Appendix for Passport® Instruments Supplied with Ammonia (NH_3) Sensors

Use of Sampling Lines for Detection of Ammonia with Ammonia (NH_3) Sensors

Due to a natural characteristic of ammonia, ambient humidity and sample line material can react with ammonia to cause an ammonia concentration *response* to be lower than actual concentrations. It is therefore necessary, when sampling for ammonia, to use a dry Teflon* sample line.

1. If condensation in the sample line is suspected, dry the sample line by running the pump module with the sample line attached. This must be done in a low humidity, non-condensing atmosphere.
2. To verify operation of a Passport Personal Alarm equipped with an ammonia sensor, perform the Passport response check with the sample line in place to verify that ammonia will reach the sensor.
3. Since limited sample line lengths will not react with ammonia, calibrate using the shortest possible tubing to connect the calibration cylinder to the Passport pump inlet. Cut the black tubing supplied with the calibration kit to a two-inch length to provide the best calibration result.

The chlorine compatible pump (P/N 811719) has internal parts made of materials specifically chosen to minimize the effects of corrosive gases. Due to differences in construction, this pump has a higher current draw than the standard pump; up to 20% shorter run time may be noticed.

⚠ WARNING

Use only Pump Module (P/N 811719) and Teflon Sample Lines (P/N 800972 or 811187) to sample for ammonia. Use of any other pump or sample line reduces the amount of ammonia reaching the sensor and causes inaccurate readings which could result in serious personal injury or death.

Calibration of Passport Personal Alarm Supplied with Ammonia Sensor

The ammonia sensor is slower than other toxic sensors supplied for the Passport Personal Alarm. Allow five minutes for calibration.

For best accuracy, calibrate the ammonia sensor at the temperature and humidity at which it will be used for detection of ammonia concentrations. The ammonia sensor should not be exposed to ammonia within two hours prior to calibration.

NOTE: Use only Regulator (P/N 809945) with Calibration Cylinder (P/N 814866).

⚠ WARNING

The ammonia sensor has an inherent zero drift of greater than 5 ppm per day. Because of this drift, it is extremely important to perform a daily response check prior to use. Failure to perform this response check could cause inaccurate readings which could result in serious personal injury or death.

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Due to the ammonia sensor's higher zero gas current, the Fresh Air Setup (FAS) function of the Passport unit may zero out up to 20 ppm ammonia. Use the FAS function only in the complete absence of ammonia concentrations. Failure to perform FAS in the complete absence of ammonia concentrations causes inaccurate readings which could result in serious personal injury or death.

Performance Characteristics of the Ammonia (NH_3) Sensor

The range of the ammonia sensor is 10 to 100 ppm ammonia. The ammonia sensor does not respond when exposed to concentrations of less than 5 ppm ammonia.

The compensated temperature range of the ammonia sensor is 0°C to 30°C with an extended range of -10°C to 40°C.

The response time (T_{90}) of the ammonia sensor is typically less than 200 seconds. However, under the following conditions, it can be as high as 400 seconds:

- concentration is less than 10 ppm ammonia
- ambient humidity is less than 30% RH
- ammonia sensor is nearing the end of operating life.

NOTE: The life of the ammonia sensor is not as long as that of other sensors supplied for the Passport Personal Alarm. The ammonia sensor is warranted for three months from the date of purchase.

Interference Gases Cross Sensitivity

SAMPLE	PASSPORT PERSONAL ALARM RESPONSE
5 PPM H_2S	25
40 PPM CO	0
10 PPM Cl	< -5
32 PPM HCl	0
215 PPM HCN	6
9 PPM NO_2	0
49 PPM NO	0
10 PPM SO_2	12

⚠ CAUTION

Passport Personal Alarms equipped with Ammonia (NH_3), Nitric Oxide (NO), or Hydrogen Chloride (HCl) sensors require a bias voltage on the sensor for proper operation and stability. A charged battery pack must be installed on the Passport Personal Alarm for at least 24 hours before using these sensors' readings. The Passport Personal Alarm does not need to be turned ON. If the battery pack is discharged or removed for more than a few minutes, allow sufficient time after attaching a charged battery pack to stabilize the sensor. For each minute the battery pack is removed,allow two minutes stabilization time after a charged battery pack is attached (up to a maximum of 24 hours stabilization time).

The ammonia sensor is appropriate for detection of intermittent leaks only and is not suitable for continuous exposure monitoring. Use of the Passport Personal Alarm with ammonia sensor for continuous exposure monitoring of ammonia could result in premature sensor failure.