TB600C-HCHO-100

# TB600C-HCHO-100 Formaldehyde Detection Module

EC Sense • Formaldehyde • Solid-Polymer Electrochemical (smart digital module)

The EC Sense TB600C-HCHO-100 is a smart digital gas detection module built on German solid-polymer electrochemical technology, designed for Formaldehyde detection (TB600C high-range version, 0 – 100 ppm range, 0.1 ppm resolution). The module outputs gas concentration directly while also measuring ambient temperature and humidity. It communicates over a UART (TTL 3.3 V) or I²C digital interface, with both active-upload and question-answer protocols. Every module is professionally calibrated with standard gas before shipment and the calibration data is stored in its flash chip — plug-and-play with no secondary gas calibration. Low power and a sleep mode make it ideal for battery-powered and IoT applications. With a compact 23 × 25.5 mm footprint weighing only 3.1 g, an operating range of -40 ℃ to +55 ℃ and a lifetime over 3 years, it integrates easily into gas detectors and online monitoring systems.

## Specifications

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| **Target Gas** | Formaldehyde |
| **Detection Range** | 0 – 100 ppm |
| **Resolution** | 0.1 ppm |
| **Order No. (UART)** | 04-TB600C-HCHO-100-01 |
| **Order No. (I²C)** | 04-TB600C-HCHO-100-I2C-01 |
| **Operating Principle** | German EC Sense solid-polymer electrochemical technology |
| **Response Time** | < 3 s (T50 < 40 s; T90 < 80 s) |
| **Accuracy** | ± 5% F.S |
| **Repeatability** | 1% |
| **Linearity** | Linear |
| **Long-Term Drift** | < 5% / year |
| **Expected Lifetime** | > 3 years |
| **Built-in Temperature Sensor** | -20 ℃ to +70 ℃, ± 0.2 ℃ (typical) |
| **Built-in Humidity Sensor** | 0 – 100% RH, ± 2% (typical) |
| **Operating Temperature** | -40 ℃ to +55 ℃ |
| **Operating Humidity** | 15% – 95% RH (non-condensing) |
| **Operating Pressure** | Atmospheric pressure ± 10% |
| **Dimensions (with sensor)** | 23 × 25.5 × 10.2 mm |
| **Dimensions (without sensor)** | 23 × 25.5 × 4.85 mm |
| **Weight** | 3.1 g |
| **Output Signal** | UART (TTL 3.3 V) or I²C digital signal |
| **UART Parameters** | 9600 baud, 8 data bits, 1 stop bit |

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| **I²C Parameters** | ≤ 20 kHz, 3.3 V signal |
| **Supply Voltage** | 3.3 – 5.5 V DC (5 V DC recommended) |
| **Working Current** | < 5 mA |
| **Peak Current** | UART 4.2 mA @5 V; I²C 6.2 mA @5 V |
| **Power Consumption** | UART 12.5 mW @5 V; I²C 23.5 mW @5 V |
| **Sleep Mode Power** | UART 4 mW @5 V; I²C 4.5 mW @5 V |
| **Warranty** | 12 months from shipment |
| **Certification** | RoHS (No.A2230090158101001) |

## Key Features

- Excellent accuracy
- Detects gas, temperature and humidity simultaneously
- High selectivity across multiple gases
- Digital output: UART (TTL 3.3 V) or I²C
- Low power with sleep mode — suits battery & IoT applications
- Long lifetime > 3 years, no poisoning
- Typical warm-up in seconds, fast response
- Linear output, no zero-line drift
- Operating range -40 ℃ to +55 ℃, leak-free
- RoHS certified (No.A2230090158101001)

## Typical Applications

- Industrial Safety Monitoring
- Leakage Detection
- Gas Manufacturing Process Monitoring
- Emission Monitoring
- Warehouse & Logistics Monitoring
- Outdoor Air Quality Monitoring
- Tobacco Storage Environment Monitoring
- Data Center Protection
- Food Industry
- Garbage Disposal
- Biogas
- Animal Husbandry
- Sanitary Facilities
- Garages
- Indoor Air Quality Monitoring
- Healthcare

## Calibration & Cross-Sensitivity

Every module is professionally calibrated with standard gas before shipment, with the calibration data stored in its flash chip — plug-and-play, no secondary gas calibration required. Refer to the datasheet for the calibration gas and cross-sensitivity data.