



PROFACTOR®
DER DEUTSCHE QUALITÄTSSTANDARD

EN

TECHNICAL DATA SHEET AND USER MANUAL



**PRODUCT
CODE**

PF TC 639W
PF TC 640W
PF TC 641W

**THERMOSTAT WITH
IMMERSION AND CLAMP-ON SENSOR**

1. PURPOSE AND SCOPE

The clamp-on thermostat PF TC 640W, the immersion thermostat PF TC 639W, and the capillary tube thermostat with immersion sensor PF TC 641W are designed for monitoring and limiting the temperature of pipelines in heating and domestic hot water systems by controlling pumps, boilers, electrothermal actuators, and similar devices, provided that the controlled equipment complies with the technical specifications of the thermostats. They are most commonly used in hydronic underfloor heating systems to protect heating loops from overheating.

The PROFACTOR® PF TC 639W, PF TC 640W, and PF TC 641W thermostats are mechanical devices with changeover contacts that do not require electrical power for operation. The thermostats are not intended for installation in high-humidity areas or aggressive environments. When the temperature of the working medium rises or falls, the thermostats open or close the contacts (the operating mode is selected during installation).

2. TECHNICAL SPECIFICATIONS

Temperature setting range: 0°C to +90°C

Temperature differential:

PF TC 639W: 5°C

PF TC 640W: 5°C ± 3°C

PF TC 641W: 4°C ± 2°C

Contact switching capacity: 16(4)A 250V~

Safety class: II (IEC 60730)

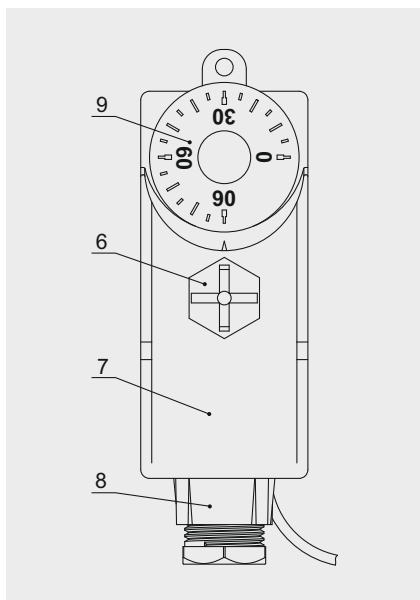
Protection degree: IP40 (IEC 60529)

Maximum temperature of the temperature-sensitive element: +110°C

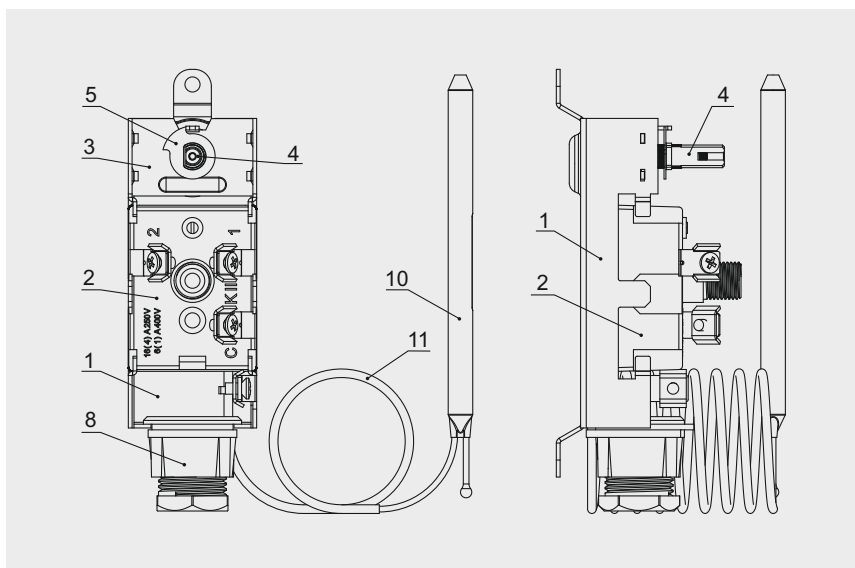
Ambient temperature: -15°C to +60°C

Maximum relative humidity of ambient air: 65%

3. DESIGN



- 1 – Base
- 2 – Contact block
- 3 – Circuit board
- 4 – Adjustment screw rod
- 5 – Adjustment limiter
- 6 – Fixing screw
- 7 – Housing (enclosure)
- 8 – Sealing gland
- 9 – Adjustment knob
- 10 – Temperature sensor
- 11 – Capillary tube



The PROFACTOR® PF TC 639W, PF TC 640W, and PF TC 641W thermostats are in accordance with IEC 60730.

The temperature-sensitive element of the PF TC 639W, PF TC 640W, and PF TC 641W thermostats is a bellows thermostat chamber. The thermostat chamber is connected to the temperature sensor (10) via a capillary tube (11). The thermostat chamber, capillary tube, and sensor are filled with a liquid having a high coefficient of thermal expansion, with the main volume of the liquid contained in the sensor itself.

The contact block (2) is a single-pole potential-free switch housed in a sealed plastic enclosure with external terminals for wire connections.

The clamp-on thermostat PF TC 640W has a short capillary tube, and its temperature sensor is fixed under the base of the unit. The PF TC 640W thermostat is supplied complete with a steel spring for mounting on pipelines, ensuring good contact and secure fixation on the pipe.

The PF TC 639W thermostat also has a short capillary tube, and its temperature sensor is placed in a special sleeve fixed under the base perpendicular to the housing. The sleeve has a 1/2" threaded connection for installation into the system.

The PF TC 641W thermostat is equipped with a 1-meter-long capillary tube, and its temperature sensor can be used either as an immersion type (inserted into a special sleeve) or as a surface-mounted type (attached to the pipe).

4. MATERIALS

Base (1), Circuit board (3), Adjustment limiter (5) — Galvanized steel

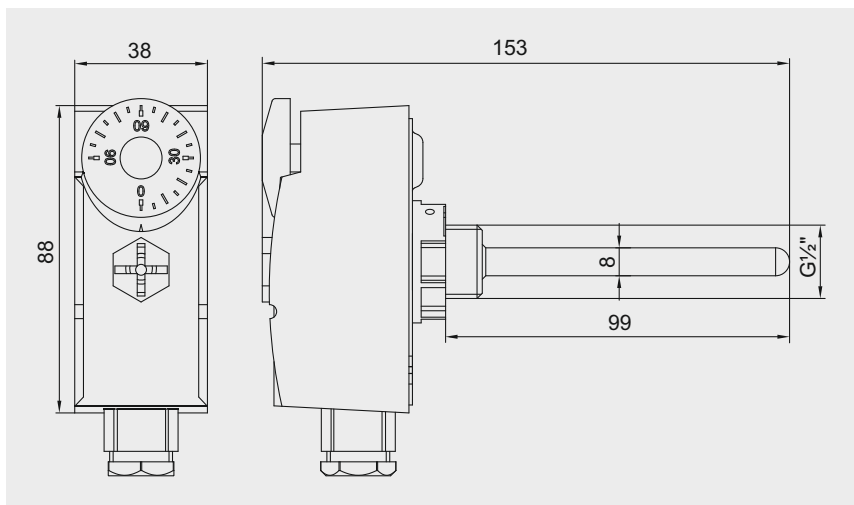
Adjustment screw rod (4) — Brass CW614N

Temperature sensor (10), Capillary tube (11) — Copper

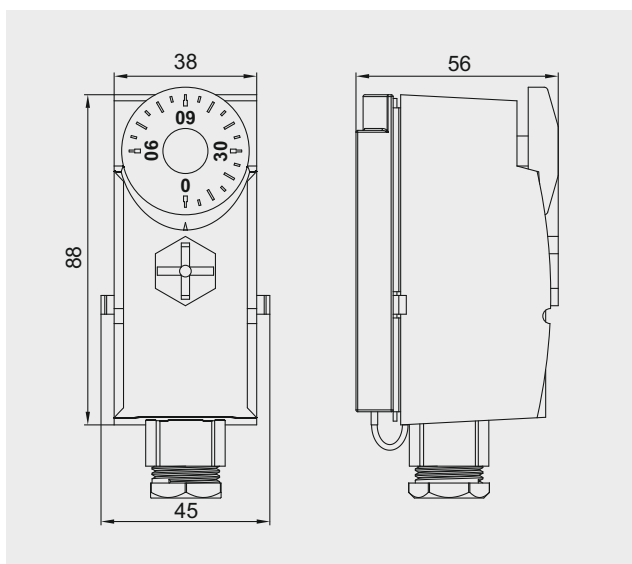
Housing (7), Sealing gland (8), Adjustment knob (9), Fixing screw (6) — ABS plastic

5. NOMENCLATURE AND DIMENSIONS

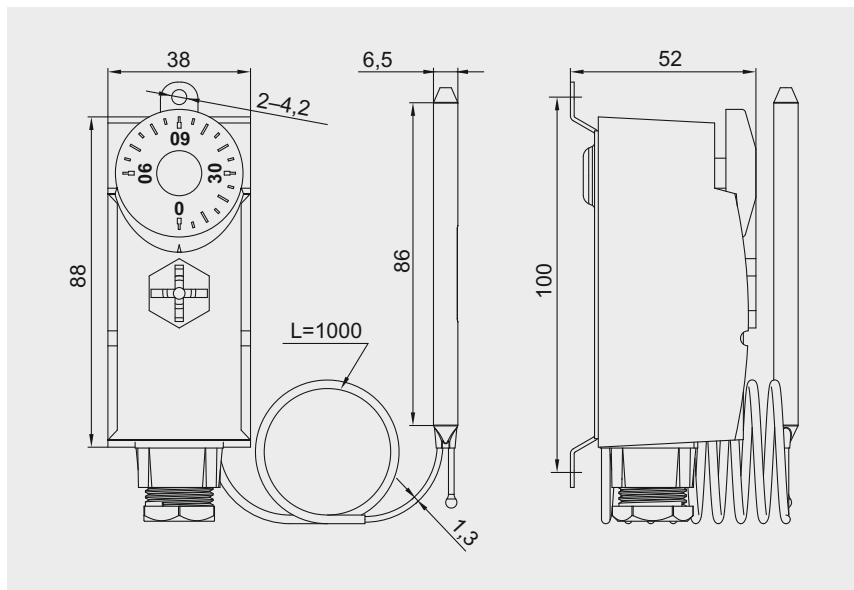
Immersion Sensor Thermostat PF TC 639W:



Clamp-on Thermostat PF TC 640W:



Capillary Tube Thermostat with Immersion Sensor PF TC 641W:



6. OPERATING PRINCIPLE

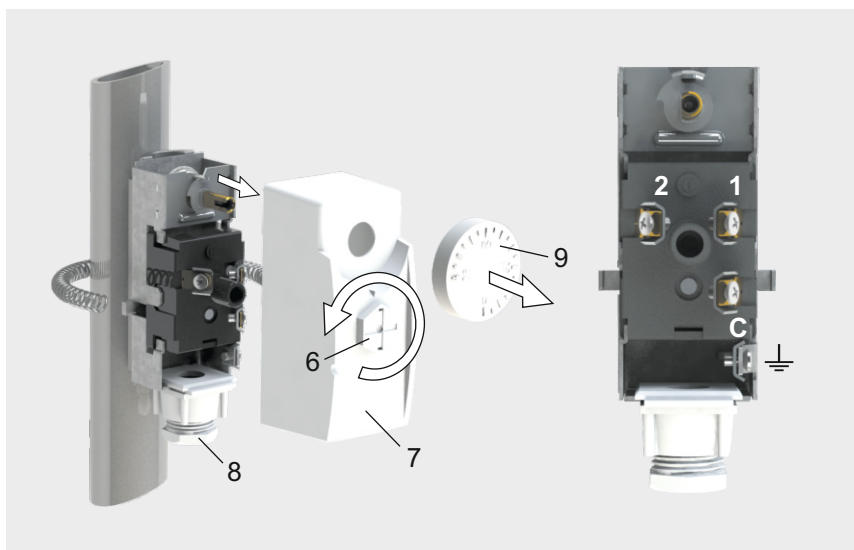
The operation of the PF TC 639W, PF TC 640W, and PF TC 641W thermostats is based on the principle of thermal expansion of a liquid that fills the sensor, capillary tube, and thermostat chamber. When the temperature rises, the liquid expands. This expansion is transmitted to the switching mechanism, which opens or closes the electrical contacts depending on the set temperature value.

7. INSTALLATION INSTRUCTIONS

All installation, removal, and repair operations must be performed only by qualified personnel who have undergone appropriate training, and only when the power supply is disconnected and no external loads are applied.

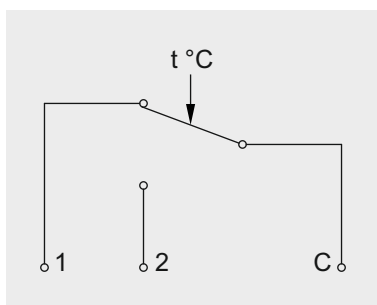
Installation:

The clamp-on thermostat PF TC 640W can be attached to the pipeline in any mounting position using the steel fixing spring supplied with the unit.



The PF TC 639W thermostat is equipped with a special immersion sleeve mounted under the base, perpendicular to the housing, which contains the temperature sensor. The thermostat is connected to the system via the 1/2" threaded sleeve.

The PF TC 641W thermostat has two Ø4.2 mm mounting holes spaced 100 mm apart, allowing it to be mounted on a wall. The temperature sensor can be installed in an immersion sleeve or attached to a pipe using clamps. The capillary tube length is 1 meter.



Electrical Cable Connection:

First, remove the adjustment knob (9), then unscrew the fixing screw (6) and remove the housing (7). Next, remove the sealing gland (8) and insert the power cable through it. Connect the phase wire (220V) to terminal "C", and use either terminal "1" or "2" for the output phase to the load, depending on the control logic.

Terminals "C" and "1": The thermostat switches off the load when the set temperature is exceeded and switches the load back on when the temperature of the heat carrier drops below the set value.

Terminals “C” and “2”: The thermostat switches on the load when the set temperature is exceeded and switches it off when the temperature of the heat carrier falls below the set value.

All electrical wiring and connections must be carried out in accordance with the requirements of the Electrical Installation Code. The connected load must not exceed the permissible voltage and current values specified in the technical specifications.

8. OPERATING AND MAINTENANCE

The set temperature is adjusted by turning the adjustment knob (9) so that the desired temperature value on the circular scale of the knob aligns with the triangular indicator on the housing.

Maintenance of the thermostat must be performed only when the power supply is disconnected. During maintenance, clean the device with a damp cloth.

Do not allow moisture to enter the device!

The use of cleaning agents, abrasives, or aggressive chemical substances is strictly prohibited. The use of sharp objects and high-pressure cleaning devices is also forbidden.

The reliability of electrical connections must be checked at least once a year.

9. WARRANTY OBLIGATIONS

The warranty period is 12 months from the date of sale to the end consumer. Throughout the entire warranty period, the manufacturer guarantees the proper functioning of the product and its compliance with safety requirements, provided that the consumer follows the rules for storage, transportation, installation, operation, and maintenance of the product. The warranty covers all defects arising through the manufacturer's fault.

The warranty does not cover defects resulting from:

- Violation of storage, transportation, installation, operation, or maintenance conditions;
- Exposure to substances aggressive to the materials of the product;
- Signs of mechanical damage;
- Damage caused by fire, natural disasters, or other force majeure circumstances;
- Damage caused by improper actions of the user;
- Evidence of unauthorized interference with the product design.

The product described in this technical manual is a technically complex device that must be installed by a qualified specialist with appropriate experience working with this type of equipment.

Installation and commissioning must be carried out by an authorized and certified company.

Profactor Armaturen GmbH reserves the right to make changes to the product design that do not affect its technical characteristics or functional features.



INTERNATIONAL WARRANTY CARD

NAME OF THE PRODUCT

PRODUCT CODE, SIZE

QUANTITY

SELLER NAME AND ADDRESS

DATE OF PURCHASE

SELLER STAMP

SELLER SIGNATURE

For the warranty term refer to the Warranty obligation clause in the technical manual

FOLD LINE

FOLD LINE

In case of any claims to the product quality the following documents should be submitted:

1. Application with customer and product details:

- Name of the customer, actual address and phone number
- Article of the product
- Reason for the claim and photo
- Plumbing system where installed (name, address, phone number)

2. Invoice copy and receipt

3. Warranty card

RETURN/EXCHANGE COMMENTS

DATE

SIGNATURE



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