

Thermo-6

Quality Test for Temperature Control Units



More than just
Temperature Control Units

Just
better.

Quality Test

What is being checked?

- The temperature control units are thoroughly tested for their functionality.
- The quality inspection includes the verification of important and safety-relevant components.
- In addition, parameters such as temperature, pressure, and flow are checked.

What is needed?

- Checking facility HB-TP180
- Measuring device for Pt 100

Confirm quality standards

With the checking facility HB-TP180, you ensure that the temperature control units are functioning properly.

The test reports meet all requirements of the Quality Management System (QMS) for documented maintenance.

Ensuring interchangeability and reproducibility

Ensure that the displayed values match the reality.

Tested temperature control units enable flexible use and reliably meet the specified requirements.

Increasing production efficiency

The maintenance interval display of the Thermo-6 helps you identify and address deficiencies early.

With tested units, you can rely on your process data and save a lot of time during the startup process.

Eliminating tolerances

All sensors and probes have their tolerances. Through unit calibration, we ensure that temperature, pressure, and flow values are accurately restored.

Extending service life

The thermal and physical requirements for temperature control units are often extremely high. With minimal maintenance effort, you can significantly extend the lifespan of your temperature control units.



Quality Test

Certainty and consistent quality in any production process demand the documented maintenance of all quality-related equipment. This is also one of the requirements of a quality management system.

The temperature control unit stores the values obtained through the checking facility. For analysis and certificate creation, the data can be transferred to a PC via USB stick and further processed using the VIP software.

Thermo-6 –
Housing size 62 with HB-TP180

Thermo-6 –
Housing size 61 with HB-TP180



Scope of Testing and Testing procedures

Thermo-6

- Visual inspection
- Functional verification based on unit type and configuration

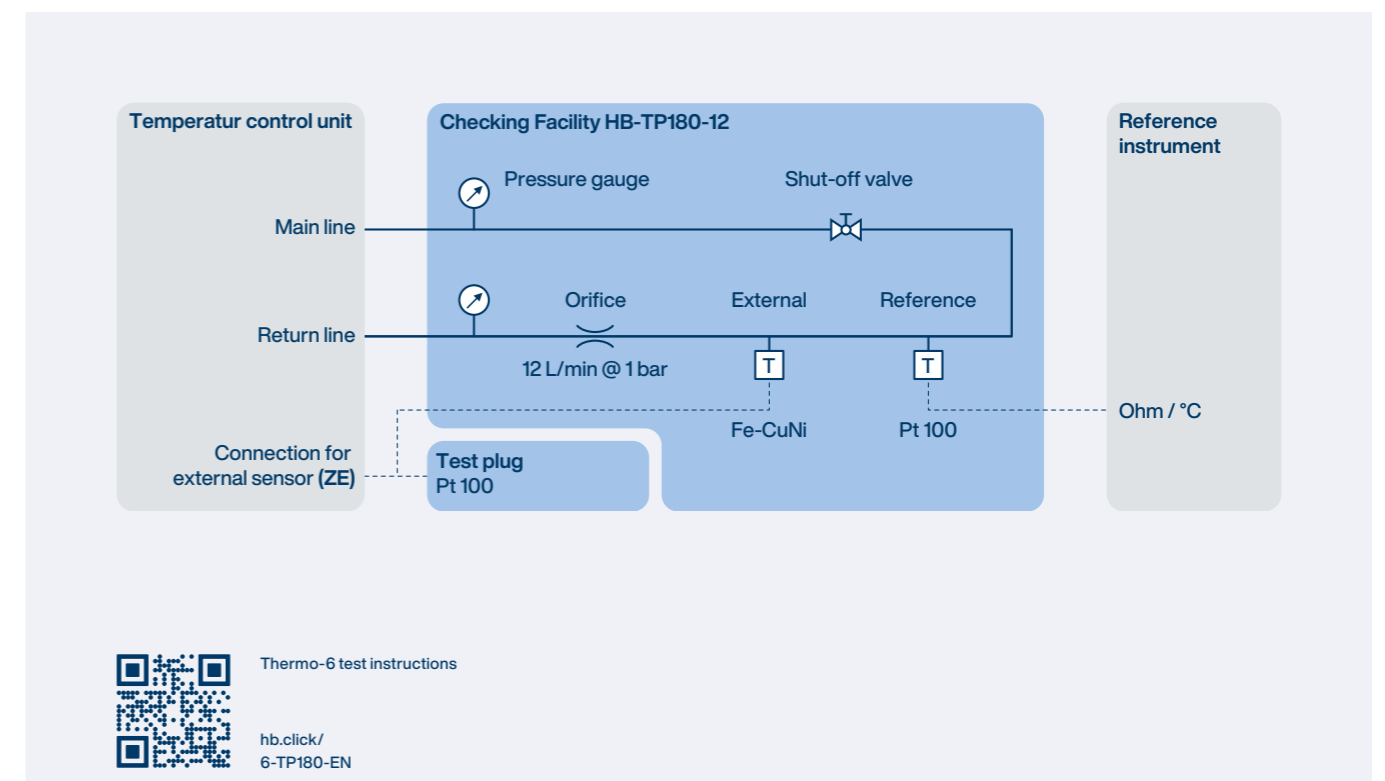
Components

- Heating
- Cooler
- Filling pump
- Pressure gauge
- Temperature sensors, pressure sensors and acoustic transducers
- Safety valve
- Heating thermostats

Measurements

- Temperature measurement using Pt 100 or Type J thermocouple
- Pressure validation via pressure gauge
- Flow measurement using differential pressure measurement
- Testing the pump condition using pressure measurement

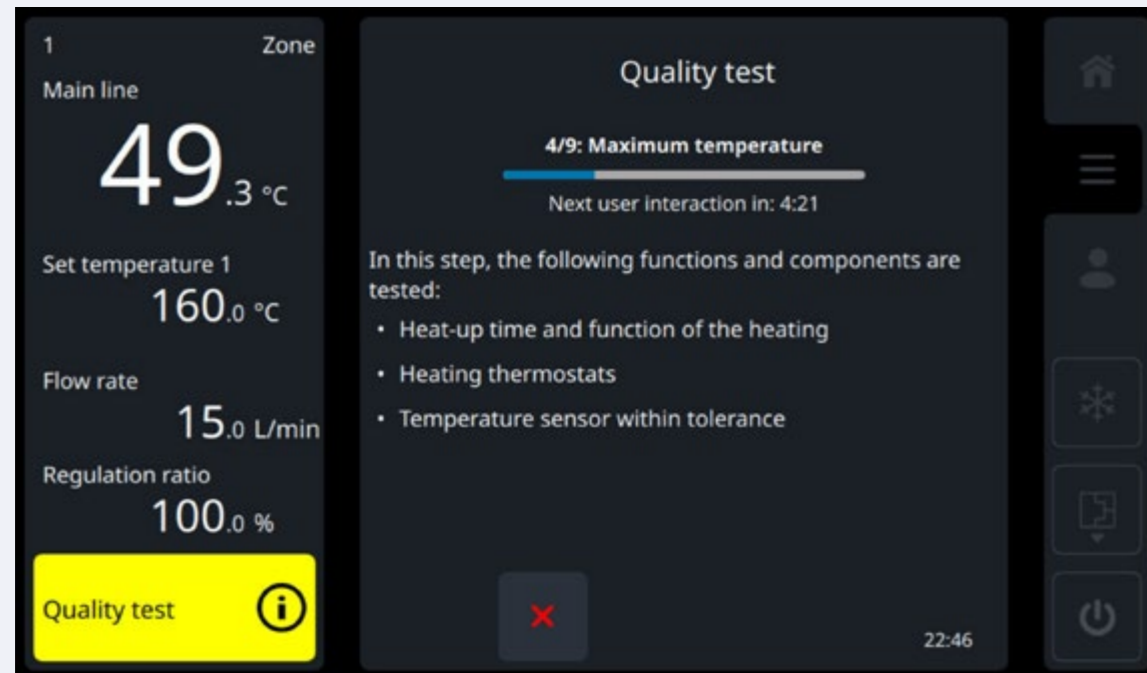
Testing Principle



Calibration

All sensors and probes are subject to tolerances. For temperature sensors, this is ± 3 °C, and for pressure sensors, it is $\pm 0,4$ bar. In extreme cases, this can result in a process temperature change of up to 6 °C due to the replacement of a temperature control unit, potentially going unnoticed. For this reason, HB-Therm calibrates each temperature control unit before factory delivery to ensure accurate and consistent measurements.

With the checking facility HB-TP180, we offer you the opportunity to recalibrate the units directly on-site.



Thermo-6 test instructions

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35 minutes

Conduct Quality Inspection independently

Do the displayed values still match the actual measurements? We recommend checking the units annually. With the checking facility HB-TP180, you can carry out the verification independently at your company.

The unit automates and largely conducts all testing steps independently, informing the inspector as soon as input or action is required. During the inspection, the remaining time until the next required action is displayed, allowing the inspector to efficiently use their time for other tasks without needing to stay at the unit constantly.

Recalibration of the Temperature Control Unit

At the end of the automated quality inspection, you have the option to agree to a recalibration defined by Thermo-6. Alternatively, you can perform this later, as the measurement data is stored in the unit.

5 minutes

Creating Test Reports

The obtained measurement data can be output via the USB interface and processed into a test report using our free VIP program.



Example Test Report

Test report generated with the VIP program

Unit under test	
Temp. control unit	
Type	HB-160Z61-8-4S-A2-400
No.	2327-077
Additional equipment	-
Running hours	6665,3
Software	SW61-1_2428

Test equipment	
Test device	
Type	HB-TP180
No.	PMS3669
Last inspect	2023-10-01
Reference measuring equipment	
Type	Multimeter
No.	PMS3134
Last inspect	2023-10-13

Recordings	Ref.	Unit	Diff.	Tol.	Result	
Main line temperature						
Temperature 1	°C	39,6	39,6	0,0	± 1,0	Passed
Temperature 2	°C	159,9	159,9	0,0	± 1,0	Passed
Temperature 3	°C					
Temperature 4	°C					
Return line temperature						
Temperature 1	°C	39,6	39,6	0,0	± 1,0	Passed
Temperature 2	°C	159,9	159,9	0,0	± 1,0	Passed
Temperature 3	°C					
Temperature 4	°C					
External temperature						
Temperature 1 (Typ J)	°C					
Temperature 2 (Typ J)	°C					
Temperature 3 (Typ J)	°C					
Temperature 4 (Typ J)	°C					
Typ Pt 100	°C					
System pressure						
Pressure 1	bar	0,0	0,0	0,0	± 0,2	Passed
Pressure 2	bar	8,7	8,7	0,0	± 0,2	Passed
Main line pressure						
Pressure 1	bar	0,0	0,1	0,1	± 0,2	Passed
Pressure 2	bar	8,7	8,8	0,1	± 0,2	Passed
Return line pressure						
Pressure 1	bar					
Pressure 2	bar					

Test report generated with the VIP program

Unit under test	
Temp. control unit	
Type	HB-160Z61-8-4S-A2-400
No.	2327-077

Messungen	Ref.	Unit	Diff.	Tol.	Result	
Pressure gauge						
Pressure 1	bar	0,0	0,0	0,0	± 0,5	Passed
Pressure 2	bar	8,7	8,7	0,0	± 0,5	Passed
Flow rate						
Flow rate 1	L/min	0,0	0,0	0,0	± 0,1	Passed
Flow rate 2	L/min	21,1	21,1	0,0	± 1,2	Passed
Pump						
max. pressure	bar	6,7	6,5	-0,2	- 2,0	Passed

Tests	Result	
Heater	Heating up without interruption	Passed
Safety valve	Safety valve successfully tested	Passed
Safety test	Safety test done as per instruction and no defects of safety detected.	Passed

Overall result	
Quality test	Passed
Remarks	-
Date / Name	2024-08-06 John Doe

Note:

By default, two predefined test temperatures are set (40 °C and the max. main line temperature). Two additional test temperatures are available if needed. The calibration is based on temperatures 1 and 2 and includes an offset and a slope value. The two additional temperatures are checked to ensure they fall within the tolerance range.

Specifications

Checking Facility		Temperature Control Units		Thermo-6	
		Heat transfer medium		Water	
		Housing size		61, 62 (pump 4T/4S)	62 (pump 6P/6R)
		Maximum main line temperature		100/140/160 °C	100/140/160/180 °C
Type			HB-TP180-12	HB-TP180-45	
Accessories	Test plug Pt 100	T25320	●	●	
	2x laboratory cables 1 m	T25319	●	●	
	Cabel Fe-CuNi, 2 m	T25318	●	●	
	Adapter R1¼ - M36	T25380		●	
	Hose PFA DN25x750	T25390		●	
	Calibration certificate		●	●	
	Carrying case		●	●	

Ordering example: HB-TP180-12, Water, English

● Standard specification

Technical Data			HB-TP180-12	HB-TP180-45
Connection, main line and return line	Threads of the temperature control unit		G¾	G1¼
	Resistance	bar, °C	25, 200	25, 200
Calibration @ 1 bar		L/min	12	45
Pressure resistance		bar	25	25
Dimensions	Height	mm	232	263
	Width	mm	240	240
	Depth	mm	202	226
Weight max.		kg	9	9
Surface temperature		°C	> 75	
Environment	Temperature range	°C	5-60	
	Relative humidity		35-85 % RH (non-condensing)	
Standards			EN ISO 12100, EN ISO 13732-1, EN IEC 63000	
Certification/Approval			CE, UKCA	

Testing equipment (not included)	Recommendation
Reference measuring device Pt 100	Gossen Metrawatt (gossenmetrawatt.de)

Quality Test

With the checking facility HB-TP180, both the temperature control units Thermo-6 and Thermo-5 can be tested. The testing procedure for Thermo-6 is described in detail in our Knowledge database, while the verification of Thermo-5 is explained in the instruction manual of the checking facility.

Contents:

- Thermo-6 test instructions
- Operating manual for checking facility
- Unit software Thermo-6



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VIP

With the visualisation program VIP, you can create test reports. Transfer the test data from the temperature control unit to your PC via USB stick and import it into the free VIP program.



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