



## Data sheet

### Test station PST400C

A competent test system for flexible, efficient and accurate test and calibration of heat meter calculators

## PST400C

**A competent test system for flexible, efficient and accurate testing and calibration of heat and cooling meter calculators.**

**PST400C** is the successor to the well-known test station **PST300PC**, used since many years by several certified laboratories.

The test station **PST400C** is optimised for accurate and rapid test and calibration of calculators by either the traditional and standardized high frequency test pulse (Hf-pulse) or by other communication interfaces, e.g. MBus.

By giving access to a large number of useful functions and features, the **PST400C** facilitates efficient and reliable working processes for certified inspection bodies and accredited laboratories world wide.

The capacity and flexibility of **PST400C** enables conformity to existing and future regulations in the area of producing, testing, controlling and calibration of all type of calculators.

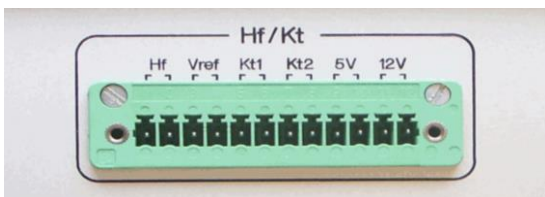
By combining high quality components and technical design with great know-how and abundant experience, the designers of Meter-Tech are proud to put a new generation of test system on the market again.

Together with the systems for testing and pairing of temperature sensors, **PST400T & TB400**, the new **PST400PC** for calculators makes the **PST test system** complete.

## Function and design - Hardware

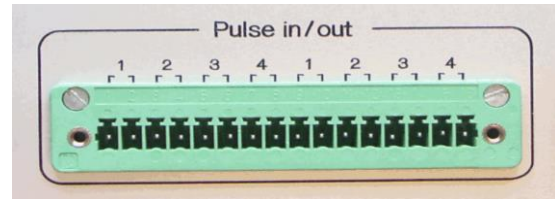
To the PC, where the software is installed and run, the temperature simulator is connected via USB. The temperature simulator has its own power supply from an external mains unit in order to avoid heating of the precision resistors.

The temperature simulator can be ordered for handling of Pt100, Pt500 or Pt1000 calculators in a wide temperature range – divided in 1024 separate and addressable steps. One unit for each Pt-type is required



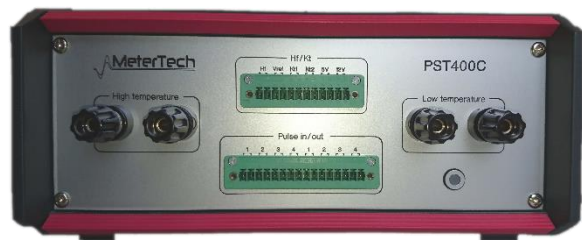
*PST400C – Inlet connector, Hf / Kt*

The temperature simulator has several in- and outlets for connection of other signals, which might be important to verify in the testing process.



*PST400C – Inlet connector, Pulse in / out*

All in- and outlets are galvanic isolated from the USB-connection and therefore also from the PC. The frontside inlets are isolated from the main part of the electronics inside.



*PST400C – Front side*

The HW design is modular and allows future upgrades or service without touching the high precision resistors.

The **PST400C** simulator can easily be calibrated without any opening of cover or potentiometer tuning. The measured calibration resistances (11 pcs for warm and cold respectively) are stored and secured in an EEprom memory, from where they are read by the software.

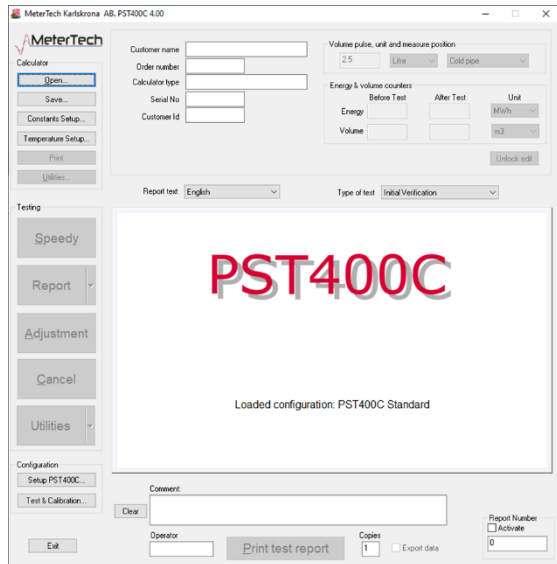


*PST400C – Back side*

Calibration parameters are also secured by the operator key lock on the back side of the temperature simulator.

## Function and design - Software

The software is designed for efficient handling of the hardware as well as all the different steps in a complete test and calibration process for all types of calculators, from standardized Hf-testing to type adapted testing of calculators by creating and using a special .dll file.



*PST400C – Main menu*

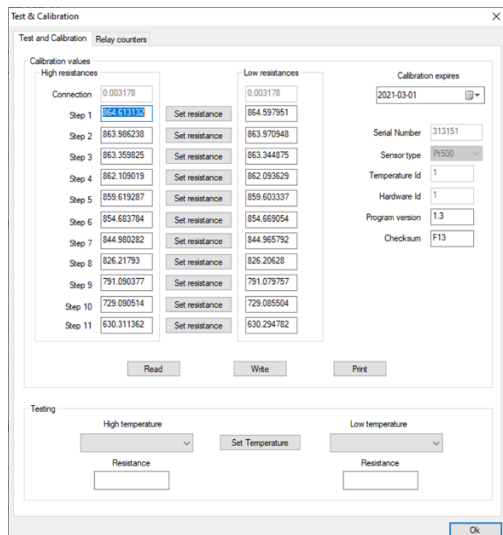
All calculator types can be operated from the same program. Entrance tests as well as approval tests can run without change of run files.

The software language is English and data output (protocols etc.) can be set to English, Swedish or German language.

Test and calibration results can be stored in XML files and/or MS-ACCESS files.

Stored protocols can easily be found by a separate search program.

The PST400C software contains a great number of supervision functions and alarms for e.g. calibration date and maximum relays operations.



*PST400C – Test & calibration menu*

## PC requirements

The PST400C program requires a standard PC with Windows 7 or Windows 10. A screen size of 20 inch or larger is recommended.

## PST400C Contents

The complete **PST400C** delivery contains of:

- PST400C Software
- Temperature simulator for required calculator type (Pt100 ... Pt1000)
- Power supply unit for each temperature simulator
- Connectors for the front signal in- & outlets (12-pin & 16-pin)
- Connection cables (USB, Power supply)
- HW and Software manuals
- PST400C Maintenance agreement

## Options

The **PST400C** test station can be completed with different options for adaptation to required communications solutions etc.

- M-Bus Master unit
- Opto head
- Cables & connectors
- Reference calculators
- Temperature cables

## Article number

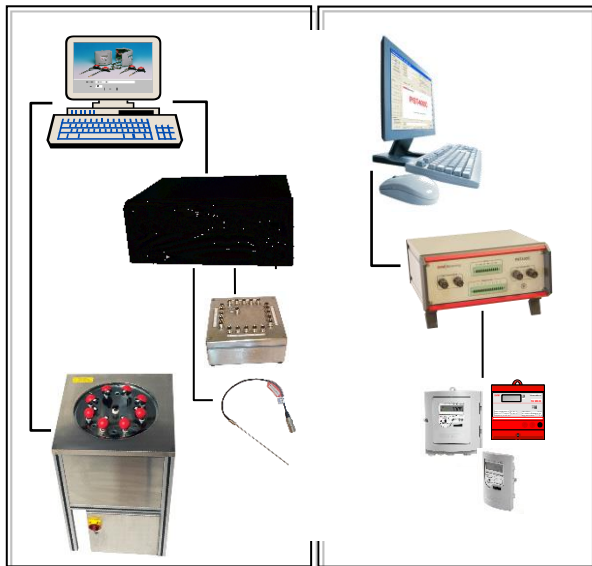
PST400C-SW1-100	PST400C software, english version
PST400C-S1-1	Temp.simulator Pt100, temp. ID = 1
PST400C-S5-1	Temp.simulator Pt500, temp. ID = 1
PST400C-S10-1	Temp.simulator Pt1000, temp. ID = 1
PST400C-TB01	Power supply unit, 230 VAC
PST400C-TB02	12-pin connector incl. cover
PST400C-TB03	16-pin connector incl. cover
S-AVTAL	Maintenance agreement
PST300-T07	M-Bus Master PW3
PST300-T08-USB	Opto head, USB
TERM284-PC9	Cable PW3 – PC, 9 pin
MR003	M-Bus micro Master, 10 nodes
TEP-MR003USB	M-Bus micro Master, 10 nodes, USB

## Maintenance

The **PST400C** test station is completed with a maintenance agreement at sale. This can be customized to fulfil our customers individual requirements and is managed by our Service and support department together with our specialists. The standard maintenance agreement can be completed with hardware backup solutions, planned accredited calibrations, annual on-site workouts etc.

## PST400C and PST400T/TB400 - A complete test system

By combining **PST400C** for calculators with **PST400T** and the **TB400** baths for temperature sensors, a complete and competent test system for calculators and temperature sensors is obtained.



PST400T & TB400

PST400C



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## Calculator

Pt100, Pt500, Pt1000

1 type in each temperature simulator

## Temperature range

-2 °C to 192 °C for high and low temperature respectively.

## Temperature resolution

0,11 ... 0,34 K/step.

1.024 different temperatures can be selected for high and low temperature respectively

11 + 11 calibration temperature points simultaneously

## Accuracy at delivery

Pt100:  $4,7 \cdot 10^{-6} \cdot R \Leftrightarrow 2,2 \text{ mK}$

Pt500:  $6,4 \cdot 10^{-6} \cdot R + 0,72 \text{ m}\Omega \Leftrightarrow 3,4 \text{ mK}$

Estimated tracking High temp – Low temp

(All  $\Delta t$  1K ... 194 K) Pt100:  $\pm 0,5 \text{ mK}$

Pt500:  $\pm 0,7 \text{ mK}$

Calibration certificate according to ISO/IEC 17025

## Temperature coefficient

Max 0,26 mK/K within ambient temperature 18-28 °C

## Nonlinearity

< 0,1 mK (-2 ... 192 °C)

## Long-term stability

Max 2 mK deviation after 12 months (all temperatures)

## Thermal EMFs

$\leq 0,5 \mu\text{V}$

## Signal inlets / outlets

Warm and cold outlets

2 flow pulse outlets

1 HF pulse inlet

1 inlet for adjusting Hf trigger level

4 pulse outlets

4 pulse inlets

5 and 12 V DC

## Main supply

230 VAC / 2x12V DC

## Dimensions

125 x 260 x 285 mm (HxBxD)

Weight 2,3 Kg