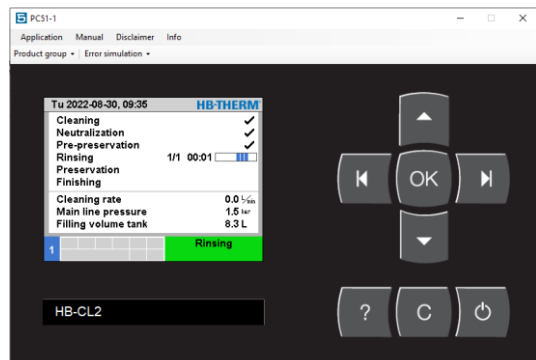
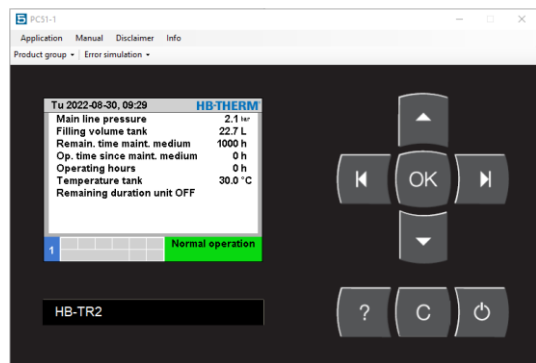
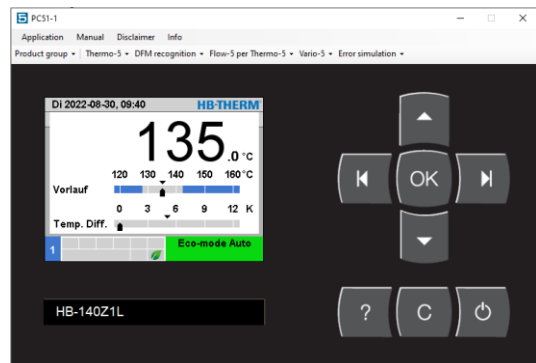


HB-Therm®

Instruction Manual HB-PC51-1

Simulation programme



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Translation of original instruction

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General

1 General

1.1 Information about this manual

This manual enables the safe and efficient handling of the simulation programme HB-PC51-1.

Illustrations in this manual serve the basic understanding and can deviate from the actual design of the software.

1.2 Intended use

The simulation programme HB-PC51-1 is used for training purposes for our sales staff in the worldwide sales network and must not be passed on to third parties.

With this programme, the operation and processes for the following equipment can be simulated:

- Temperature control units HB-THERM Series 5
- Water treatment unit HB-THERM Treat
- Cleaning unit HB-THERM Clean

The necessary actual values such as temperature, flow, pressure, etc., are simulated.

Any use of the programme exceeding the simulation of the named units is prohibited. HB-THERM AG disclaims any liability in connection with the programme.

1.3 Explanation of symbols

Hints and recommendations



NOTE!

... emphasizes useful hints and recommendations as well as information for efficient and trouble-free operation.

1.4 Limitation of liability

All information and notes in this Manual were compiled under due consideration of valid standards and regulations, the present status of technology and our years of knowledge and experience.

The manufacturer can not be made liable for damage resulting from:

- disregarding this Manual
- unintended use

Apart from this, the obligations agreed upon in the delivery contract, the general terms and conditions and the delivery conditions of the manufacturer and the legal regulations valid at the time of contract do apply.

1.5 Copyright

This Manual is protected by copyright law and exclusively to be used for internal purposes.

Passing this Manual on to third parties, duplication of any kind – even in form of excerpts – as well as the use and/or disclosure of the contents without the written consent of the manufacturer is not permitted, except for internal purposes.

Violations oblige to compensation. The right for further claims remains reserved.

1.6 Customer Service

For technical information, please contact the HB-Therm representatives or our customer service department
→ www.hb-therm.ch.

Furthermore, our employees are always interested in new information and experiences resulting from the application that could be valuable for the improvement of our products.

Used for

2 Used for

The program can be used to simulate the operation of the following devices:

- Temperature control unit Thermo-5
- Water treatment unit Treat-5
- Cleaning unit Clean-5
- Flow rate meter Flow-5
- Changeover unit for variothermal temperature control Vario-5

The required actual values, e.g. Temperature, flow, pressure etc. are simulated.

3 Starting the programme



NOTICE!

The program consists of the Exe file and can be started directly (also from an external storage medium such as a USB stick). Installation is not required.

1. Open the directory with the file PC51-1_xxxx.exe and double-click to start
2. When the program is first selected, the disclaimer has to be accepted in order to start the program, otherwise the program will be terminated.

3.1 End the program



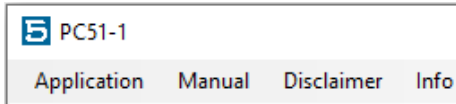
You can end the program at any time.

1. End the program by clicking on the Windows symbol "X".

Fig. 1: End the program

4 Control

4.1 Menu bar



Various functions can be selected in the menu bar.

Fig. 2: Menu bar

Function	Description
Application	Use this parameter to load predefined or custom applications. Under Custom 1-3, the currently set simulation can be saved or recalled.
Manual	Call up the instruction in the currently set language
Disclaimer	Information on copyright and liability
Info	Call the manufacturer's contact information

Control

4.2 Quick selection guide

Products can be simulated with the quick selection bar and their number as well as errors.

4.2.1 Product group

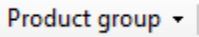


Fig. 3: Product group selection

The HB-PC51-1 simulation program can simulate various HB-THERM products. The product group should be set as follows:

1. Start simulation program HB-PC51-1.
2. Select the required **Product group** in the product group menu bar.
3. When you click on the desired product group, the product group is automatically restarted.

Possible Product Groups

Value	Product
TG 1	Temperature thermostat Thermo-5 including flow meter Flow-5 as well as variotherme change-over units Vario-5
TR	Water treatment unit Treat-5
CL	Cleaning unit Clean-5

4.2.2 Thermo-5 (only with product group TG)

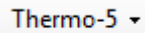


Fig. 4: Selection number Thermo-5

This parameter is used to select the number of simulated thermocouples Thermo-5. The number should be set as follows:

1. Start simulation program HB-PC51-1.
2. Select the desired number of Thermo-5 devices in the menu bar on Thermo-5.
3. By clicking on the desired Thermo-5 number, the devices are automatically simulated and logged on and the initialization window for module devices is displayed (→Fig. 5).
4. If desired, the addresses of the module devices can be adapted.

Warning ▾ Initialisation			
No.	1...99	1 2 3 4	⏪ ⏩
12345678	registered	1	
12345679	registered	2	
12345680	registered	3	
12345681	registered	4	
1	Main line Pressure	25.0 °C 0.8 bar	Ready to operate

Fig. 5: Initialization window



NOTICE!

For further details on the operation of module devices, refer to the operating instructions *Operating module HB-FB51 (O8291-X)*.

Control


4.2.3 Detection DFM (Just with product group TG)

DFM recognition ▾

Fig. 6: Selection DFM recognition

This parameter is used to select whether Flow-5 flowmeters are to be integrated or operated modularly. The selection should be set as follows:

1. Start simulation program HB-PC51-1.
2. Select the desired setting in the DFM detection menu bar.
3. When you click on the desired setting, an automatic restart is carried out after confirmation.

 **NOTICE!**
For further details on the operation of the Flow-5 flow meter, refer to the operating instructions (O8340-X)

4.2.4 Flow-5 per Thermo-5 (only for detection DFM = integrated)

Flow-5 per Thermo-5 ▾

Fig. 7: Select Flow-5 per Thermo-5

0, 1 or 2 flowmeter Flow-5 per Thermo-5 can be simulated. The desired number of Flow-5 per Thermo-5 is set as follows:

1. Select the desired value in [Flow-5 per Thermo-5](#) in the menu bar.
2. If you click on 1 or 2, the initialization window for flow meter Flow-5 is displayed (→Fig. 8).
3. Set parameter range 1..4 or 5..8.
4. Assign the flow measuring unit to a unit/module by entering the address.

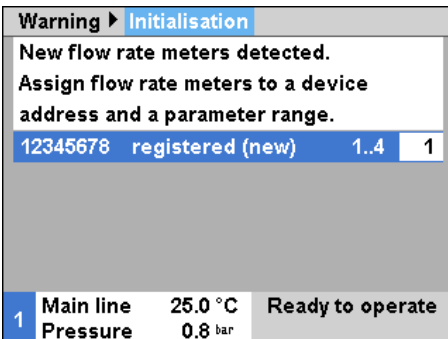



Fig. 8: Instalation Window Flow-5

 **NOTICE!**
For further details on the operation of the Flow-5 flow meter, refer to the operating instructions (O8340-X)

Control

4.2.5 Flow-5 and measuring circuits (DFM = modular only)

Flow 5 ▾ Circuits ▾

Fig. 9: Selection number of flow-5 and measuring circuits

Warning ▾ Initialisation			
No.	A..Z	A	A1 A2 A3 A4 A5 A6
New flow rate meters detected. Assign flow rate meters to a device address and a parameter range.			
22345600	registered (new)	active	A
1	Main line Pressure	25.0 °C 0.8 bar	Ready to operate

Fig. 10: Instalation Window Flow-5

A maximum of 8 flow-5 a maximum 16 measuring circuits can be simulated. The desired number of Flow-5 and its number of measuring circuits must be set as follows:

1. Select the desired value in **Flow-5** and **Circuits** in the menu bar.
2. When clicking on at least one Flow-5 and at least two measuring circuits, the initialization window for flow meter Flow-5 is displayed (→Fig. 10).



NOTICE!

For further details on the operation of the Flow-5 flow meter, refer to the operating instructions (O8340-X)

4.2.6 Vario-5 (Just with product group TG)

Vario-5 ▾

Fig. 11: Selection number Vario-5

Warning ▾ Initialisation			
No.	VC1..8		
New variothermal system detected. Address system, assign a device address to TH and TC.			
333333	registered (new)	active	VC1
	TH1 1	TC1	2
2	Main line Pressure	25.0 °C 0.8 bar	Ready to operate

Fig. 12: Installation Window Vario-5

A maximum of 8 flow-5 switching units Vario-5 can be simulated. The desired number Vario-5 should be set as follows:

1. In the **Vario-5** menu bar, select the desired number of Vario-5 switching units.



NOTICE!

Two simulated Thermo-5 units are required for each switching unit.

2. If you click on atleast 1 Vario-5, the initialization window for switching unit Vario-5 is displayed (→Fig. 12).
3. Status, address, and device addresses.



NOTICE!

For further details on the operation of the Vario-5 switch unit, refer to the operating instructions (O8340-X)

4.2.7 Error Simulation

Error simulation ▾






Fig. 13: Selection Error Simulation

With this parameter, various errors can be simulated. Depending on the selected product group, a different selection of errors is available.

4.3 Keyboard

The keys can be operated via the mouse or the PC keyboard.
When operating with the mouse, the mouse pointer must be moved over the desired key and then pressed with a mouse click.

When operating with the PC keyboard, the allocation of the keys is as follows:

Unit keys	PC keyboard	Numerical pad PC keyboard
	[↑] [↓] [←] [→]	[8] [2] [4] [6]
	[ENTER]	[5]
	[F1]	[0]
	[SPACE]	no assignment
	[ESC], [DEL]	[.]

Control

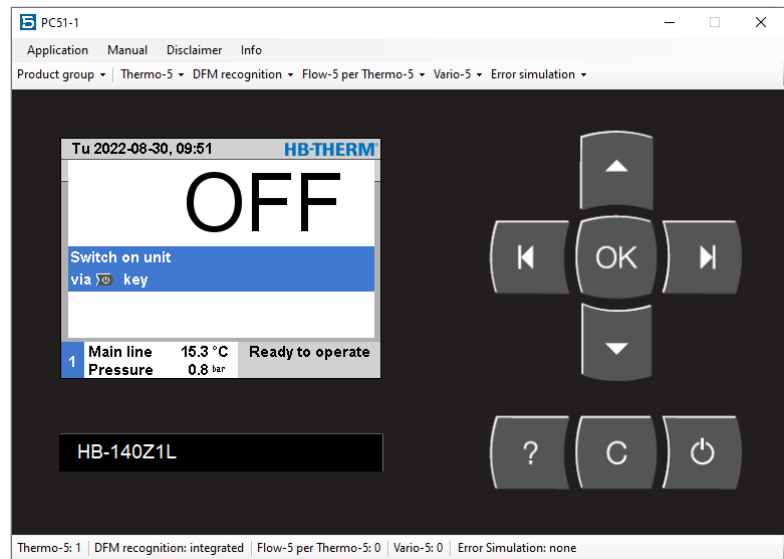










Fig. 14: Keyboard and display

4.3.1 Key functions

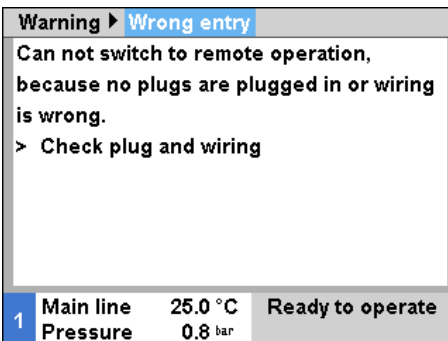
Key	Key function in basic display	Key function within menu	Key function with active parameter adjustment
	In menu Nominal values jump to Nominal value 1 (adjustment mode). (only for temperature control units).	Navigate upwards.	Increase values.
	Navigate to lower module No. (only for temperature control units).	Navigate to lower module No. (only for temperature control units)	Switch from "one tenth setting" to "whole value setting".
	Display main menu.	Display sub-menus or activate parameter adjustment.	Confirm values.
	Navigate to higher module No. (only for temperature control units).	Navigate to higher module No. (only for temperature control units)	Switch from "whole value setting" to "one tenth setting".
	In menu Profile jump to Language .	Navigate downwards.	Decrease values.
	Display online help.	Display online help.	Display online help.
	Acknowledge active horn or alarm.	Navigate back to previous menu.	Cancel the adjustment of values.
	Switch unit / module on or off.	Switch unit / module on or off.	Switch unit / module on or off.

Operating the unit

5 Operating the unit

Operate the devices (Thermo-5, Clean-5, Treat-5, Flow-5 or Vario-5) with the simulation program HB-PC51-1 the same as with real devices. For the basic operation of the device, please refer to the respective operating instructions (eg O8285-X for Thermo 5, O8304-X for Treat-5, O8305-X for Clean-5, O8295-X for Flow-5 and O8340- 5). The functionality of the simulation program HB-PC51-1 is partially limited. The restrictions or modifications are described below.

5.1 Remote mode (only Product group TG)

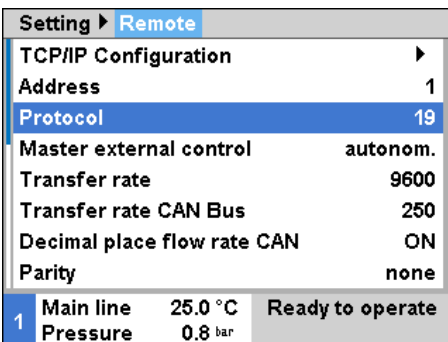


The remote control mode is only possible with the simulation program HB-PC51-1 with protocol 19 (OPC-UA).

For all other protocols, the error message is displayed when activating the remote control function (→ Fig. 15)

Fig. 15 Incorrect entry Remote mode

5.1.1 Setting Protocol 19 (OPC-UA)



To set the protocol for OPC UA, proceed as follows:

1. Display the menu page **Setting \ Remote**
2. Set parameter **Protocol** to "19".

Fig. 16 Setting protocol 19

Operating the unit

5.1.2 TCP/IP Configuration

Setting ▶ Remote ▶ TCP/IP Configuration		
DHCP		yes
DHCP addressing successful		yes
IP	10.0.100.80	
Subnet mask	255.255.0.0	
Standard gateway	10.0.0.1	
Port	4840	
Mac Address	48:0F:CF:50:3C:88	
Em. Shutdown Ses. Timeout		no
1 Main line	25.0 °C	Ready to operate
Pressure	0.8 bar	

Fig. 17 TCP/IP Configuration

The **DHCP** is always automatically set to "yes" in the simulation program HB-PC51-1. All TCP/IP settings can not be set manually. The **IP** corresponds to the IP address of the computer on which the HB-PC51-1 simulation program is running.

5.1 External sensor (only Product group TG)

Setting ▶ Miscellaneous		
Pressure relief with unit OFF		ON
Time pressure relief		5 s
Sensor type external sensor	J/Fe-CuNi	
Switch over external sensor		autom.
Restart interlock		OFF
Rinse interval		OFF
Rinse time		2.0 s
Limitation filling time		30 s
1 Main line	25.0 °C	Ready to operate
Pressure	0.0 bar	

Fig. 18 Switch over external sensor

Automatic detection of an external sensor is not possible with the simulation programme HB-PC51-1. Proceed as follows to simulate an external sensor:

1. Display the menu page **Settings \ Miscellaneous**.
2. Set parameter **Switch over external sensor** to "manual".
3. Display menu page **Functions**.
4. Select the external sensor function and activate or deactivate with the **OK** key. (→ Fig. 19)

Functions		
Cooling		
Mould evacuation		
External sensor		
Remote		
Leak stopper		
2nd nominal Value		
Switch clock		
Ramp programme		
1 Main line	25.0 °C	Ready to operate
Flow rate	--L/min	

Fig. 19 Switching on the external sensor

Operating the unit

5.1 Process operation / Teaching Vario-5

The control signals Ext. Control can not be simulated in the simulation program HB-PC51-1. Therefore, the process operation as well as the teaching assistants for Vario-5 can not be used for simulation purposes.

The test mode can be used instead of the process mode.



NOTICE!

For further details on the operation of the Vario-5 switch unit, refer to the operating instructions (O8340-X)

5.1 Save/Load

All data (actual, parameter, configuration, tool, error and operating data) are written directly to the directory "... Simulation \ current \ Drives \ D" from which the simulation program HB-PC51-1 was started Loaded from there.

5.1 Software update

The software update function is not available with the simulation programme HB-PC51-1.