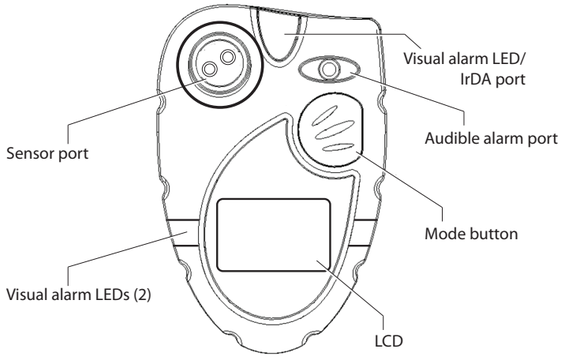
ToxiPro® Gas Monitor - Quick Reference Guide

This guide applies to ToxiPro® toxic gas monitors and O_2 monitors. Some monitors are capable of datalogging.

Parts



Visual alarm LED/IrDA port: A bright red LED (light-emitting diode) alarm light provides a visual indication of the alarm state. The LED also functions as the IrDA port.

Audible alarm port: A cylindrical resonating chamber containing the sound alarm.

Mode button: The large pushbutton on the front of the monitor is used to turn the monitor on and off, to activate the backlight, to view the MAX, STEL (if enabled) and TWA (if enabled) screens, and to initiate automatic calibration.

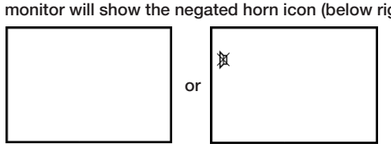
Sensor port: The sensor port is located at the upper left corner of the monitor. A filter prevents unwanted contaminants from entering the sensor.

The LCD (liquid crystal display) shows gas readings, messages, and other information. A manually-activated backlight allows the display to be read in low light conditions.

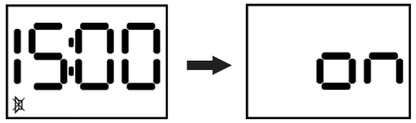
A belt clip (not shown) attaches to the bottom surface of the monitor.

Operating the monitor

The gas monitor is effectively disabled when it leaves Honeywell. Upon arrival, the toxic gas monitor's display will be blank (below left). The O_2 monitor will show the negated horn icon (below right).


or

To initialize the monitor, press the Mode button. ToxiPro® O_2 models will proceed with a 15-minute countdown while the oxygen sensor stabilizes. ToxiPro® models equipped with toxic gas sensors do not require an initial warmup period.

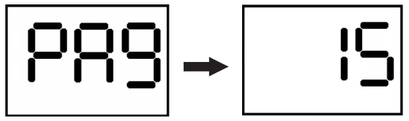


When the warm-up period concludes, the screen will be blank.

Press and hold the Mode button for 3 seconds to initiate the start-up sequence.

At start-up, the monitor will automatically go through a basic electronic self-test sequence that will take about thirty seconds. During the self-test sequence, all sections of the display will be lit, the display backlight will momentantly turn on, and the audible alarm will "chirp."

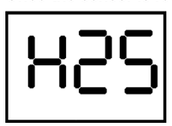
The monitor will first recognize the sensor and will then display the software version.



The serial number screens will then be shown. Since thhe 9 digit serial number cannot fit on a single screen, it is shown on three consecutive screens. In this example, the monitor serial number is 481871404.

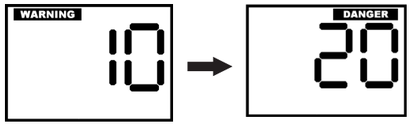
Datalogging versions will then show the "dL" screen.

Once the sensor is recognized, the monitor will display the sensor type.

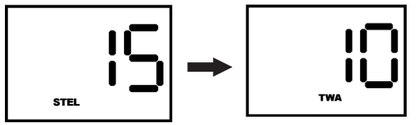


The warning alarm level will then be displayed, followed by the danger alarm level. During the display of the warning alarm level, the LED alarm light will flash twice and the audible warning alarm will sound twice.

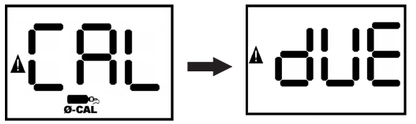
Similarly, during the display of the danger alarm level, the LED visual alarm will flash twice and the audible danger alarm will sound twice. The frequency of the audible danger alarm is higher than the frequency of the audible warning alarm.



If the monitor is configured with a toxic sensor and with the STEL and TWA alarm enabled, it will briefly display the STEL and TWA alarm levels.



If the calibration due reminder is enabled and calibration is due, the following screens will be shown.



Press the Mode button to acknowledge the reminder.

Turning the monitor off

To turn the monitor off, press and hold the Mode button until the monitor chirps three times and "OFF" is displayed. Release the Mode button. The monitor will be off when the display goes blank.

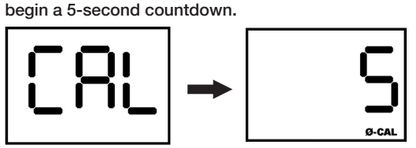
Fresh air/zero calibration

⚠WARNING

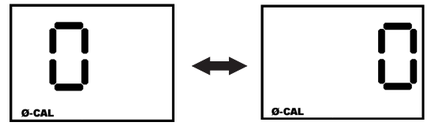
Fresh air/zero calibrations may be performed only in an atmosphere known to contain 20.9% oxygen and 0 PPM toxic gas. Performing the fresh air/zero calibration in an atmosphere that is not comprised of 20.9% oxygen and 0 PPM toxic gas may lead to inaccurate and potentially dangerous readings.

To initiate fresh air/zero calibration:

1. From the current gas reading screen, press the Mode button three times within two seconds to begin the fresh air/zero calibration sequence. The monitor will briefly display "CAL" and then display the 0-CAL icon and begin a 5-second countdown.



2. Press the Mode button again before the end of the 5-second countdown to begin the fresh air/zero calibration. The calibration has been successfully initiated when the monitor alternates between these two screens:



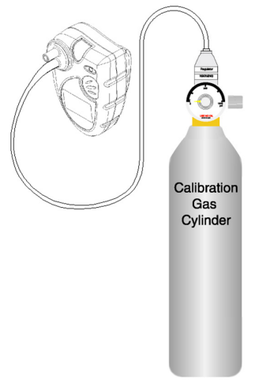
3. For monitors equipped with toxic gas sensors, the fresh air/zero calibration is complete when the monitor begins a second 5-second countdown for the span calibration. If span calibration is not required, allow the countdown to reach 0 without pressing the Mode button. For further instructions concerning the span calibration of toxic sensor-equipped models, refer to section 3.5 in the operator's manual.

   For ToxiPro® O_2 models, calibration is complete when the monitor returns to the current gas readings screen. If the fresh air/zero calibration attempt fails, proceed to section 3.6.1 in the operator's manual.

Functional (bump) testing for toxic sensor monitors

The accuracy of ToxiPro® monitors may be verified at any time by a simple functional (bump) test:

1. Turn the monitor on and wait at least three minutes to allow the readings to stabilize. If the sensor has been replaced recently, allow it to stabilize prior to performing the bump test. See section 4.2 in the operator's manual for further details.
2. Locate the monitor in fresh air.
3. Verify that the current gas readings match the concentrations present in fresh air. The reading for toxic gases should be 0 parts per million (PPM). If the reading is anything other than 0 PPM, refer to section 3.3 of the operator's manual and perform a fresh air/zero calibration before continuing.
4. Apply the calibration gas as shown below.



5. Wait for the readings to stabilize. One minute is usually sufficient.
6. Note the readings. Readings are considered accurate if they are between 90% and 120% of the expected value given on the calibration cylinder. If the readings are accurate, the monitor may be used without further adjustment. If readings are *inaccurate*, the monitor must be adjusted before further use following the span calibration procedure discussed in more detail in section 3.5 of the operator's manual.

continued...

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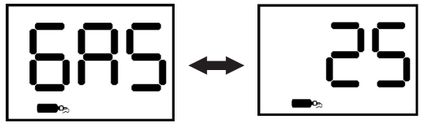
Honeywell

Span Calibration for toxic sensor monitors

Span calibration should be performed when a bump test has shown that the monitor's gas readings are not between 90% and 120% of the expected values as given on the calibration gas cylinder (see section 3.4 of the operator's manual). Prior to performing a span calibration, perform a fresh air/zero calibration as discussed in section 3.3 of the operator's manual. After successful completion of the fresh air/zero calibration, the monitor will begin a second five-second countdown with the calibration gas bottle icon highlighted.

1. Press the Mode button before the countdown is complete to initiate the span calibration. The display will alternate between "GAS" and the expected concentration of calibration gas.

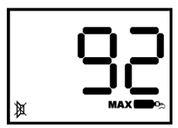


2. Apply the calibration gas as shown above. Once calibration gas is detected, the display will change to show the gas reading. Note that when the monitor is in calibration mode, the negated horn symbol is shown at the lower left to indicate that the alarms are not operating.

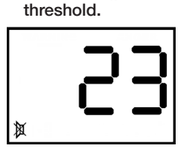
NOTE

A ToxiPro monitor equipped with a chlorine dioxide (ClO_2) sensor requires a chlorine dioxide generator as a calibration gas source.

3. The calibration is fully automatic from this point. Once the monitor successfully completes the span calibration, it will emit three short beeps and display the maximum span calibration adjustment value for two seconds.



4. Following successful calibration, the monitor will display the gas reading with the negated horn icon until the reading drops below the alarm threshold.



5. Disconnect the calibration assembly immediately after calibration.

Span calibration failure

The monitor is designed to recognize two types of span calibration failures: failures that occur due to a sensor response outside the sensor's normal range for calibration and failures that occur when the monitor fails to recognize any calibration gas whatsoever.

Causes of span calibration failure

Span calibration failures can be caused by:

1. Expired calibration gas.
2. Calibration gas whose concentration fails to match the concentration expected by the monitor.
3. An inappropriate regulator. The monitor must be calibrated using a 1.0 liter/minute fixed-flow regulator.
4. Sensor failure.

Maintenance

Replacing the battery

WARNING

Removal or replacement of the lithium battery in a potentially combustible atmosphere may compromises intrinsic safety. Remove or replace the battery only in an atmosphere known to be free of combustible gas.

1. Turn the monitor off. If the monitor is in Always On mode, see section 2.7.1 of the operator's manual for further instructions.

CAUTION

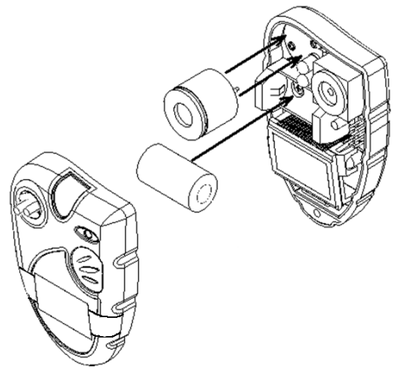
Removing or replacing the battery while the monitor is on may cause datalogger information to be lost.

2. Remove the two screws from the back of the monitor. One is located under the clip, the other is located near the bottom of the monitor.
3. Remove the front housing. The main board will stay attached to the rear monitor housing. The battery is located directly above the display.

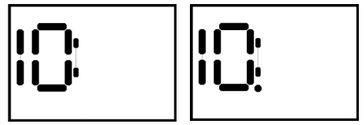
CAUTION

The IrDA module is located on the main board directly above the battery and below the LED alarm light. Take care not to damage it or bend the IrDA connection pins while replacing the battery. If the IrDA pins are inadvertently bent during battery replacement, gently return the IrDA module to a 45-degree angle relative to the main board pointing away from the battery.

4. Remove the old lithium battery. If necessary, use a small screwdriver to gently pry the battery out. This illustration shows the monitor with the sensor and battery removed:



5. Install the new battery. Align the polarity of the battery in accordance with the diagram on the face of the battery compartment. Use only Duracell Ultra #CR2, Energizer #1CR2 (EL1CR2), Sanyo #CR2, or Panasonic #CR2 batteries.
6. After the monitor has been reassembled, it will automatically restart with the hours digits blinking. The next five steps describe programming the time and date.
7. Press and release the Mode button to advance the setting by one. Hold the Mode button down to scroll rapidly. Afternoon and evening hours are differentiated by a dot below the colon on the display.



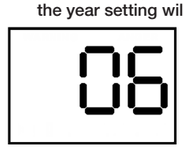
10 a.m. 10 p.m.

When the desired hour setting is reached, wait 5 seconds and the minutes setting will begin blinking.

8. Adjust the minutes setting with the Mode button, then wait 5 seconds and the months setting will be shown.

9. Adjust the months with the Mode button, then wait 5 seconds and the days setting will be displayed.

10. Adjust the days setting with the Mode button, then wait 5 seconds and the year setting will be shown in two digit format.



11. Enter the last two digits of the year with the Mode button, then wait 5 seconds and the monitor will continue to the normal start up sequence as discussed in section 2.1 of the operator's manual.
12. Replace the front cover plate.
13. Reinstall the screws that were removed in step 2.
14. The monitor must be calibrated following replacement of the battery. Allow it to stabilize then begin the calibration. For ToxiPro® toxic gas units, perform the fresh air/zero calibration and the span calibration. For ToxiPro® O_2 units, perform only the fresh air/zero calibration.

Replacing the sensor

WARNING

Removing or replacing the sensor in a combustible atmosphere will compromise intrinsic safety. Remove or replace the sensor only in an atmosphere known to be free of combustible gas.

The sensor in the monitor may require periodic replacement. To replace the sensor:

1. Follow steps 1-3 above to remove the housing.
2. The sensor is located to the left of the LED alarm light on the main board. Gently remove the old sensor and install a new sensor of the same type.
3. New sensors must be allowed to stabilize prior to use according to the following schedule. The detector must be powered off and functional batteries must be installed for the sensors to stabilize.

ToxiPro® Monitor Stabilization Periods	
Model	**Time**
O_2	1 hour
toxic gas sensor	15 minutes

4. After the sensor has stabilized, calibrate the monitor. For ToxiPro® O_2 units, perform the fresh air/zero calibration as described in section 3.3 of the operator's manual. For ToxiPro® units with toxic gas sensors, perform both the fresh air/zero calibration and the span calibration.

Contact information for orders (sales & service)
Life Safety Distribution AG
Javastrasse 2
8604 Hegnau
Switzerland
Tel: +33 (0)4 42 98 17 70
Fax: +33 (0)4 42 71 97 05
PortablesFR@honeywell.com (for sales requests)
BIOexpert@honeywell.com (for service requests)

Contact information for service returns
Life Safety Distribution AG
c/o Honeywell Portable Gas Detection
ZAC Athélia 4 - 375 avenue du Mistral
Bât B, Espace Mistral
13600 La Ciotat, France
Tel: +33 (0)4 42 98 17 70
Fax: +33 (0)4 42 71 97 05
BIOexpert@honeywell.com (for service requests)

www.honeywell.com

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