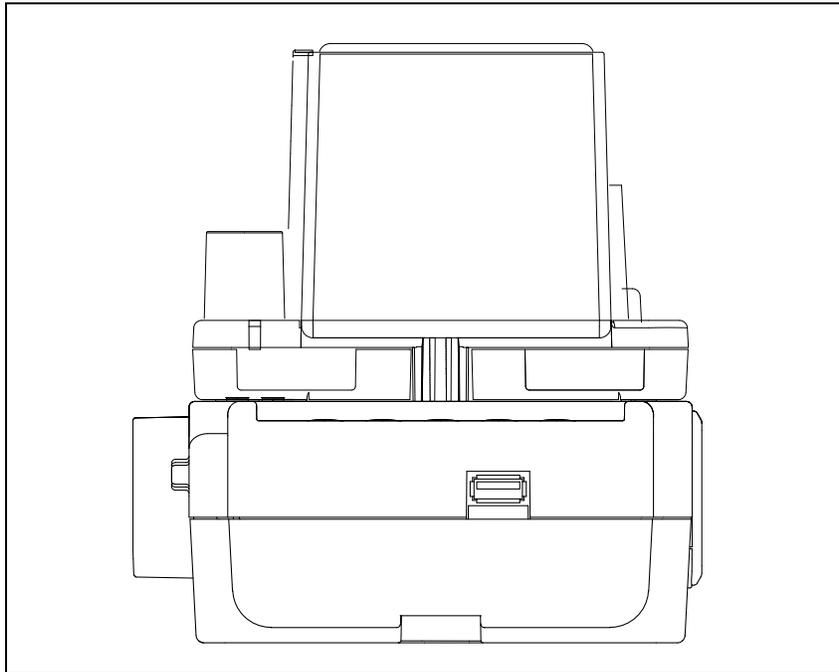
Figure 6: Docking Station Front View

Standard Accessories

Air Filter and Exhaust Tubing

A cylindrical particle filter with a short length of tubing is supplied with the SDM-6100 for installation to the AIR fitting on the left panel. The filter keeps particulate contamination out of the docking station.

A 10 foot length of 5/16 inch ID polyurethane tubing is provided for connection to the exhaust fitting on the back panel to allow routing of the exhaust to a location such as an open window where the exhaust can disperse.

Particle Filter for Air Inlet

Exhaust Tubing, 5/16 Inch ID, 10 feet
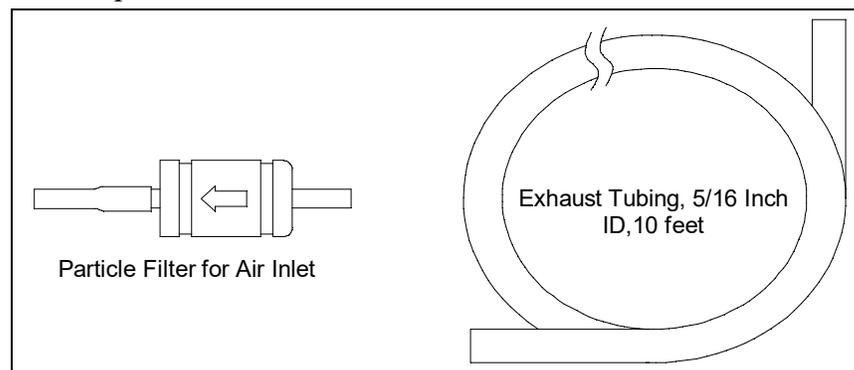
Figure 7: Air Filter & Exhaust Tubing

WARNING: *Do not use an exhaust tube that is longer than 10 feet. The increased flow restriction caused by a longer tube may affect gas response and cause inaccurate calibration and bump test results.*

Calibration Tubing

A 3 foot 3/16 inch ID tube is included for connecting a demand flow regulator to an SDM-6100 gas inlet fitting.

Calibration Gas Sample Tubing, 3/16 Inch ID, 3 feet
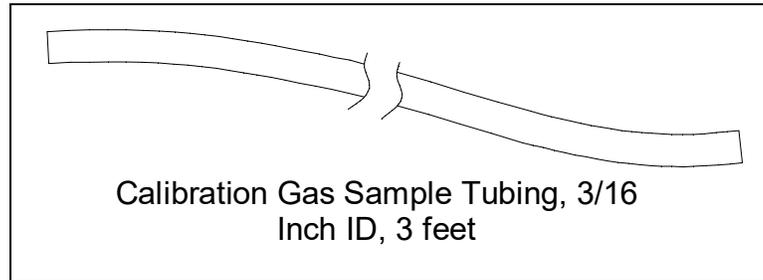
Figure 8: Air Filter & Exhaust Tubing

Single-Station AC Adapter

The single-station AC adapter is a wall plug style adapter with a 4 foot cable. The end of the cable has a plug that connects to the SDM-6100's power jack. The AC adapter is rated 100 - 240 VAC input, 5.0 VDC 3A output.

USB Type A to Type B Cable

A Type A to Type B USB cable is used to connect the SDM-6100 to a PC which is required for setting up the LAN connectivity function of the SDM-6100 or for using the SDM-6100 in the PC Controlled configuration. If you have a multi-station system, each SDM-6100 must be individually connected to the PC.

NOTE: Functionality with the PC controller program will be available starting in Q2 2026.
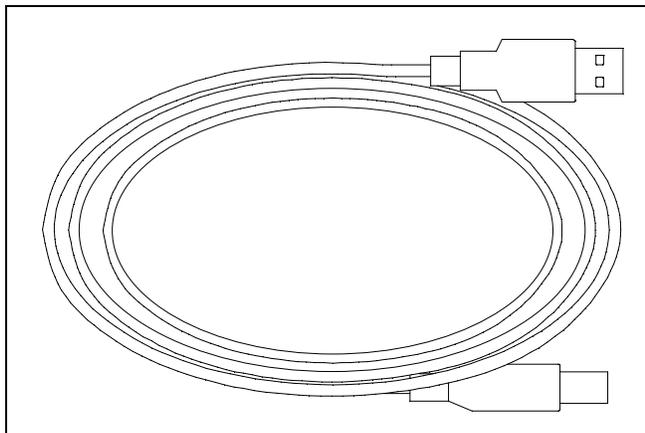
Figure 9: USB Cable

Ethernet Cable

A 5 foot length of black Ethernet cable allows for the LAN connectivity function of the SDM-6100 to be used. One end of the cable is plugged into the LAN port on the SDM-6100's back panel and the other end is plugged into an available network port. If you have a multi-station system, each SDM-6100 must have its own Ethernet connection.

USB Drive

A USB drive is supplied for copying data from the SDM-6100's memory and importing it into the PC Program.

Connection Brackets

The SDM-6100 docking stations can be mechanically connected to each other using the connection brackets.

Optional Accessories

Wall Mounting Brackets

The SDM-6100 can be mounted to the wall, if desired, using 2 mounting brackets. See "Wall Mounting the SDM-6100, Optional" on page 22 for a description of how many wall mounting brackets are needed depending on how many SDM-6100 docking stations are in your system.

Cylinder Holder

A cylinder holder with 4 adhesive pads allows a calibration cylinder to securely sit on a desktop or bench top.

Demand Flow Regulator

A demand flow regulator installs on a calibration cylinder to allow the SDM-6100 to draw calibration gas.

Calibration Cylinder

A cylinder with a known gas concentration must be used for bump testing and calibration.

Chapter 3: Mechanical Setup of SDM-6100

Overview

Mechanical setup for the SDM-6100 includes the following procedures:

- connecting multiple SDM-6100 docking stations together, optional (page 18)
- assembling the hardware (page 20)
- wall mounting the station, optional (page 22)
- connecting calibration gas (page 26)

Connecting Multiple SDM-6100 Docking Stations Together, Optional

Up to 10 SDM-6100 docking stations can be connected together.

1. Be sure that the docking stations are not connected to power.

2. Perform the following steps for every station except the one that will be located on the far right side of the bank:

   a. Unscrew the two screws that retain the panel on the right side of the SDM-6100. The screws are not captive. Be sure not to lose them.

   b. Pull the panel away from the SDM-6100.

   c. Use needle nosed pliers to remove the clear plugs that are installed in the four mating sample fittings.

   d. Save the panel, the screws, and the four plugs in a safe place.

3. Starting with the two left-most stations, line up the sample fitting connections and push the two stations together until the housings are touching.

Right Side, Panel and Plugs Installed

Right Side, Panel and Plugs Removed
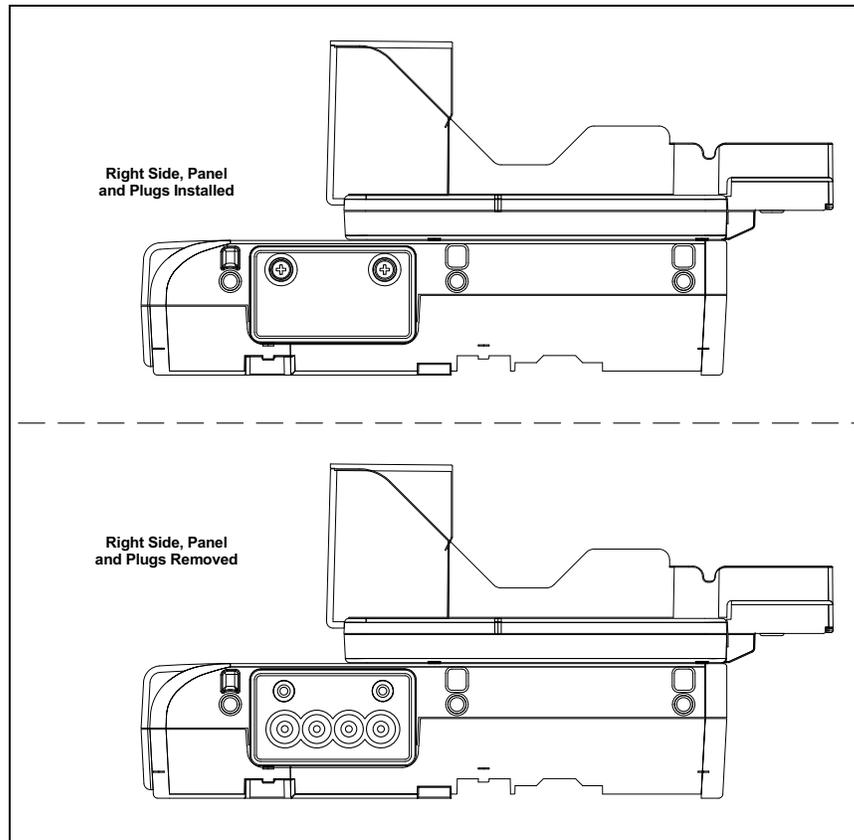
Figure 10: Panel and Plug Removal

4. Add stations to the right side of the bank using the same procedure. The last station installed should have its connection panel still installed on the right side.

5. (Optional) Use the metal connection brackets and screws to secure the two connection points on the bottom of the SDM-6100 to each other.
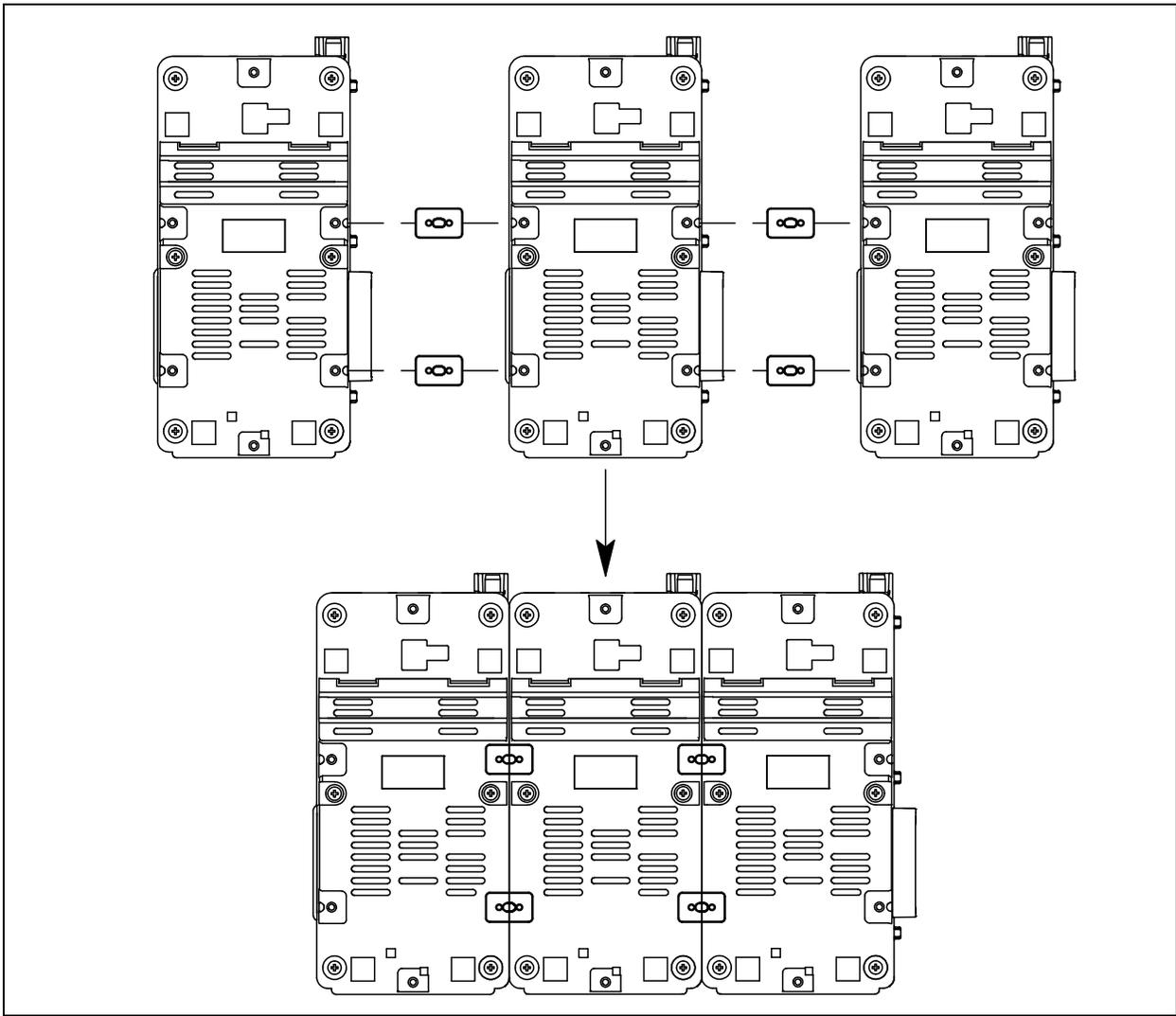
Figure 11: Connecting SDM-6100 Docking Stations Together

Hardware Assembly

The hardware assembly consists of connecting the AC adapter, installing the air filter, and connecting the exhaust tubing. Perform the following to complete the hardware assembly:

1. Place the SDM-6100 docking stations on a convenient table top near an AC wall socket in a well-ventilated area. A location near a window that can be opened is best so that the exhaust can be routed to the window.

2. Connect the AC adapter's wall plug into a wall AC socket.

3. Insert the plug on the end of the AC adapter's output cable into the power jack on the back of the SDM-6100.

> **NOTE:** If you have multiple SDM-6100 docking stations connected to each other, each docking station needs its own power.

4. Install the air filter so that the arrow on the filter that indicates direction of flow is pointing towards the AIR fitting.

5. Install the 10 foot long 5/16 inch ID flexible tube that is included with the SDM-6100 on the exhaust fitting. Route the tube to an area where the exhaust can be safely dispersed, such as an open window.

    Exhaust tubing from multiple SDM-6100 docking stations can be daisy chained together in a manifold for more convenient operation. If you wish to manifold the exhaust, you must order 1 T-fitting (17-0611RK) and 1 check valve (32-0504RK) per SDM-6100. See "Assembling an Exhaust Manifold for Multiple SDM-6100 Docking Stations" for instructions.

> *CAUTION:* *The maximum recommended length for the exhaust tube is 10 feet. Using tubing longer than 10 feet or with an ID smaller than 5/16 inch may adversely affect bump test and calibration accuracy.*

Assembling an Exhaust Manifold for Multiple SDM-6100 Docking Stations

Up to 10 SDM-6100 docking stations can be manifolded together. The exhaust lines can also be manifolded together and be routed away from the docking stations with only one 10 foot long 5/16 inch piece of tubing.

Each SDM-6100 is shipped with exhaust tubing. If you wish to manifold the exhaust, you must order 1 T-fitting (17-0611RK) and 1 check valve (32-0504RK) per SDM-6100.

Exhaust Tubing

Reference Figure 12 for the instructions below.

1. Cut a 1-2 inch piece of 5/16 inch tubing for each SDM-6100 and connect it to each unit's exhaust fitting.

2. Connect the check valves to the short pieces of tubing already installed at the exhaust fittings. Be sure that the arrows that appear on the check valve are pointing **away** from the exhaust fitting.

3. Cut a 2-3 inch piece of 5/16 inch tubing for every SDM-6100 except the first one and connect it to the other end of the check valve.

4. Insert the T-fittings into the tubing so that the remaining two ports on the T-fitting are perpendicular to the exhaust tube and check valve.

5. For the first SDM-6100, cut a 9-10 inch piece of 5/16 inch tubing and connect it from the check valve on the first SDM-6100 to the closest port on the second SDM-6100's exhaust T-fitting.

6. Use one of the provided 10 foot lengths of tubing and connect it to the T-fitting on the last SDM-6100. The maximum recommended exhaust tube length is 10 feet.

7. For the remaining SDM-6100 docking stations, cut 6-7 inch pieces of 5/16 inch tubing and connect the remaining T-fittings.
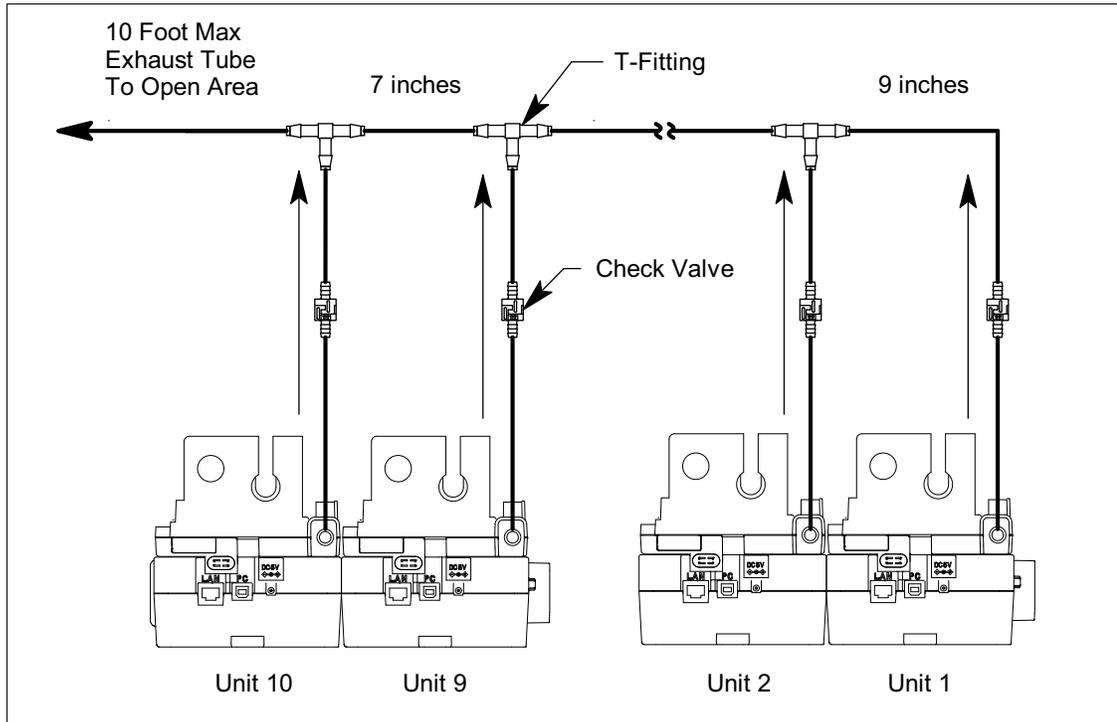
Figure 12: Exhaust Tubing Connections

Wall Mounting the SDM-6100, Optional

Single SDM-6100 docking stations or multiple SDM-6100 docking stations connected together can be mounted to the wall using mounting brackets as described in "Connecting Multiple SDM-6100 Docking Stations Together, Optional" on page 18. The wall mounting brackets are not supplied as standard with the SDM-6100.

If you are wall mounting a bank of SDM-6100 docking stations, not every SDM-6100 will need wall mounting brackets but each SDM-6100 that will use wall mounting brackets needs 2. See Table 2 and Figure 13 (1-7 stations) and Table 3 and Figure 14 (8-10 stations) to determine how many wall mounting brackets you need to order.
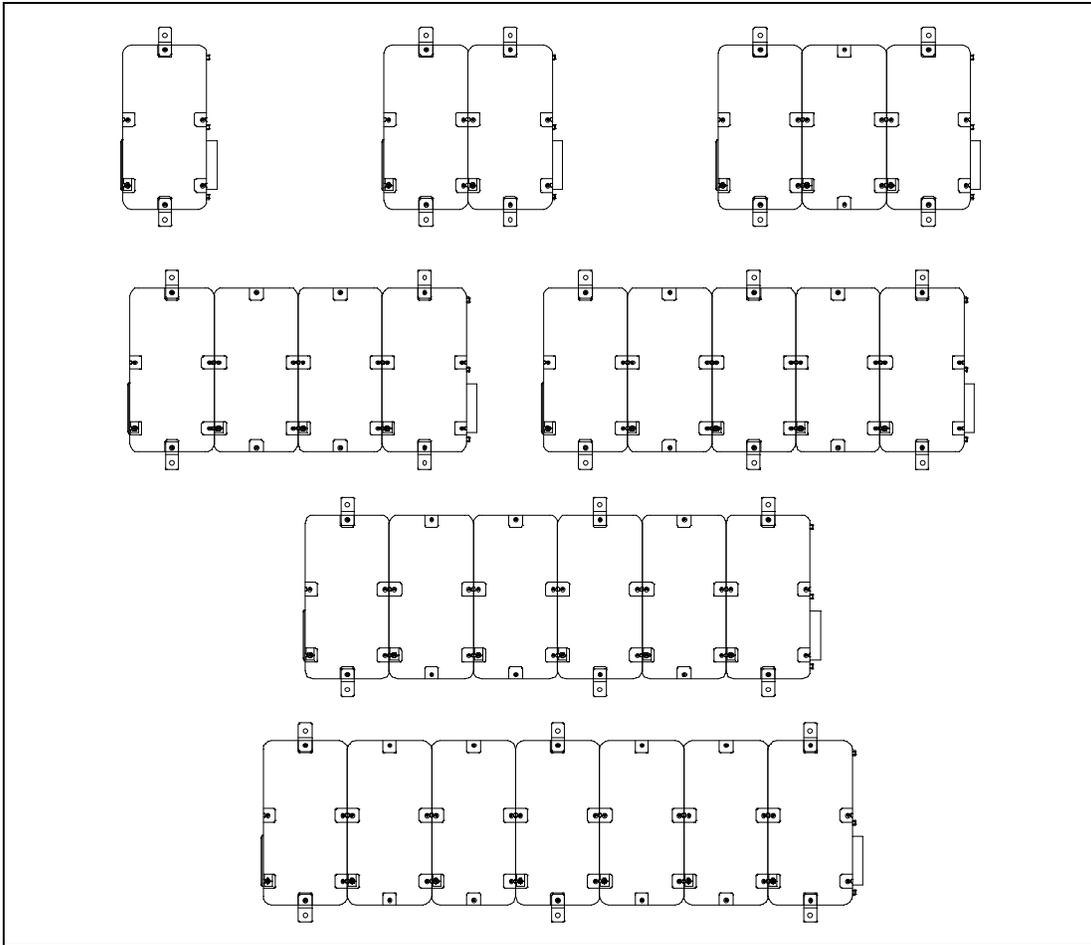
Figure 13: Wall Mounting 1-7 SDM-6100 Stations

Table 2: Mounting Bracket Requirements for Up to 7 SDM-6100 Docking Stations

# of Docking Stations	Total # of wall mounting brackets necessary
1 SDM-6100	2 wall mounting brackets
2-4 SDM-6100 stations	4 wall mounting brackets
5-7 SDM-6100 stations	6 wall mounting brackets
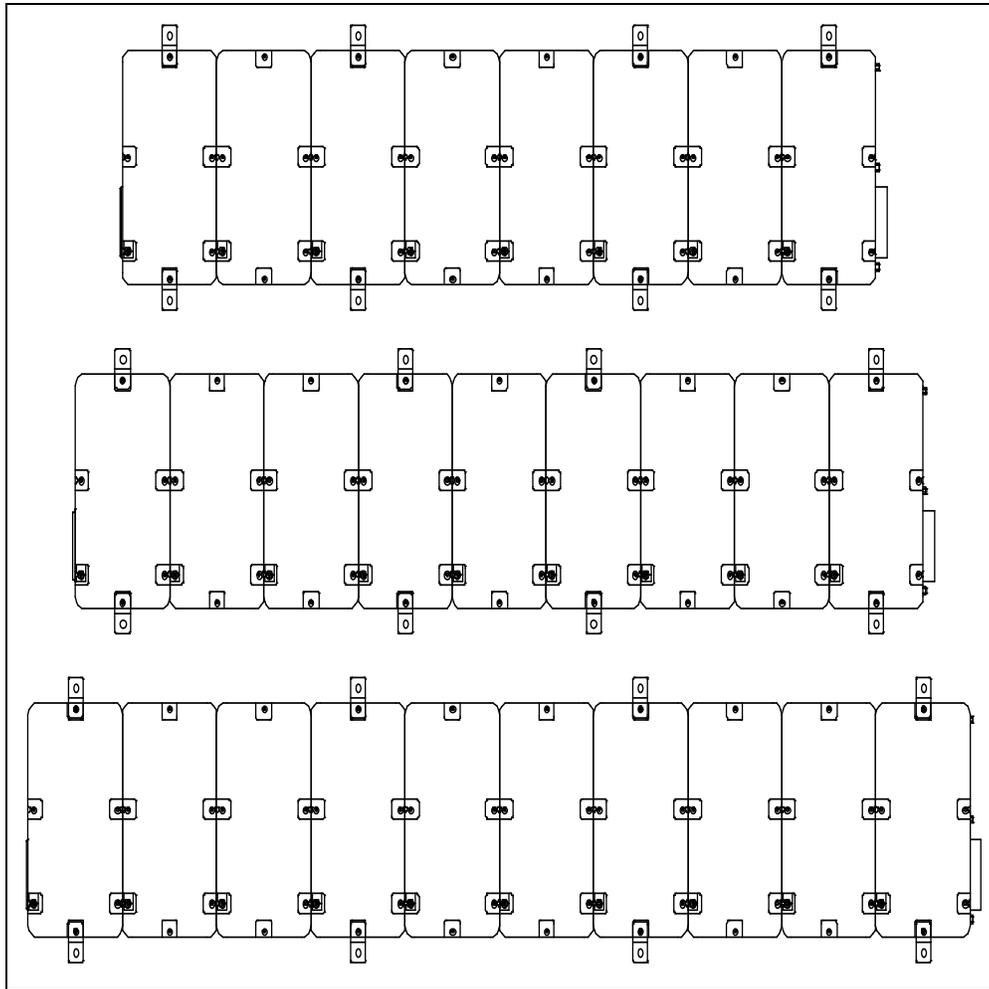
Figure 14: Wall Mounting 8-10 SDM-6100 Stations

Table 3: Mounting Bracket Requirements for 8 to 10 SDM-6100 Docking Stations

# of Docking Stations	Total # of wall mounting brackets necessary
8-10 SDM-6100 stations	8 wall mounting brackets

1. If you are mounting multiple SDM-6100 docking stations, be sure your docking stations are properly connected and secured to each other.

2. Connect the wall mounting brackets to the docking station(s) using the provided screws. The wall mounting brackets are not straight. They have a short section and a long section. The short section has a smaller hole than the long section. Screw the short section into the SDM-6100 making sure that the long section points away from the station and is flush with the back of the station.

Long Section w/ Bigger Hole
Short Section w/ Smaller Hole

Short Section w/ Smaller Hole
Long Section w/ Bigger Hole
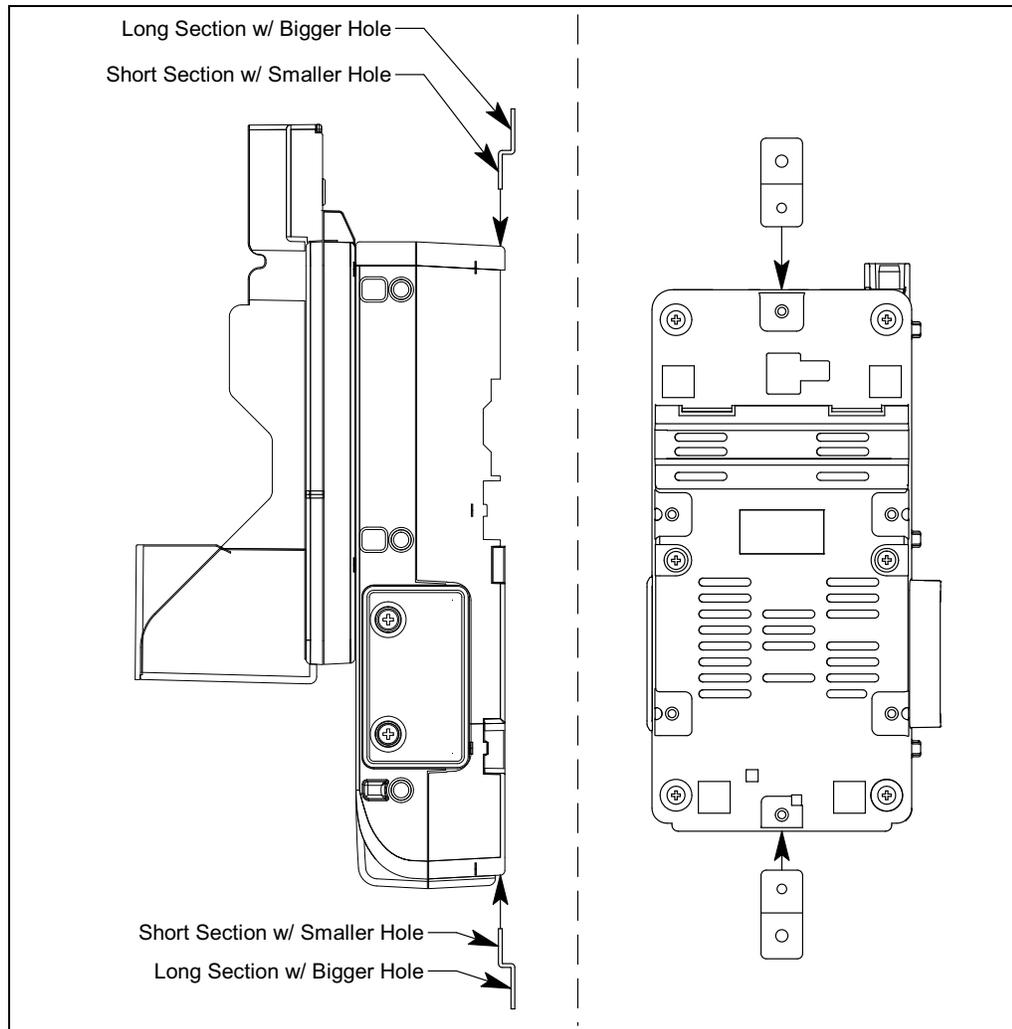
Figure 15: Wall Mounting Bracket Installation

3. Position the SDM-6100 docking station(s) on the wall where you intend to mount the docking station(s).

4. Screw the wall mounting brackets into the wall. Make sure the mounting screws and the material they are screwed into are appropriate to support the weight of the system.

Installing the Cylinder Holder, Optional

1. Choose a location for the calibration cylinders that is close to the SDM-6100. 4 pads with adhesive on each side are included with each cylinder holder.

2. Remove the backing from one side of each pad and stick it to a corner on the bottom of the cylinder holder.

   If desired and/or practical, 2 pads can be used for the bottom and 2 pads can be used for the back.

3. Remove the backing from each of the installed pads and press the cylinder holder firmly into position.

Connecting Calibration Gas

NOTE: Only the standard 4-gases + PID can currently be calibrated with the SDM-6100. Improvements that allow for calibration of any gas combination and with other gases are expected Q2 2026.

In addition, the 5-gas IBL cylinder cannot be used to calibrate a 4-gas + PID instrument. Separate 4-gas and isobutylene cylinders must be used.

The GAS 1, GAS 2, and GAS 3 fittings on the left side of the docking station are designed to be used with a calibration gas cylinder that is fitted with a demand flow regulator. See page 85 for part numbers of available cylinders.

Up to 10 SDM-6100 docking stations can be manifolded together to draw gas using the same regulator and cylinder. See "Connecting Multiple SDM-6100 Docking Stations Together, Optional" on page 18.

AIR

The AIR fitting needs one of the following:

   a. A cylinder of zero emissions air

   OR

   b. A fresh air area

GAS 1 - GAS 3 Cylinders

See Table 4 below for information about necessary calibration cylinders and what inlet to connect them to.

If a GX-6100 combination requires more than 3 cylinders, any additional cylinders defined in the **CYLINDER** menu (see "Cylinder Parameters (CYLINDER)" on page 38) will be automatically assigned to **C3** (for changing on GAS3 inlet). The docking station will prompt you to change cylinders during a bump test or calibration.

NOTE: You cannot change cylinders more than once during a test.

Table 4: Recommended Gas Cylinders and Gas Ports for Single-Station Use

Instrument Types	Recommended Calibration Gas Cylinder and Gas Inlet Selection
3-gas (LEL/Oxy/CO) + low range PID	**GAS 1**: 3-gas mix with LEL/Oxy/CO **GAS 2**: 10 ppm IBL
3-gas (LEL/Oxy/CO) + high range PID	**GAS 1**: 3-gas mix with LEL/Oxy/CO **GAS 2**: 100 ppm IBL
Standard 4-gas (LEL/Oxy/H2S/CO) + low range PID	**GAS 1**: 4-gas mix with LEL/Oxy/H2S/CO **GAS 2**: 10 ppm IBL
Standard 4-gas + high range PID	**GAS 1**: 5-gas mix with LEL/Oxy/CO/H2S/IBL

Connecting Calibration Cylinders

1. If the area around the docking station is not considered a fresh air area (an area free of combustible and toxic gases and of normal oxygen content, 20.9%) install a tube not longer than 10 feet on the filter attached to the AIR fitting on the left side of the docking station and route it to a fresh air area or connect a cylinder of zero air with a demand flow regulator to the AIR fitting.

    NOTE: Up to 10 SDM-6100 docking stations can be manifolded together to draw gas using the same regulator and cylinder. See "Connecting Multiple SDM-6100 Docking Stations Together, Optional" on page 18.

2. Install the demand flow regulator(s) on the calibration gas cylinder(s).

    NOTE: Do not connect pressurized gas directly to the SDM-6100. Be sure to install a demand flow regulator on the cylinder before connecting it to the SDM-6100.

3. Connect the demand flow regulator to the appropriate inlet fitting using 3/16 inch ID sample tubing.

Chapter 4: SDM-6100 Configuration Menu

Once the hardware has been assembled, use the Configuration Menu to confirm or adjust the parameters found in the menus listed below.

Even if you have mechanically connected multiple docking stations, you must set up your desired operation for each docking station. There is no master station that controls the others.

Table 5: Configuration Menu Items

Display Name	Menu Description
BUMP	Bump test parameters (page 29)
CAL	Calibration parameters (page 34)
CYLINDER	Gas cylinder parameters (page 38)
INLET	Gas cylinder assignments (page 44)
SENSOR	Include or exclude GX-6100 sensors from SDM-6100 tests (page 45)
DATE	Date and time (page 47); must adjust upon receipt in order for saved data to have correct date/time
LANGUAGE	Displayed language (page 49)
SYSTEM	LCD, power save, data logger, expiration notice settings (page 50)

Entering the Configuration Menu

1. With the SDM-6100 off, press and hold the POWER button.

2. Press the EDIT ENTER button. If **PASSWORD** is set to **ON** (factory setting is **OFF**), you will be prompted for a password.

   Use BUMP ▼ and CAL ▲ to adjust a digit and the EDIT ENTER button to save it and move to the next digit.

3. The Configuration Menu will be displayed.

```
■ ⌖⌗        ▭        F ♪ 12:30
>BUMP
 CAL
 CYLINDER
SETTING
```
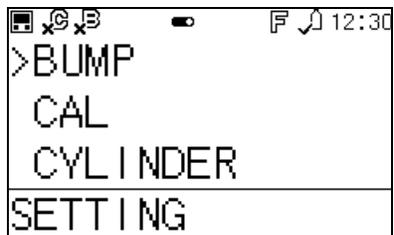
Bump Test Parameters (BUMP)

There are 9 bump test parameters in the **BUMP** menu. Table 6 lists the parameter display names, their setting options, and their factory settings.

If you wish to use the factory settings, then you do not need to make any parameter adjustments. If you wish to confirm or change the parameter settings, follow the instructions below.

Table 6: Bump Test Parameter Menu

Parameter (Display Name)	Setting Ranges (Factory Default)
Pre-Sample Flush Time (**AIR FLUSH**)*	15 - 120 seconds in 1-second increments (15 seconds)
Bump Test Sample Time (**GAS TIME**)*	20 - 120 seconds in 1-second increments (25 seconds)
Post-Sample Purge Time (**AIR PURGE**)*	5 - 120 seconds in 1-second increments (15 seconds)
Bump Test Check Tolerance (**TOLERANCE**)*	10% - 50% in 1% increments (50%)
Automatic Calibration (**AUTO CAL**)	• ON (factory default) • OFF
Fast Bump (**FAST BUMP**)	• ON (factory default) • OFF
Alarm Check (**ALARM CHECK**)	• ON (factory default) • OFF
Automatically Bump Test if Past Due (**BUMP EXPIRED**)	• ON • OFF (factory default)
Automatically Turn on the Instrument to Perform a Bump Test (**AUTO EXEC**)	• ON • OFF (factory default)

Table 6: Bump Test Parameter Menu

Parameter (Display Name)	Setting Ranges (Factory Default)
Automatically Skip the SDM-6100 Warm-Up Period (**WARM-UP SKIP**)	• ON • OFF (factory default)

*   *This parameter also defines the* **COMMON** *setting of the same parameter in the* **CYLINDER** *menu.*

Pre-Sample Flush Time (AIR FLUSH)

NOTE: This parameter also defines the **COMMON** setting of the **BUMP AIR FLUSH** parameter in the **CYLINDER** menu.

The pre-sample flush time is the length of time that the SDM-6100 will draw air through the AIR fitting before performing an air adjust operation.

NOTE: If the GX-6100 is not on for 40 seconds before a bump test is initiated, air will flow until the GX-6100 has been on for 40 seconds regardless of the time selected here.

Bump Test Sample Time (GAS TIME)

NOTE: This parameter also defines the **COMMON** setting of the **BUMP GAS TIME** parameter in the **CYLINDER** menu.

The bump test gas sample time is the length of time that the SDM-6100 will draw calibration gas through each of the gas fittings during a bump test.

Post-Sample Purge Time (AIR PURGE)

NOTE: This parameter also defines the **COMMON** setting of the **BUMP AIR PURGE** parameter in the **CYLINDER** menu.

The post-sample purge time is the length of time that the SDM-6100 will draw air through the AIR fitting to purge calibration gas from the system.

Bump Test Check Tolerance (TOLERANCE)

The amount that the GX-6100 gas reading differs from the calibration gas concentration must be equal to or less than this percentage of the gas concentration in order to pass the bump test. For example, if the tolerance is set to 50%, and the %LEL calibration gas concentration is 50% LEL, then the bump test gas reading for the LEL channel on the GX-6100 must be 50% LEL ± 25% LEL. The **FAST BUMP** feature has its own factory-set tolerances: ±37% for oxygen (O_2) and ±50% for all other gases. The **TOLERANCE** setting has no effect on the fast bump feature.

Automatic Calibration (AUTO CAL)

If **AUTO CAL** is set to **ON**, then the docking station will automatically perform a calibration if a bump test fails.

Fast Bump (FAST BUMP)

Turning **FAST BUMP** on allows calibration gas to be saved when the tested sensors respond quickly and accurately. The **FAST BUMP** feature has its own factory-set tolerances: ±37% for oxygen (O_2) and ±50% for all other gases.

If **FAST BUMP** is set to **OFF**, the gas application during a bump test will continue for the time period defined by the **GAS TIME** bump test parameter regardless of the sensor reading(s).

If **FAST BUMP** is set to **ON** and the gas reading for the sensor(s) being tested is within the bump test tolerance defined in **TOLERANCE** at the end of a 15 second gas application and a 10 second stabilization period, the sensor(s) pass bump testing, the gas application will be stopped, and the test will move on to the next sensor(s) or to the fresh air purge.

If the gas reading on any of the tested channels is outside of the bump test tolerance defined in **TOLERANCE** at the end of the 15 second gas application and a 10 second stabilization period, the bump test will fail and the next step will depend on the **AUTO CAL** setting.

Consider the following scenario as an example:

- 50% LEL methane used for bump testing the combustible gas channel
- **FAST BUMP** set to **ON**
- Factory-set fast bump tolerance is set to ± 50%, which means that the acceptable reading range is 25% LEL - 75% LEL

The table below shows possible readings after the 15 second gas application and the 10 second stabilization period.

Table 7: Example Fast Bump Scenarios

Gas Reading After 15 Seconds of Gas Application and a 10 Second Stabilization Period	Outcome
15% LEL (-70% of 50% LEL)	• Bump test fails • Begins calibration (if **AUTO CAL** is **ON**)
30% LEL (-40% of 50% LEL)	• Gas application stops • Sensor passes bump testing
60% LEL (+20% of 50% LEL)	• Gas application stops • Sensor passes bump testing
80% LEL (+60% of 50% LEL)	• Bump test fails • Begins calibration (if **AUTO CAL** is **ON**)

Alarm Check (ALARM CHECK)

If **ALARM CHECK** is set to **ON**, an LED and buzzer test is done on the GX-6100 at the end of the bump test. The LEDs will turn on for a few seconds, the buzzer will sound, and the SDM-6100 will determine if these actions were completed successfully.

Automatically Bump Test if Past Due (BUMP EXPIRED)

If **BUMP EXPIRED** is set to **ON** <u>and</u> if the connected GX-6100 is due for a bump test, the SDM-6100 will automatically perform a bump test on all channels when the GX-6100 is connected.

If **BUMP EXPIRED** is set to **OFF**, an automatic bump test will not be performed, even if the GX-6100 is due for one.

Automatically Turn On and Bump Test the Instrument (AUTO EXEC)

NOTE: The SDM-6100 cannot be disconnected from power or completely turned off for **AUTO EXEC** to run as intended. See "Turning Off the Instrument and SDM-6100" on page 68 to ensure the docking station remains on.

If the SDM-6100 is on, the GX-6100 is connected, and **AUTO EXEC** is set to **ON**, the SDM-6100 will regularly and automatically bump test all channels. The instrument does not have to be due for a bump test or turned on for this operation to execute.

See "Adjusting Automatic Execution (AUTOMATIC EXEC)" on page 58 to define the schedule.

Skipping the Warm-Up Period (WARM-UP SKIP)

The sensor warm-up waiting period is skipped when the bump test begins.

NOTE: If **WARM-UP SKIP** is set to **ON** and the **Zero Follower** parameter on the GX-6100 is set to **OFF**, after performing a bump test with this device, perform a fresh air adjustment on the GX-6100 before operation.

When performing a bump test with **WARM-UP SKIP** set to **ON**, the Zero Follower parameter on the GX-6100 must always be set to **ON**.

Viewing or Changing the Bump Parameters

1. To enter the Configuration Menu, refer to "Entering the Configuration Menu" on page 28.

2. While in the Configuration Menu, use BUMP ▼ and CAL ▲ to scroll to the **BUMP** menu.
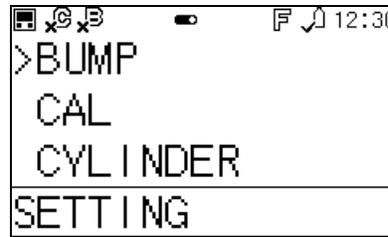
```
>BUMP
 CAL
 CYLINDER
SETTING
```

3. Press and release EDIT ENTER. The **AIR FLUSH** parameter will display.


```
        1/10              2/10              3/10
   15                25                15
AIR FLUSH         GAS TIME          AIR PURGE
```

```
        4/10              5/10              6/10
   50                ON                ON
TOLERANCE         AUTO CAL          FAST BUMP
```

```
        7/10              8/10              9/10
   ON                OFF               OFF
ALARM CHECK       BUMP EXPIRED      AUTO EXEC
```

```


ESCAPE
```
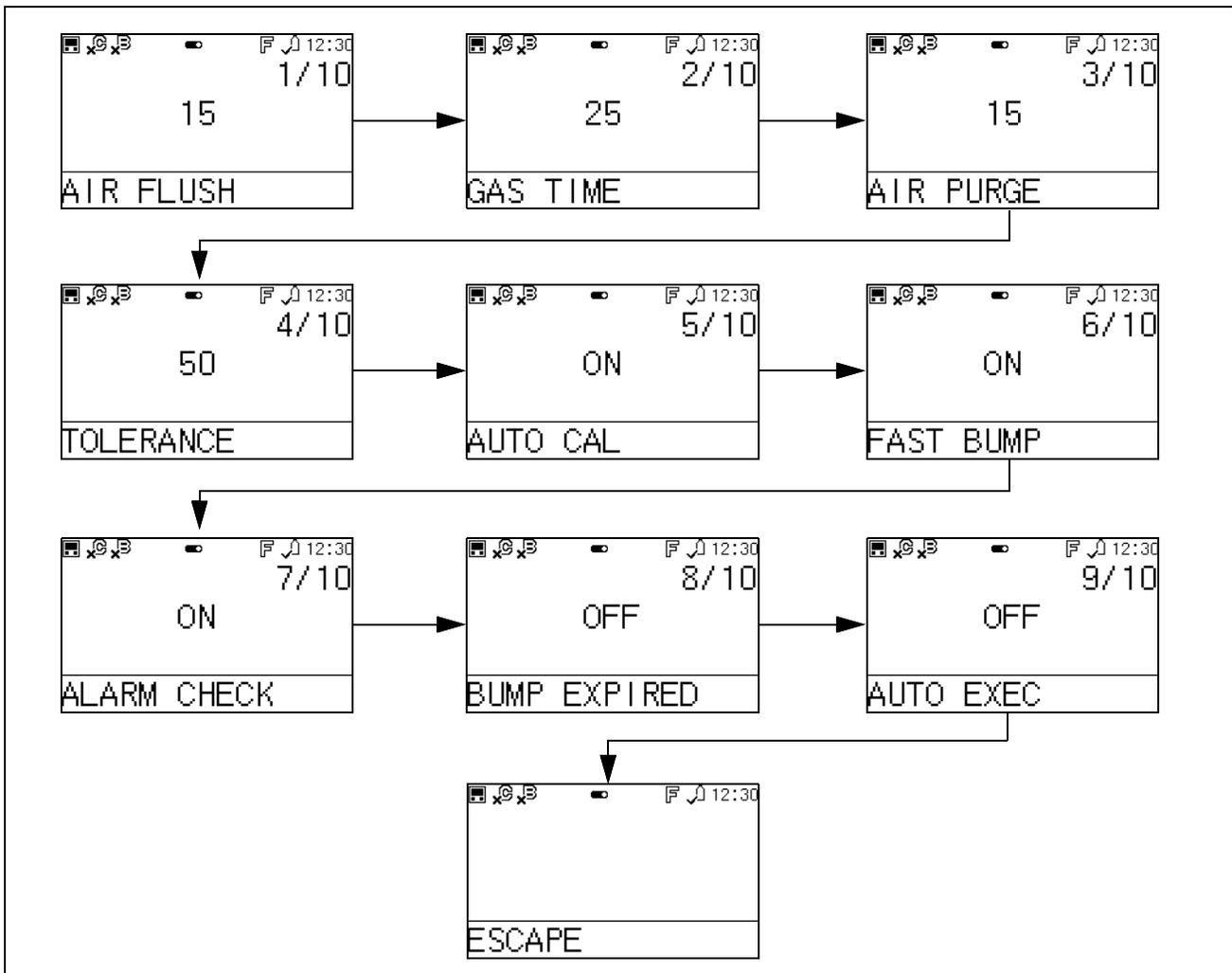
4. Use BUMP ▼ and CAL ▲ to scroll through the bump parameter settings. To change a parameter's setting, press and release EDIT ENTER to highlight the current setting.

5. Use BUMP ▼ and CAL ▲ to change the setting. Press and release EDIT ENTER to save the parameter's setting.

6. To return to the Configuration Menu, use BUMP ▼ and CAL ▲ to scroll to **ESCAPE** and press and release EDIT ENTER.

7. To exit the Configuration Menu and return to the channel readings display, use BUMP ▼ and CAL ▲ to scroll to **ESCAPE** and press and release EDIT ENTER.

Calibration Parameters (CAL)

There are 8 calibration parameters in the **CAL** menu. Table 8 lists the parameter display names, their setting options, and their factory settings.

If you wish to use the factory settings, then you do not need to make any parameter adjustments. If you wish to confirm or change the parameter settings, follow the instructions below.

Table 8: Calibration Parameter Menu

Parameter	Setting Ranges (Factory Default)
Pre-Sample Flush Time (**AIR FLUSH**)*	15 - 180 seconds in 1-second increments (15 seconds)
Calibration Gas Sample Time (**GAS TIME**)*	20 - 120 seconds in 1-second increments (25 seconds)
Post-Sample Purge Time (**AIR PURGE**)*	5 - 180 seconds in 1-second increments (15 seconds)
Alarm Check (**ALARM CHECK**)	• ON (factory default) • OFF
Automatically Calibrate if Past Due (**CAL EXPIRED**)	• ON • OFF (factory default)
Automatically Calibrate at Instrument Turn On (**AUTO EXEC**)	• ON • OFF (factory default)
Manual Calibration (**MANUAL CAL**)	• ON (factory default) • OFF
CO_2 Zero Calibration (**CO2 ZERO CAL**)	• N_2 (factory default) • 400 ppm
Automatically Skip the SDM-6100 Warm-Up Period (**WARM-UP SKIP**)	• ON (factory default) • OFF

* *This parameter also defines the* **COMMON** *setting of the same parameter in the* **CYLINDER** *menu.*

Pre-Sample Flush Time (AIR FLUSH)

NOTE: This parameter also defines the **COMMON** setting of the **CAL AIR FLUSH** parameter in the **CYLINDER** menu.

The pre-sample flush time is the length of time that the SDM-6100 will draw air through the AIR fitting before performing an air adjust operation.

NOTE: If the GX-6100 is not on for 40 seconds before a calibration is initiated, air will flow until the GX-6100 has been on for 40 seconds regardless of the time selected here.

Calibration Gas Sample Time (GAS TIME)

NOTE: This parameter also defines the **COMMON** setting of the **CAL GAS TIME** parameter in the **CYLINDER** menu.

The calibration gas sample time is the length of time that the SDM-6100 will draw calibration gas through each of the gas fittings during calibration.

Post-Sample Purge Time (AIR PURGE)

NOTE: This parameter also defines the **COMMON** setting of the **CAL AIR PURGE** parameter in the **CYLINDER** menu.

The post-sample purge time is the length of time that the SDM-6100 will draw air through the AIR fitting to purge calibration gas from the system.

Alarm Check (ALARM CHECK)

If **ALARM CHECK** is set to **ON**, an LED and buzzer test is done on the GX-6100 at the end of the calibration. The LEDs will turn on for a few seconds, the buzzer will sound, and the SDM-6100 will determine if these actions were completed successfully.

Automatically Calibrate if Past Due (CAL EXPIRED)

If **CAL EXPIRED** is set to **ON** and if the connected GX-6100 is due for a calibration, the SDM-6100 will automatically perform a calibration on all channels when the GX-6100 is connected.

If **CAL EXPIRED** is set to **OFF**, an automatic calibration will not be performed, even if the GX-6100 is due for one.

Automatically Turn On and Calibrate the Instrument (AUTO EXEC)

NOTE: The SDM-6100 cannot be disconnected from power or completely turned off for **AUTO EXEC** to run as intended. See "Turning Off the Instrument and SDM-6100" on page 68 to ensure the docking station remains on.

If the SDM-6100 is on, the GX-6100 is connected, and **AUTO EXEC** is set to **ON**, the SDM-6100 will regularly and automatically calibrate all channels. The instrument does not have to be due for calibration or turned on for this operation to execute.

See "Adjusting Automatic Execution (AUTOMATIC EXEC)" on page 58 to define the schedule.

Manual Calibration (MANUAL CAL)

If **MANUAL CAL** is set to **ON**, a calibration can be initiated by pressing the CAL ▲ button. If **MANUAL CAL** is set to **OFF**, a calibration cannot be manually initiated.

Skipping the Warm-Up Period (WARM-UP SKIP)

If **WARM-UP SKIP** is set to **ON**, the sensor warm-up waiting period is skipped when the calibration begins.

NOTE: For best accuracy, **WARM-UP SKIP** should be set to **OFF**. If **WARM-UP SKIP** is set to **ON**, calibration accuracy will decrease.

Viewing or Changing the Calibration Parameters

1. To enter the Configuration Menu, refer to "Entering the Configuration Menu" on page 28.

2. While in the Configuration Menu, use BUMP ▼ and CAL ▲ to scroll to the **CAL** menu.

```
 ■ ⚙   ▭        ⚑ ⏰ 12:30
  BUMP
 >CAL
  CYLINDER
 SETTING
```
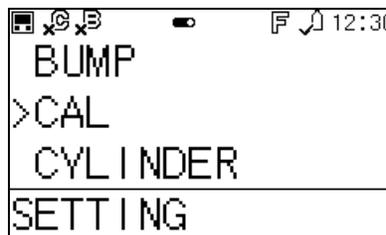
3. Press and release EDIT ENTER. The **AIR FLUSH** parameter will display.
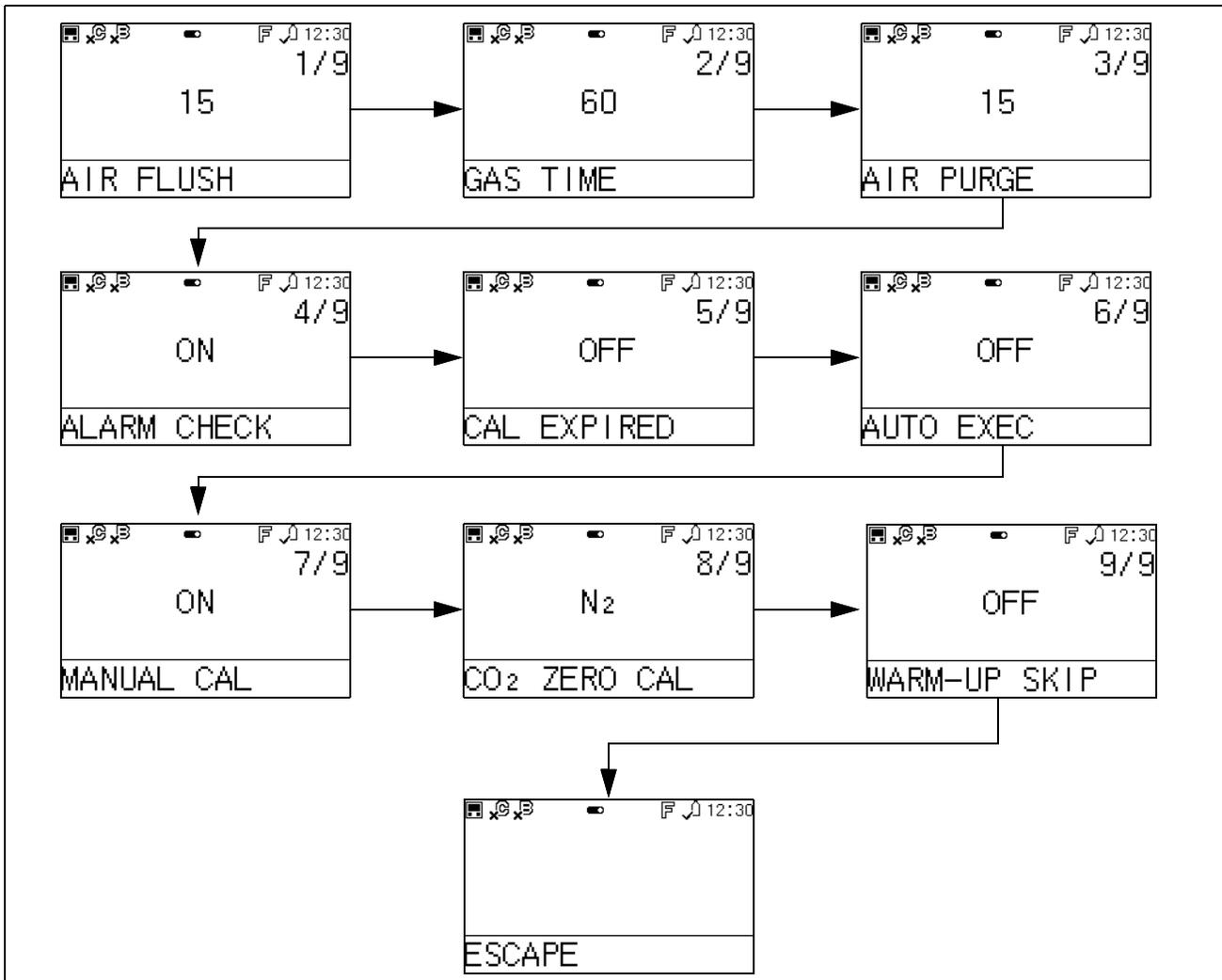
4. Use BUMP ▼ and CAL ▲ to scroll through the calibration parameter settings. To change a parameter's setting, press and release EDIT ENTER to highlight the current setting.

5. Use BUMP ▼ and CAL ▲ to change the setting. Press and release EDIT ENTER to save the parameter's setting.

6. To return to the Configuration Menu, use BUMP ▼ and CAL ▲ to scroll to **ESCAPE** and press and release EDIT ENTER.

7. To exit the Configuration Menu and return to the channel readings display, use BUMP ▼ and CAL ▲ to scroll to **ESCAPE** and press and release EDIT ENTER.

Cylinder Parameters (CYLINDER)

In the **CYLINDER** menu, there are 12 available cylinder profiles for storing information about cylinders used by the SDM-6100. Each profile has 3 types of menus.

- **BASIC INFO**: Standard information about a cylinder (i.e. name, part number, serial number, expiration date)
- **DETAIL INFO**: Parameters for how the cylinder gets used during bump tests and calibrations (i.e. air flush times, purge times, gas sample times)
- Cylinder Gases (**GS1** - **GS6**): Define the gases (up to 6) that are in the cylinder (i.e. gas name, concentration, bump test tolerance)

NOTE: If the **COMMON** setting is selected for a parameter, the SDM-6100 will use the corresponding parameter in either the **BUMP** or **CAL** parameter menus.

Table 9: Cylinder Profile Parameter Menu

Menu Name	Parameter	Setting Range (Factory Default)
BASIC INFO	CYLINDER NAME	10 character-limit (factory default is "CYL", followed by numbers 01 - 12)
	PART NUMBER	10 character-limit, A-Z, 0-9 (no default)
	SERIAL NUMBER	10 character-limit, A-Z, 0-9 (no default)
	EXPIRY DATE	• Month: 1 - 12 (12) • Day: 1 - 31 (31) • Year: 2024 - 2099 (2099)
	ACTIVE	• ON (factory setting) • OFF
DETAIL INFO	ACTUAL GAS	• ON • OFF (factory setting)
	BUMP AIR FLUSH*	COMMON (factory setting) or 15 - 180 seconds in 1 second increments
	BUMP AIR PURGE*	COMMON (factory setting) or 5 - 180 seconds in 1 second increments
	CAL AIR FLUSH*	COMMON (factory setting) or 15 - 180 seconds in 1 second increments

Table 9: Cylinder Profile Parameter Menu

Menu Name	Parameter	Setting Range (Factory Default)
DETAIL INFO (cont.)	CAL AIR PURGE*	COMMON (factory setting) or 5 - 180 seconds in 1 second increments
	BUMP GAS TIME*	COMMON (factory setting) or 20 - 120 seconds in 1 second increments
	CAL GAS TIME*	COMMON (factory setting) or 20 - 120 seconds in 1 second increments
	IR GAS TIME	Not used by the SDM-6100
	IR WAIT TIME	Not used by the SDM-6100
	SH SENSOR	Not used by the SDM-6100
	SH BUMP UPPER	Not used by the SDM-6100
	SH BUMP LOWER	Not used by the SDM-6100
GS1 - **GS6**	GAS NAME	10 character-limit, A-Z, 0-9
	GAS VALUE	10 digit-limit, 0-9, unit choices are %LEL, %VOL, %, ppb, and ppm
	BUMP TOLERANCE*	COMMON (factory setting) or 10% - 50% in 1% increments
CLEAR DATA	• ON: Deletes the cylinder profile when setting is confirmed so that a new cylinder profile can be defined • OFF (factory setting): No effect when setting is confirmed	

* *If the* **COMMON** *setting is selected for this parameter, the SDM-6100 will use the setting saved for the corresponding* **BUMP** *and* **CAL** *parameters.*

Adjusting Cylinder Parameters

1. To enter the Configuration Menu, refer to "Entering the Configuration Menu" on page 28.

2. While in the Configuration Menu, press BUMP ▼ to scroll to **CYLINDER**.

3. Press and release EDIT ENTER. The list of cylinder profiles is displayed.

```
■ ,G,B       ⚬      F ♪12:30
>01:CYL01
 02:CYL02
 03:CYL03
CYLINDER
```
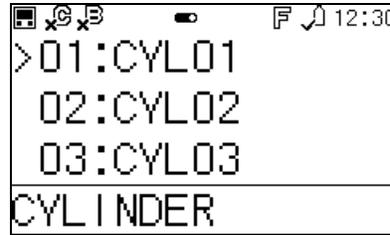
4. Use BUMP ▼ and CAL ▲ to scroll to the desired cylinder profile.

5. Press and release EDIT ENTER. The available parameter menus are displayed.

```
■ ,G,B       ⚬      F ♪12:30
>BASIC INFO
 DETAIL INFO
 GS1:CH₄
CYLINDER 01
```

6. To edit **BASIC INFO** parameters, press and release EDIT ENTER. The **CYLINDER NAME** parameter will display.

```
■ ,G,B       ⚬      F ♪12:30        ■ ,G,B       ⚬      F ♪12:30        ■ ,G,B       ⚬      F ♪12:30
                    1/5                                 2/5                                 3/5
 CYL01

CYLINDER NAME               PART NUMBER                 SERIAL NUMBER
```

```
■ ,G,B       ⚬      F ♪12:30        ■ ,G,B       ⚬      F ♪12:30        ■ ,G,B       ⚬      F ♪12:30
                    4/5                                 5/5
 MM/DD/YYYY                   ON
 12/31/2099
EXPIRY DATE                 ACTIVE                      ESCAPE
```

7. Use BUMP ▼ and CAL ▲ to scroll through the **BASIC INFO** parameters. To change a parameter's setting, press and release EDIT ENTER to highlight the current setting.

8. Use BUMP ▼ and CAL ▲ to change the setting. Press and release EDIT ENTER to save the parameter's setting.

9. To return to the cylinder profile menu, use BUMP ▼ and CAL ▲ to scroll to **ESCAPE** and press and release EDIT ENTER.

10. To edit **DETAIL INFO** parameters, press BUMP ▼ to scroll to **DETAIL INFO**.

```
 ▨ ⅍ᴮ          ⊂⊃        ℝ ♪ 12:30
>BASIC INFO
 DETAIL INFO
 GS1:CH₄
CYLINDER 01
```

11. Press and release EDIT ENTER. The **ACTUAL GAS** parameter will display.

```
 ▨ ⅍ᴮ      ⊂⊃    ℝ ♪ 12:30
              1/12
      OFF

ACTUAL GAS
```
→
```
 ▨ ⅍ᴮ      ⊂⊃    ℝ ♪ 12:30
              2/12
     COMMON

BUMP AIR FLUSH
```
→
```
 ▨ ⅍ᴮ      ⊂⊃    ℝ ♪ 12:30
              3/12
     COMMON

BUMP AIR PURGE
```

```
 ▨ ⅍ᴮ      ⊂⊃    ℝ ♪ 12:30
              4/12
     COMMON

CAL AIR FLUSH
```
→
```
 ▨ ⅍ᴮ      ⊂⊃    ℝ ♪ 12:30
              5/12
     COMMON

CAL AIR PURGE
```
→
```
 ▨ ⅍ᴮ      ⊂⊃    ℝ ♪ 12:30
              6/12
     COMMON

BUMP GAS TIME
```

```
 ▨ ⅍ᴮ      ⊂⊃    ℝ ♪ 12:30
              7/12
     COMMON

CAL GAS TIME
```
→
```
 ▨ ⅍ᴮ      ⊂⊃    ℝ ♪ 12:30
              8/12
       15

IR GAS TIME
```
→
```
 ▨ ⅍ᴮ      ⊂⊃    ℝ ♪ 12:30
              9/12
       10

IR WAIT TIME
```

```
 ▨ ⅍ᴮ      ⊂⊃    ℝ ♪ 12:30
             10/12
      OFF

SH SENSOR
```
→
```
 ▨ ⅍ᴮ      ⊂⊃    ℝ ♪ 12:30
             11/12
     -----

SH BUMP UPPER
```
→
```
 ▨ ⅍ᴮ      ⊂⊃    ℝ ♪ 12:30
             12/12
     -----

SH BUMP LOWER
```

NOTE: Parameters on screens 11 - 12 are not used by this instrument.

```
 ▨ ⅍ᴮ      ⊂⊃    ℝ ♪ 12:30



ESCAPE
```

12. Use BUMP ▼ and CAL ▲ to scroll through the **DETAIL INFO** parameters. To change a parameter's setting, press and release EDIT ENTER to highlight the current setting.

13. Use BUMP ▼ and CAL ▲ to scroll through available settings. Press and release EDIT ENTER to save the parameter's setting.

14. When finished, press BUMP ▼ to scroll to **ESCAPE**.

15. Press and release EDIT ENTER to return to the **CYLINDER** menu.

16. To define the gases in the cylinder, press BUMP ▼ to scroll to the desired gas name.

```
■ ⅙ ⅙       ━     𝔽 ⏲ 12:30
 DETAIL INFO
>GS1:CH₄
 GS2:O₂
CYLINDER 01
```
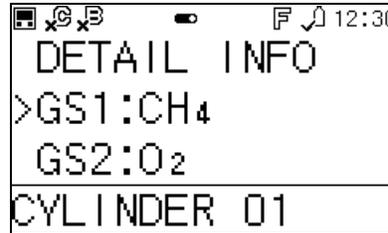
17. Press and release EDIT ENTER. The **GAS NAME** parameter will display.

```
■ ⅙ ⅙    ━   𝔽 ⏲ 12:30        ■ ⅙ ⅙    ━   𝔽 ⏲ 12:30        ■ ⅙ ⅙    ━   𝔽 ⏲ 12:30
               1/3                          2/3                          3/3
   CH₄                          50.0000 %LEL                 COMMON

GAS NAME                      GAS VALUE                     BUMP TOLERANCE
```

```
■ ⅙ ⅙    ━   𝔽 ⏲ 12:30




ESCAPE
```
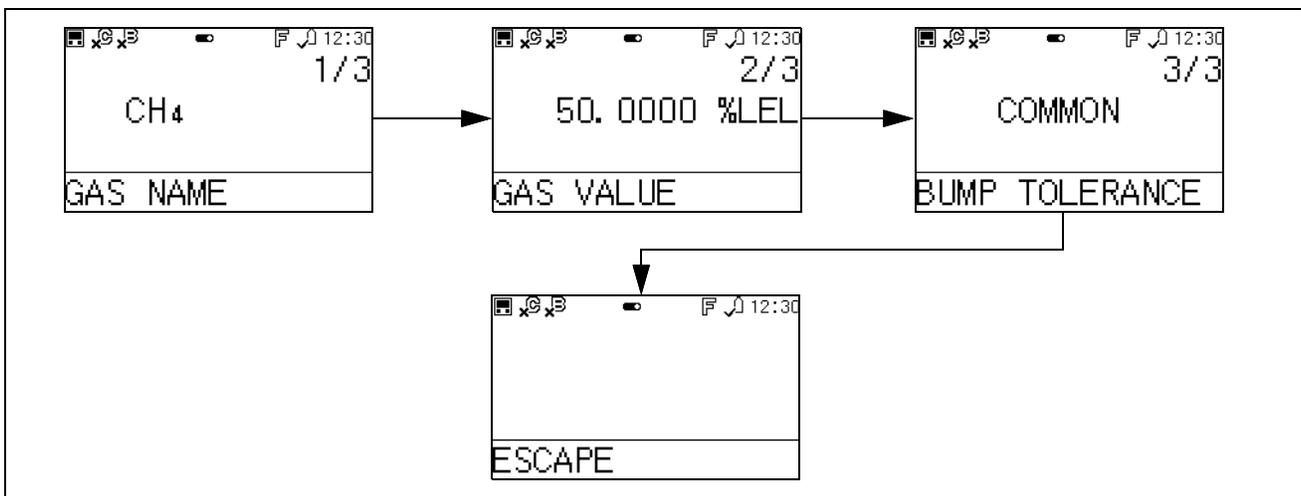
18. Use BUMP ▼ and CAL ▲ to scroll through the **GAS** parameters. To change a parameter's setting, press and release EDIT ENTER to highlight the current setting.

19. Use BUMP ▼ and CAL ▲ to change the setting. Press and release EDIT ENTER to save the parameter's setting.

20. To return to the cylinder profile menu, use BUMP ▼ and CAL ▲ to scroll to **ESCAPE** and press and release EDIT ENTER.

21. Repeat Step 16 through Step 20 for each gas in the cylinder.

22. To return to the **CYLINDER** menu, use BUMP ▼ and CAL ▲ to scroll to **ESCAPE** and press and release EDIT ENTER.

23. Repeat Step 4 to Step 21 for each cylinder profile.

24. To return to the Configuration Menu, use BUMP ▼ and CAL ▲ to scroll to **ESCAPE** and press and release EDIT ENTER.

25. To exit the Configuration Menu and return to the channel readings display, use BUMP ▼ and CAL ▲ to scroll to **ESCAPE** and press and release EDIT ENTER.

Deleting Cylinder Settings (CLEAR DATA)

1. To enter the Configuration Menu, refer to "Entering the Configuration Menu" on page 28.

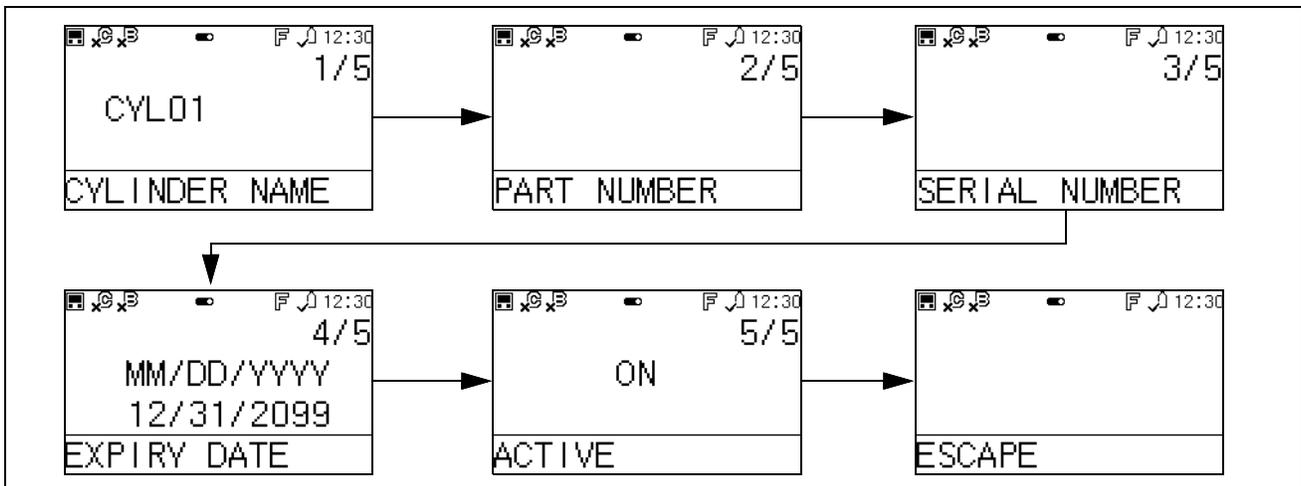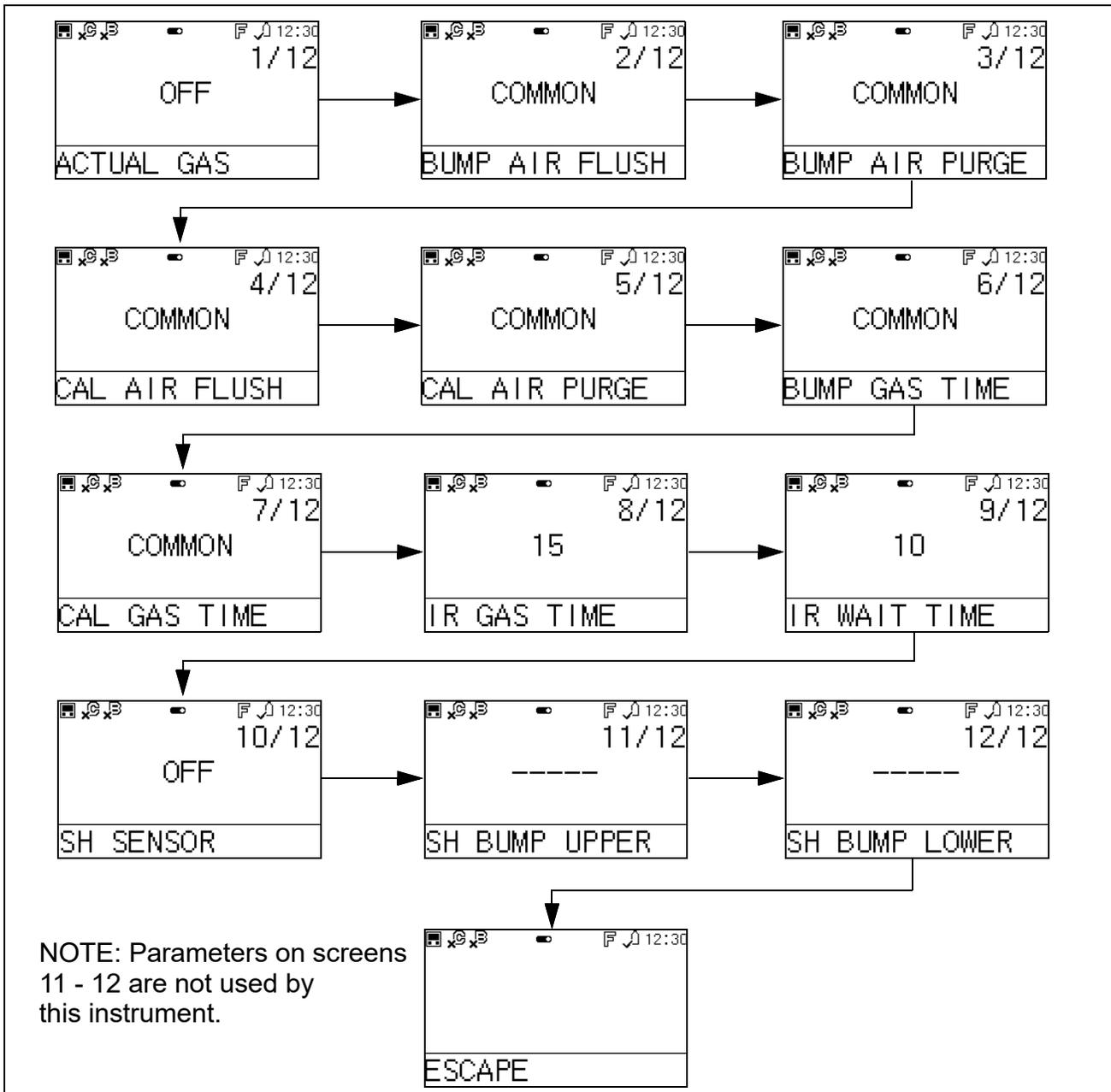2. While in the Configuration Menu, press BUMP ▼ to scroll to **CYLINDER**.

```
□ ⁣⁣⁣        ▭        📄 🔔 12:30
 CAL
>CYLINDER
 INLET
SETTING
```
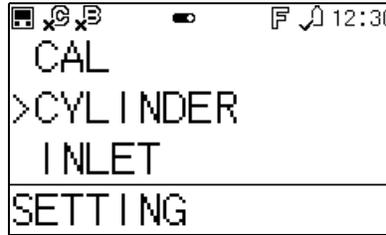
3. Press and release EDIT ENTER. The **CYLINDER** menu is displayed.

```
□ ⁣⁣⁣        ▭        📄 🔔 12:30
>01:CYL01
 02:CYL02
 03:CYL03
CYLINDER
```
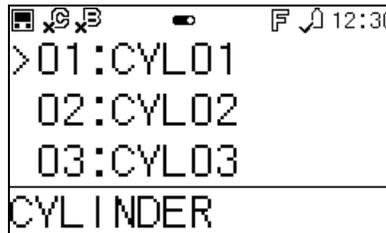
4. Use BUMP ▼ and CAL ▲ to scroll to the cylinder profile to delete.

5. Press and release EDIT ENTER. The available parameter menus are displayed.

6. Use BUMP ▼ and CAL ▲ to scroll to **CLEAR DATA**.

7. Press and release EDIT ENTER. The **CLEAR DATA** menu item is displayed.

```
□ ⁣⁣⁣        ▭        📄 🔔 12:30
                    1/1

          OFF

CLEAR  DATA
```
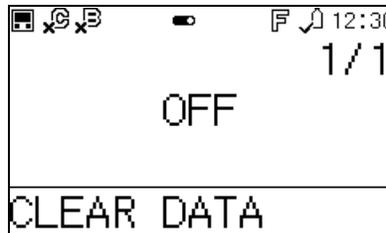
8. Press and release EDIT ENTER to highlight the **CLEAR DATA** setting.

```
□ ⁣⁣⁣        ▭        📄 🔔 12:30
                    1/1

          ON

CLEAR  DATA
```
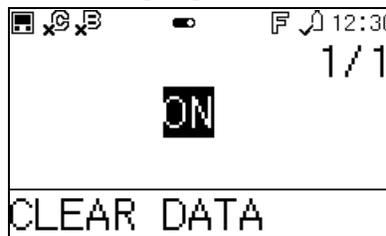
9. Use BUMP ▼ and CAL ▲ to change the option between **ON** and **OFF**.
   - To delete the cylinder profile, change the setting to **ON** and press EDIT ENTER to confirm the change.
   - To keep the cylinder profile, change the setting to **OFF** press EDIT ENTER to confirm the change.

10. To return to the cylinder profile menu, use BUMP ▼ and CAL ▲ to scroll to **ESCAPE** and press and release EDIT ENTER.

11. To return to the **CYLINDER** menu, use BUMP ▼ and CAL ▲ to scroll to **ESCAPE** and press and release EDIT ENTER.

12. Repeat Step 4 to Step 10 for any other cylinder profile deletions.

13. To return to the Configuration Menu, use BUMP ▼ and CAL ▲ to scroll to **ESCAPE** and press and release EDIT ENTER.

14. To exit the Configuration Menu and return to the channel readings display, use BUMP ▼ and CAL ▲ to scroll to **ESCAPE** and press and release EDIT ENTER.

Gas Inlet Assignments (INLET)

Assigning the gas cylinders defines which gas inlet each cylinder will use during bump testing or calibration.

A gas cylinder can only be changed once during a test.

Table 10: Inlet Assignment Parameter Menu

Inlet Display Names	Operation
INLET GAS1	Assigns cylinder to the GAS1 inlet
INLET GAS2	Assigns cylinder to the GAS2 inlet
INLET GAS3	Assigns cylinder to the GAS3 inlet

See the table below for gas inlet assignment examples. See page 26 for a more detailed explanation of cylinder requirements.

Table 11: Recommended Gas Cylinders and Gas Ports for Single-Station Use

| Instrument Types	Recommended Calibration Gas Cylinder and Gas Inlet Selection
3-gas (LEL/Oxy/CO) + low range PID	**GAS 1**: 3-gas mix with LEL/Oxy/CO **GAS 2**: 10 ppm IBL
3-gas (LEL/Oxy/CO) + high range PID	**GAS 1**: 3-gas mix with LEL/Oxy/CO **GAS 2**: 100 ppm IBL
Standard 4-gas (LEL/Oxy/H2S/CO) + low range PID	**GAS 1**: 4-gas mix with LEL/Oxy/H2S/CO **GAS 2**: 10 ppm IBL
Standard 4-gas + high range PID	**GAS 1**: 5-gas mix with LEL/Oxy/CO/H2S/IBL

To enter the Configuration Menu, refer to "Entering the Configuration Menu" on page 28.

15. While in the Configuration Menu, press BUMP ▼ to scroll to **INLET**.

```
┌─────────────────────────────┐
│ ▣ ₓⒼₓⒷ    ▭    🅕 ♪ 12:30 │
│  CYLINDER                   │
│ >INLET                      │
│  SENSOR                     │
│ ┌─────────────────────────┐ │
│ │SETTING                  │ │
│ └─────────────────────────┘ │
└─────────────────────────────┘
```

16. Press and release EDIT ENTER. The cylinder assignment for the GAS1 fitting is displayed.

```
┌──────────────────────┐      ┌──────────────────────┐      ┌──────────────────────┐
│ ▣ ₓⒼₓⒷ  ▭  🅕♪12:30 │      │ ▣ ₓⒼₓⒷ  ▭  🅕♪12:30 │      │ ▣ ₓⒼₓⒷ  ▭  🅕♪12:30 │
│                 1/3  │ ───► │                 2/3  │ ───► │                 3/3  │
│  01:CYL01            │      │     OFF              │      │  03:CYL03            │
│ ┌──────────────────┐ │      │ ┌──────────────────┐ │      │ ┌──────────────────┐ │
│ │INLET GAS1        │ │      │ │INLET GAS2        │ │      │ │INLET GAS3        │ │
│ └──────────────────┘ │      │ └──────────────────┘ │      │ └──────────────────┘ │
└──────────────────────┘      └──────────────────────┘      └──────────────────────┘
                                                                       │
                                        ┌──────────────────────┐◄──────┘
                                        │ ▣ ₓⒼₓⒷ  ▭  🅕♪12:30 │
                                        │                      │
                                        │                      │
                                        │ ┌──────────────────┐ │
                                        │ │ESCAPE            │ │
                                        │ └──────────────────┘ │
                                        └──────────────────────┘
```
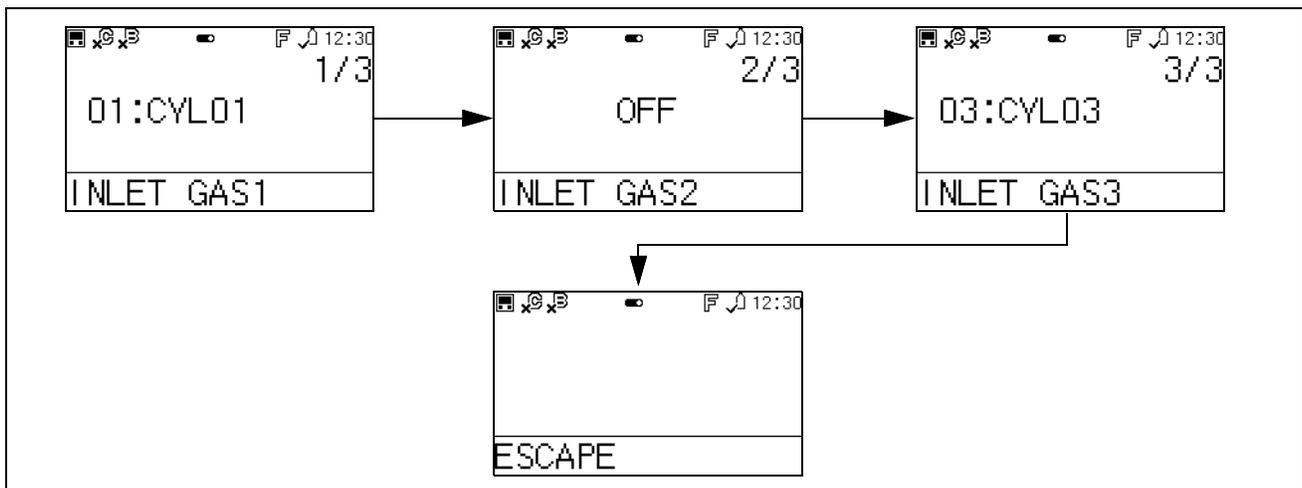
17. Use BUMP ▼ and CAL ▲ to scroll through the list of inlet fittings. To change an inlet assignment, press and release EDIT ENTER to highlight the current assignment.

18. Use BUMP ▼ and CAL ▲ to change which gas cylinder is assigned to the inlet fitting. Press and release EDIT ENTER to save the parameter's setting.

19. To return to the Configuration Menu, use BUMP ▼ and CAL ▲ to scroll to **ESCAPE** and press and release EDIT ENTER.

20. To exit the Configuration Menu and return to the channel readings display, use BUMP ▼ and CAL ▲ to scroll to ESCAPE and press and release EDIT ENTER.

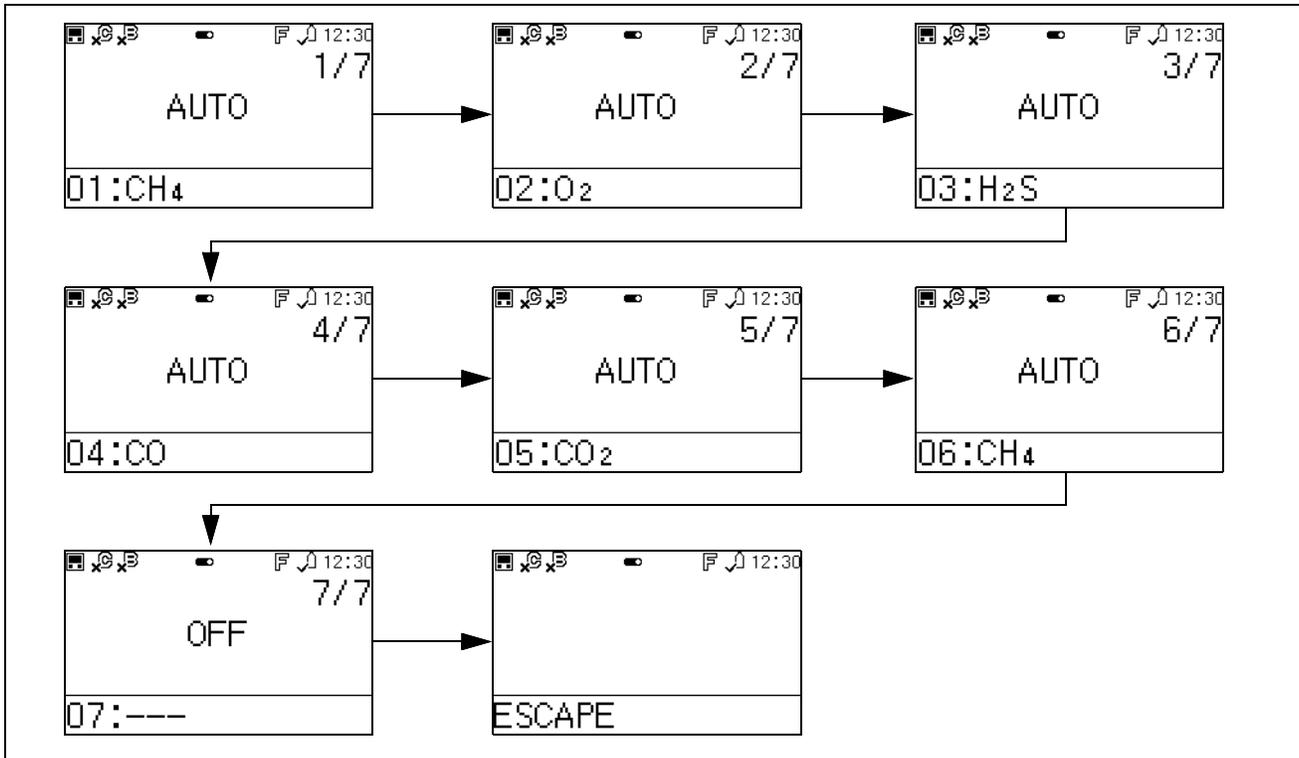# Selecting Sensors for Calibration/Bump Tests (SENSOR)

The **SENSOR** menu is used to include or exclude which sensors are tested during bump tests and calibrations. The SDM-6100 will use the same settings when a GX-6100 with the same sensor combination is connected to the docking station.

1. To enter the Configuration Menu, refer to "Entering the Configuration Menu" on page 28.

2. While in the Configuration Menu, press BUMP ▼ to scroll to **SENSOR**.

```
   INLET
>SENSOR
   DATE
SETTING
```

3. Press and release EDIT ENTER. The first sensor's ON/OFF parameter is displayed. The following LCD sequence is for a GX-6100 with CH_4, O_2, H_2S, CO, IR CO_2, and IR CH_4 sensors installed.

```
  1/7              2/7              3/7
 AUTO             AUTO             AUTO

01:CH₄           02:O₂            03:H₂S
```

```
  4/7              5/7              6/7
 AUTO             AUTO             AUTO

04:CO            05:CO₂           06:CH₄
```

```
  7/7
 OFF

07:---           ESCAPE
```

4. Use BUMP ▼ and CAL ▲ to scroll through each parameter screen. To change a parameter's setting, press and release EDIT ENTER to highlight the current setting.

5. Use BUMP ▼ and CAL ▲ to change the parameter. Press and release EDIT ENTER to save the parameter's setting.

6. To return to the Configuration Menu, use BUMP ▼ and CAL ▲ to scroll to **ESCAPE** and press and release EDIT ENTER.

7. To exit the Configuration Menu and return to the channel readings display, use BUMP ▼ and CAL ▲ to scroll to ESCAPE and press and release EDIT ENTER.
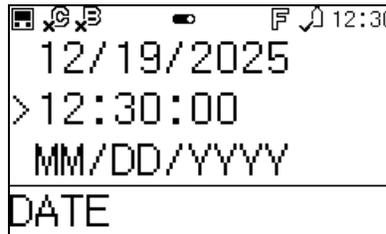
Changing Date and Time Settings (DATE)

It is important to update the SDM-6100's date/time to match your time zone. The SDM-6100 automatically updates the date/time in a connected GX-6100 to match the SDM-6100's date/time. If the date/time in your SDM-6100 is not correct and you connect your GX-6100, the date/time in the GX-6100 will no longer be correct.

1. To enter the Configuration Menu, refer to "Entering the Configuration Menu" on page 28.

2. While in the Configuration Menu, press BUMP ▼ to scroll to **DATE**.

```
■ ⚙    ▭      ⚑ ♪ 12:30
 SENSOR
>DATE
 LANGUAGE
SETTING
```

3. Press and release EDIT ENTER. The **DATE** menu will display.

```
■ ⚙    ▭      ⚑ ♪ 12:30
 12/19/2025
>12:30:00
 MM/DD/YYYY
DATE
```

4. To set the date:

   a. Press and release EDIT ENTER. The screen displays the date format and the current date with the year highlighted.

```
■ ⚙    ▭      ⚑ ♪ 12:30
 YYYY/MM/DD
 2025/04/08
DATE
```

   b. Use BUMP ▼ and CAL ▲ to adjust the value.

   c. Press EDIT ENTER to save the value and move to the month setting.

   d. Repeat steps b and c for the month and day settings.

   e. When you press EDIT ENTER to save the day setting, **SAVING** appears and the SDM-6100 returns to the **DATE** menu.

5. To set the time:
   a. Use BUMP ▼ and CAL ▲ to scroll to the time parameter.
   b. Press and release EDIT ENTER. The current time is displayed with the hour setting highlighted.

   c. Use BUMP ▼ and CAL ▲ to adjust the value.
   d. Press EDIT ENTER to save the value and move to the minute setting.
   e. Repeat steps c and d for the minute and seconds settings.
   f. When you press EDIT ENTER to save the seconds setting, **SAVING** appears and the SDM-6100 returns to the **DATE** menu.

6. To select the date format:
   a. Use BUMP ▼ and CAL ▲ to scroll to the date format parameter.
   b. Press and release EDIT ENTER. The current setting is highlighted.

   c. Use BUMP ▼ and CAL ▲ to change the setting.
   d. When you press EDIT ENTER to save the parameter, **SAVING** appears and the SDM-6100 returns to the **DATE** menu.

7. To return to the Configuration Menu, use BUMP ▼ and CAL ▲ to scroll to **ESCAPE**. Press and release EDIT ENTER to return to the Configuration Menu.

8. To exit the Configuration Menu and return to the channel readings display, use BUMP ▼ and CAL ▲ to scroll to **ESCAPE** and press and release EDIT ENTER.

Selecting Language (LANGUAGE)

This parameter affects the language used in the SDM-6100 displays. It does not change the **LANGUAGE** parameter of the GX-6100.

The following languages are supported: English, Japanese, Korean, Chinese, Vietnamese, German, French, Spanish, Portuguese, Italian, Polish, Czech, Slovak, Romanian, Turkish, and Russian.

1. To enter the Configuration Menu, refer to "Entering the Configuration Menu" on page 28.

2. While in the Configuration Menu, press BUMP ▼ to scroll to **LANGUAGE**.

```
■ ✗©✗ᴮ      ▬    ⊮ ♪ 12:30
 DATE
>LANGUAGE
 SYSTEM
SETTING
```

3. Press and release EDIT ENTER. The **LANGUAGE** parameter will display.

```
■ ✗©✗ᴮ      ▬    ⊮ ♪ 13 33
                     1/1
    ENGLISH

LANGUAGE
```

4. Press and release EDIT ENTER to begin editing the parameter.

5. Use BUMP ▼ and CAL ▲ to change the setting.

6. Press EDIT ENTER to save the parameter's setting.

7. To return to the Configuration Menu, use BUMP ▼ and CAL ▲ to scroll to ESCAPE and press and release EDIT ENTER.

8. To exit the Configuration Menu and return to the channel readings display, use BUMP ▼ and CAL ▲ to scroll to **ESCAPE** and press and release EDIT ENTER.

System Parameters (SYSTEM)

General system settings can be accessed through the Configuration Menu. Table 12 below describes each available menu, their parameters, and the factory settings of each parameter.

Table 12: SYSTEM Parameter Menus

Parameter Menu Name	Parameters	Setting Ranges (Factory Setting)
LCD	LCD CONTRAST	1 - 50 (25)
POWER SAVE	WAIT TIME	0 - 23 hrs, 0 - 59 min, 0 - 59 sec (10 min)
	WAIT TIME (PASS)	0 - 23 hrs, 0 - 59 min, 0 - 59 sec (15 sec)
DATA LOGGER	AUTO DOWNLOAD	• OFF (factory setting) • EVERY TIME • INTERVAL
	INTERVAL	1 - 60 days (1 day)
	MANUAL DOWNLOAD	• ON (factory setting) • OFF
EXPIRE NOTICE	BUMP ICON	• ON (factory setting) • OFF
	CAL ICON	• ON (factory setting) • OFF
	CYL ICON	• ON (factory setting) • OFF
	BUMP WARN DAYS	0 - 180 days (10 days)
	CAL WARN DAYS	0 - 180 days (10 days)
	CYL WARN DAYS	0 - 180 days (10 days)
PASSWORD	ON/OFF	• ON • OFF (factory setting)
	PASSWORD	0000 - 9999, (0000)

Table 12: SYSTEM Parameter Menus

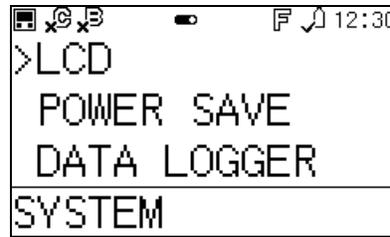| Parameter Menu Name	Parameters	Setting Ranges (Factory Setting)
AUTOMATIC EXEC	TYPE	• BUMP (factory setting) • CALIBRATION • ALARM CHECK
	EXEC TIME	00:00 - 23:59 (00:00)
	SUN - SAT	• ON • OFF (factory setting)

NETWORK	CONFIG	• CONFIG:DHCP: ON/OFF (ON)
		• CONFIG:IP ADDR:
		  0.0.0.0 to 255.255.255.255 (0.0.0.0)
		• CONFIG:SUBNET:
		  0.0.0.0 to 255.255.255.255 (255.255.255.255)
		• CONFIG:DEF GW:
		  0.0.0.0 to 255.255.255.255 (0.0.0.0)

	STATUS	• STATUS:MAC ADDR (N/A) • STATUS:IP ADDR (N/A) • STATUS:SUBNET M (N/A) • STATUS:DEF GW (N/A)
SDM INFO	ROM/SUM	N/A
	INST NUMBER 1	N/A
	INST NUMBER 2	N/A
UPDATE	N/A	N/A

Adjusting the LCD Contrast (LCD)

Use the **LCD** menu to adjust the contrast of the docking station display. The contrast settings range from 1 to 50 (factory default is 25).

1. To enter the Configuration Menu, refer to "Entering the Configuration Menu" on page 28.

2. While in the Configuration Menu, press BUMP ▼ to scroll to **SYSTEM**.

3. Press and release EDIT ENTER. The **SYSTEM** menu will display.

```
■ᕗᴳᵦᴮ          ▭▭      ⴼ ♪ 12:30
>LCD
 POWER SAVE
 DATA LOGGER
SYSTEM
```
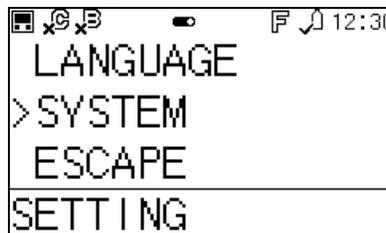
4. Press and release EDIT ENTER to enter the **LCD** menu. The **LCD CONTRAST** parameter will display.

```
■ᕗᴳᵦᴮ          ▭▭      ⴼ ♪ 12:30
                        1/1
         15

LCD CONTRAST
```

5. Press and release EDIT ENTER to begin editing the parameter.

6. Use BUMP ▼ and CAL ▲ to change the setting.

7. Press EDIT ENTER to save the parameter's setting.

8. To return to the **SYSTEM** menu, use BUMP ▼ and CAL ▲ to scroll to **ESCAPE** and press and release EDIT ENTER.

9. To return to the Configuration Menu, use BUMP ▼ and CAL ▲ to scroll to **ESCAPE** and press and release EDIT ENTER.

10. To exit the Configuration Menu and return to the channel readings display, use BUMP ▼ and CAL ▲ to scroll to **ESCAPE** and press and release EDIT ENTER.

Adjusting the Power Saving Settings (POWER SAVE)

The **POWER SAVE** menu has 2 parameters: **WAIT TIME** and **WAIT TIME (PASS)**.

- **WAIT TIME** is used to control how long the docked GX-6100 remains on if none of the SDM-6100 buttons are pressed.
- **WAIT TIME (PASS)** is used to control how long the docked GX-6100 remains on if none of the SDM-6100 buttons are pressed after a successful bump test, calibration, or alarm check.

1. To enter the Configuration Menu, refer to "Entering the Configuration Menu" on page 28.

2. While in the Configuration Menu, press BUMP ▼ to scroll to **SYSTEM**.

3. Press and release EDIT ENTER. The **SYSTEM** menu will display.

4. Use BUMP ▼ and CAL ▲ to scroll to the **POWER SAVE** menu.

```
■ ⚙ ✕ ᴮ        ▭        🏳 🔔 12:30
 LCD
>POWER SAVE
 DATA LOGGER
SYSTEM
```
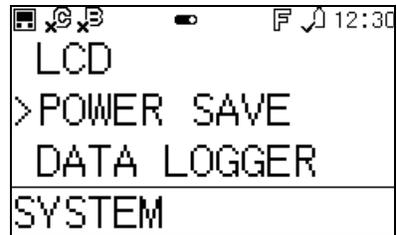
5. Press and release EDIT ENTER to enter the **POWER SAVE** menu. The **WAIT TIME** setting will display.

```
■ ⚙ ✕ ᴮ        ▭        🏳 🔔 12:30
                          1/2
   HOUR   MIN    SEC
              10     00
WAIT TIME
```
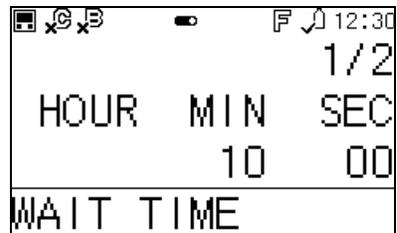
6. To adjust the **WAIT TIME** parameter:
   a. Press and release EDIT ENTER. The current hour parameter is highlighted.

```
■ ⚙ ✕ ᴮ        ▭        🏳 🔔 12:30
                          1/2
   HOUR   MIN    SEC
   00      10     00
WAIT TIME
```

   b. Use BUMP ▼ and CAL ▲ to adjust the value.
   c. Press EDIT ENTER to save the value and move to the minute setting.
   d. Repeat steps b and c for the minute and second settings.
   e. When you press EDIT ENTER to save the parameter, **SAVING** appears and the SDM-6100 stops highlighting the parameters.

7. To adjust **WAIT TIME (PASS)** parameter:
   a. Use BUMP ▼ and CAL ▲ to scroll to the **WAIT TIME (PASS)**.
   b. Press and release EDIT ENTER. The current hour parameter is highlighted.

```
■ ⚙ ✕ ᴮ        ▭        🏳 🔔 12:30
                          2/2
   HOUR   MIN    SEC
   00      00     15
WAIT TIME(PASS)
```

   c. Use BUMP ▼ and CAL ▲ to adjust the value.
   d. Press EDIT ENTER to save the value and move to the minute parameter.

e. Repeat steps c and d for the minute and second parameters.

f. When you press EDIT ENTER to save the parameter, **SAVING** appears and the SDM-6100 stops highlighting the parameters.

8. To return to the **SYSTEM** menu, use BUMP ▼ and CAL ▲ to scroll to **ESCAPE** and press and release EDIT ENTER.

9. To return to the Configuration Menu, use BUMP ▼ and CAL ▲ to scroll to **ESCAPE** and press and release EDIT ENTER.

10. To exit the Configuration Menu and return to the channel readings display, use BUMP ▼ and CAL ▲ to scroll to **ESCAPE** and press and release EDIT ENTER.

Adjusting the Data Logger Settings (DATA LOGGER)

The **DATA LOGGER** menu has 3 parameters: **AUTO DOWNLOAD**, **INTERVAL**, and **MANUAL DOWNLOAD**.

* **AUTO DOWNLOAD** is used to enable automatic downloading of logger data if a USB flash drive is connected when the GX-6100 is connected to the SDM-6100.

* **INTERVAL** controls the length of the interval between the last download of the same instrument and the next automatic download. **AUTO DOWNLOAD** must be enabled for this parameter to be used. The SDM-6100 uses this parameter to compare the current time/date with logger data already on the flash drive.

* **MANUAL DOWNLOAD** is used to enable whether logger data can be downloaded by holding down the COPY button.

1. To enter the Configuration Menu, refer to "Entering the Configuration Menu" on page 28.

2. While in the Configuration Menu, press BUMP ▼ to scroll to **SYSTEM**.

3. Press and release EDIT ENTER. The **SYSTEM** menu will display.

4. Use BUMP ▼ and CAL ▲ to scroll to the **DATA LOGGER** menu.

```
 ■ ⚙ ⚙        ▭        ⚑ ♪ 12:30
  POWER SAVE
 >DATA LOGGER
  EXPIRE NOTICE
 SYSTEM
```
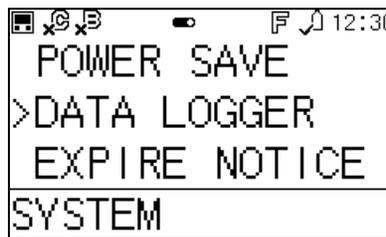
5. Press and release EDIT ENTER to enter the **DATA LOGGER** menu. The **AUTO DOWNLOAD**
    parameter will display.
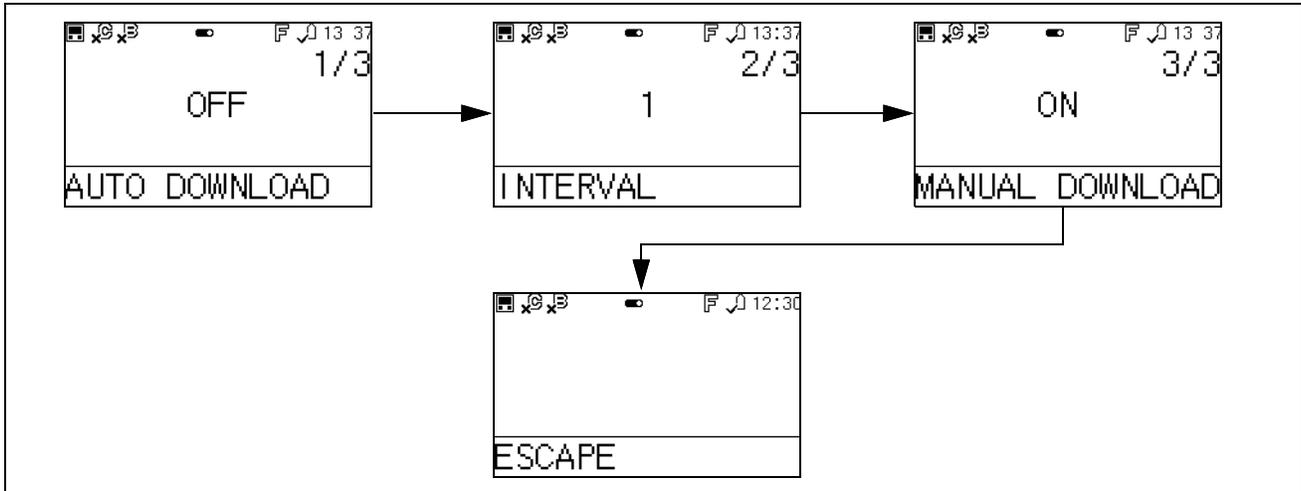
6. Use BUMP ▼ and CAL ▲ to scroll through each parameter screen. To change a parameter's
    setting, press and release EDIT ENTER to highlight the current setting.

7. Use BUMP ▼ and CAL ▲ to change the parameter. Press and release EDIT ENTER to save
    the parameter's setting.

8. To return to the **SYSTEM** menu, use BUMP ▼ and CAL ▲ to scroll to **ESCAPE** and press
    and release EDIT ENTER.

9. To return to the Configuration Menu, use BUMP ▼ and CAL ▲ to scroll to **ESCAPE** and
    press and release EDIT ENTER.

10. To exit the Configuration Menu and return to the channel readings display, use BUMP ▼ and
    CAL ▲ to scroll to **ESCAPE** and press and release EDIT ENTER.

Adjusting the Expiration Notice Settings (EXPIRE NOTICE)

The **EXPIRE NOTICE** menu contains the parameters for displaying warning icons when nearing
expiration dates and how far in advance the icons appear.

1. To enter the Configuration Menu, refer to "Entering the Configuration Menu" on page 28.

2. While in the Configuration Menu, press BUMP ▼ to scroll to **SYSTEM**.

3. Press and release EDIT ENTER. The **SYSTEM** menu will display.

4. Use BUMP ▼ and CAL ▲ to scroll to the **EXPIRE NOTICE** menu.

5. Press and release EDIT ENTER. The **BUMP ICON** parameter will display.

1/6 ON BUMP ICON	2/6 ON CAL ICON	3/6 ON CYL ICON
4/6 10 BUMP WARN DAYS	5/6 10 CAL WARN DAYS	6/6 10 CYL WARN DAYS
	ESCAPE	

6. Use BUMP ▼ and CAL ▲ to scroll through each parameter screen. To change a parameter's setting, press and release EDIT ENTER to highlight the current setting.

7. Use BUMP ▼ and CAL ▲ to change the parameter. Press and release EDIT ENTER to save the parameter's setting.

8. To return to the **SYSTEM** menu, use BUMP ▼ and CAL ▲ to scroll to **ESCAPE** and press and release EDIT ENTER.

9. To return to the Configuration Menu, use BUMP ▼ and CAL ▲ to scroll to **ESCAPE** and press and release EDIT ENTER.

10. To exit the Configuration Menu and return to the channel readings display, use BUMP ▼ and CAL ▲ to scroll to **ESCAPE** and press and release EDIT ENTER.
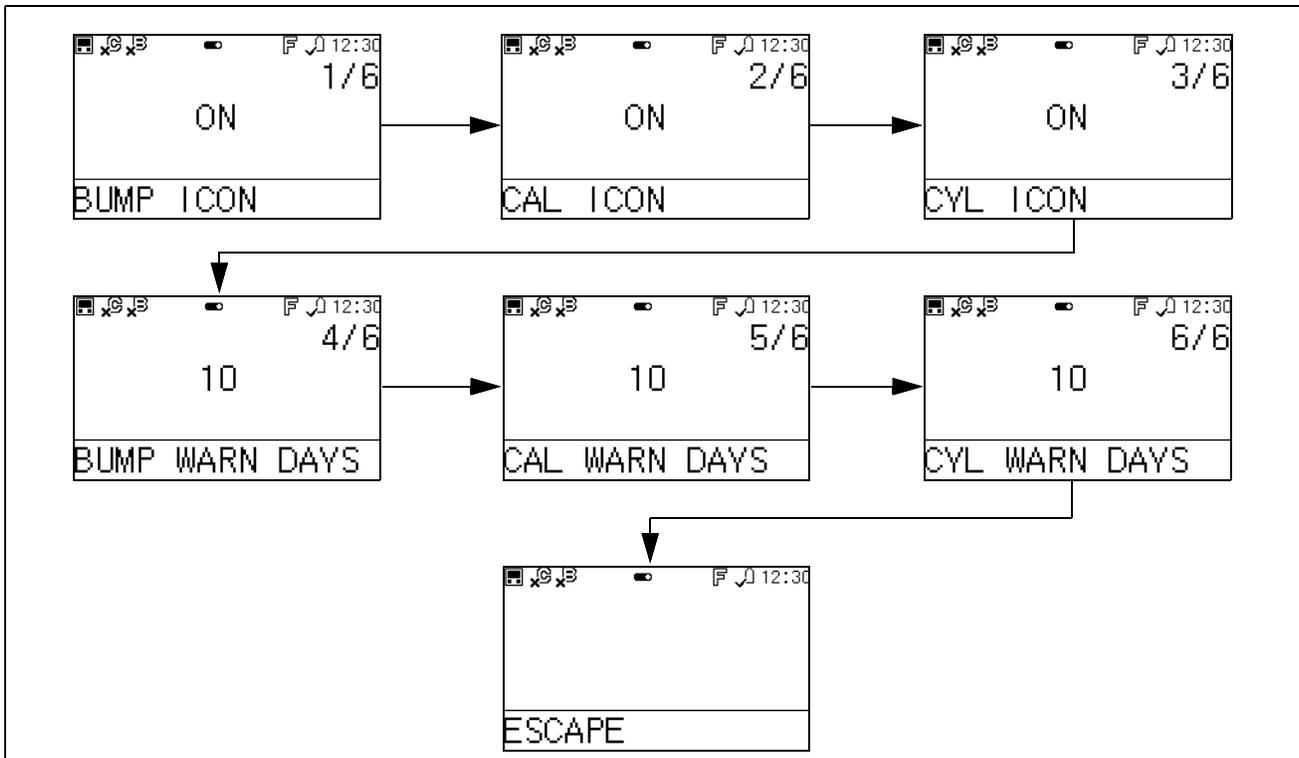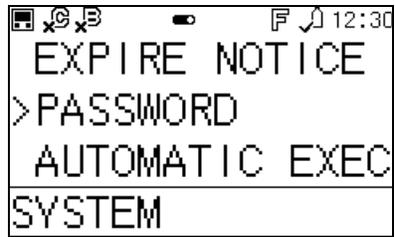
Turning the Password On/Off (PASSWORD)

If **PASSWORD** is set to **ON**, a password will be required to enter the Configuration Menu. If **PASSWORD** is set to **OFF** (factory setting), no password is required to enter the Configuration Menu.

1. To enter the Configuration Menu, refer to "Entering the Configuration Menu" on page 28.

2. While in the Configuration Menu, press BUMP ▼ to scroll to **SYSTEM**.

3. Press and release EDIT ENTER. The **SYSTEM** menu will display.

4. Use BUMP ▼ and CAL ▲ to scroll to the **PASSWORD** menu.

```
 ▦ ⚙ ⅋        ▭      ⌶ ♪ 12:30
 EXPIRE NOTICE
>PASSWORD
 AUTOMATIC EXEC
SYSTEM
```

5. Press and release EDIT ENTER. The **PASSWORD** menu will display.

```
 ▦ ⚙ ⅋        ▭      ⌶ ♪ 12:30
>ON/OFF
 PASSWORD
 ESCAPE
PASSWORD
```

6. To turn the password on or off:
   a. Press and release EDIT ENTER to enter the **ON/OFF** parameter. The parameter's setting will display.
   b. Press and release EDIT ENTER. The current setting is highlighted.

```
 ▦ ⚙ ⅋        ▭      ⌶ ♪ 12:30



        ON


PASSWORD
```

   c. Use BUMP ▼ and CAL ▲ to change the setting.
   d. Press and release EDIT ENTER to save the parameter's setting. **SAVING** appears and the SDM-6100 returns to the Password Menu.

7. To set a password:
   a. Use BUMP ▼ and CAL ▲ to scroll to **PASSWORD**.
   b. Press and release EDIT ENTER. The current password is displayed with the first digit highlighted.
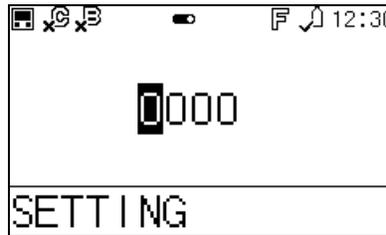
   c. Use BUMP ▼ and CAL ▲ to adjust the first digit.
   d. Press EDIT ENTER to save the value and move to the next digit.
   e. Repeat steps c and d for the remaining digits.
   f. Press and release EDIT ENTER to save the parameter. **SAVING** appears and the SDM-6100 returns to the Password Menu.

8. To return to the **SYSTEM** menu, use BUMP ▼ and CAL ▲ to scroll to **ESCAPE** and press and release EDIT ENTER.

9. To return to the Configuration Menu, use BUMP ▼ and CAL ▲ to scroll to **ESCAPE** and press and release EDIT ENTER.

10. To exit the Configuration Menu and return to the main screen, use BUMP ▼ and CAL ▲ to scroll to **ESCAPE**. Press and release EDIT ENTER to return to the main screen.

Adjusting Automatic Execution (AUTOMATIC EXEC)

The **AUTOMATIC EXEC** menu has 3 parameters: **TYPE**, **EXEC TIME**, and **SUN. - SAT.**. These are used for scheduling automatic tests that will occur if the docking station is correctly setup, connected to power, and the instrument is installed in the cradle with inlet/exhaust tubing connected.

- **TYPE** allows the selection of which process is automatically executed (**BUMP**, **CALIBRATION**, or **ALARM CHECK**). For channels with sensors that require replacement, bump testing and calibration are disabled.

- **EXEC TIME** controls what time of day that the automatic process is executed. If the connected GX-6100 is off, it will be turned on for this process.

- **SUN. - SAT.** are parameters for enabling (**ON**) or disabling (**OFF**) automatic tests on specified days.

1. To enter the Configuration Menu, refer to "Entering the Configuration Menu" on page 28.

2. While in the Configuration Menu, press BUMP ▼ to scroll to **SYSTEM**.

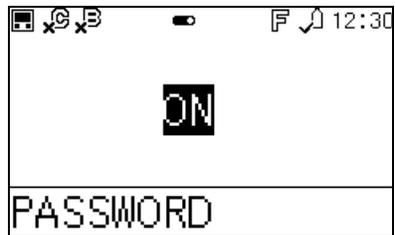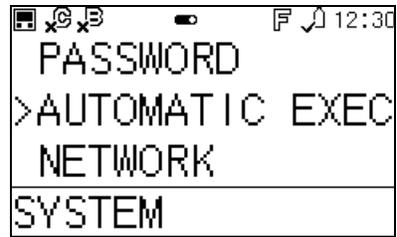3. Press and release EDIT ENTER. The **SYSTEM** menu will display.

4. Use BUMP ▼ and CAL ▲ to scroll to **AUTOMATIC EXEC**.

```
■ ░░░         ●○      ℉ ♪12:30
 PASSWORD
>AUTOMATIC EXEC
 NETWORK
SYSTEM
```

5. Press and release EDIT ENTER. The **TYPE** parameter will display.
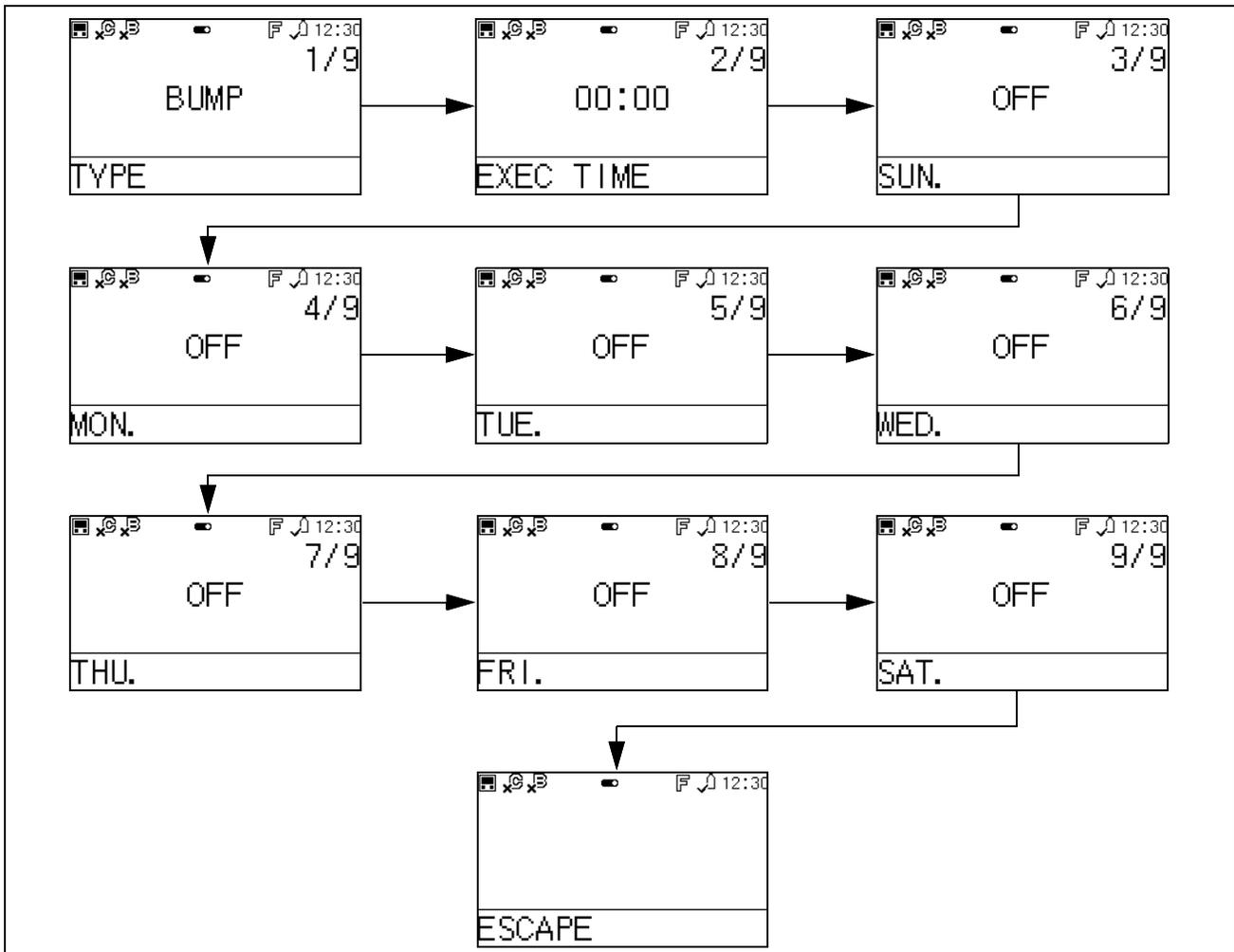
```
■ ░░░    ●○   ℉ ♪12:30          ■ ░░░    ●○   ℉ ♪12:30          ■ ░░░    ●○   ℉ ♪12:30
              1/9                            2/9                            3/9
     BUMP                           00:00                            OFF

TYPE                            EXEC TIME                       SUN.
```

```
■ ░░░    ●○   ℉ ♪12:30          ■ ░░░    ●○   ℉ ♪12:30          ■ ░░░    ●○   ℉ ♪12:30
              4/9                            5/9                            6/9
      OFF                            OFF                            OFF

MON.                            TUE.                            WED.
```

```
■ ░░░    ●○   ℉ ♪12:30          ■ ░░░    ●○   ℉ ♪12:30          ■ ░░░    ●○   ℉ ♪12:30
              7/9                            8/9                            9/9
      OFF                            OFF                            OFF

THU.                            FRI.                            SAT.
```

```
■ ░░░    ●○   ℉ ♪12:30




ESCAPE
```

6. Use BUMP ▼ and CAL ▲ to scroll through each parameter screen. To change a parameter's setting, press and release EDIT ENTER to highlight the current setting.

7. Use BUMP ▼ and CAL ▲ to change the parameter. Press and release EDIT ENTER to save the parameter's setting.

8. To return to the **SYSTEM** menu, use BUMP ▼ and CAL ▲ to scroll to **ESCAPE** and press and release EDIT ENTER.

9. To return to the Configuration Menu, use BUMP ▼ and CAL ▲ to scroll to **ESCAPE** and press and release EDIT ENTER.

10. To exit the Configuration Menu and return to the channel readings display, use BUMP ▼ and CAL ▲ to scroll to **ESCAPE** and press and release EDIT ENTER.

## *Adjusting Network Settings (NETWORK)*

1. To enter the Configuration Menu, refer to "Entering the Configuration Menu" on page 28.

2. While in the Configuration Menu, press BUMP ▼ to scroll to **SYSTEM**.

3. Press and release EDIT ENTER. The **SYSTEM** menu will display.

4. Use BUMP ▼ and CAL ▲ to scroll to **NETWORK**.
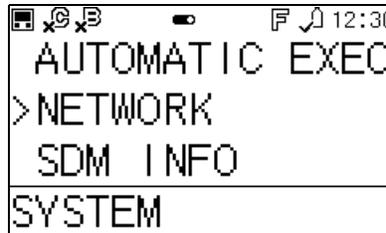
5. Press and release EDIT ENTER. The **NETWORK** menu will display.
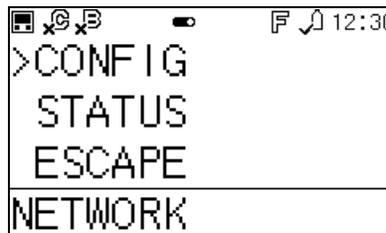
6. To adjust network configuration, press and release EDIT ENTER to edit **CONFIG** parameters. The **CONFIG:DHCP** parameter is displayed.
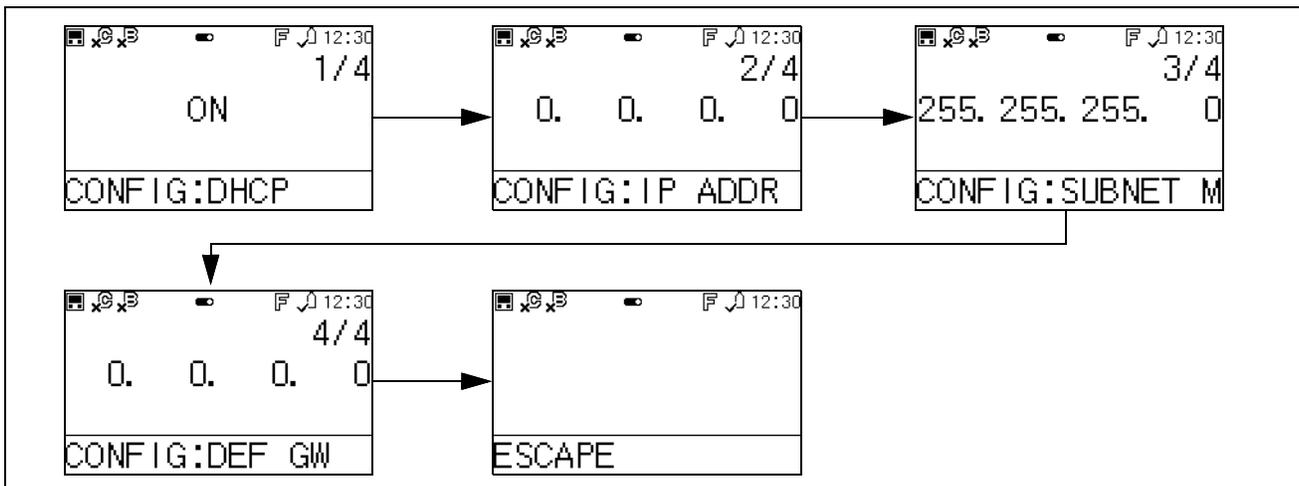
7. Use BUMP ▼ and CAL ▲ to scroll through each parameter screen. To change a parameter's setting, press and release EDIT ENTER to highlight the current setting.

8. Use BUMP ▼ and CAL ▲ to change the parameter. Press and release EDIT ENTER to save the parameter's setting and move to the next value.

9. To return to the **NETWORK** menu, use BUMP ▼ and CAL ▲ to scroll to **ESCAPE** and press and release EDIT ENTER.

10. To view current network status information, use BUMP ▼ and CAL ▲ to scroll to **STATUS**.

11. Press EDIT ENTER. The MAC address is displayed.
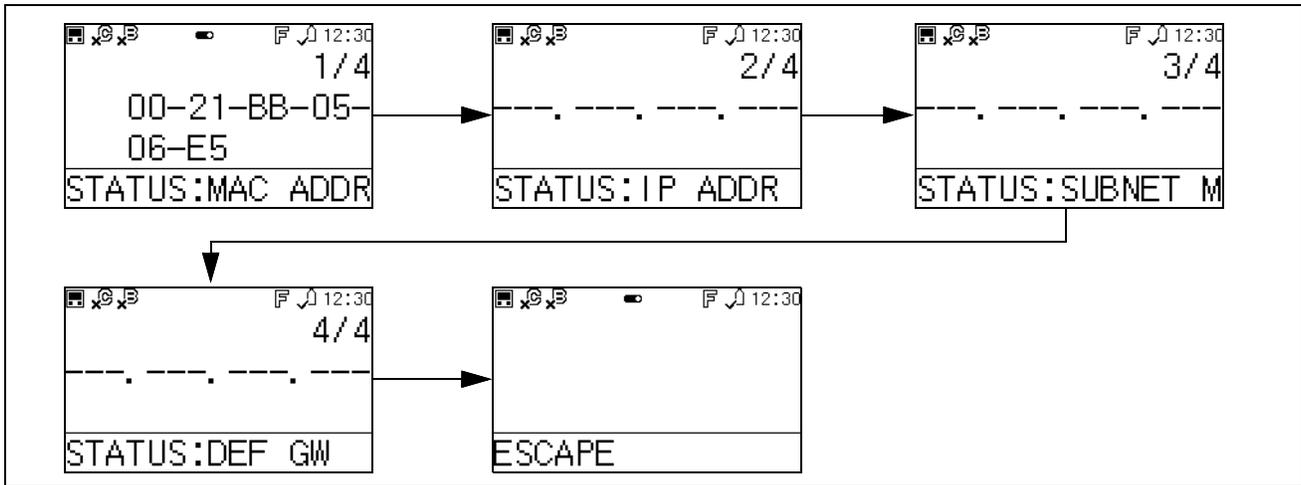
12. Use BUMP ▼ and CAL ▲ to view each screen's information. These screens display default values or the values set in the **CONFIG** parameters in the previous section.

13. To return to the **NETWORK** menu, use BUMP ▼ and CAL ▲ to scroll to **ESCAPE** and press and release EDIT ENTER.

14. To return to the **SYSTEM** menu, use BUMP ▼ and CAL ▲ to scroll to **ESCAPE** and press and release EDIT ENTER.

15. To return to the Configuration Menu, use BUMP ▼ and CAL ▲ to scroll to **ESCAPE** and press and release EDIT ENTER.

16. To exit the Configuration Menu and return to the channel readings display, use BUMP ▼ and CAL ▲ to scroll to **ESCAPE** and press and release EDIT ENTER.

Viewing Unit Information (SDM INFO)

1. To enter the Configuration Menu, refer to "Entering the Configuration Menu" on page 28.

2. While in the Configuration Menu, press BUMP ▼ to scroll to **SYSTEM**.

3. Press and release EDIT ENTER. The **SYSTEM** menu will display.

4. Use BUMP ▼ and CAL ▲ to scroll to **SDM INFO**.
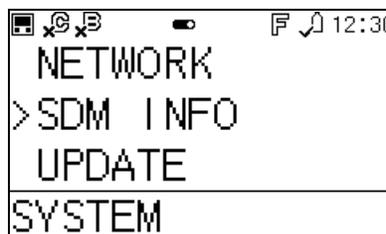
5. Press and release EDIT ENTER. The **ROM/SUM** info screen is displayed.
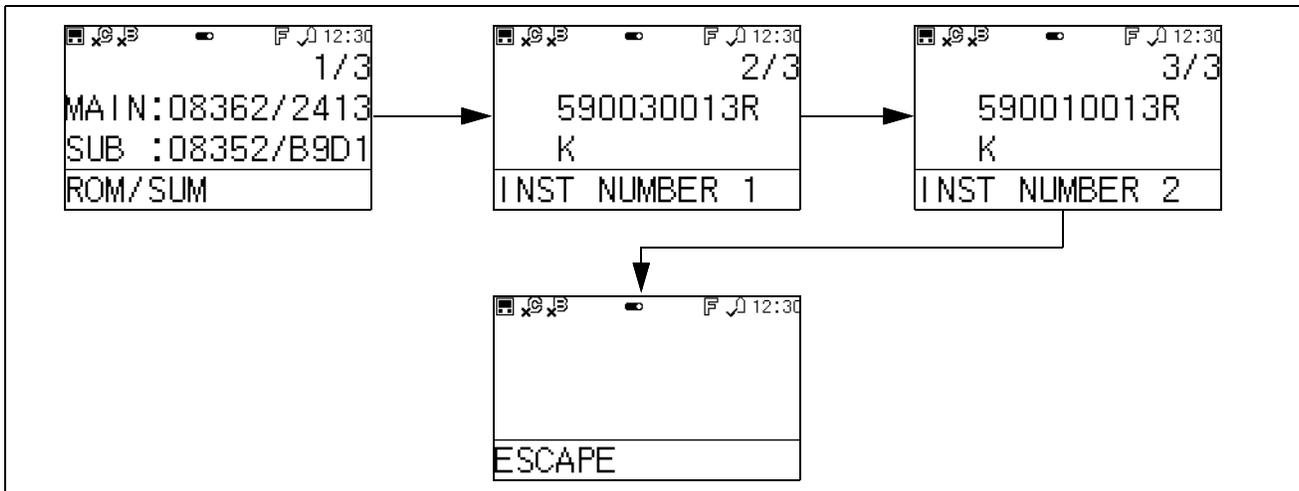
6. Use BUMP ▼ and CAL ▲ to view each screen's information.

7. To return to the **SYSTEM** menu, use BUMP ▼ and CAL ▲ to scroll to **ESCAPE** and press and release EDIT ENTER.

8. To return to the Configuration Menu, use BUMP ▼ and CAL ▲ to scroll to **ESCAPE** and press and release EDIT ENTER.

9. To exit the Configuration Menu and return to the channel readings display, use BUMP ▼ and CAL ▲ to scroll to **ESCAPE** and press and release EDIT ENTER.

Updating the SDM-6100 (UPDATE)

UPDATE is used for installing firmware updates using a USB flash drive. See the "Updating Instrument Firmware" on page 80 for instructions on updating the SDM-6100 firmware.

Chapter 5: Operation

Overview

The SDM-6100 is capable of performing bump tests, calibrations, and alarm checks on the GX-6100. It can also charge the rechargeable Li-ion battery pack in the GX-6100. This chapter describes procedures for using the docking station to bump test, calibrate, alarm check, download instrument logger data to a USB drive, and recharge the GX-6100.

NOTE: When the GX-6100 is connected to the SDM-6100, the GX-6100's date and time are automatically updated to the SDM-6100's current date and time. Ensure that the SDM-6100's date and time are correct before connecting a GX-6100.

NOTE: Only the standard 4-gases + PID can currently be calibrated with the SDM-6100. Improvements that allow for calibration of any gas combination and with other gases are expected Q2 2026.

In addition, the 5-gas IBL cylinder cannot be used to calibrate a 4-gas + PID instrument. Separate 4-gas and isobutylene cylinders must be used.

Automatically Initiated Tests and Data Download

Tests

There are two types of automatic tests:

1. Bump test, calibration, or alarm check automatically start at GX-6100 connection.

OR

2. GX-6100 is automatically turned on at a specific date/time and a bump test, calibration, or alarm check is performed. See "Adjusting Automatic Execution (AUTOMATIC EXEC)" on page 58.

For each option, no user involvement is needed to start the test and the test progresses as described in the appropriate section below. For bump testing and calibration, the calibration cylinders need to be connected to the appropriate fittings and the cylinder assignments need to be set up appropriately.

For adjusting the automatic testing parameters, see "Chapter 4: SDM-6100 Configuration Menu" on page 28.

Data Download

An automatic data download ("Adjusting the Data Logger Settings (DATA LOGGER)" on page 54) automatically downloads a connected GX-6100's logged data. A USB drive must be inserted in the USB port on the front of the SDM-6100 in order for the automatic data download to occur.

Table 13: COPY Button LED Indicators

Condition		Indicator
Power on (for one second)		Orange
No USB flash drive installed	No data	OFF
	Used space on the docking station is less than 80% (1 to 399 records)	Green
	Used space on the docking station is more than 80% (400 to 499 records)	Orange
	Used space at 100% capacity (500 records)	Red
USB flash drive installed	No data	OFF
	Used space on the docking station is less than 80% (1 to 399 records)	Green (flashing)
	Used space on the docking station is more than 80% (400 to 499 records)	Orange (flashing)
	Used space at 100% capacity (500 records)	Red (flashing)
	Data copying in progress	Red
	Logger data download in progress	Orange (flashing)

Turning On the SDM-6100

Proper operation during a bump test, calibration, alarm check or charging of a GX-6100 requires the following:

1. Connect the AC adapter to the SDM-6100 and to an AC wall socket.

2. Press the POWER button to turn on the SDM-6100. The SDM-6100's CHARGE LED will be solid green if it is operating properly or solid red if there is a system failure. The COPY LED will indicate how much storage space is left in the SDM-6100.

3. Install the GX-6100 into the SDM-6100's instrument cradle with the instrument display facing down.

4. The GX-6100 will beep and automatically connect to the SDM-6100. The SDM-6100's LCD will display the following screen.iled the fresh air adjustment. In the following example, the O_2 channel failed the fresh air adjustment.

5. Attach the inlet and exhaust tubes to the instrument, as shown in the figure below.
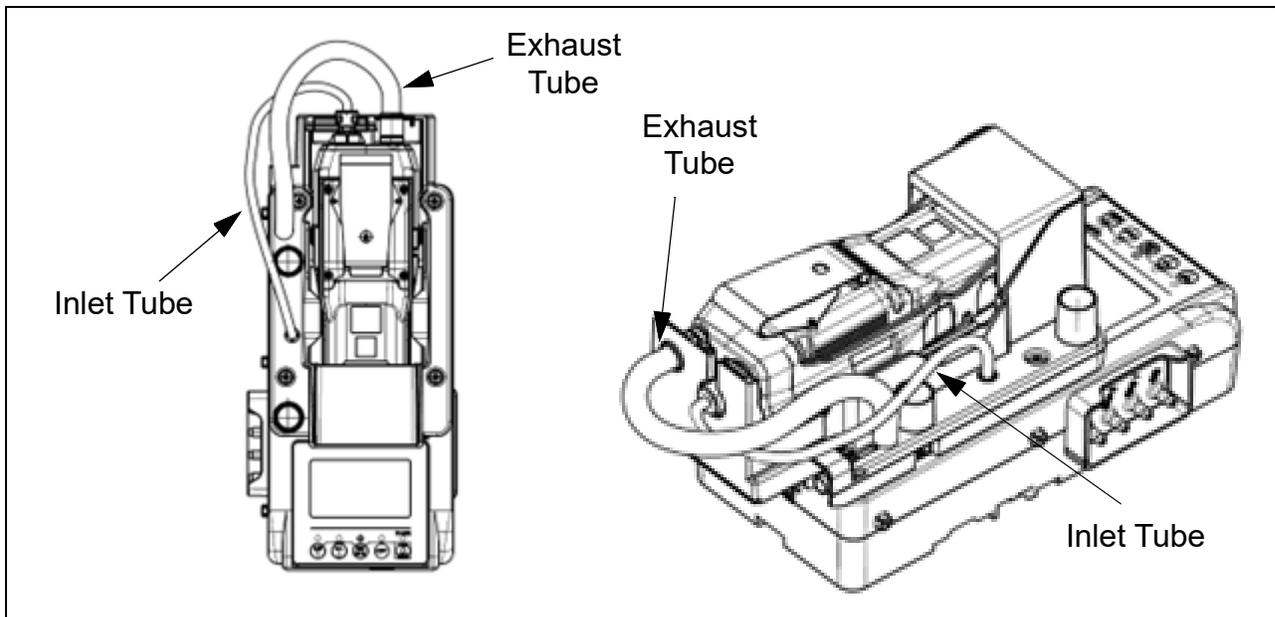
Figure 16: Inlet and Exhaust Tubes Connected

6. Repeat Step 1 - Step 5 for any additional SDM-6100 docking stations and GX-6100 instruments.

7. When the GX-6100 is connected to the SDM-6100, the GX-6100's date and time are automatically updated to the SDM-6100's current date and time.

> **NOTE:** When the GX-6100 is connected to the SDM-6100, the GX-6100's date and time are automatically updated to the SDM-6100's current date and time. Ensure that the SDM-6100's date and time are correct before connecting a GX-6100.

---

8. If an automatic test is set up to occur, it will start as soon as the GX-6100 is connected to the SDM-6100.

    To cancel the test, press and hold BUMP for bump tests or press and hold CAL for calibrations. The screen will display **CANCEL** and the unit proceeds to normal operation.

SDM-6100 Operation Display

When the SDM-6100 completes its startup sequence, it is in normal operation. The SDM-6100 is considered to be in normal operation if there are no alarm indications and a calibration/bump test is not in progress. The following display will appear, indicating the docking station is ready for use.
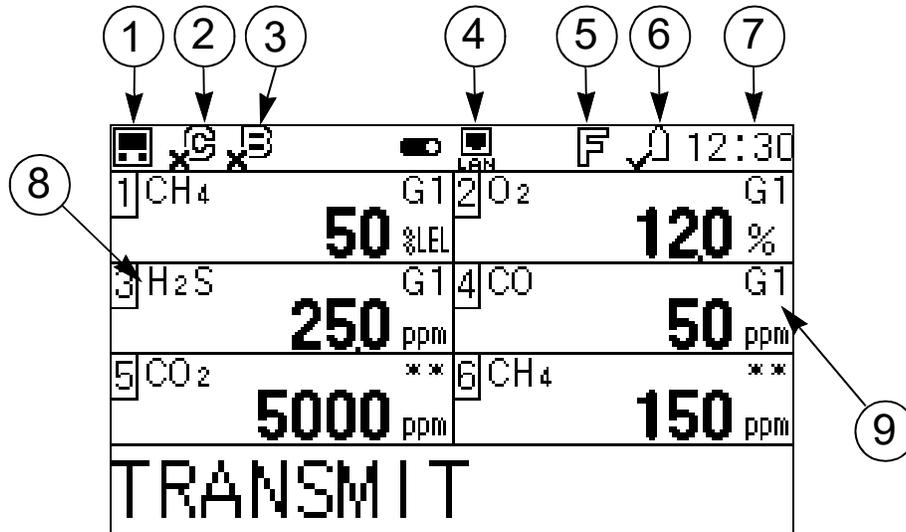
Figure 17: SDM-6100 Operation Display

1. <u>Instrument Docked</u>: The instrument icon will appear if the GX-6100 is correctly installed in the instrument cradle, powered on, and connected to the SDM-6100.

2. <u>Calibration Expiration Status</u>: Indicates whether or not a sensor has an expired calibration date
   - : All sensors are up to date on their calibrations.
   - : One or more sensors is approaching their calibration expiration date.
   - : One or more sensors has an expired calibration date and requires calibration.

3. <u>Bump Test Expiration Status</u>: Indicates whether or not a sensor has an expired bump test date
   - : All sensors are up to date on their bump tests.
   - : One or more sensors is approaching their bump test expiration date.
   - : One or more sensors has an expired bump test date and requires bump testing.

4. <u>LAN Connection</u>: Displayed when the SDM-6100 has a wired Ethernet connection to a local network

5. <u>Fast Bump (F) Icon</u>: Displayed when **Fast Bump** is enabled (see page 31)

6. <u>Cylinder Expiration Status</u>: Indicates whether or not one or multiple cylinders are out of date.
   - : All cylinders configured to the SDM-6100 are still usable.
   - : One or more cylinders configured to the SDM-6100 is approaching their expiration date.
   - : One or more cylinders configured to the SDM-6100 has expired and requires replacement.

7. <u>Clock</u>: Current time is displayed in 24-hour format

NOTE: When the GX-6100 is connected to the SDM-6100, the GX-6100's date and time are automatically updated to the SDM-6100's current date and time. Ensure that the SDM-6100's date and time are correct before connecting a GX-6100.

---

8. <u>Sensor Name</u>: Displays the sensor assigned to the channel

9. <u>Inlet Setting</u>: Each channel has an inlet assignment. "G" is for channels that get tested first on an inlet (GAS1 or GAS2). "C" is for channels that require a cylinder change before being tested on an inlet (GAS1 or GAS2).

Turning Off the Instrument and SDM-6100

If the GX-6100 is in the cradle, the instrument should be turned off before the docking station is turned off.

1. To turn off the instrument while it is connected to the docking station, press and hold the EDIT ENTER and POWER buttons on the docking station.

   The docking station display will be blank except for the non-instrument icons and clock at the top of the LCD.
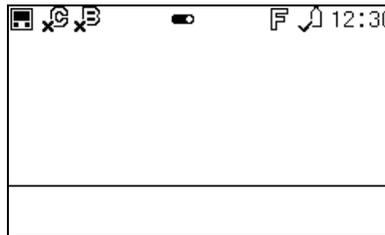
2. Press and hold the POWER button to turn off the docking station.

NOTE: If a scheduled **AUTO EXEC** is intended to run, do not turn off the docking station. Allow the docking station to go into standby and the instrument to shut off.

Bump Test

NOTE: Only the standard 4-gases + PID can currently be calibrated with the SDM-6100. Improvements that allow for calibration of any gas combination and with other gases are expected Q2 2026.

In addition, the 5-gas IBL cylinder cannot be used to calibrate a 4-gas + PID instrument. Separate 4-gas and isobutylene cylinders must be used.

When a bump test is performed, the SDM-6100 performs a fresh air adjustment on the docked GX-6100 and then applies calibration gas to the instrument. The docking station then analyzes the response and determines if the instrument passed the bump test based on the bump test check tolerance setting (see page 30).

If the automatic calibration (**AUTO CAL**) parameter is set to **ON** (see page 31), then the SDM-6100 will automatically perform a calibration if one or more sensors fail the bump test.

Table 14: LED Indicators During Bump Test

Condition	LED Label	
	BUMP	**CAL**
Zero adjustment failed	Red (flashing)	OFF
Bump test in progress	Orange (flashing)	OFF
Low flow failure during bump test (**AUTO CAL** is **OFF**)	Green (flashing)	OFF
Low flow failure during bump test (**AUTO CAL** is **ON**)	Green (flashing)	Green (flashing)
Communication failure during bump test (**AUTO CAL** is **OFF**)	Red (flashing)	OFF
Communication failure during bump test (**AUTO CAL** is **ON**)	Red (flashing)	Red (flashing)

Table 15: LED Indicators for Bump Test Results

Condition	LED Label		
	BUMP	**CAL**	**EDIT ENTER**
All channels passed bump test	Green	OFF	Red (Alarm Check Failed)
			Green (Alarm Check Passed)
Channel(s) failed bump test (**AUTO CAL** is **OFF**)	Red	OFF	Red (Alarm Check Failed)
			Green (Alarm Check Passed)

Table 15: LED Indicators for Bump Test Results

Channel(s) failed bump test, but passed calibration (**AUTO CAL** is **ON**)	Red	Green	Red (Alarm Check Failed)
			Green (Alarm Check Passed)
Channel(s) failed bump test and calibration failed (**AUTO CAL** is **ON**)	Red	Red	Red (Alarm Check Failed)
			Green (Alarm Check Passed)

Do the following to perform a bump test:

1. Turn on the SDM-6100 system as described in "Turning On the SDM-6100" on page 65.

2. Confirm that the bump test parameters are set to the desired values as described on page 29.

3. Confirm that the bump test settings are correct for cylinders with specific settings (see page 38 for **CYLINDER** parameters).

4. Confirm that the gas inlet parameters are appropriately assigned as described on page 44.

5. Verify that the appropriate calibration gas cylinders are connected to the gas fittings on the left side of the SDM-6100. See page 26 for calibration gas cylinder options and calibration gas connection procedures.

6. Press BUMP ▼ to initiate a bump test.

   If you wish to cancel the bump test, press and hold BUMP ▼ until the screen shows CANCEL.

7. If at any point during the bump test the gas flow to the GX-6100 becomes too low, the bump test will be aborted and the screen will indicate a flow failure.
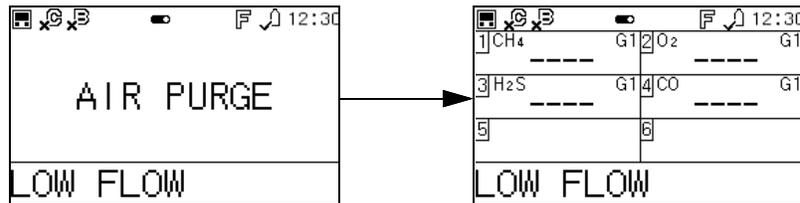
If a flow failure occurs, confirm all tubing connections are correct, that all lines are clear, and that the GX-6100 is correctly installed in the SDM-6100.

Press and release EDIT ENTER to return to the main screen.

8. A pre-sample flush will begin. The SDM-6100 will apply fresh air to the GX-6100 for the time defined by the AIR FLUSH bump test parameter.

NOTE: If the GX-6100 was not on for 40 seconds before the bump test was initiated, air will flow until the GX-6100 has been on for 40 seconds regardless of the AIR FLUSH bump test parameter setting.

---

9. The SDM-6100 will perform a fresh air adjustment on the instrument.

    a. If the air adjustment is successful, the SDM-6100 will continue as described in Step 10 below.

    b. If one or more of the sensors fails the fresh air adjustment, the SDM-6100 will abort the bump test and will not apply calibration gas. If this happens, the screen will indicate which channels passed and failed the fresh air adjustment. In the following example, the O_2 channel failed the fresh air adjustment.
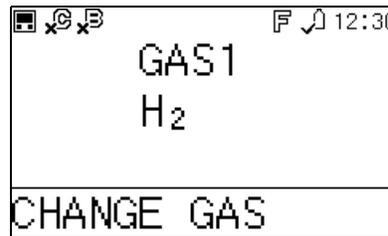

In this case, continue to Step 16.

10. The SDM-6100 will then apply calibration gas in the order of the gas inlets. For info on adjusting each inlet's bump test sample time, see "Cylinder Parameters (CYLINDER)" on page 38.
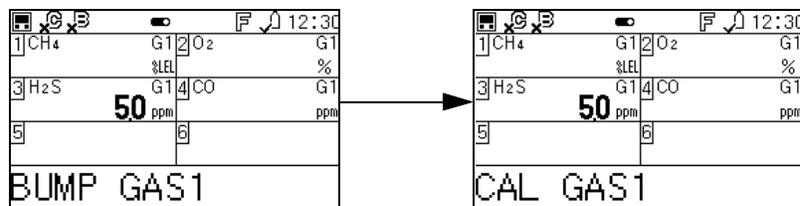
11. If the test requires a cylinder change, the LCD will prompt you to change the cylinder but the SDM-6100's pump will keep running. Change the cylinder and press EDIT ENTER to continue the bump test.

```
┌──────────────────────────────────┐
│ ▣ ₓᏟₓᴮ          ℙ ↲ 12:30 │
│            GAS1                   │
│            H₂                     │
│                                  │
│ CHANGE GAS                       │
└──────────────────────────────────┘
```

12. The SDM-6100 will analyze the results after the end of each gas application. If the bump test fails and **AUTO CAL** is set to **ON**, the gas will keep flowing and a calibration will automatically begin.

In the following example, the H₂S channel fails the bump test and a calibration starts automatically.

```
┌──────────────────────────┐        ┌──────────────────────────┐
│▣ₓᏟₓᴮ   ▭   ℙ↲12:30│        │▣ₓᏟₓᴮ   ▭   ℙ↲12:30│
│1 CH₄    G1 2 O₂    G1│        │1 CH₄    G1 2 O₂    G1│
│         %LEL      %│   ──►   │         %LEL      %│
│3 H₂S    G1 4 CO    G1│        │3 H₂S    G1 4 CO    G1│
│    50 ppm      ppm│        │    50 ppm      ppm│
│5          6       │        │5          6       │
│BUMP GAS1          │        │CAL GAS1           │
└──────────────────────────┘        └──────────────────────────┘
```

Calibration gas will continue to be applied so that the total gas application time is the sum of each assigned cylinder's GAS TIME calibration parameter. This time includes the time that the GX-6100 was being bump tested.

NOTE: If the GX-6100 has its **calibration** GAS TIME **parameter** set to 90 seconds and its **bump test** GAS TIME **parameter** set to 30 seconds, the instrument will sample gas for an additional 60 seconds to bring the total exposure time to 90 seconds.

---

13. A post-sample purge will begin.

```
┌──────────────────────────────────┐
│ ▣ ₓᏟₓᴮ    ▭    ℙ ↲ 12:30│
│ 1              2                  │
│                                  │
│ 3              4                  │
│                                  │
│ 5              6                  │
│ AIR PURGE                        │
└──────────────────────────────────┘
```
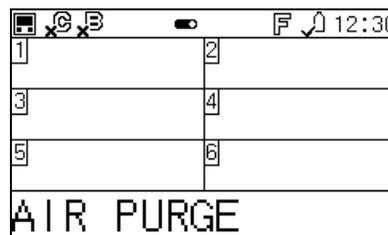
14. If the **ALARM CHECK** parameter in the **BUMP** menu is set to **ON**, an alarm check will begin. The buzzer will sound, the LEDs will turn on for a few seconds, and the SDM-6100 will determine if these actions were completed successfully.

```
┌──────────────────────────┐      ┌──────────────────────────┐      ┌──────────────────────────┐
│ ▣ �ℐℂ℈         ▱   Ⅎ ♪12:30 │      │ ▣ ⅋℈         ▱   Ⅎ ♪12:30 │      │ ▣ ⅋℈         ▱   Ⅎ ♪12:30 │
│                          │      │   LED                    │      │   LED               P    │
│                          │  →   │   BUZZER                 │  →   │   BUZZER            P    │
│                          │      │                          │      │                          │
│ ALARM CHECK              │      │ ALARM CHECK              │      │ ALARM CHECK              │
└──────────────────────────┘      └──────────────────────────┘      └──────────────────────────┘
```
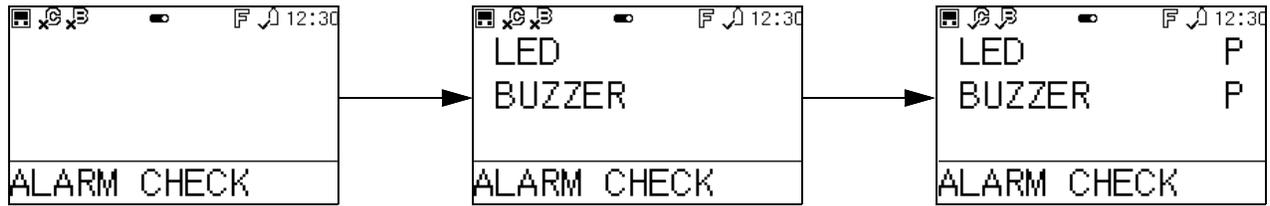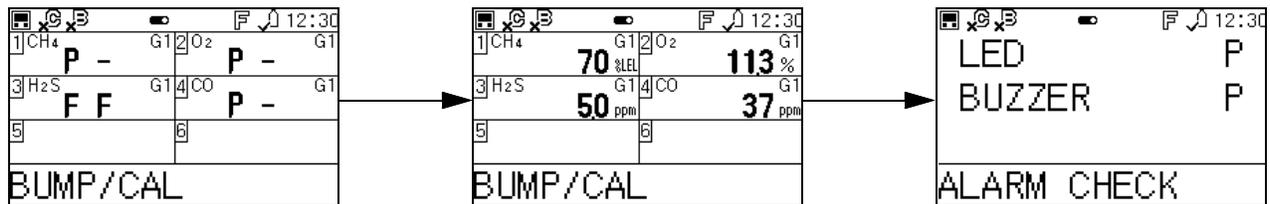
15. Once the bump test is over, the LCD will display the test results and the LEDs will indicate the results. The LEDs will stay on until you press EDIT ENTER and will remain on even if the GX-6100 is turned off

```
┌──────────────────────────┐      ┌──────────────────────────┐      ┌──────────────────────────┐
│ ▣ ⅋℈      ▱   Ⅎ ♪12:30   │      │ ▣ ⅋℈      ▱   Ⅎ ♪12:30   │      │ ▣ ⅋℈      ▱   Ⅎ ♪12:30   │
│1│CH₄   G1│2│O₂      G1   │      │1│CH₄   G1│2│O₂      G1   │      │   LED               P    │
│   P  –      P  –         │      │    70 %LEL   113 %        │      │   BUZZER            P    │
│3│H₂S   G1│4│CO      G1   │  →   │3│H₂S   G1│4│CO      G1   │  →   │                          │
│  F F        P  –         │      │    50 ppm    37 ppm       │      │                          │
│5│       │6│             │      │5│       │6│             │      │                          │
│ BUMP/CAL                 │      │ BUMP/CAL                 │      │ ALARM CHECK              │
└──────────────────────────┘      └──────────────────────────┘      └──────────────────────────┘
```

Condition	LED Label		
	BUMP	**CAL**	**EDIT ENTER**
All channels passed bump test	Green	OFF	Red (Alarm Check Failed)
			Green (Alarm Check Passed)
Channel(s) failed bump test (**AUTO CAL** is **OFF**)	Red	OFF	Red (Alarm Check Failed)
			Green (Alarm Check Passed)
Channel(s) failed bump test, but failed calibration (**AUTO CAL** is **ON**)	Red	Red	Red (Alarm Check Failed)
			Green (Alarm Check Passed)
Channel(s) failed bump test, but passed calibration (**AUTO CAL** is **ON**)	Red	Green	Red (Alarm Check Failed)
			Green (Alarm Check Passed)

16. Press EDIT ENTER to return to the main screen.

17. To perform any other operations, press BUMP ▼, CAL ▲, or BUMP ▼ and EDIT ENTER.

18. To turn the GX-6100 off, perform the following:
   - If the bump test was successful, the GX-6100 will shut off in the time period defined by the **WAIT TIME (PASS)** parameter. If the bump test failed, the GX-6100 will shut off in the time period defined by the **WAIT TIME** parameter. See "Adjusting the Power Saving Settings (POWER SAVE)" on page 52.

- To turn off the GX-6100 before it is automatically turned off, press the EDIT ENTER and POWER buttons.

19. The results of the bump test, calibration (if applicable), and alarm check will be stored in the SDM-6100.

20. Remove the GX-6100 from the SDM-6100.

21. Repeat Step 1 - Step 20 for any additional GX-6100 instruments.

Calibration

NOTE: Only the standard 4-gases + PID can currently be calibrated with the SDM-6100. Improvements that allow for calibration of any gas combination and with other gases are expected Q2 2026.

In addition, the 5-gas IBL cylinder cannot be used to calibrate a 4-gas + PID instrument. Separate 4-gas and isobutylene cylinders must be used.

When a calibration is performed, the docking station performs a fresh air adjustment on the docked GX-6100 and then applies calibration gas to the instrument. The docking station analyzes the calibration results and determines if the instrument passed the calibration.

Table 16: LED Indicators During Calibration

Condition	LED Label	
	BUMP	**CAL**
Zero adjustment failure	OFF	Red (flashing)
Calibration in progress	OFF	Orange (flashing)
Calibration in progress after failed bump test (**AUTO CAL** is **ON**)	Orange (flashing)	Orange (flashing)
Communication failure	OFF	Red
Communication failure after bump test (**AUTO CAL** is **ON**)	Red	Red
Low flow rate	Green (flashing)	OFF
Low flow rate (**AUTO CAL** is **ON**)	Green (flashing)	Green (flashing)

Table 17: LED Indicators for Calibration Results

Condition	LED Label		
	BUMP	**CAL**	**EDIT ENTER**
All channels passed calibration	OFF	Green	Red (Alarm Check Failed)
			Green (Alarm Check Passed)
Channel(s) failed calibration	OFF	Red	Red (Alarm Check Failed)
			Green (Alarm Check Passed)
Failed bump test, channel(s) passed calibration (**AUTO CAL** is **ON**)	Red	Green	Red (Alarm Check Failed)
			Green (Alarm Check Passed)

Table 17: LED Indicators for Calibration Results

Condition	LED Label		
	BUMP	**CAL**	**EDIT ENTER**
Failed bump test, channel(s) failed calibration (**AUTO CAL** is **ON**)	Red	Red	Red (Alarm Check Failed)
			Green (Alarm Check Passed)

To perform a calibration on a GX-6100, follow these steps:

1. Turn on the SDM-6100 system as described in "Turning On the SDM-6100" on page 65.

2. Confirm that the calibration parameters are set to the desired values as described on page 34.

3. Confirm that the calibration settings are correct for cylinders with specific settings (see page 39 for **CYLINDER** parameters).

4. Confirm that the gas inlet parameters are appropriately assigned as described on page 44.

5. Verify that the appropriate calibration gas cylinders are connected to the gas fittings on the left side of the SDM-6100. See page 26 for calibration gas cylinder options and calibration gas connection procedures.

6. Press CAL ▲ to initiate a calibration.

   If you wish to cancel the calibration, press and hold CAL ▲ until the screen shows **CANCEL**.

7. If at any point during the calibration the gas flow to the GX-6100 becomes too low, the calibration will be aborted and the screen will indicate a flow failure.
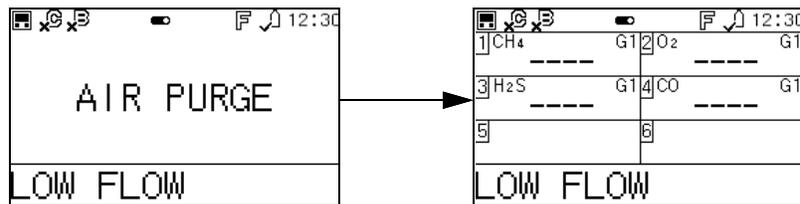

   If a flow failure occurs, confirm all tubing connections are correct, that all lines are clear, and that the GX-6100 is correctly installed in the SDM-6100.

8. A pre-sample flush will begin. The SDM-6100 will apply fresh air to the GX-6100 for the time defined by the AIR FLUSH calibration parameter.


NOTE: If the GX-6100 was not on for 40 seconds before the bump test was initiated, air will flow until the GX-6100 has been on for 40 seconds regardless of the **AIR FLUSH** calibration parameter setting.

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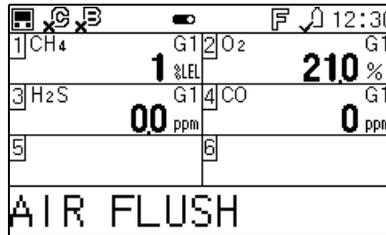
9. The SDM-6100 will perform a fresh air adjustment on the GX-6100.
    a. If the air adjustment is successful, the SDM-6100 will continue as described in Step 10 below.
    b. If one or more of the sensors fails the fresh air adjustment, the SDM-6100 will abort the calibration and will not apply calibration gas. If this happens, the screen will indicate which channels passed and failed the fresh air adjustment. In the following example, the O_2 channel failed the fresh air adjustment.
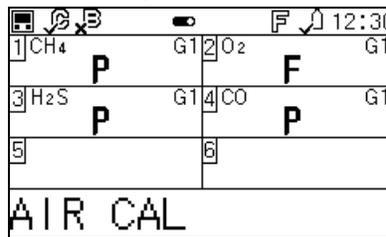

10. The SDM-6100 will then apply calibration gas in the order of the gas inlets. For adjusting each cylinder's calibration sample time, see "Cylinder Parameters (CYLINDER)" on page 38.

11. If the test requires a cylinder change, the LCD will prompt you to change the cylinder but the SDM-6100's pump will keep running. Change the cylinder and press EDIT ENTER to continue the calibration.
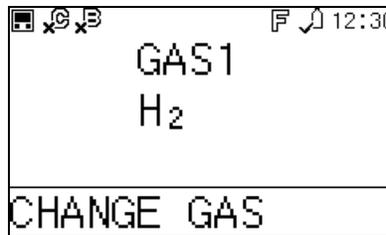
12. The SDM-6100 will analyze the results after the end of each gas application.

13. A post-sample purge will begin.
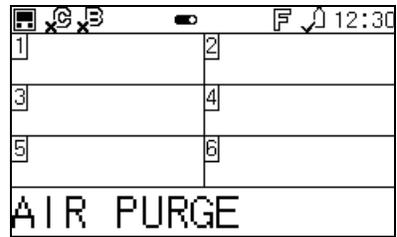
14. If the **ALARM CHECK** parameter in the **CAL** menu is set to **ON**, an alarm check will begin. The buzzer will sound, the LEDs will turn on for a few seconds, and the SDM-6100 will determine if these actions were completed successfully.

See the following table for the list of possible results and their LED indicators.

Condition	LED Label		
	BUMP	**CAL**	**EDIT ENTER**
All channels passed calibration	OFF	Green	Red (Alarm Check Failed)
			Green (Alarm Check Passed)
Channel(s) failed calibration	OFF	Red	Red (Alarm Check Failed)
			Green (Alarm Check Passed)
Failed bump test, all channels passed calibration (**AUTO CAL** is **ON**)	Red	Green	Red (Alarm Check Failed)
			Green (Alarm Check Passed)
Failed bump test, channel(s) failed calibration (**AUTO CAL** is **ON**)	Red	Red	Red (Alarm Check Failed)
			Green (Alarm Check Passed)

15. Once the calibration is over, the LCD will display the test results and the LEDs will indicate the results. The LEDs will stay on until you press EDIT ENTER and will remain on even if the GX-6100 is turned off.
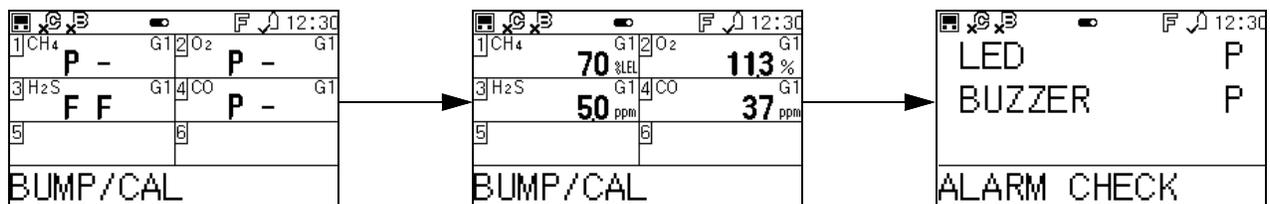
16. Press EDIT ENTER to return to the main screen.

17. To perform any other operations, press BUMP ▼, CAL ▲, or BUMP ▼ and EDIT ENTER.

18. To turn the GX-6100 off, perform the following:

   • If the calibration was successful, the GX-6100 will shut off in the time period defined by the **WAIT TIME (PASS)** parameter. If the calibration failed, the GX-6100 will shut off in the time period defined by the **WAIT TIME** parameter. See "Adjusting the Power Saving Settings (POWER SAVE)" on page 52.

   • To turn off the GX-6100 before it is automatically turned off, press the EDIT ENTER and POWER buttons.

19. The results of the calibration and alarm check will be stored in the SDM-6100.

20. Remove the GX-6100 from the SDM-6100.

21. Repeat Step 1 - Step 20 for any additional GX-6100 instruments.

Alarm Check

When an alarm check is performed, the SDM-6100 tests the LED and buzzer on the docked GX-6100. Following the test, the SDM-6100 displays the test results and the LEDs on the docking station will indicate accordingly.

Table 18: In-Progress Alarm Check LED Indicators

Condition	LED Label		
	BUMP	**CAL**	**EDIT/ENTER**
Alarm check in progress	OFF	OFF	Orange (flashing)
Alarm check in progress after bump test failed (**AUTO CAL** is **OFF**)	Orange (flashing)	OFF	Orange (flashing)
Alarm check in progress after bump test failed (**AUTO CAL** is **ON**)	Orange (flashing)	Orange (flashing)	Orange (flashing)
Alarm check in progress after calibration	OFF	Orange (flashing)	Orange (flashing)

Table 19: Alarm Check Result LED Indicators

Condition	LED Label		
	BUMP	**CAL**	**EDIT ENTER**
Alarm check passed	Bump Test Result (if available)	Calibration Result (if available)	Green
Alarm check failed	Bump Test Result (if available)	Calibration Result (if available)	Red

To perform an alarm check on a GX-6100, follow these steps:

1. Turn on the SDM-6100 system as described in "Turning On the SDM-6100" on page 65.

2. Press BUMP ▼ and EDIT ENTER to initiate an alarm check.

   If you wish to cancel the alarm check, press BUMP ▼ and EDIT ENTER again.

3. The buzzer will sound, the LEDs will turn on for a few seconds, and the SDM-6100 will determine if these actions were completed successfully.

4. Once the alarm check is over, the LCD will display the results..
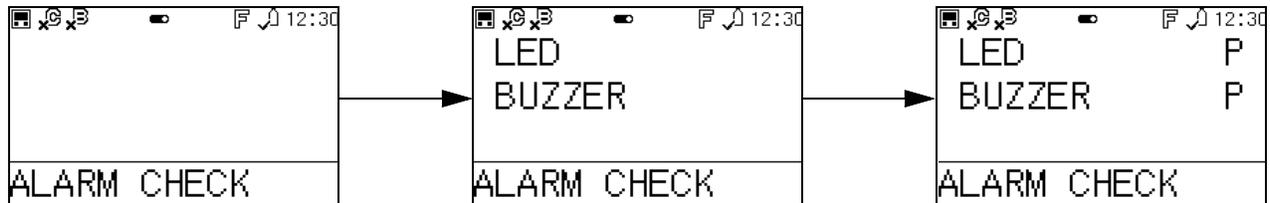
5. Press EDIT ENTER to return to the main screen.

6. To perform any other operations, press BUMP ▼, CAL ▲, or BUMP ▼ and EDIT ENTER.

7. To turn the GX-6100 off, perform the following:

   • If the alarm check was successful, the GX-6100 will shut off in the time period defined by the **WAIT TIME (PASS)** parameter. If the alarm check failed, the GX-6100 will shut off in the time period defined by the **WAIT TIME** parameter. See "Adjusting the Power Saving Settings (POWER SAVE)" on page 52.

   • To turn off the GX-6100 before it is automatically turned off, press the EDIT ENTER and POWER buttons.

8. The results of the alarm check will be stored in the SDM-6100.

9. Remove the GX-6100 from the SDM-6100.

10. Repeat Step 1 - Step 9 for any additional GX-6100 instruments.

Updating Instrument Firmware

CAUTION: *If the SDM-6100 is disconnected from power during a firmware update, the product may not restart.*

1. Insert a USB flash drive into your computer.

2. Create a folder named "update" on the flash drive.

3. Copy and paste the new firmware file into the "update" folder.

   NOTE: If the docking station's firmware has been updated in the past, delete any old firmware files from the "update" folder.

4. On the SDM-6100, press and hold POWER for at least one second. The docking station will turn on.

5. Eject and disconnect the flash drive from your computer.

6. Insert the flash drive into the USB port on the front of the instrument.

7. The LCD will transition to the **UPDATE** display. This displays the current firmware numbers and the firmware numbers loaded into the folder "update".

8. To start the update, hold down BUMP, CAL, and COPY for three seconds. When finished, the LCD will display **COMPLETE**.

9. Once the update is complete, hold down POWER for three seconds to turn the unit off.

10. Hold down POWER on the SDM-6100 for at least one second to start the docking station with the new firmware.

Chapter 6: Maintenance

Troubleshooting

NOTE: This troubleshooting guide describes SDM-6100 problems only. See the GX-6100 Operator's Manual for problems you may encounter with the GX-6100.

Table 20: Troubleshooting the SDM-6100

Symptoms	Probable Causes	Recommended Action
Fresh air adjustment fails	• The SDM-6100 is not in a fresh air environment or the cylinder connected to the AIR fitting is not a zero air cylinder. • If a zero air cylinder is used, the calibration cylinder is out of gas. • The GX-6100 is not correctly inserted in the instrument cradle.	1. Confirm that the SDM-6100 is in a fresh air environment or that a zero air cylinder is attached to the AIR fitting. 2. If a zero air cylinder is used, verify that it contains an adequate supply of test sample. 3. If a zero air cylinder is used, check all calibration tubing for leaks or for any bad connections. 4. Check to make sure the GX-6100 is correctly inserted in the instrument cradle. 5. If the fail condition continues, replace the failed sensor(s) in the GX-6100. 6. If the difficulties continue, contact RKI Instruments, Inc. for further instruction.
Calibration fails	• The auto calibration values do not match the cylinder gas concentrations. • The calibration cylinder is out of gas or is outdated. • The calibration cylinder is not connected to the appropriate gas inlet fitting. • The GX-6100 is not correctly inserted in the instrument cradle. • The inlet tubing is not connected to the top of the GX-6100.	1. Confirm that the auto calibration values match the concentrations listed on the gas cylinder. 2. Verify that the calibration cylinder contains an adequate supply of fresh test sample. 3. Verify that the calibration cylinder is connected to the appropriate gas inlet fitting. 4. Check to make sure the GX-6100 is correctly inserted in the instrument cradle. 5. Make sure the inlet fitting is connected. 6. Check all calibration tubing for leaks or for any bad connections. 7. If the fail condition continues, replace the failed sensor(s) in the GX-6100. 8. If the difficulties continue, contact RKI Instruments, Inc. for further instruction.

Table 20: Troubleshooting the SDM-6100

Symptoms	Probable Causes	Recommended Action
No connection between the GX-6100 and SDM-6100	• SDM-6100 is not turned on. • The GX-6100 is not correctly inserted into the instrument cradle.	1. Turn on the SDM-6100. If it does not turn on, check that the AC adapter is plugged into an AC socket and to the jack on the left side of the SDM-6100. 2. Check to make sure the GX-6100 is inserted properly. 3. If the difficulties continue, contact RKI Instruments, Inc. for further instruction.
Control buttons not functioning correctly for standalone operation	• The SDM-6100 is connected to a computer and the PC Program is running.	1. Disconnect the USB cable from the back of the SDM-6100 if it is connected. See the *SDM-6100 PC Program Operator's Manual*.
The Li-ion battery pack in the GX-6100 is not charging	• The Li-ion battery pack is faulty. • The charger is malfunctioning.	1. Attempt to charge the Li-ion battery pack. 2. If the difficulties continue, contact RKI Instruments, Inc. for further instruction.

Charging a GX-6100

The SDM-6100 can be used to charge the rechargeable Li-ion battery pack in a GX-6100. To maximize the GX-6100's run time and the battery life, make sure the battery pack's charge is as low as possible before recharging it.

1. If desired, perform a bump test, calibration, or alarm check on a GX-6100 as described in "Bump Test" on page 69, "Calibration" on page 75, or "Alarm Check" on page 79.

2. Turn off the GX-6100 by pressing EDIT ENTER and POWER. If no buttons are pressed within the time period defined by either the **WAIT TIME (PASS)** parameter (if all tests passed) or the **WAIT TIME** parameter (if a test failed), the GX-6100 will shut off and resume charging. See "Adjusting the Power Saving Settings (POWER SAVE)" on page 52.

3. Before the GX-6100 is turned off, the CHARGE LED will be blinking green. Once the GX-6100 is turned off, the CHARGE LED will blink orange if the GX-6100 needs to be charged. The CHARGE LED will be solid green if the GX-6100 is already fully charged.

NOTE: The SDM-6100 does not start charging the battery pack until the GX-6100 is off.

4. If the battery pack is drained enough for the docking station to charge it, the CHARGE LED will continue to blink orange while charging is taking place. The SDM-6100 will take approximately 6 hours to charge a fully-discharged GX-6100.

   If the Li-ion pack is already fully charged, the CHARGE LED will be solid green and no charging will occur.

   If the charging process encounters a fail condition, the CHARGE LED will turn steadily red. A fail condition could indicate that there is something wrong with the Li-ion battery pack or that there is something wrong with the charger.

5. When the charge is complete, the CHARGE LED will turn solid green.

Battery Pack Too Drained for Standalone Operation

If the battery pack in the GX-6100 does not have enough power to keep the GX-6100 on during operations with the SDM-6100, the GX-6100 will turn off.

The GX-6100 goes into a 5 minute charge cycle and the LCD indicates **CHARGING**. Once the 5 minute charge cycle has ended, the GX-6100 will automatically turn back on and connect to the SDM-6100.

Chapter 7: Spare Parts List

Part Number	Description
06-1248RK	Polyurethane tubing, 5/16-inch OD x 3/16-inch ID, for connecting to inlet fittings
06-1248RK-03	3 foot length of 5/16-inch OD x 3/16-inch ID, for connecting calibration cylinder to inlet fittings
06-1254RK	Polyurethane tubing, 7/16-inch OD x 5/16-inch ID, for exhaust tube, 15 feet maximum
06-1254RK-10	10 foot length of 7/16-inch OD x 5/16-inch ID, for exhaust tube
10-1233-06	Screw, M4 x 8 mm, for connection brackets, wall mounting brackets, and/or panel on right side of SDM-6100
14-0401-02	Wall mounting brackets, set of 2, with screws
14-0402	Connection brackets, set of 2, with screws, for connecting SDM-6100 docking stations together
16-0611RK	T-fitting for exhaust manifold
17-4710	Sample fitting plugs
32-0504RK	Check valve for exhaust fitting (when manifolded)
33-0167RK	Particle air filter replacement, CF-8369
47-5073RK	USB cable, Type A to Type B, for connecting to a computer
47-5088	Ethernet cable, black, 5 ft.
49-0144	Single-station AC adapter
71-0696	Operator's Manual, SDM-6100 Docking Station for standalone operation (this document)
71-0710	Operator's Manual, SDM-6100 PC Controller Program
81-0000RK-51	Calibration cylinder, 200 ppm H_2 in air, 34 liter steel
81-0012RK-01	Calibration cylinder, 50% LEL CH_4 in air, 34 liter steel
81-0012RK-03	Calibration cylinder, 50% LEL CH_4 in air, 103 liter
81-0018RK-01	Calibration cylinder, 50% LEL isobutane in air, 34 liter steel
81-0018RK-03	Calibration cylinder, 50% LEL isobutane in air, 103 liter
81-0076RK	Calibration cylinder, zero air, 17 liter
81-0076RK-01	Calibration cylinder, zero air, 34 liter steel
81-0076RK-03	Calibration cylinder, zero air, 103 liter

Part Number	Description
81-0090RK-01	Calibration cylinder, 3-gas (50% LEL CH_4/12% O_2/50 ppm CO), 34 liter steel
81-0090RK-03	Calibration cylinder, 3-gas (50% LEL CH_4/12% O_2/50 ppm CO), 103 liter
81-0103RK-01	Calibration cylinder, isobutylene, 100 ppm in air, 34 liter steel
81-0103RK-03	Calibration cylinder, isobutylene, 100 ppm in air, 103 liter
81-0103RK-04	Calibration cylinder, isobutylene, 100 ppm in air, 34 liter aluminum
81-0104RK-01	Calibration cylinder, isobutylene, 10 ppm in air, 34 liter steel
81-0104RK-03	Calibration cylinder, isobutylene, 10 ppm in air, 103 liter
81-0104RK-04	Calibration cylinder, isobutylene, 10 ppm in air, 34 liter aluminum
81-0142RK-02	Calibration cylinder, 5-gas (CH_4/O_2/H_2S/CO/SO_2), 58 liter
81-0154RK-02	Calibration cylinder, 4-gas (50% LEL CH_4/12% O_2/50 ppm CO/25 ppm H_2S), 58 liter
81-0154RK-04	Calibration cylinder, 4-gas (50% LEL CH_4/12% O_2/50 ppm CO/25 ppm H_2S), 34 liter aluminum
81-0158RK-02	Calibration cylinder, 4-gas (50% LEL Isobutane/12% O_2/50 ppm CO/25 ppm H_2S), 58 liter
81-0158RK-04	Calibration cylinder, 4-gas (50% LEL Isobutane/12% O_2/50 ppm CO/25 ppm H_2S), 34 liter aluminum
81-1054RK-H2S	Regulator, demand-flow type, for CO, H_2S, zero air, and LEL combustible gases in 34-liter aluminum, 58-liter, and 103-liter calibration cylinders (cylinders with internal threads)
81-1055RK	Regulator, demand-flow type, for all gases in 17- and 34-liter steel cylinders (cylinders with external threads)
81-1500RK	Cylinder holder for 58 liter calibration cylinder
81-1501RK	Cylinder holder for 103 liter calibration cylinder
81-1502RK	Cylinder holder for 34 liter calibration cylinder
81-SDM6100-01	Docking station for GX-6100, includes docking station, single-station AC adapter, air filter, exhaust tubing, USB cable, Ethernet cable, and USB drive
82-6105RK	USB drive