

Thermal sensors TPS-01

**TPS-01-72 / TPS-01-93 / TPS-01-110 / TPS-01C-72 /
TPS-01C-93 / TPS-01C-110 / TPS-01-M**



FUNCTIONAL DESCRIPTION AND OPERATING INSTRUCTIONS

Version 10/2025



Tungus General Representation
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1. General Information

The TPS-01 thermal sensor is a reliable heat detection and activation device. It automatically detects fire through rising temperature and triggers the MPH powder extinguishing module via an impulse current. Additionally, the TPS-01 sensor can transmit a signal to other systems, such as fire alarm panels or electrical distribution units, for further integration.

Designed for long-term performance, the TPS-01 sensor operates autonomously and with high reliability for up to 12 years without the need for technical maintenance.

2. Versions

The TPS-01 sensor is available in four versions to suit different applications. Three models provide automatic fire detection at predefined activation temperatures, while a fourth version is designed for manual triggering of powder extinguishing systems.

- Model TPS-01-72 (TPS-01C-72) - Activation temperature: 72°C
- Model TPS-01-93 (TPS-01C-93) - Activation temperature: 93°C
- Model TPS-01-110 (TPS-01C-110) - Activation temperature: 110°C
- Model TPS-01-M - Manual version / hand-operated release

For use in particularly demanding or aggressive environments, all models are also available in a specially sealed version with a protective cover for the bimetal ring. These reinforced models carry the designation TPS-01-TC.

3. Application

3.1 Automatic Activation, TPS-01

The key component is the bimetal ring (7). Once the predefined temperature is reached, the bimetal ring is released. The metal pin (10) disengages from the sensor head (9) and springs back. The magnet (4), mounted on the pin, is pushed backwards by the return spring through the lateral coils (12), generating an electrical impulse which is transferred to the terminal connections (2).

This generated impulse current is transmitted to the corresponding MPH module and is sufficient to activate the module.

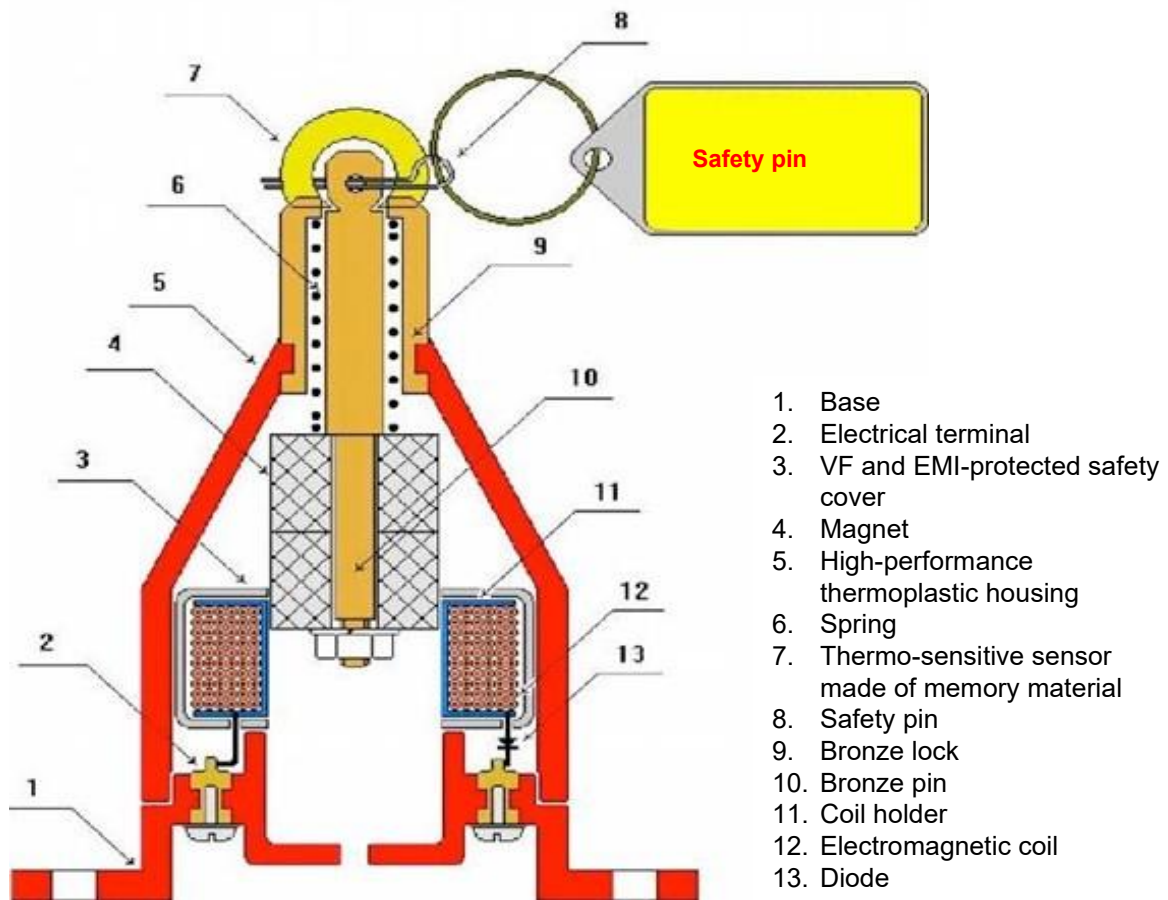


Figure 1. TPS-01 sensor

3.2 Manual Activation, TPS-01-M

The manual sensor TPS-01-M is not equipped with a bimetal ring. The sensor's metal pin is held in its initial position solely by a safety pin (6). When this safety pin (6) is pulled out of its holder using the pull ring (5), the sensor is activated.

The subsequent process for generating the impulse current is identical to that of the automatic activation sensor (see section 3.1).

The generated impulse current is transmitted to the corresponding MPH module and is sufficient to trigger the module.

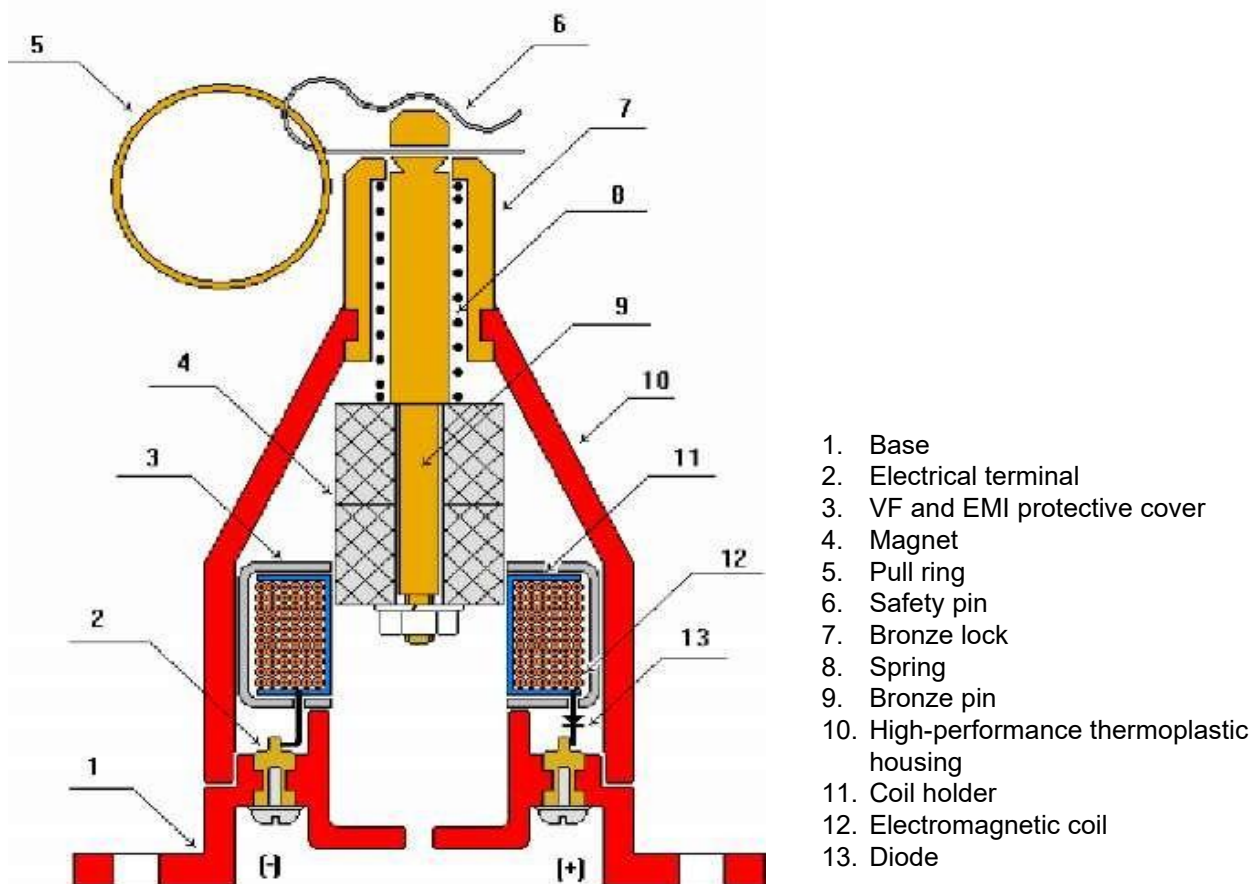


Figure 2: Sensor TPS-01-M

3.3 Protected Version, TPS-01TC (Automatic Version Only)

All models are also available in a specially sealed version for use in aggressive environments, equipped with an additional protective cover for the bimetal ring. These models are designated TPS-01TC.

The operating principle of this sensor is identical to that of the standard TPS-01 sensor (see section 3.1).

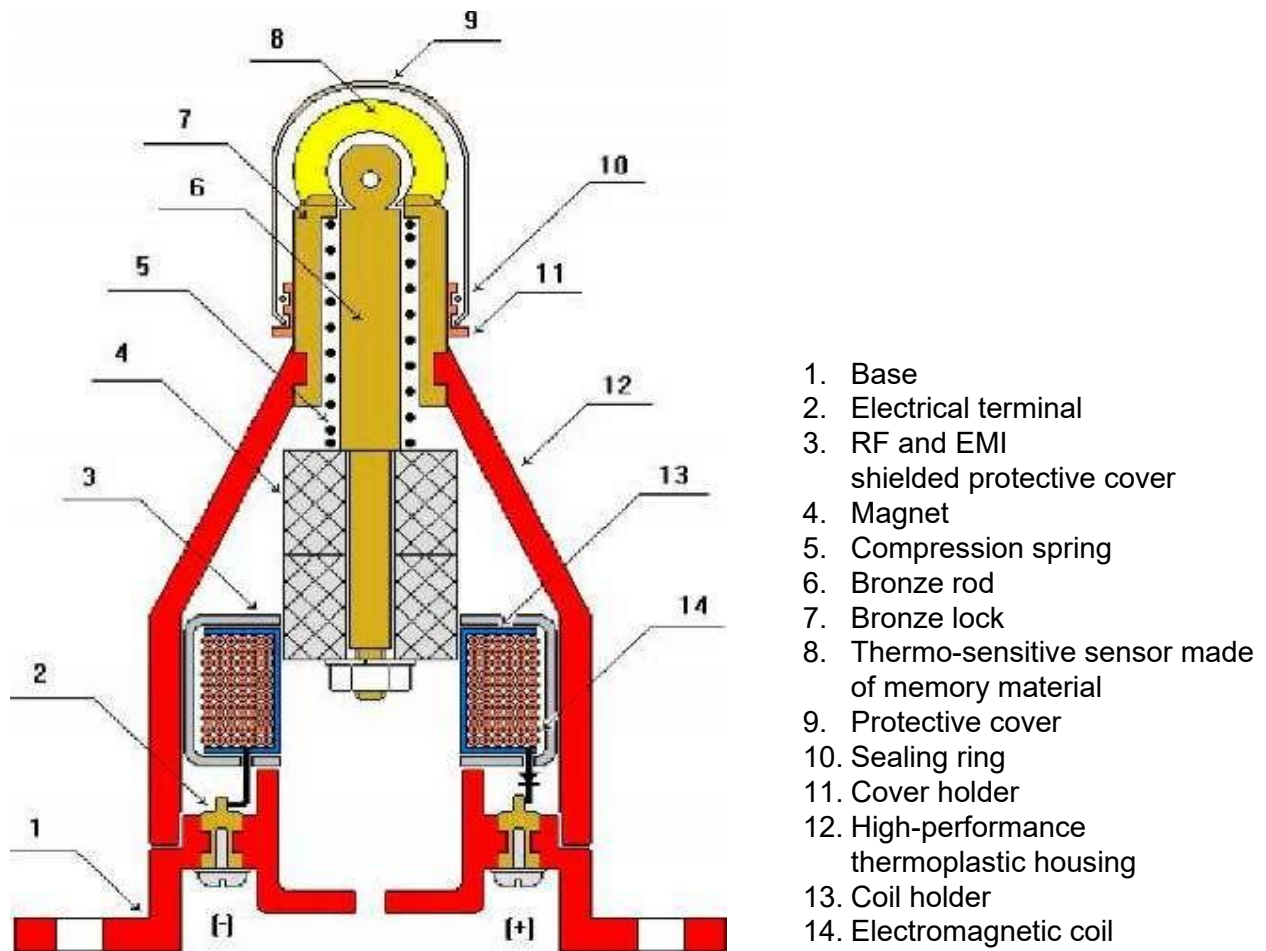


Figure 3: TPS-01TC mit Abdeckung

4. Technical Specifications for the Sensors

4.1 Dimensions and Weight

- Height: approx. 85 mm
- Diameter: approx. 65 mm
- Weight: approx. 200 g

4.2 Operating Ambient Temperatures

TPS-01-72 and TPS-01C-72	From -60 to +55°C
TPS-01-93 and TPS-01C-93	From -60 to +75°C
TPS-01-110 and TPS-01C-110	From -60 to +95°C
TPS-01-M	From -60 to +95°C

4.3 Activation Temperatures

TPS-01-72 and TPS-01C-72	+72°C ±5°C
TPS-01-93 and TPS-01C-93	+93°C ±5°C
TPS-01-110 and TPS-01C-110	+110°C ±5°C

*also applies to the protected version TPS-01TC

4.4 Duration until activation of the pulse current

The time until pulse generation depends on the TPS model, ambient temperature, and heat development during a fire. Ambient temperature growth rates (UTR) of 3°C/min and 30°C/min were selected as the standard for testing. For a UTR of 30°C/min, the activation time should be in the range of 58-144 milliseconds, and for a UTR of 3°C/min, in the range of 580-960 milliseconds.

Table 1. Activation period for TPS-01

Modell TPS-01	Initial ambient temperature, air °C	UTR 30°C/min		UTR 3°C/min	
		Max. delay (ms)	Min. delay (ms)	Max. delay (ms)	Min. delay (ms)
TPS-01-72	35	93	85	740	724
TPS-01-93	55	114	98	820	808
TPS-01-110	70	137	125	950	937

5. Electrical parameters

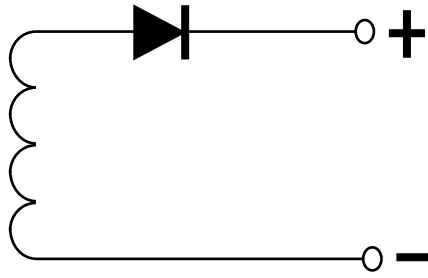


Figure 4. Circuit diagram TPS-01

The TPS-01 thermal sensor generates an electrical pulse with an amplitude of 3.5 V DC and a resistance of 1.0 ohms.

The electrical pulse duration is no less than 1 millisecond and the strength is no less than 3.0 V DC.

Signal standards: MB-2H, 3A-1, PP-9, YGP-10, and others.

5.1 Extended connection options

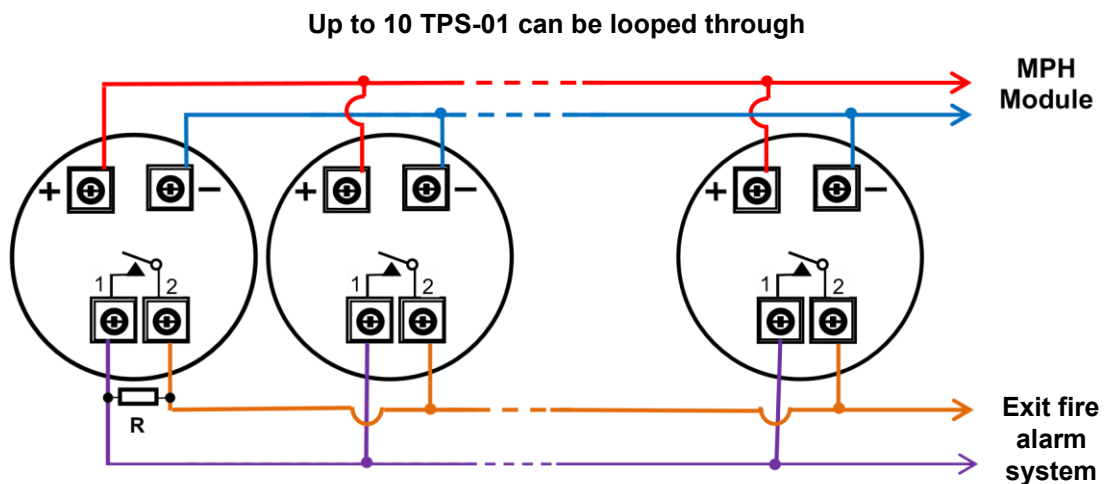


Figure 5. Wiring TPS-01C to the module and external receiver

6. Usage Limitations

- The monitored area per sensor must not exceed 25 m².
- The sensor must be installed in the center of the protected area, 100–150 mm below the ceiling.
- Vibrations should not exceed 0.5 to 200 Hz with an acceleration of 4G.

- The sensor can withstand shocks with a force of up to 4G for durations of 2 to 50 milliseconds.
- The sensor is approved for use in hazardous areas of category 2ExeII T6.
- The TPSPV sensor is suitable for use in hazardous zones of category POExial.
- Maximum relative humidity should not exceed 98% (without condensation).

7. Installation and Wiring

- No more than 10 modules may be connected to a single sensor.
- Cable length between two devices in a loop must not exceed 3 meters.
- Devices must be connected in parallel. Polarity (“+” and “–”) must be strictly observed.
- The sensor can also be used in areas with electromagnetic and high-frequency energy.
- Cables used should be fire-resistant copper cables with a cross-section of 1 mm², or 0.5 mm² for multi-core cables.
- In high-frequency areas, such as radio stations, sonar equipment, etc., shielded cables should be used.
- In high-density electromagnetic fields, such as near high-voltage transformers and high-voltage cable ducts, cables should be installed in steel conduits.
- Shielded cables and steel conduits must be grounded.
- In areas at risk of mechanical damage, cables should be installed with protection (e.g., plastic conduit or similar).

8. Technical Maintenance

No special technical maintenance is required during the specified service life. However, it is recommended to inspect the sensors for damage every quarter. Damaged sensors must be replaced.

9. Transport and Storage

9.1 Transport and storage of TPS-01 sensors should be in the manufacturer’s original packaging at temperatures between -50°C and +50°C.

9.2 During transport and storage, avoid mechanical impacts and damage, excessive moisture, direct sunlight, and contact with aggressive substances (e.g., chemicals).

10. Manufacturer's Warranty

The manufacturer guarantees, provided all above points are observed, and proper storage, professional installation, regular inspections (visual), and correct use of the sensors are ensured:

- 12 years operational life for TPS-01 standard version
- 5 years operational life for TPS-01 special versions

The warranty period begins upon delivery of the sensors. If the sensors are installed by a professional company, the warranty period starts after installation and joint acceptance with the customer on-site, but no later than two months after delivery.

The manufacturer is not responsible for:

- Incorrect operation of TPS sensors
- Improper storage and transport of TPS sensors
- Failure to follow the technical specifications and operating instructions
- Use of the sensors after the warranty period

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