TB600C-TVOC

TB600C-TVOC Volatile Organic Compounds (TVOC) Detection Module

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

The EC Sense TB600C-TVOC is a smart digital gas detection module built on German solid-polymer electrochemical technology, designed for Volatile Organic Compounds (TVOC) detection (TB600C high-range version, 0 – 500 ppm / 0 – 2000 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

Target Gas	Volatile Organic Compounds (TVOC)
Detection Range	0 – 500 ppm / 0 – 2000 ppm
Resolution	0.1 ppm
Order No. (UART)	04-TB600C-TVOC-500-01 / 04-TB600C-TVOC-2000-01
Order No. (I²C)	04-TB600C-TVOC-500-I2C-01 / 04-TB600C-TVOC-2000-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
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.