

## 1. Intended Use

Thank you for purchasing the Setra FLEX, the industry's most advanced and flexible room environmental monitor.

Setra FLEX is designed for indoor use only to monitor critical environments by providing differential pressure indication and additional parameters such as temperature, relative humidity, air changes per hour, and user-defined information. Typically this is between a monitored room and a reference space such as a corridor or ante room. The unit also provides monitoring, control, alarm, and communications functions.

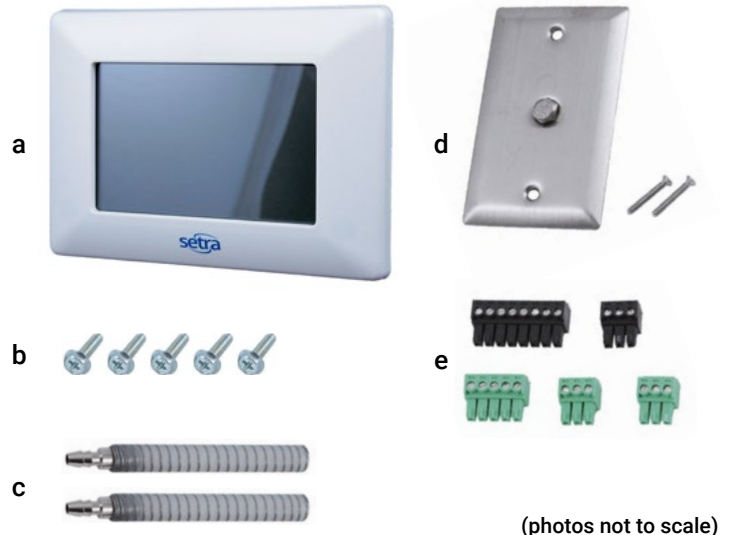
Typical Applications:

1. Hospitals – patient isolation and protection rooms, operating suites, intensive care and emergency rooms.
2. Pharmaceutical, semiconductor, precision manufacturing and clean rooms
3. Laboratories – medical research, BSL (bio safety labs), radiation, vivarium, toxic metals and chemicals.

## Included in the box

- a) FLEX unit
- b) FLEX unit mounting screws
- c) Tubing
- d) Room pressure snubber (RPS, if ordered) and mounting screws
- e) Electrical connector kit

Quantity of box contents may vary.



## Parts required and to be supplied by installer

To mount and install properly, the following components are required.

### NOT INCLUDED and required for each FLEX unit:

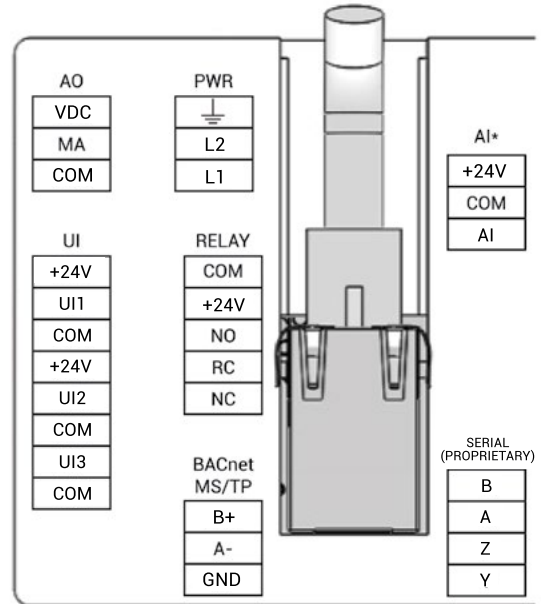
- Triple Gang Double Deep Metal Electrical Box, RACO 697 or Appleton M3-350 or equivalent: 1  
(a single-deep box may be used if no on-board pressure sensor was ordered)
- Green grounding screw: 1
- Power and signal wiring, as needed
- ¼" pressure tubing to run from the room(s) to the FLEX unit
- Transformer, 24 VAC
- Door Switch SPDT or SPST, N.O., as needed
- Remote Pressure Transducers, as needed
- Remote Annunciators, as needed

## 2. Wiring

### Inputs & Outputs

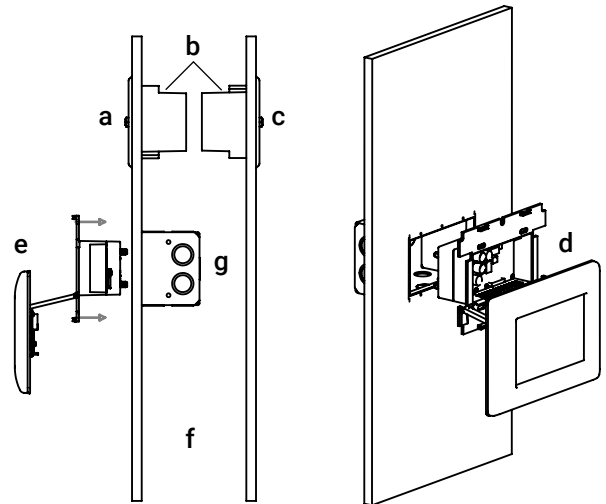
<b>Universal inputs (3)</b>	0-5 VDC, 0-10 VDC, or 4-20 mA input signal* Configurable for either Analog or Digital signals. Use external sensors for pressure, temperature, humidity, or any suitable application. Use as digital input for door, HVAC filter DP, or duct static DP pressure switch.
<b>Analog input (1)</b>	Dedicated for use as input for either on-board pressure transducer, or general AI input. Used only when no transducer is purchased on unit.
<b>Analog output (1)</b>	0-5 VDC, 0-10 VDC, or 4-20 mA output signal. Use as PI control loop to modulate reheat valves or other analog driven devices, pressure output signal, or mirror an input signal. Can be assigned to any room parameter.
<b>Relay output (1)</b>	24 VDC SPDT NO/NC Relay. Use as remote alarm annunciator or other NO/NC applications. Contact rating 2.0A @ 30 VDC /VA 0.6A @125 VAC
<b>Wire</b>	Stranded shielded twisted pair, 16-24 AWG .14-1.5 mm <sup>2</sup> cross sectional area
<b>Expansion I/O module</b>	8 Universal Inputs, 4 Analog Outputs, 4 Relay Outputs

\*Installer provided 250Ω resistor required for 4-20mA signal



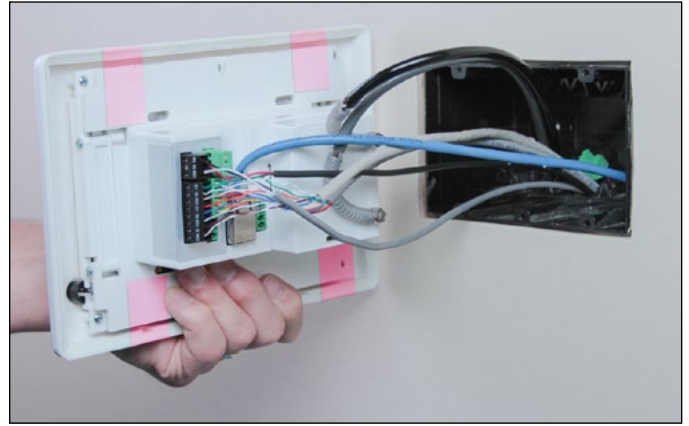
## 3. Rough-In

- Ensure rough-in box is ready to receive the RPS
  - Setra RPS Reference Pressure Side
  - 1-Gang Electric Box
  - Setra RPS Room Pressure Side
  - Setra FLEX Unit (Display hinges down during installation then snaps in place when mounting is complete)
  - Setra FLEX Unit (may be mounted inside or outside room)
  - Wall cavity
  - Electrical Box (3-Gang double-deep if using on-board sensor, single deep if no on-board sensor)
- Ensure rough-in box is ready to receive the FLEX unit



## 4. Installation

- Make the final connections by pushing the removable connectors and wires into the back of the FLEX unit. If connecting BACnet/IP, insert the RJ-45 cable into the Ethernet port. If connecting pressure tubing, align HIGH and LOW ports to their appropriate pressure sensor connections with anti-kink tubing and secure in place.



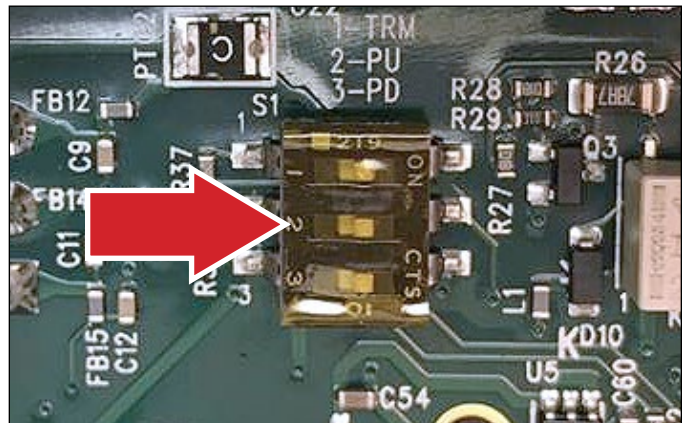
- Slide the FLEX unit back into the wall, taking care to not crimp tubing or damage wires.



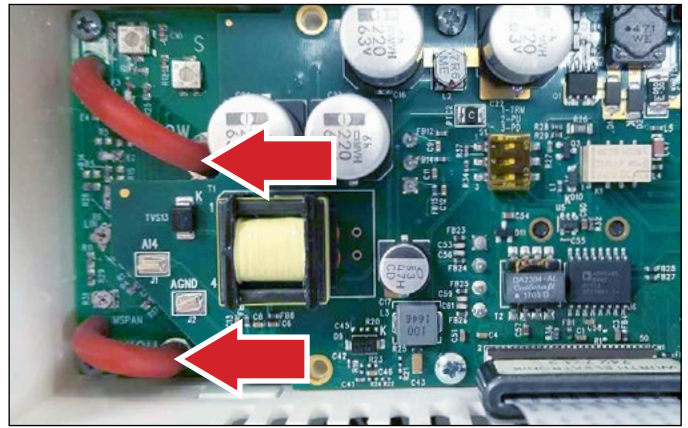
- Secure the FLEX base unit into the electrical box with the four (4) mounting screws provided. Allow the FLEX display to hang below the mounting box, taking care so that the display does not get damaged by tools.



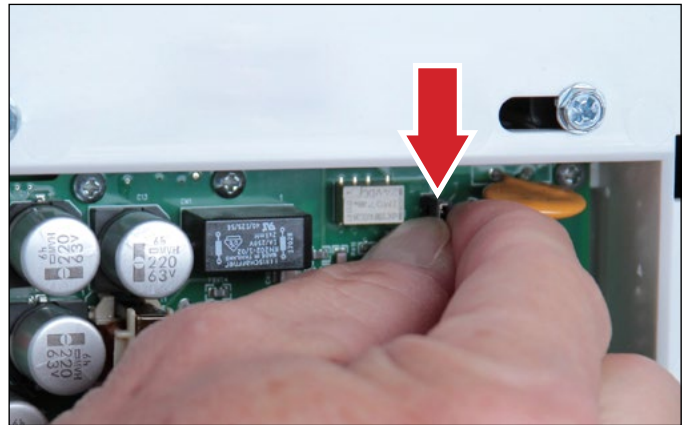
- BACnet MS/TP hardware is implemented as isolated RS485. Wire to Connector COMM, labeled BACNET. Connect TX line to B (+), RX to A (-) and ground wires to GND. Connect shields together with wire nut. Hardware configuration is done using a three position dip switch located in the upper center section of the rear PCB. Use a small flat blade screwdriver or pen to push the switch to the right to turn the function on, or to the left to turn the function off. If the unit will be at the end of the line, the pull up resistor can be enabled by pushing position 1 to on.



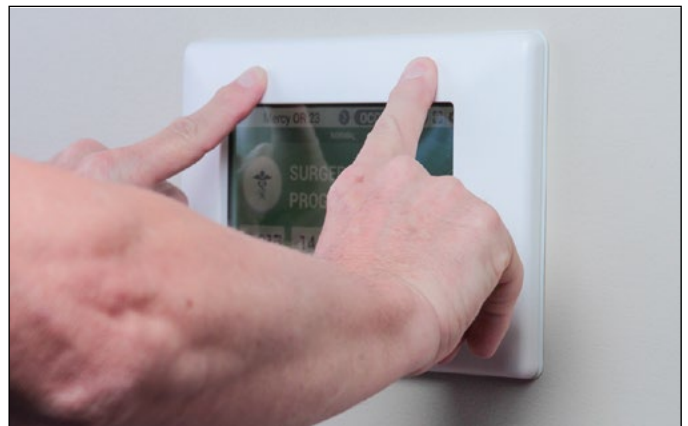
- With the FLEX display hanging open and unit powered, re-zero the sensor to ensure accurate operation:
  1. Remove one end of each pressure tube (shown here)
  2. Access “Settings” > “Maintenance” > “Pressure Calibration”
  3. With tubes disconnected, press “Adjust Zero”
  4. Reconnect tubes
- The unit is now ready for final mounting



- If live power is already turning on FLEX, power can be removed from FLEX by removing the J6 jumper on the unit. This can be done by hand, or carefully with non-conductive pliers. Normally, FLEX is continuously powered and this jumper does not need to be accessed.

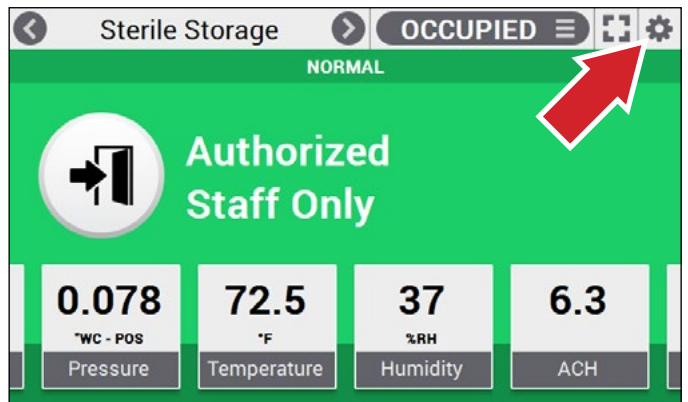


- Swivel up the FLEX display, and push firmly at the frame just above and just below the touch screen. The display will snap into place and seal against the wall surface.



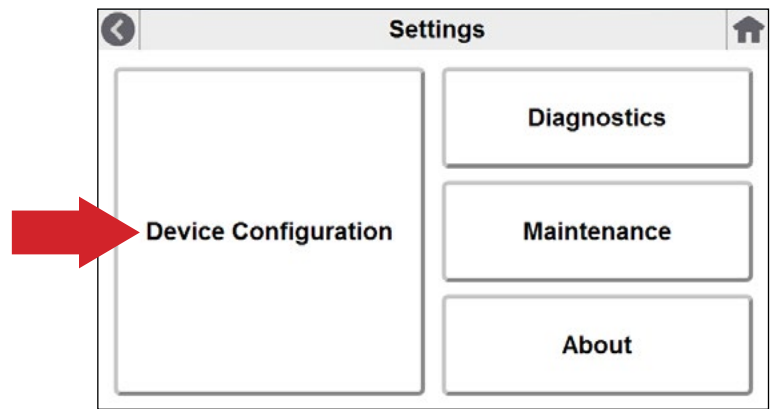
## 5. Power Up Configuration

- Access the “cog wheel” on the top-right of the FLEX display to configure the unit.

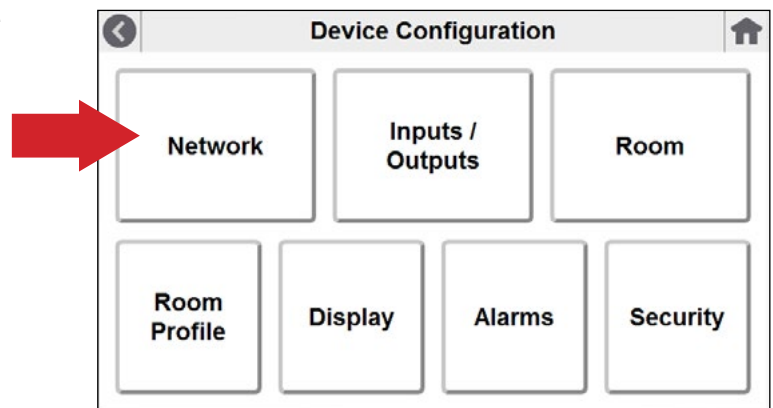




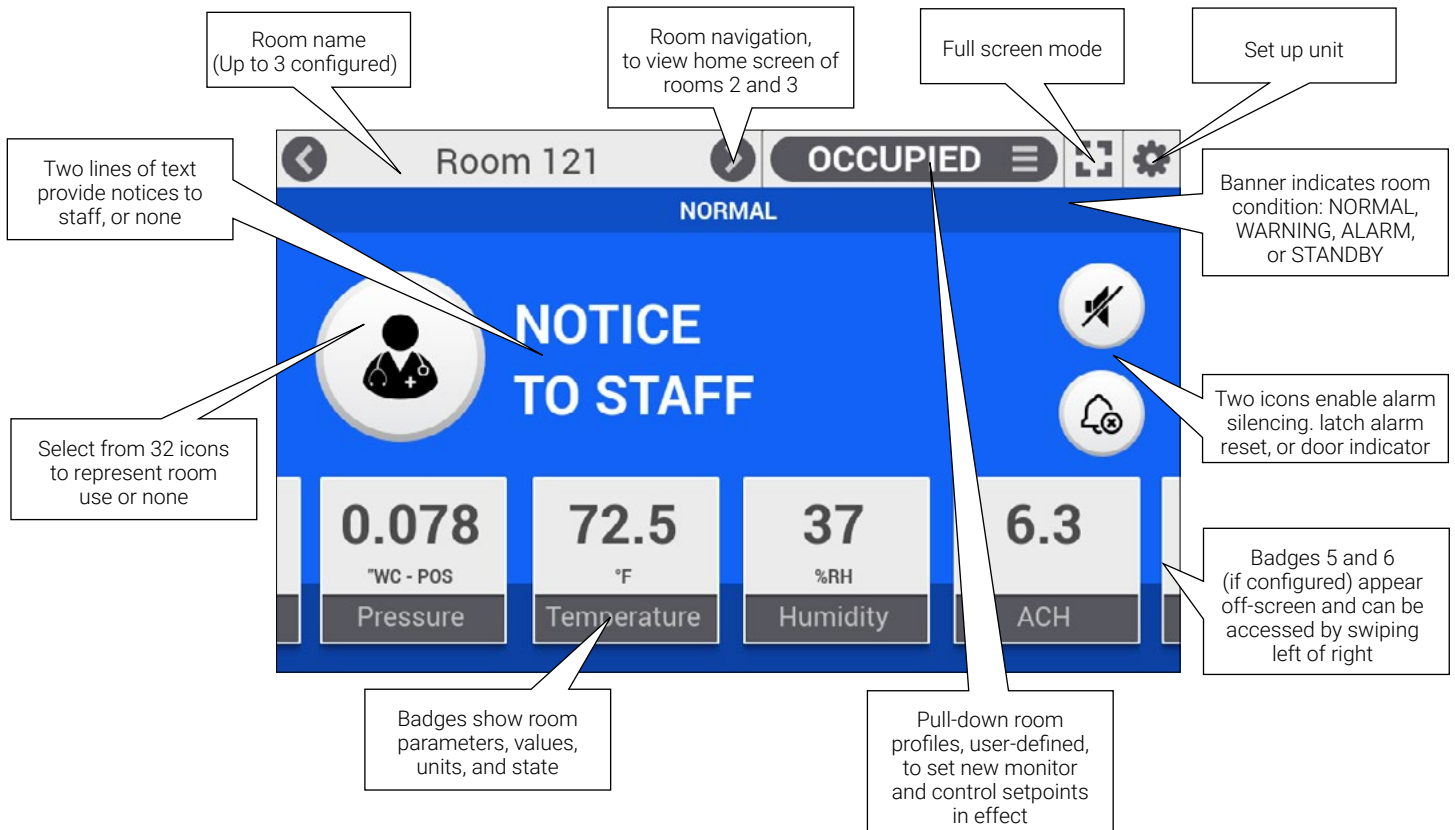
- Use "Device Configuration" for initial setup.



- The next seven menus (three tiles over four) permit complete configuration of your FLEX unit. Detailed instructions for each menu can be found in the FLEX Installation & Operations Guide.



## 6. FLEX Home Screen



## 7. Specifications

### Physical Description

<b>Dimensions</b>	9.25" W x 6.3" H x 0.65"D (215.0mm x 160.0mm x 16.51mm)
<b>Mounting</b>	Triple-gang, double deep electrical box. RACO 697, Appleton M3-350, or equivalent
<b>Case</b>	Fire-retardant plastic UL94 V-0
<b>Weight</b>	2 lbs
<b>Display</b>	7" Projected Capacitive (PCAP) multitouch. 800 x 480 pixels. Usable with medical gloves.
<b>Display brightness</b>	1-7
<b>USB port</b>	Micro-USB port for configuration cloning between units and software upgrades.
<b>Audible alarm</b>	Dual piezo with 3 volume levels (0-75 dB max.)

### Communications

#### Protocols (BACnet objects can be found at [setra.com](http://setra.com))

BACnet/IP using IPv4, Ethernet CAT5 cables with RJ45
BACnet MS/TP up to 76.8 kbps, 3-conductor, twisted, shielded 16-24 AWG cable

### Electrical

<b>Power</b>	24 VAC (18-32 VAC operational), 50-60 HZ
<b>Power draw</b>	13 W max, 10 W typical
<b>Wire</b>	2 or 3-conductor (depending on application) stranded unshielded twisted pair, 16-24 AWG
<b>Connections</b>	Removable Terminal Blocks

### Regulatory Compliance

CE, RoHS, WEEE

Specifications subject to change without notice.

### Environmental Data

<b>Operating temp. °F (°C)</b>	32 to 120 (0 to 50)
<b>Storage temp. °F (°C)</b>	-40 to 185 (-40 to 85)
<b>Operating humidity</b>	5 to 95% RH (non-condensing)
<b>Ingress Protection (IP) rating</b>	IP54

### Chemical Resistance

Exposed surfaces are chemically resistant to vaporized hydrogen peroxide (VHP), formaldehyde, chlorine dioxide (clidox), perchloric acid, sodium hypochlorite 3-6% (bleach), quaternary ammonium 7% in 1:128 tap water (ammonia).

### Performance

<b>Accuracy RSS</b>	±0.25%
<b>Non-linearity (BFSL)</b>	±0.24%
<b>Hysteresis</b>	±0.05%
<b>Non-repeatability</b>	±0.05%
<b>Span setting tol.</b>	±0.5% Rdg
<b>Zero/span shift % FS</b>	± 0.03% PSI (±0.05% FS)
<b>Overpressure</b>	±1 PSI (15" WC for ≤0.10" WC FS)
<b>Pressure media</b>	Air or non-conductive, non-explosive gases
<b>Pressure fittings</b>	3/16" barbed fittings
<b>Altitude</b>	6562 ft. (2000 m) max.
<b>Position</b>	Housing to be 90° in reference to level surface, ±5°

## 8. Maintenance

- The FLEX is designed to operate in an indoor environment, monitoring clean, dry air.
- Upon final installation of the FLEX Environmental Monitor, no routine maintenance is required. An annual check of system calibration is recommended. FLEX is not field serviceable and should be returned if repair is needed (field repair should not be attempted and may void warranty). Be sure to include a brief description of the problem plus any relevant application notes. Contact customer service to receive a return goods authorization number before shipping.
- **WARNING:** Do not blow into the pressure tubing or fittings with mouth, compressed air, or canned air. Such actions may permanently damage the pressure sensor. Do not clean or wash-down FLEX with industrial cleaners or solvents other than those approved in specifications. Do not immerse unit.

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## 9. Returns

When returning a product to Setra Systems, the material should be carefully packaged and shipped prepaid to:

**Setra Systems, Inc.**  
**159 Swanson Road**  
**Boxborough, MA 01719-1304**  
**Attn.: Repair Department**

To assure prompt handling, please refer to return instructions at the following URL:

**[http://www.setra.com/tra/repairs/cal\\_rep.htm](http://www.setra.com/tra/repairs/cal_rep.htm)**

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## 10. Warranty and limitation of liability

SETRA warrants its products to be free from defects in materials and workmanship, subject to the following terms and conditions: Without charge, SETRA will repair or replace products found to be defective in materials or workmanship within the warranty period; provided that:

- a) the product has not been subjected to abuse, neglect, accident, incorrect wiring not our own, improper installation or servicing, or use in violation of instructions furnished by SETRA;
- b) the product has not been repaired or altered by anyone except SETRA or its authorized service agencies;
- c) the serial number or date code has not been removed, defaced, or otherwise changed; and
- d) examination discloses, in the judgment of SETRA, the defect in materials or workmanship developed under normal installation, use and service;
- e) SETRA is notified in advance of and the product is returned to SETRA transportation prepaid.

Unless otherwise specified in a manual or warranty card, or agreed to in writing and signed by a SETRA officer, SETRA pressure, humidity, and acceleration products shall be warranted for one year from date of sale.

The foregoing warranty is in lieu of all warranties, express, implied or statutory, including but not limited to, any implied warranty of merchantability for a particular purpose.

SETRA's liability for breach of warranty is limited to repair or replacement, or if the goods cannot be repaired or replaced, to a refund of the purchase price. In no instance shall SETRA be liable for incidental or consequential damages arising from a breach of warranty, or from the use or installation of its products.

No representative or person is authorized to give any warranty other than as set out above or to assume for SETRA any other liability in connection with the sale of its products.

For all CE technical questions, contact Setra Systems, USA. EU customers may contact our EU representative Hengstler GmbH, Umlandstr 49, 78554 Aldingen, Germany (Tel: +49-7424-890; Fax: +49-7424-89500).

# 11. Support

## Setra FLEX Installation & Operation Guide



The cover of the Setra FLEX Installation & Operation Guide features a central image of the device's touchscreen interface. The screen displays a 'NOTICE TO STAFF' alert and several numerical data points: 0.028, 72.5, 37, and 22.0. Below the screen image, the text 'setraFLEX Installation & Operation Guide' is prominently displayed. At the bottom, the Setra Systems, Inc. logo and contact information are provided.

**Setra Systems, Inc.**  
159 Swanson Road, Boxborough, MA 01719  
800.257.3872 • www.setra.com

## Setra FLEX Data Sheet



The Setra FLEX Data Sheet cover includes a small image of the device's screen at the top left. The main text describes the device's capabilities, such as its ability to monitor up to 5 rooms and its modular design. It also lists various features like the touch screen, keypad, and network connectivity options. The Setra logo is in the top right corner, and the product name 'setraFLEX Environmental Monitor' is in the middle. At the bottom, there are certification logos (UL, USA, CE, RoHS) and the contact information '800.257.3872 | www.setra.com'.

**setra**

The Setra FLEX™ provides a flexible room environmental control and monitoring solution in a simple to use package. An intuitive touch screen interface is complemented by an intuitive graphical display to meet any architectural requirement. The unit supports 5 rooms, monitoring up to 5 parameters for each room. If additional I/O is required, an expansion I/O module enables the monitoring and control for more complex applications. An optional differential pressure sensor can be either factory installed in the unit or ordered separately and installed above the ceiling. Integration with building automation systems is made easy through either BACnet/IP or Modbus RTU network protocols.

**Modular Design**

A modular hardware design enables the FLEX monitor to fit in various wall thicknesses based around the globe. For applications which require the monitor to fit in wall depths less than common, the FLEX can be ordered with an external pressure sensor when measuring in three gang electrical boxes, the FLEX can be ordered with an integrated on board sensor. Sufficient on board I/O provides connectivity for most common equipment and sensor applications. If additional connections are required, or if more advanced HVAC applications demand it, the expansion I/O module can be ordered as an accessory. A high accuracy 0.2% differential pressure transducer is used in all pressure sensing options. A protected capacitive touch screen provides simple functionality and allows for use with medical gloves. The keypad is attached to the unit body enabling both tamper resistant operation and easy opening for pressure calibration.

**Setra FLEX-RM and FLEX-RC**

FLEX software is designed to suit any application, with the ability to support up to 5 rooms. FLEX RM (Room Monitor) provides monitoring only for those applications where no control from the touch screen is needed. FLEX RC (Room Controller) offers monitoring plus filtering or network control of VAV boxes, water valves, or hydraulic relief valves. Software is pre-installed, with configuration and network integration done using simple step screens. There is no programming required. When completed, configuration settings on one unit can be cloned to other devices using a standard USB thumb drive, thereby shortening commissioning time. Units can also be configured and commissioned via a BACnet network.

The FLEX monitor is both a controller and monitor with audible and visual alarming on all room environmental parameters. The FLEX monitor enables users to save energy by choosing from two PI control loops and two monitoring sets for any of four room modes, such as occupied and unoccupied.

**setraFLEX**  
Environmental Monitor

- Supports 5 Rooms & Parameters Each
- IP Integrated Capacitive Touch Screen
- BACnet/IP & Modbus RTU
- Flush Mount to Wall
- Mounts in Standard Electrical Boxes
- Full Touch-Response with Medical Gloves
- No Programming Required
- Supports 8.5" Outputs On Board
- Supports 8.5" Outputs Expansion I/O Module
- On Board or External Pressure Transducer
- High Accuracy 0.2% Sensor Standard
- Monitor and Control Pressure, Temperature, Humidity, Air Change
- Rate and User Defined Parameters
- Customizable Alarm Profiles
- Levels of Password Security
- User Defined On Screen Test and Resets
- Configuration Options Help Reduce Maintenance Alarms
- Supports Wall Depth when Sensor is Mounted Remotely
- Cloning Features Reduces Time Required for Multi-Unit Installation
- Permits Duplicate display shown parameters inside and outside of rooms

**UL** **USA** **CE** **RoHS**

800.257.3872 | www.setra.com

## Technical Support



800.257.3872



www.setra.com



techsupport@setra.com



SS-FLEX Quickstart Rev. B 02/2018

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