SVM Test station PST400C

DATA SHEET

- Test station for heat meter calculators
- Verification of measurement accuracy
- Future-proof design
- Any calculator with Hf pulse output can be verified
- Reduced setup time provides an efficient workflow
- Used by many accredited inspection bodies

Application

PST400C is the sequel to the well-known test station PST300C, used over many years by certified verification bodies and test laboratories in several countries. PST400C is optimized for fast and accurate testing and calibration of calculators from virtually all suppliers available on the market.

The test itself utilizes the standard high-resolution test pulse (Hf) or any other communication interface, such as M-Bus. The test station consists of a temperature simulator with the necessary power supply, cables and software.

PST400 software is developed for effective management and control of both hardware and the various work operations that are part of a complete verification and calibration process.

The program runs on a standard PC with Windows XP or Windows 7. The test station is flexible and the calculators can be tested in a wide temperature range, in up to 1024 steps, for Pt100, Pt500 or Pt1000.

PST400C, along with the test equipment PST400T for monitoring and pairing of temperature sensors, and the temperature bath TB400, a complete test system for temperature sensors and calculators is provided.

Kamstrup

Tullgatan 5 · SE-371 39 Karlskrona · Tel: +46 455 33 19 00 · Fax: +46 455 33 19 01 · karlskrona@kamstrup.se · www.kamstrup.se

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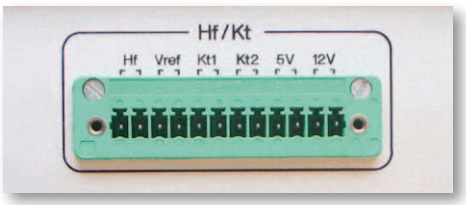
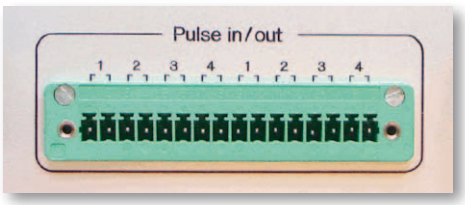
Function and design - Hardware

The temperature simulator unit in PST400C is connected via USB to a PC where the software is installed and running. The temperature simulator is powered by an external power supply to avoid unwanted heating of the precision resistors.

The temperature simulator is available in three versions, for Pt100, Pt500 or Pt1000, and all have a wide temperature range divided into 1024 temperature steps. PST400C has several additional inputs and outputs for connecting other signals that may be necessary in the verifications and calibration work, cf. Technical Data for further details.



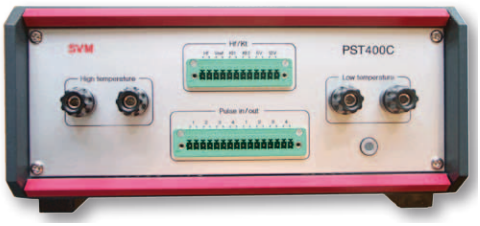
PST400C
Inlet connector, Hf / Kt



PST400C
Inlet connector, Pulse in / out

All inputs and outputs on the temperature simulator unit are electrically isolated from the rest of the electronics to provide an extended degree of protection. Also the USB connection and the PC are isolated from the inputs and outputs of the temperature simulator.

The PST400C is built with a modular design which facilitates future upgrades and service, without affecting the precision resistors. PST400C can easily be re-calibrated without opening the casing or adjusting any potentiometers. The measured calibration values; 11 resistance values for the supply line temperature, and 11 for the return line temperature, are stored securely in an EEPROM memory from where they later can be loaded into the software.



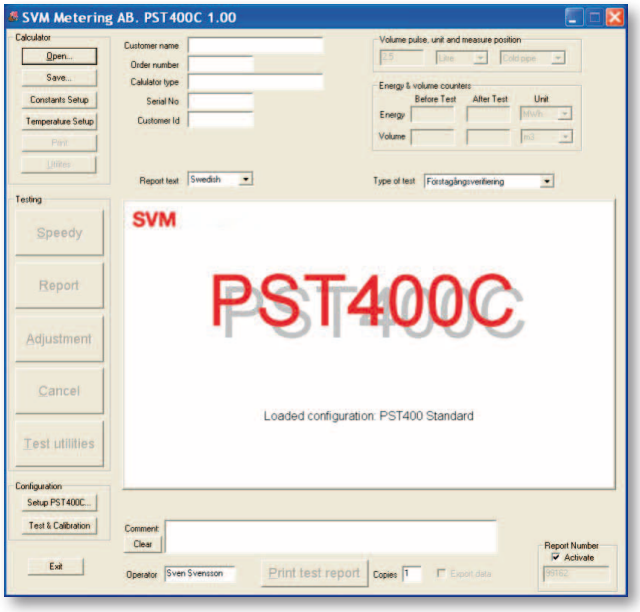
PST400C Front

PST400C Back

Function and design - Hardware

The software in PST400C is developed for efficient handling of both hardware and the different operations that are part of a complete verification or calibration process. Any type of calculator can be tested, from standardized testing with high-resolution pulses to type adapted testing of calculators by creating and using specific .dll files.

Function and design - Hardware

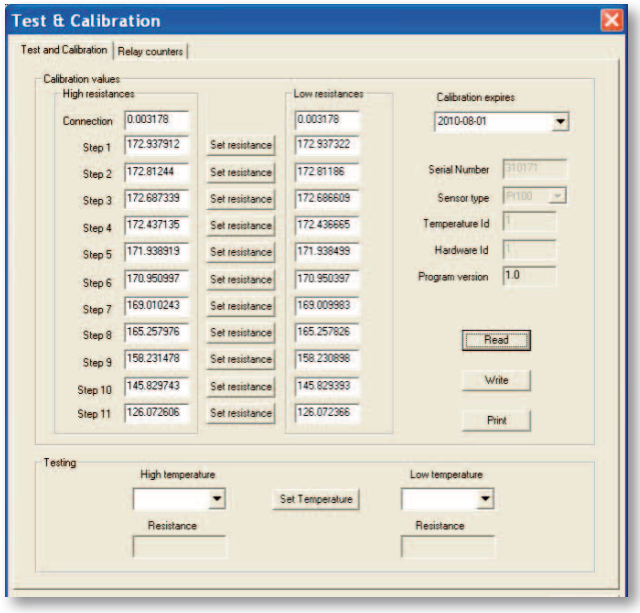


PST400C
Main menu

Any type of calculator is handled with the same software. Both initial verification and re-verification tests are conducted without changing the program or test files.

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

Test and Calibration results can be stored in .xml files and / or MS-Access files. Stored protocols are easily found by using a separate search program, included in the PST400C package. The PST400C software contains a number of supervision functions and alarms for eg. calibration date and maximum relay operations.



PST400C
Test and calibration menu

SVM Test station PST400C

DATA SHEET

PC requirements

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

PST400C Contents

The complete PST400C deliver contains:

- PST400C Software
- Temperature simulator for required type (Pt100, Pt500 or Pt1000)
- Power supply unit for each temperature simulator
- Connectors for the front signal inlets and outlets (12 pin and 16 pin)
- Connection cables (USB, Power supply)
- .dll files for Kamstrup SVM calculators in the F- and S-series together with Kamstrup MULTICAL®
- Hardware 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 sold with a maintenance agreement. This agreement can be customized with different service levels to meet each customer's specific requirements. The maintenance agreement is administered by the Service and Support department of Kamstrup SVM. The maintenance agreement may be supplemented by agreements on preparedness with spare parts / equipment, scheduled calibrations, annual checks of equipment and work methods on site, 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

SVM Test station PST400C

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Technical data PST400C

Calculator type
- Pt100, Pt500, Pt1000
- 1 type for 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:	$4,7 * 10^{-6} * R \Leftrightarrow 2,2$ mK
— Pt500:	$6,4 * 10^{-6} * R + 0,72$ mΩ ⇔ 3,4 mK
— Estimated tracking	High temp. – Low temp.
— (All Δt 1K ... 194 K)	Pt100: ± 0,5 mK Pt500: ± 0,7 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	0,5 µV

Signal inlets / outlets
- High and low temperature 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