

Model	Range °C	Sensing element	Application
SPTC-A	-10T60	PTC	Room
SPTC-A5	-10T60	PTC+pot.	Room
SPTC-C	-50T150	PTC	Immersion
SPTC-CR	-50T150	PTC	Immersion stick enclosed
SPTC-D	-50T150	PTC	Duct
SPTC-E	-20T60	PTC	Outside
SPTC-F	-10T120	PTC	Strap-on (pipe)
SPTC-V	-20T65	PTC	Duct

APPLICATION AND USE

Temperature sensors are employed in heating and air conditioning systems for both civil and industrial purposes. Connected to the relevant controllers (W500T series) or I/O modules (DG2101), they allow detecting and controlling room, immersion, duct and outside temperature. This series includes also sensors fitted with potentiometer for the adjustment of the set point of the controller, they are connected to.

OPERATION

The sensors detect temperature through a sensing element, whose ohm value varies according to the detected unit. Each sensor is characterized by the sensing element type, which determines its ohm/°C function, and by the application. All sensors are provided with a direct variation sensing element (ohm value increases when the temperature increases). All sensors must be connected to the controller by means of two wires, in order to receive the ohm signal generated by the corresponding sensing element.

MANUFACTURING CHARACTERISTICS

Room sensors (SPTC-Ax)

They consist in an ABS base supporting the electronic card with the sensing element and terminals for electrical connections. The SPTC-A5 version is equipped with a potentiometer for set-point variation with external knob without degree scale.

Air duct sensors SPTC-V

It is composed of an ABS housing including the terminal board. On the back is located the well containing the sensing element. The sheat is provided at its end with slots for air circulation. The cover is locked by screws.

Air duct sensors SPTC-D

It is a wire sensor composed of an AISI 316 steel cap, which contains the sensing element. It has a 1,5 m silicon cable.

Strap-on sensors SPTC-F

It consists in an ABS case with a built-in card with the terminals for electrical connections. The sensing element is inserted into a metal core.

Pipe sensors SPTC-C

It is a wire sensor composed of an AISI 316 steel cap, which contains the sensing element. It has a 1,5 m silicon cable.



Air duct sensors SPTC-CR

They are composed of an ABS housing containing the terminal board. On the back is located the well containing the sensing element. The cover is locked by screws.

Outside sensor SPTC-E

It consists of an ABS case with a built-in card with the terminals for electrical connections. The sensing element is inserted into a metal core.

INSTALLATION

Room sensors (SPTC-Ax)

Mount the sensor on a wall at approximately 1.5 m from floor level, in an area representing the average room temperature. Avoid installation near doors, windows, heat sources and in air stagnation zones. Remove the lid and mount the sensor on the wall by screwing it using the two holes on the case bottom.

Pipe sensors (SPTC-C/SPTC-CR/SPTC-F)

Install the sensor preferably downstream the circulating pump and, in any case, at least 1 m. from the control valve constant flow rate outlet. Moreover for strap-on sensors (SPTC-F) Remove the eventual isolation and painting on the pipe before installing the sensor, then tighten the mounting strap around the pipe (max. pipe diameter 100 mm.).

Air duct sensors (SPTC-V)

Install the sensor into the duct by using the little flange and fix it on the duct wall by means of two screws. The sensor well must be totally immersed into the air duct, preferably in the middle, in vertical position.

- **Supply air sensor:**
install it downstream the supply fan and anyway at least 0,5 m far from the coil.
- **Sensor in return-air duct for room temperature detection:**
install it upstream the return air fan and anyway near the room return air duct.
- **Saturation point sensor:**
install it downstream the drop separator so that it cannot come into contact with water drops.

Outside sensors (SPTC-E)

Install the sensor on the external wall of the building oriented north or northwest. At any rate, avoid installation in a place directly exposed to sun beams. Moreover, avoid mounting near windows, extract ducts, over doors, windows, chimneys, or under balconies, protecting roofs, etc.

TECHNICAL CHARACTERISTICS

Common characteristics

Sensing element	PTC 1000 Ohm 25 °C
Average variation	8 Ohm/°C
Accuracy	± 1 K
Operating temp.:	-10T 60 °C

SPTC-E / SPTC-F / SPTC-V / SPTC-CR (*)

Terminal board	Screw terminals for 1,5 mm ² max wires
Conduit opening	PG9
Protection	IP44
Weight	0,25 Kg.

SPTC-A / SPTC-A5

Terminal board	Screw terminals for 0,5 mm ² max wires
Protection	IP30
Weight	0,152 Kg.

SPTC-D / SPTC-C (*)

Cable length	1,5 m
Sensor material	silicon cable with AISI 316 steel cap
Temperature range	-55T150 °C

* For these sensors are available the wells 421 (AISI 306) and 422 (nickel plated brass).

For mounting with well, it is necessary to use thermo-conduction pulp since the sensors have a 7,5 mm hole.

It is always necessary to use 421 or 422 well for SPTC-C sensors

Product conforms to EMC 89/336 directive according to the below-mentioned standards:

- EN 50081-1 emission
- EN 50082-1 immunity

ACCESSORIES

Model	Description
421	AISI 306 stainless steel well with 1/2" gas male connection - 113 mm well length
422	As above in nickel brass

ELECTRICAL CONNECTIONS

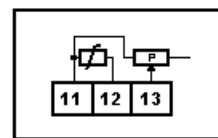
For the cable type and for terminal board connections to the controllers, make reference to the controller data sheets or to the diagrams and documents supplied with the ordered control system.

It is fundamental to carry out the connections according to the existing standards, in particular CEI 64-8. It is, moreover, necessary to avoid routing the sensor and the power cables into a single protection pipe or raceway. Therefore, use separate conduits.

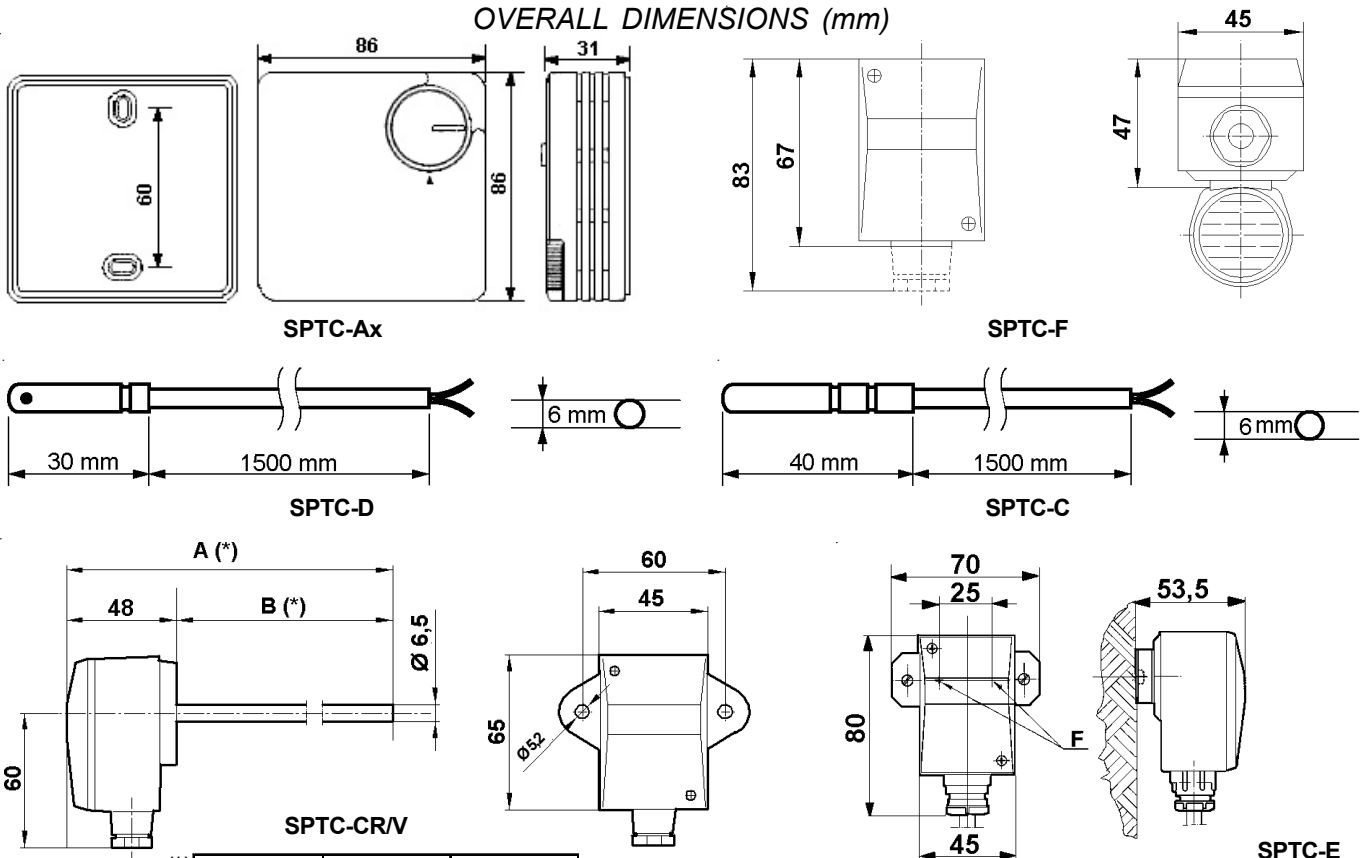
In case of shielded cable, ground only one cable end.

- SPTC/D/A/E/F/V/CR 2 non polarized terminals
- SPTC-A5 2 terminals + 1 common.
External knob without degree scale

SPTC-A5



OVERALL DIMENSIONS (mm)



(*) Model	A	B
SPTC-V	348	300
SPTC-CR	184	136

The performances stated on this sheet can be modified without any prior notice due to design improvement.