

# TSVCM

## Duct air quality sensor



### Description

TSVCM is a compact digital air quality (VOC) sensor. It also measures temperature and relative humidity. Equipped with Modbus RTU communication, TSVCM allows easy adjustment of parameters and settings remotely through SenteraWeb.

TSVCM provides the following benefits:

- **Easy Connection:** TSVCM is equipped with a pluggable terminal block that can be unplugged from the device and plugged back when the wires have been connected.  
Power over Modbus (PoM) Compatibility: PoM allows both power supply and data to be transmitted via a single UTP or EIB cable, which makes TSVCM easy to implement in a variety of HVAC systems.
- **Accurate TVOC Detection:** The algorithms of TSVCM precisely measure the level of total volatile organic compounds (TVOCs).
- **Intelligent Baseline Adaptation:** Featuring automated baseline correction, the device intelligently learns its environment to consistently and accurately identify elevated TVOC levels in any condition. This gives a reliable indication of the air quality.
- **Long-Term Performance:** Equipped with a proprietary metal oxide (MOx) sensor, this product delivers reliable and effective responsiveness to changing TVOC levels throughout its operational lifespan.
- **Human-Like Sensitivity:** The algorithm mimics the human nose, offering rapid detection of subtle changes in air quality with high sensitivity while effectively filtering out very gradual variations.
- **Fast Initial Response:** The integrated sensor reacts instantly to the presence of all TVOCs, ensuring immediate detection of air quality changes.
- **Smart Long-Term Adaptation After the Preheating Time:** While the sensor reacts quickly, the algorithm employs a 24-hour time constant for full decay, allowing it to adapt to stable air quality conditions over time.
- **Automatic Baseline Calibration:** In consistently clean air environments over a 24-hour period, the algorithm intelligently converges to an IAQ index of 100, indicating optimal air quality.

### Key Features

- Modbus RTU communication allowing:
  - Configuration and adjusting settings
  - Reading of the measurements and sensor status
  - Firmware upload
- Free selectable ranges and alert levels via Modbus registers:
  - Temperature: -30 - 70 °C
  - Relative humidity: 0 - 100 %
  - VOC index: 0 - 500 AQI
- Pluggable terminal block providing easy connection:
  - Supply: 24 VDC, GND
  - Modbus communication: A, /B
- Provides precise and rapid environmental readings for temperature and relative humidity.
- Offers quick and reliable volatile organic compound detection for air quality assessment.
- Delivers long-lasting and consistent measurements of total volatile organic compounds for indoor air quality monitoring.

### Area of Use

- Demand controlled ventilation based on temperature, relative humidity and air quality.
- Air quality monitoring in air ducts.

### Standards

- Low Voltage Directive 2014/35/EU
- Electromagnetic Compatibility (EMC) Directive 2014/30/EU
- Commission Delegated Directive (EU) 2015/863 (RoHS 3) of 31 March 2015 amending Annex II to Directive 2011/65/EU of the European Parliament and of the Council as regards the list of restricted substances



### Global Trade Item Numbers 14 (GTIN 14)

Article	Unit	Carton	Box
TSVCM	5401003019009	5401003303016	5401003504451



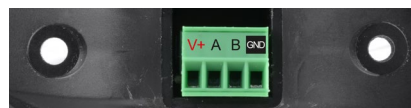
### Article Code

Article code	Supply voltage	Imax	Connection type
TSVCM	24 VDC	20 mA	Pluggable terminal block

### Technical Specifications

Supply voltage	24 VDC	
Maximum input current	20 mA	
Operating conditions	Temperature	-10 – 50 °C
	Relative humidity	10 – 90 % rH, non-condensing
Pre-heating time	VOC index	5 minutes
	IAQ Rating and TVOC	3 minutes
Accuracy of measurements	Temperature	±0,4 °C
	Relative humidity	±2,5 % rH
	TVOC	(± 20 µg/m³ + 15%) at 1 to 1.000 µg/m³
Minimum recommended airflow velocity	1 m/s	
Storage conditions	Temperature	-20°C – 60°C
	Relative humidity	5 – 80% rH
Enclosure	Material	Black ABS (Acrylonitrile Butadiene Styrene)
	Protection class	IP20 (EN 60529)

### Wiring and Connections



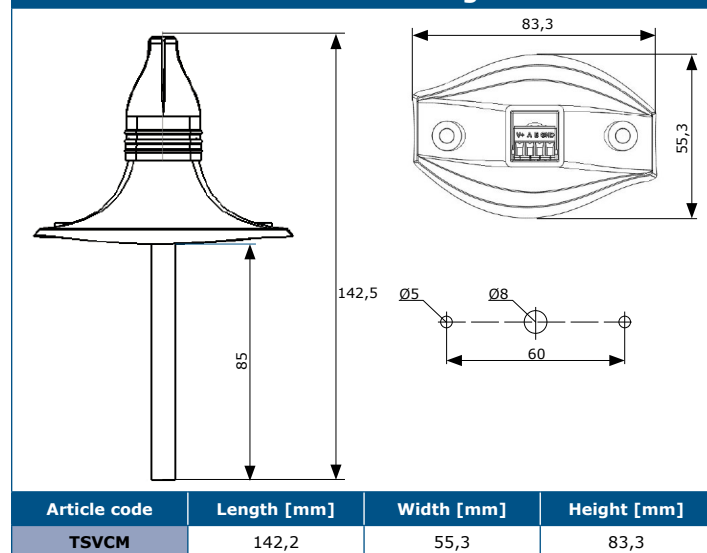
VIN	24 VDC
GND	Common ground
A	Modbus RTU (RS485), signal A
/B	Modbus RTU (RS485), signal /B
Connection type	Pluggable terminal block, Cat5 or EIB cable

# TSVCM

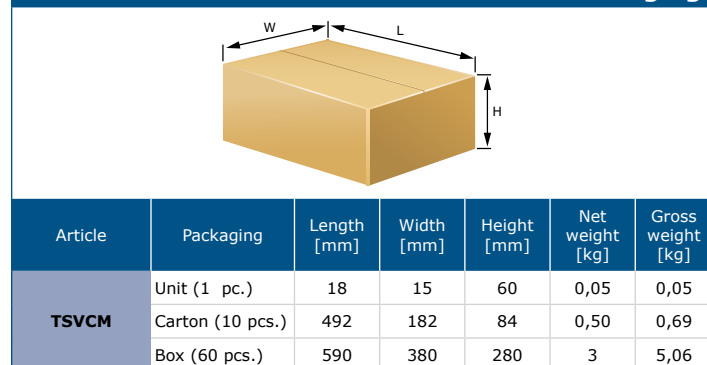
## Duct air quality sensor



### Fixing and Dimensions



### Packaging



### How to Configure



Via a Sentera Internet Gateway you can connect your installation to the SenteraWeb HVAC cloud and:

- Easily change the parameter settings of the connected devices remotely
- Define users and give them access to monitor the installation via a standard web browser
- Log data - create diagrams and export logged data
- Receive alerts or warnings when measured values exceed alert ranges or when errors occur
- Create different regimes for your ventilation system - e.g. day-night regime



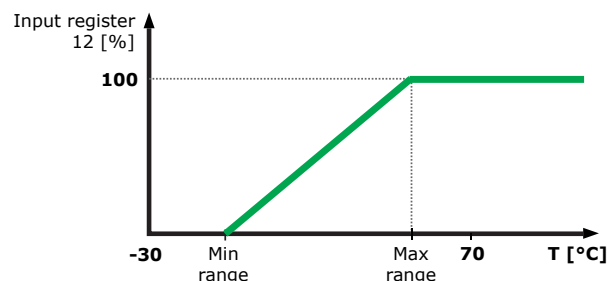
The parameters of the unit can also be monitored / configured through the 3SModbus software platform. You can download it from the following link:

<https://www.sentera.eu/en/3SMCenter>

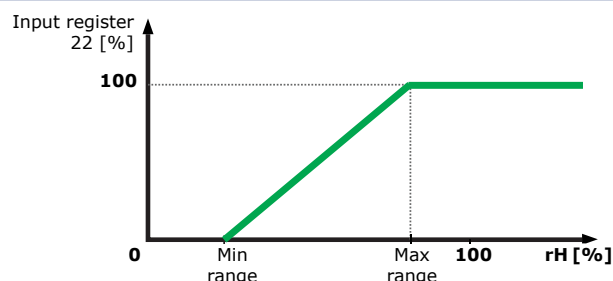
For more information about the Modbus registers, please refer to the Modbus Register Map of the product.

### Operational Diagrams

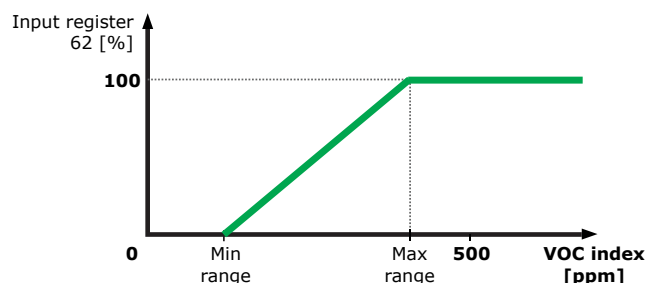
#### Temperature



#### Relative humidity



#### VOC Index (IAQ)



If the VOC sensor is broken, the output value will be 0.