Honeywell

# Midas® SENSOR CARTRIDGE SPECIFICATIONS

## Phosphine ($PH_3$)
## MIDAS-S-PH3, MIDAS-E-PH3

| Gas Measured | Phosphine ($PH_3$) |
|---|---|
| **Cartridge Part Number** | MIDAS-S-PH3 1 year standard warranty<br>MIDAS-E-PH3 2 year extended warranty |
| **Sensor Technology** | 3 electrode electrochemical cell |
| **Measuring Range (ppm)** | $PH_3$ 0 – 1.2ppm |
| **Minimum Alarm 1 Set Point** | 0.15ppm |
| **Repeatability** | < ± 5% of measured value |
| **Linearity** | < ± 10% of measured value |
| **Response Time $t_{62.5}$** | ≤ 2 seconds |
| **Sensor Cartridge Life Expectancy** | ≥ 24 months under typical application conditions |
| **Operating Temperature**<br>**Effect of Temperature**<br>Zero<br>Sensitivity | 0°C to +40°C (32°F to 104°F)<br>< ± 0.001ppm / °C (0°C to 20°C)<br>< ± 0.003ppm / °C (20°C to 40°C)<br>< ± 0.6% of measured value / °C |
| **Operating Humidity (continuous)**<br>**Effect of Humidity**<br>Zero<br>Sensitivity | 10 – 90% rH<br><br>< 0.0015ppm / % rH<br>< ± 1% of measured value / % rH |
| **Operating Pressure** | 90 – 110kPa |
| **Effect of Position** | No effect in typical application |
| **Long Term Drift**<br>Zero<br>Sensitivity | <br>< ± 0.02ppm / year<br>< ± 10% of measured value / year |
| **Calibration Gas** | Phosphine ($PH_3$) |
| **Challenge Gas (Bump Test)** | Phosphine ($PH_3$) |
| **Warm Up Time** | < 20 minutes |
| **Storage Temperature** | +5°C to +25°C (+41°F to +77°F) |

The sensor data listed is based on ideal test environment; observed performance may vary based on the actual monitoring system and the sampling conditions employed

**Cross Sensitivities**

Each Midas® sensor is potentially cross sensitive to other gases and this may cause a gas reading when exposed to other gases than those originally designated. The table below presents typical readings that will be observed when a new sensor cartridge is exposed to the cross sensitive gas (or a mixture of gases containing the cross sensitive species).

| Gas / Vapor | Chemical Formula | Concentration Applied (ppm) | Reading (ppm $PH_3$) |
|---|---|---|---|
| **Ammonia** | $NH_3$ | 100 | 1.05 |
| **Arsine** | $AsH_3$ | 1 | 0.68 |
| **Carbon Monoxide** | CO | 2000 | < 0.01 |
| **Chlorine** | $Cl_2$ | 1 | - 0.07 |
| **Diborane** | $B_2H_6$ | 1 | 0.45 |
| **Ethanol** | $C_2H_5OH$ | 2000 | < 0.01 |
| **Germane** | $GeH_4$ | 1 | 0.45 |
| **Hydrogen** | $H_2$ | 5000 | < 0.01 |
| **Hydrogen Chloride** | HCl | 10 | < 0.01 |
| **Hydrogen Fluoride** | HF | 10 | < 0.01 |
| **Hydrogen Sulphide** | $H_2S$ | 0.5 | 0.07 |
| **Iso Propanol** | $C_3H_7OH$ | 2000 | 0 |
| **Nitrogen Dioxide** | $NO_2$ | 8 | - 0.86 |
| **Silane** | $SiH_4$ | 1 | 0.36 |
| **Sulphur Dioxide** | $SO_2$ | 50 | 0.55 |

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