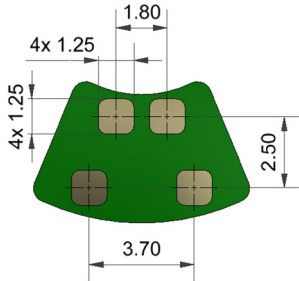
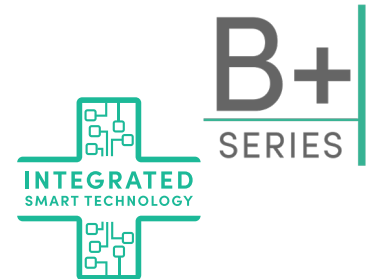
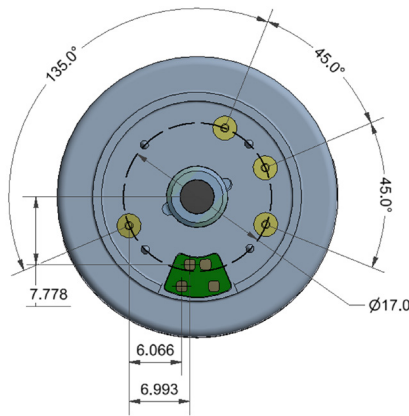


B+ Series Smart Sensor Datasheet (with Integrated Smart Technology)



Dimensions are in millimetres (± 0.1 mm).



IST Board

B4+ Smart Sensor with IST

Integrated Sensor Technology

Interface

Communication Bus
 Max. Bus Speed
 Input Logic Levels
 Absolute Max. Input Signal

Compatible with the 400 kHz I²C protocol
 Up to 1 MHz
 High (Recessive) < 2.3 V | Low (Dominant) < 0.2 V
 3.6 V

Electrical

Supply Voltage Range
 Supply current – Stand-By
 Supply current – Operating

 Power Supply Conditioning
 ESD Protection
 Bus Pins Input Capacitance

1.7 V to 3.6 V
 < 5 μ A
 < 0.15 mA (temperature reading only)
 < 2.15 mA (temperature reading + memory reading/writing)
 Built-In 100 nF decoupling capacitor
 4 kV (human body model) – Enhanced ESD / Latch-Up protection
 15 pF max.

Performance

IST Board Temperature Range

 Temperature Sensor Accuracy
 Memory Data Retention
 Memory Write Cycles

-40 °C to +85 °C – applies to IST board only & does not override temperature range of specific sensor it is fitted to.
 $\pm 1^\circ\text{C}$ (-0°C to +70°C)
 > 200 years
 > 4,000,000

Data & Communication

Memory IC & I2C Address
 Temperature IC & I2C Address
 Product Data Start Address
 Calibration Data Start Address
 User Data Area
 CRC Polynomial
 Digital Signature Algorithm

M24128X-FCU | Device Address: R – 0xA0 / W – 0xA1
 MAX31875R0TZS+T | Device Address: R – 0x90 / W – 0x91
 0x0900
 0x0B00
 0x0D00 – 0x18FF (3,072 Bytes)
 0x 01 04C1 1DB7
 SHA-256

Factory-populated data

Product Data

Data Format Version
 Customer (OEM) ID
 Product ID
 Type of sensor / Target Gas
 Sensor Serial Number
 End of Storage Period Date
 Sensor Replacement Date
 Product Data Checksum
 Alphasense Digital Signature
 Customer Digital Signature

Calibration

Calibration Data Units
 Zero (clean dry air) Output
 Calibration Span
 Calibration Output
 Sensitivity
 Calibration Date
 Calibration Data Checksum
 Calibration Data Signature

Sensor Specification

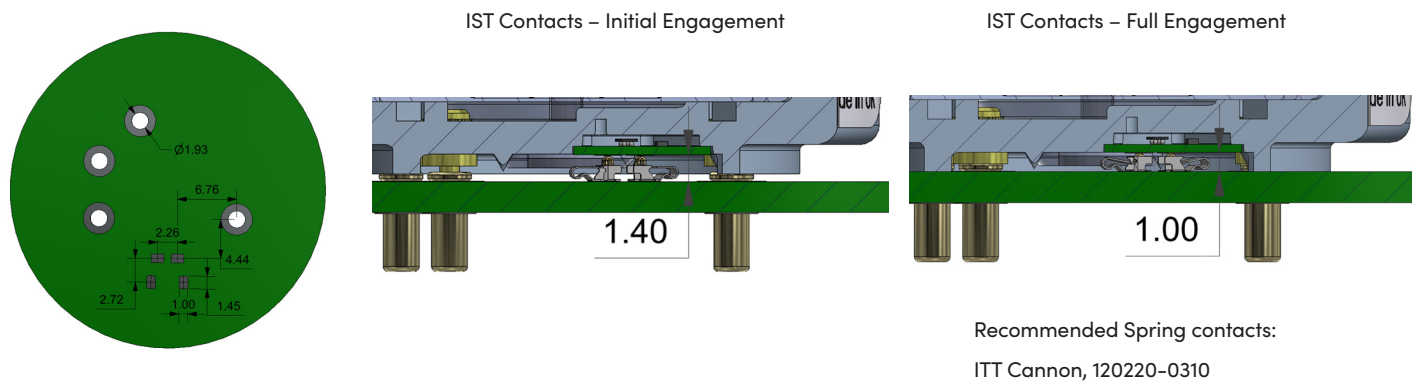
Over-gas limit
 Concentration Range
 Temperature Range Low
 Temperature Range High
 Humidity Range Low
 Humidity Range High
 Pressure Range Low
 Pressure Range High
 Specification Checksum

15,000+ locations

Customer Specific

Custom Parameters
 Re-Calibration Due Date
 Operational Limits:
 Low | High | STEL | TWA
 Next Bump Test Due Date
 User Data Area

Figure 1 – Recommended Customer IST Interface – B+ Series Smart Sensor



List of Target Gases for the B+ Smart Sensor Series

- | | | |
|--|--|---|
| Ammonia (NH3) | Hydrogen Cyanide (HCN) | Ozone + Nitrogen Dioxide (O3 + NO2) - PPB |
| Carbon Monoxide (CO) | Hydrogen Peroxide (H2O2) | Phosphine (PH3) |
| Carbon Monoxide (CO) - Filtered | Hydrogen Sulphide (H2S) | Phosphine (PH3) Extended Range |
| Carbon Monoxide (CO) - Low cross-sensitivity to Hydrogen | Hydrogen Sulphide (H2S) - Extended range | Sulfur Dioxide (SO2) - PPB |
| Carbon Monoxide (CO) - PPB | Hydrogen Sulphide (H2S) - High output | Sulphur Dioxide (SO2) - Extended range |
| Chlorine (CL2) | Hydrogen Sulphide (H2S) - PPB | Sulphur Dioxide (SO2) - Filtered |
| Ethylene Oxide (ETO) | Nitric Oxide (NO) | Volatile Organic Compounds (VOC) - PPB |
| Hydrogen (H2) | Nitric Oxide (NO) - PPB | |
| Hydrogen Chloride (HCL) | Nitrogen Dioxide (NO2) | |
| | Nitrogen Dioxide (NO2) - PPB | |

At the end of the product's life, do not dispose of any electronic sensor, component or instrument in the domestic waste, but contact the instrument manufacturer, Alphasense or its distributor for disposal instructions. NOTE: all sensors are tested at ambient environmental conditions unless otherwise stated. As applications of use are outside our control, the information provided is given without legal responsibility. Customers should test under their own conditions, to ensure that the sensors are suitable for their own requirements.

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