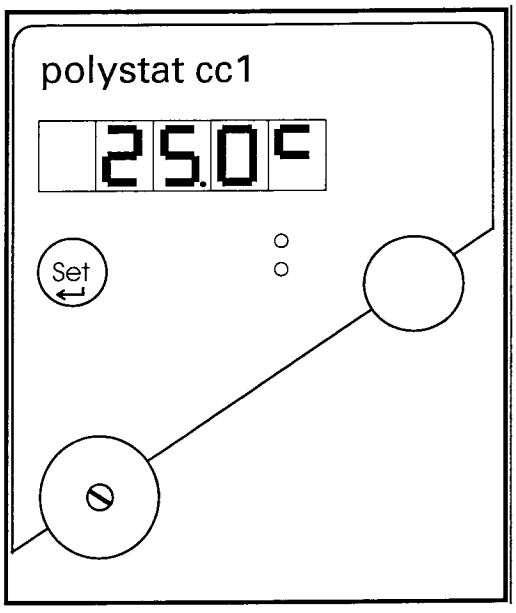
huber

hochgenau temperieren

OPERATING INSTRUCTIONS

Version 3.7

polystat compatible control 1



PETER HUBER KÄLTEMASCHINENBAU GMBH · Werner-von-Siemens-Strasse 1 · D-77656 Offenburg · Tel. +49-781-9603-0 · Fax +49-781-57211
Internet: www.huber-online.com · E-Mail: info@huber-online.com · Erfüllungsort und Gerichtsstand 77656 Offenburg · Amtsgericht Offenburg
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Foreword: Please read carefully!

Product description

Polystat cc1 (61) is a compact, microprocessor control unit for Huber's Polystat Compatible Control circulation baths. The set-point limits, the compressor automatic controls and the °C or °F display can be be set. The controller can be calibrated to comply with ISO9000ff. All important data is stored in a permanent memory. Data entry is controlled by the operator and supports alpha-numeric characters.

Safety Advice Regarding Overtemperature protection device

The overtemperature protection device is an independent safety device which must be set by the user. When setting this unit, allow for the flash-point of the heat transfer fluid and the flash-point of other media which are used in the application as well as the temperature limits for the application apparatus, i.e., the connecting hoses.
Regularly (e.g., every 4 weeks) check the operation of the overtemperature protection device at a non-critical temperature. The user is responsible for ensuring that the setting of the overtemperature protection device is correct.

Polystat 61

The polystat 61 is available with or without overtemperature protection alternatively. You can recognize the version without overtemperature protection by the missing variable-pitch screw (position 4, fig. on page 5).
The version without overtemperature protection is only allowed to be used with **non-flammable** liquids.

Safety Advice Regarding Controller Replacement

Electrical hazards must never be underestimated. For this reason, always switch off the circulator bath and disconnect the mains power supply before replacing the controller (21). Ensure that the mains power is not reconnected. Remove the fastening screws (22), take out the controller (21) forward. Ensure foreign bodies do not enter the control unit slot once the control unit has been removed from the circulator bath. Do not touch the control unit or the circulator bath contacts under any circumstances. Examine the replacement control unit contacts before installing the unit. The contract strip must not be dirty.
When inserting the replacement control unit, ensure it is not tilted and do not use excessive force under any circumstances. Re-insert the fastening screws (22). The circulator bath can now be re-commissioned.

The data entry modes are divided into two levels.

1. Feature selection:
Features as set-point value adjustment, etc. are selected using the **set**-key. The display does **not** flash during these operations. The selected feature can be accessed using the set-key, thereby permitting entry to the 2nd programming level.

2. Data entry mode:
The adjuster is used to set a numerical value, e.g., the set-point value or to select a programme option, e.g., Auto, On or Off for the compressor automatic controls. The display flashes during this operation. The value or the option must then be confirmed using the set-key. The controller initially stores the data in a non-volatile memory. The control unit will annul the data entry and return to the default status (displaying the actual value) unless the data entry is confirmed within 4 minutes.

New functions from V3.04

From software version V3.04, a few additional functions have been incorporated in the operating software.

The thermostat is now fitted with a programmable automatic cutout. The user can determine the activation conditions himself. Only when the automatic cutout is switched on does the thermostat start the temperature control when the power is connected or after a power failure. If the automatic cutout is switched off, the user has to start the temperature control when tUrn is displayed by turning the rotary knob (see §2.10).

The definition of the calibration temperatures and the two-point calibration programme have been summarized under point CAL in the function menu (see §2.9). Additionally, you have the possibility to equalize the internal Pt100 sensor at a temperature. This Offset (Shift) calibration is described under point §2.8.

It is now possible to save the user-defined settings in the permanent memory so they may be reloaded if required. Access to this function is a complicated process in order to prevent it from being called up unintentionally (see §2.11).

Another innovation is the saving of the calibration settings. The user-saved calibration data or the factory calibration data may be loaded if required. Access to this function is a complicated process in order to prevent it from being called up unintentionally (see §2.11).

To improve external ventilatioin, a ventilation function has now been installed. This enables the pump to be operated in alternating mode. (see §2.12).

G. Description of unit

The Polystat is a temperature control unit with Plug & Play technology featuring microprocessor control and straightforward operation with an angular sensor and a digital display. High-pressure pump, coated components manufactured from stainless steel or plastic which is highly resistant to chemical attack. All models with 3 year guarantee for electronic components. Selection of 3 Models:

Polystat cc1, with level safety device (float switch) and adjustable overtemperature protection device for long-term unattended operation with flammable and non-flammable fluids (FL). Additional safety through maximum and minimum set-point value. Max. temperature=200°C*.

Polystat 61, as Polystat cc1, however alternatively with or without overtemperature protection. The version without overtemperature protection is only allowed to be used with non-flammable liquids (NFL). Max. temperature=100°C.

Polystat cc2 (62), as Polystat cc1 (61), however with program controller (5 steps), master control unit for external temperature control, 3 set-point temperatures and straightforward ramp feature. Max. temperature = 200°C*.

Polystat cc3 (63), as Polystat cc2 (62), however with the entire range of features from the Compatible Control circulation baths: Program controller (50 steps can be divided into 10 programmes), RS232, RS 485 and analogue interfaces (4...20mA) for two-way communication. Connection for serial printer. Max. temperature = 200°C*.

The **Polystat as an immersion temperature control unit** with a 2000 watt heater output which provides the features of an immersion circulation bath or a refrigerated circulation bath when combined with an immersion bath or a refrigerated bath. The pump permits temperature control of sealed equipment, e.g., photometers when used in conjunction with the pump adapter.

The **Polystat as a bath thermostat** (Heating thermostat). Maximum operating temperature see nameplate. For works at room temperature the cooling coil can be operated with water. With lower temperatures a seperate cooling is needed.

G.1 Application

Temperature range and safety classification.

Immersion Temperature Control Units	Min. Temp.	Max. Temp.	Safety Classification	
Polystat CC 1 (61)	-30°C	200°C (100°C)	FL (NFL)	S
Polystat CC 2 (62)	-30°C	200°C	FL	S
Polystat CC 3 (63)	-30°C	200°C	FL	S
Heated Temperature Control Units				
Polystat 201	-30°C	200°C	FL	S
Polystat 202	-30°C	200°C	FL	S
CC 302	-20°C	300°C	FL	D
CC 303	-20°C	300°C	FL	D
Heated/ Refrigerated Temperature Control Units				
Polystat K6	-25°C	150°C	FL	S
Polystat K12	-20°C	120°C	FL	S
Polystat K15	-20°C	200°C	FL	S
Polystat K20	-30°C	200°C	FL	S
Polystat K25	-30°C	200°C	FL	S
Intelligent Chiller (-H), Unichiller UC (-H)	see nameplate	40°C (80°C)	NFL (FL)	D

S= Float switch, D= Flow indicator

* The temperature range can be extended up to 300 °C in conjunction with a CC302, CC303.

	Min. Temp.	Max. Temp.
Polycarbonate baths A5 up to A18	-30°C	100°C
Stainless steel baths insulated with PUR housing E8, E12, E20	-30°C	120°C
Stainless steel baths insulated with stainless steel housing E15, E25	-30°C	200°C
Refrigerated baths: Polystat K6 Polystat K12 Polystat K15 Polystat K20 Polystat K25	 -25°C -20°C -20°C -30°C -30°C	 (80°C) / 150°C (50°C) / 120°C (50°C) / 200°C (50°C) / 200°C (50°C) / 200°C

(50°C) = Maximum working temperature with refrigeration unit switched on.

For polycarbonate and stainless steel vessels: A water-filled refrigeration coil is required to cool the fluid below its inherent temperature. An external mechanical refrigeration system is must be fitted where even lower fluid temperatures are required. There are basically two options for external refrigeration: 1st an immersion refrigeration unit with refrigeration unit sensor located directly temperature-controlled bath or 2nd a pipework refrigeration unit located at the pump adapter.

G.2 Preparation

Note the following information before commissioning

- Supply voltage and fusing - see name plate.
- Maximum working temperature - see tables in § G.1. In addition, observe the working temperatures of the heat transfer fluid (viscosity and flash-point).
- A immersion temperature control unit is fastened to the temperature control vessel using the clamping bolt (20). This can be adjusted according to the application. To do this, remove the three fastening bolts for the bolted clamp and fasten the bolted clamp in the desired position.
- Max. bath filling level = 15mm below the top edge of the bath
  Please note: Allow for an volumetric expansion of approx. 15% when heating the heat transfer oil from 20 °C up to 200 °C.
- Connect the external equipment to the pump adapter (accessory at present) or seal the equipment using the closure bolts. An SW19 open-ended spanner is required for the union nut - counterhold using an SW 17 open-ended spanner. Always counterhold when connecting or disconnecting the equipment!
- Connect the coolant water hose if the fluid temperature has to be regulated to a temperature below its inherent temperature. An immersion refrigeration unit can be used to achieve colder temperatures, e.g., HUBER TC40. An equivalent refrigeration effect can be achieved using a pipework refrigeration unit, e.g., HUBER DC30. This is connected to the pump adapter (15 + 16). The return line from the equipment is routed via the pipework refrigeration unit if external temperature control is used.

G.3 Commissioning

Check the level of the bath and all hose connections. Connect the mains power supply. Activate the temperature control unit using the mains power switch (2). *HELLO* will appear on the display (5) followed by the temperature control unit identification. Consult the following sections for information regarding operation of the controller.

G.4 Level alarm

The float switch (9) breaks the circuit before the fluid level falls below a level which is critical for the heater (12). The message *Float* will appear on the display (5) and the temperature control unit will deactivate. The *Float* message will is retained, even if the cause of the message is rectified (refilling with heat transfer liquid). For cancelling the message, deactivate and then reactivate the temperature control unit.
Max. bath filling level = 15 mm below the top edge of the bath. Please note the interlock temperature of the volume.

G.5 Electrical thermostat within pump motor

If the pump motor overheats, the motor's internal electrical thermostat will trip out. This may result from excessive heat transfer fluid viscosity. A message will appear on the display.

With units with float switch the message *pump* appears: the thermostat switches off.

With units with flow indicator the message *float* appears: because of failure of the pump motor the pressure switch responsed.

The message will be retained even once the pump motor has cooled down. This can process take some time, depending on the bath temperature. For cancelling the message, deactivate and then reactivate the temperature control unit.

G.6 Overtemperature protection device

For devices with security classification FL.
If the bath temperature exceeds the value set for the overtemperature protection device, the *Temp* message will appear on the display and the temperature control unit will deactivate. The *Temp* message will be retained even once the bath has cooled down. This procedure can take some time, depending on the bath temperature. For cancelling the message, deactivate and then reactivate the temperature control unit.

G.7 Heat transfer fluid

Ensure the heat transfer liquid used for temperature control is either water or one of the fluids specified in our price list.
If using water as a heat transfer fluid, ensure that the freezing point of water is accounted for.
Compare the minimum and maximum permissible temperatures for the heat transfer fluid against your desired range of working temperatures. The maximum working temperature should remain at least 5K below the flash-point of the heat transfer fluid. Please note that the viscosity of the heat transfer fluid increases as its tempeature is reduced. With the minimum operating temperature the viscosity of the thermo fluid must not exceed 50 mm^2/s. The freezing point should stay 10-20K below the operating temperature.
Likewise, check the controller settings (set-point limits §2.2).

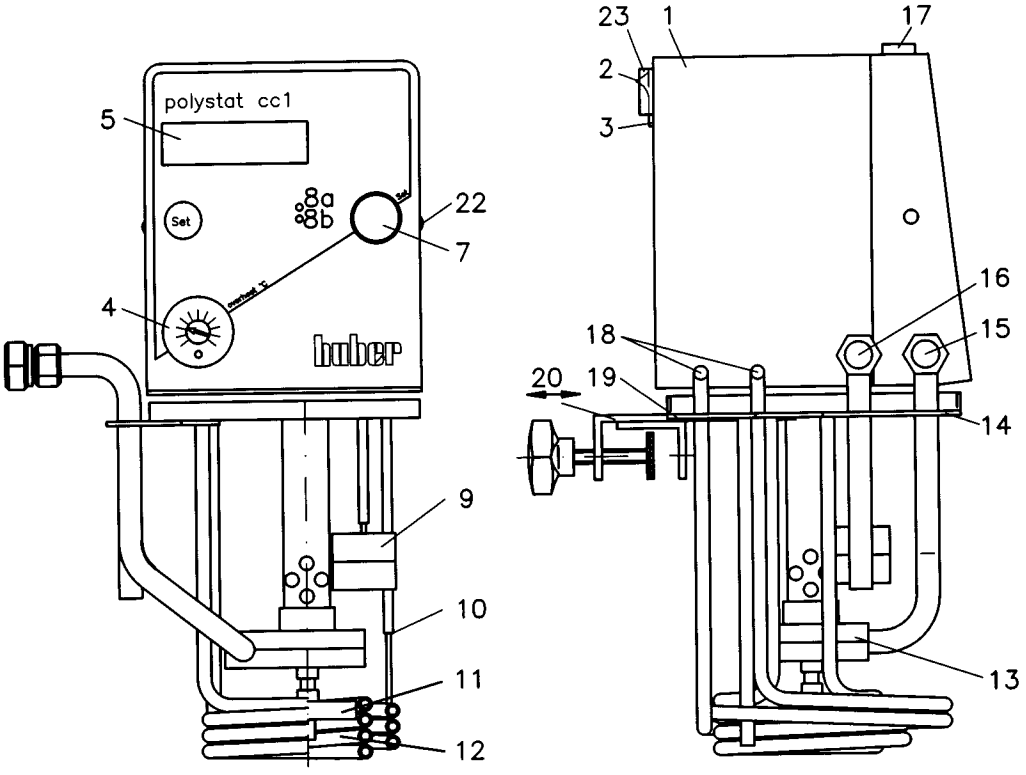
Use of the following fluids is not permitted:

- demineralised or destilled water
- mineral-enriched water or sea water
- CaCl2 salt solution
- thermoregulation fluids containing ether, ester and amine. These admixtures are in some sorts of glycol as these heat transfer fluids can damage the 1.4301 stainless steel construction material.

Please close the pump sockets with screw plugs, resp. with external application connect the tubes. The tube material must be suited to the requested operating temperature range.
Verify pump sockets to density.

G.8 Unit Diagram

1 Hood
2 Mains power switch
3 Mains power connection
4 Overtemperature protection device
5 Display
7 Rotary knob
8a Power LED
8b Heating LED
8c External LED
8d Program LED
9 Float (level)
10 Controller sensor
11 Stirrer
12 Heater
13 High-pressure pump
14 Fastening for 15-16
15 Pump adapter pressure connection 6 (accessories)
16 Pump adapter return connection (accessories)
18 Cooling coil pipework connection (accessories)
19 Fastening for 18
20 Bolted clamp
21 Controller
22 Fastening screw
23 6pole connector



G.9 Type recognition

Device type recognition and sensor type recognition first featured on the Polystat. As a result, this permitted the use of parameters which are specific to the device and the controller. The currently defined devices and controllers are described in the following table. The „TYPERror„ fault message is displayed if a controller with a unrecognised device type. The device table can be revised by updating the software. The *HELLO* display indicates that a device has been recognised.

G.9.1 Table of Device Types

Device	Display		Note
Polystat NFL	HELLO	P_100	Without overtemperature protection device, -30°C... +100°C
Polystat FL	HELLO	P_200	With overtemperature protection device, -30°C... +200°C
Polystat 300°C	HELLO	P_300	With overtemperature protection device, -30°C... +300°C
Intelligent Chiller Unichiller UC	HELLO	IC1....4	Without overtemperature protection device, -25°C... +40°C
IC...-H Unichiller UC...-H	HELLO	IC1-H...4-H	With overheating protection device, -25°C... +80°C

G.9.2 Table of Controller Types

Controller	Display	Note
Polystat CC1 (61)	Contr. 1/ Contr. 2	Set-point value limit / extended temperature range
Polystat CC2 (62)	Contr. 2	As Poly CC1 (61) plus external circuit temperature controller, 3 user temperatures, small programme controller, straightforward ramp procedure
Polystat CC3 (63)	Contr. 3	As Poly CC2 (62) but 10 user temperatures, larger program controller plus RS232 interface, RS485 interface, 4..20mA analogue interface

G.10 Operation of Refrigerated Baths K6, K12, K15, K20, K25

Water baths without approaching possibility of regulator : With these water bathes no 6-pole connector at the rear of the bath.

Connect the mains power supply using the heater unit plug on the back of the housing.
One of two temperature control unit operation modes can be selected.
- Cooling is not required or the operating temperature is higher than the maximum working temperature of the cooling machine:
Move the black rocker switch to the 0 position (located above the voltage supply unit on the back of the housing). Activate the temperature control unit using the mains power switch (2). The circulation pump and the temperature control unit are activated.
- Cooling is required:
The commissioning procedure is performed as described above, however the refrigeration unit is also activated using the black rocker switch on the back of the housing. Please note that the refrigeration unit can only be operated up to the maximum working temperature (see table §G1).
The refrigeration unit must be deactivated for bath temperatures above the maximum value using the black rocker switch on the back of the housing.
Please ensure that the bath temperature and the set-point value are indicated on the LED display once the Polystat is activated.

Water baths with approaching possibility of regulator : With these water bathes a 6-pole connector is at the rear of the bath.
Connect the data to the regulator. Use the delivered connection cable. Set up the power supply with the high temperature plug at the rear of the unit. Only change the rocker switch at the rear of the water bath to position 1 if the bath is working without data control. Then continue as described above. If not the rocker switch has to be in position 0.
You have the possibility to choose between two ways of operation of the thermostat.

- You do not need a cooling capacity or the operating temperature is higher than the maximum working temperature of the cooling machine.

Switch on the thermostat with the main switch (2).The circulation pump and the tempering have started. Switch off the cooling machine with the compressor automation (see §3.11)

- You need cooling capacity and the operating temperature is lower than the maximum working temperature of the cooling machine:

For installation see above, however the automation of compressing can be switched to AUTO or ON (see §3.11) Please see that the operation of the cooling machine is possible only up to a maximum working temperature (see table §G1). With bath temperatures above the maximum working temperature the cooling machine has to be switched off through the compressor automation (see §3.11).

In case of simultaneous operation of cooling bath (compressor) and polystat (heating), the heating capacity has to be limited to a maximum of 75% in order not to exceed the maximum current absorption of 10A.

Therefore, the function *Heat* has been introduced in the function menu. With this function, the maximum heating capacity can be set on 25%, 50%, 75% or 100% (see §3.12).

⚠ If the heating capacity is not limited, the fuse integrated in the cooling bath's bush is activated. The bush is at the cooling bath's back.

G.10.1 Service, maintenance

Ensure there is an approx. 10 mm gap on both sides of the unit.
Clean condenser regularly. Remove the cover plate by releasing both of the fastening bolts and clean the condenser with compressed air.

G.10.2 Transport

The thermostats do have to be secured for transport, however the contents of the bath should be drained completely. The temperature control unit should not be tilted or placed on its side when transported.
Ensure the unit is well packaged and mark the packaging with the correct vertical transportation orientation.

1. Features of the set-key

The set key is for choosing the setpoint or menu functions and, in general, for confirming an input.

⚠ **Safety first!**

The set-point value limit should be adjusted when commissioning the unit and each time the temperature regulation liquid is replaced.
The set-point value limit is software-controlled and separate from the high-temperature and high-level safety devices whose activation does is not controlled by the control system electronics.
The setpoint limit is no overtemperature protection.
Limit the upper set-point value to 5K below the flash-point of the temperature regulation liquid (e.g., 25°C when ethanol is used).

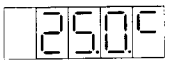
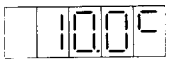
Limit the lower set-point value according to the viscosity or freezing point of the temperature regulation liquid (e.g. 5°C with water).

See section §2.2 for the relevant procedure.

1.1 Reading the set-point value

Set	Press the set-key once, then release
	The adjusted set-point value is displayed in the units selected (°C/°F) and flashes.
	e.g.: 25.0° Centigrade or
	or 77.0 ° Fahrenheit After approx. 4 minutes the actual value is displayed.

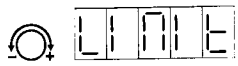
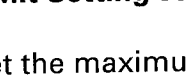
1.2 Adjusting the set-point value

Set  	Press the set-key once. The previously saved set-point is displayed flashing. Use the rotary knob to raise or lower the set-point value, as required.
Set 	Press the set-key once to confirm the set-point value. If the set-point value is not confirmed within 4 minutes, the data entry mode will be terminated and the adjusted set-point value will not be saved.

2 Description of the Menu Functions

2.1 Call up the Menu functions

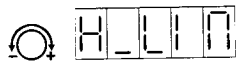
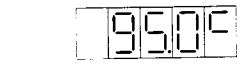
The function menu can only be called up when starting the thermostat. In this menu all other functions of the thermostat can be set.

Set 	Press the set key and switch on the thermostat at the mains switch. Wait is displayed. Release the set key.
5 seconds 	After approx. 5 Sec. the first function of the function menu *Limit* is displayed. You can leaf through the different functions of the function menu using the rotary knob.
Set 	By pressing the set key, the chosen function is called up. You can exit the function menu when *Temp* is displayed.
Set 	The thermoregulation starts by choosing the function with the help of set key.
	The bath temperature is displayed.

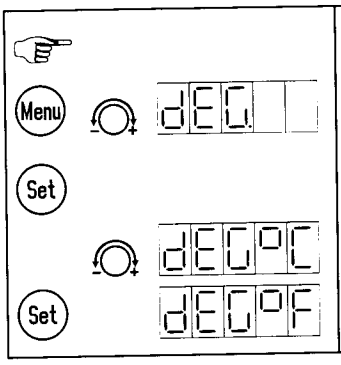
2.2 LIMIt Setting set-point value limits

Set the maximum set-point value to at least 5 K below the flash-point or boiling point (water). Set the minimum set-point value to at least 3 K above the freezing point of the temperature regulation liquid and taking account of its viscosity.
Generally, increased viscosity results in reduced heat transfer rate and thereby reduced system efficiency.

The upper and lower limits of the set-point value should be redefined each time the temperature regulation liquid is replaced in order to ensure operation within a suitable temperature range and also accounting for the flash-point and viscosity. If flammable liquids are used (e.g., alcohol), the upper limit must be 5K below the flash-point.

Menu 	In case of need call up the function menu (see 2.1). Turn the rotary knob until *Limit* is displayed. Once the set key is pressed *L-Lim* will be initially displayed. The lower set-point value limit can now be adjusted using the rotary knob.
Set 	
	Example: The lower limit is 2°C
Set	Confirm the temperature setting using the set-key.
	*H-Lim* is displayed. The upper set-point value limit can now be adjusted using the arrow-keys.
Set 	Example: The upper set-point value limit is 95°C. Once the settings are confirmed using the set-key. The function menu is still activated.

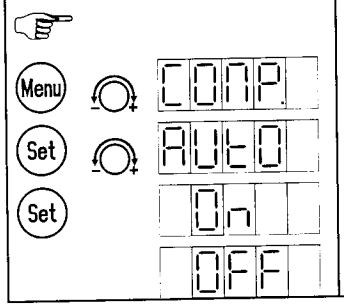
2.3 dEG. Setting the temperature-unit to Celsius or Fahrenheit



In case of need call up the function menu (see 2.1).
Turn the rotary knob until *Deg.* is displayed.
Select the function with the Set key.

Switch over between Deg°C and Deg°F using the rotary knob.
Confirm the temperature measurement unit setting using the set-key.
The function menu is still activated.

2.4 COMP. Set Automatic Compressor Control

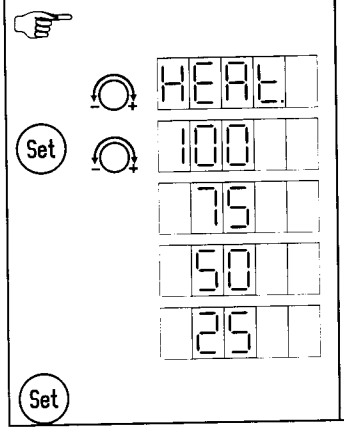


In case of need call up the function menu (see 2.1).
Turn the rotary knob until *Comp.* is displayed. Confirm with set key.

Choose the required compressor mode using the rotary knob.
Confirm with set key.

The function menu is still activated.

2.5 HEAt Set Maximum Heating Capacity



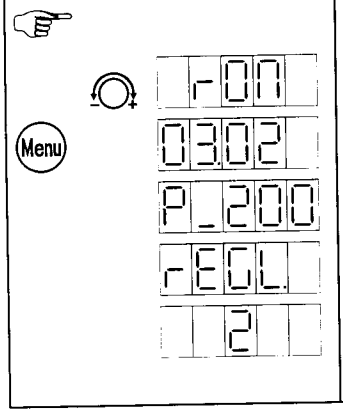
In case of need call up the function menu (see 2.1).
Turn the rotary knob until the message *Heat* appears.
Confirm with set key.

Set the required maximum heating capacity in % using the rotary knob.
See §G.10 „Operation of Refrigerated Baths„.

Confirm with set key.

The function menu is still activated.

2.6 rOM Read Software version



In case of need call up the function menu (see 2.1).
Turn the rotary knob until *Rom* is displayed. Confirm with set key.

Successively, the following is displayed:
- the software version e.g. *03.02,*

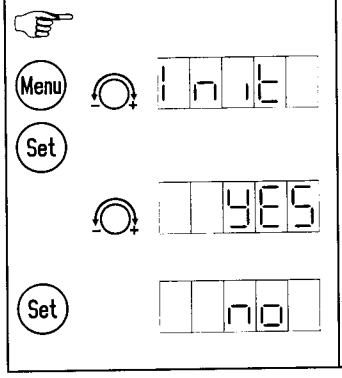
- the type of device e.g. *P_200*

- the message *Regl.* for controller and finally the controller type, e.g. 1

The function menu is still activated.

2.7 Init Set factory-set unit parameters

In case of factory-set parameters, the control parameters and the set-point limits are cleared.



In case of need call up the function menu (see 2.1).
Turn the rotary knob until *Init* is displayed.
Confirm with set key.

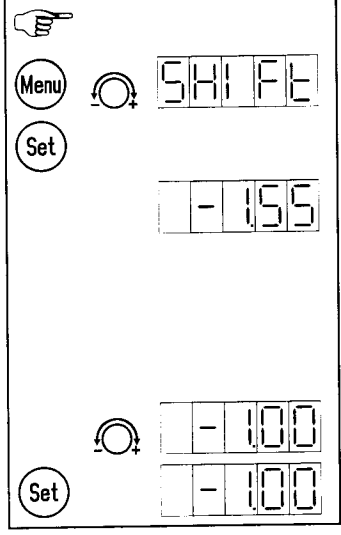
Yes is displayed.
In order to set the factory-set parameters, confirm with set key.

If you do not whish to change the parameters, set the display *No* with the rotary knob and confirm with set key.
The function menu is still activated.

2.8 SHIFt Pt100 internal Offset (Shift) circuit calibration program

This program only starts when the internal circuit control mode is activated (see §3.2).

The internal circuit Pt100 sensor can be calibrated using the keyboard thus permitting calibration of the microprocessor control unit and the circulator bath for conformance with ISO 9000 ff. or for quality assurance requirements. The internal circuit sensor is calibrated at any point within the temperature range of the device. The Shift calibration can be adjusted a maximum of +/-5K.



In case of need call up the function menu (see 2.1).
Turn the rotary knob until *Shift* is displayed. Call up the Shift program using the set key.

The current Shift is displayed, e.g., *-1.55K.*

The Shift is added to the temperature value. E.i. the indicated temperature rises in case of a positive shift and goes down in case of a negative shift.

Use the rotary knob keys to adjust the Shift.
Confirm the entry using the set-key.
Finally, the shift setting is displayed for 2 seconds.
The function menu is still activated.

2.9 CAL Pt100 internal circuit calibration program

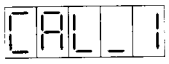
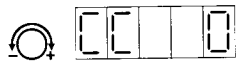
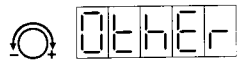
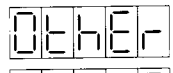
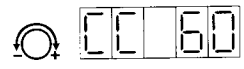
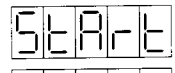
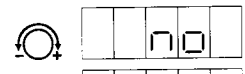
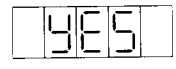
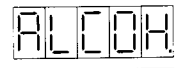
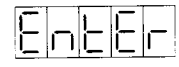
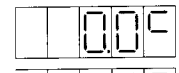
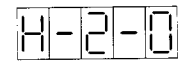
The internal circuit Pt100 sensor can be calibrated using the keyboard thus permitting calibration of the microprocessor control unit, the bath and circulation circulator bath - thereby complying using ISO 9000 ff. or quality assurance requirements. The settings are saved once the calibration procedure is completed.

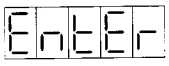
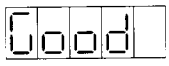
The control unit for the circulator bath is calibrated ex works. If the control unit is replaced, the system accuracy should be checked.

The calibration temperatures must be defined in the function menu (see §2.8). The second calibration temperature must always be higher than the first calibration temperature. The difference between the calibration temperatures must be greater than 10K and less than 250K.

Before performing the calibration procedure, the set-point limit values must be defined to ensure that they do not conflict with the calibration temperature. (see §2.2)

The display for the type of temperature regulation liquid depends on the calibration temperatures. At a calibration temperature of <20°C ALCOH. is displayed, between 20°C and 94°C H-2-O for water is displayed and at a calibration temperature of>=95°C OIL is displayed. These are only suggestions. The correct temperature regulation liquid must always be selected by the user.
The following describes the calibration of an internal circuit sensor at 0°C with alcohol and at 80°C with water:

☞	Fill the bath with alcohol and switch on the thermostat. Call up the function menu (see 2.1).
	Turn the rotary knob until *Cal* is dispalyed and confirm with set key.
Set	*Cal_1* appears on the display.
	To input the first calibration temperature turn the rotary knob.
	The rotary knob may be used to select from a table with predefined calibration temperatures, e.g. CC0 for 0°C. With the display *Other,* there is an option of entering any calibration temperature.
Set	
	Confirm the table value or the option *Other* with the Set key. Only with the option *Other*: Use the rotary knob to set any calibration temperature and confirm with the Set key.
Set 	
Set	
	To enter the second calibration temperature turn the rotary knob when the display shows *CAL_2*.
	The rotary knob may be used to select from a table with predefined calibration temperatures, e.g. CC80 for 80°C. With the display *Other,* there is an option of entering any calibration temperature. Confirm the table value or the option *Other* with the Set key. Only with the option *Other*: Use the rotary knob to set any calibration temperature and confirm with the Set key.
Set 	
Set 	
Set	
	*Start* appears on the display. To start the calibration program, select the option *Yes* with the rotary knob and confirm with set key. With the option *no*, the function is left.
	
Set 	
	After the option *Yes*, the display *Alcoh* appears.
	Acknowledge with the rotary knob. The program *CC 0* starts automatically, the controller specifies a set value of 0°C. The display *CC 0* appears for about 1s and alternates for 2s with the actual temperature eg: *20.00(°C)*.
	
	If 0°C is measured and the bath temperature is stable for a certain time, the message *Enter* appears. Check the stability of the bath temperature on the reference thermometer. If this is stable, set the temperature shown on the reference thermometer with the rotary knob. The displayed value may be corrected by ±5°K. Pressing the Set key confirms the entered temperature.
	
Set	
	The display *H-2-O* for water appears.

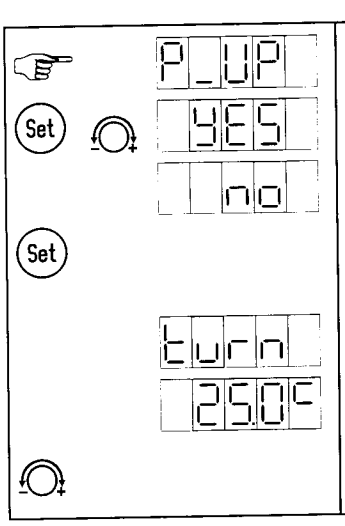
	Switch off the thermostat, empty the bath, fill with water, switch on the thermostat and call up the function menu.
	Choose program Cal with the rotary knob and call it up with the set key.
	Call up the menu. Using the Set key, confirm the 1st and 2nd calibration temperature. Start the calibration program. Acknowledge the display *Alcoh.* with the Set key. This jumps the 1st calibration temperature and calibration is only performed with the 2nd calibration temperature.
	
	
	The display *H-2-O* for water appears.
	Acknowledge by turning the rotary knob. If the calibration temperatures are set so that there is no need to change the temperature control fluid, the 2nd display for the temperature control fluid may be acknowledged by turning the rotary knob and the calibration is then performed for the 2nd calibration temperature. The program *CC 80* starts automatically, the controller specifies the set value 80°C.
	The display *CC 80* appears for about 1s and alternates for 2s with the actual temperature eg: *56.00(°C)*.
	If 80°C are measured and the bath temperature is stable for a certain time, the message *Enter* appears. Use the rotary knob to set the temperature displayed on the reference thermometer.
	
 	Pressing the Set key confirms the entered temperature.
 	The message *Good* appears on the display, the correct data are saved.
	In the event of a poor calibration, *bath* is displayed.
	In the event of non-calibrated controllers, *Uncal* is displayed

If the set calibration temperature (flashing display) is not confirmed within 4 minutes, the entry is terminated without storing the calibration temperature.

⚠ If the calibration is not properly completed, all the data entered will be erased and the circulator bath will no longer be calibrated. The *UnCal* message will be displayed.

2.10 P_UP The automatic cutout

The automatic cutout determines the behaviour of the thermostats when the power is switched on or after a power outage. If the automatic cutout is activated, the thermostat starts the temperature control when it is switched on at the mains switch. The thermostat also starts the temperature control again automatically after a power outage.
For safety reasons, it may be necessary for the thermostat to remain switched off after a power outage. In such a case, the automatic cutout must be switched off.



In order to set the automatic cutout, press the set key when *P_UP* is displayed.

Choose *Yes* for automatic cutout On or
the option *No* for automatic cutout OFF with the help of the rotary knob.

Confirm with set key.
When the automatic cutout is switched off, the thermostat does not automatically start the temperature control. After the starting phase when the display shows *HELLO* and the type display, the display alternates between the current actual value and the reference *turn*. If the rotary knob is now turned, the thermostat starts the temperature control. The reference *turn* no longer appears on the display.

2.11 SAFE The backup memory for equipment configuration and calibration data

The access to this function is a complicated process to prevent it from being called up unintentionally. It is now possible to save the user-defined settings in the permanent memory so that it may be reloaded if required. This is displayed by the menu points *L.USER* and *S.USER*. All settings and programming operations are saved and loaded.

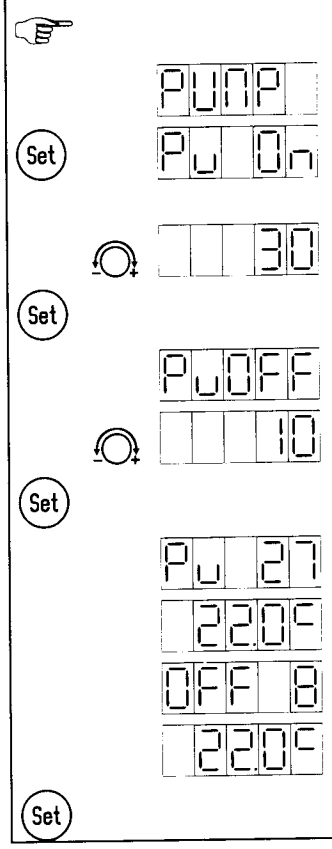
Another innovation is the saving or reloading of the calibration settings. The user-saved calibration data are saved under the menu point *S_CAL* and reloaded under the menu point *L_CAL*. The factory calibration data may be loaded under the menu point *ReCAL* if required. Access to the load function is protected with a *Yes/No* question to prevent it from being called up unintentionally.

The calibration data should only be reloaded if the user is aware of the content of the backup copy. If false data are backed up, loading this data may degrade the accuracy.

☞ SAFE	In order to access the main memory for the unit configuration and the calibration data, press the set key when *Safe* is displayed.
Set CodE	The reference *Code* appears on the display.
108	Use the rotary knob to sent the password *108* and confirm with the Set key.
Set LUSEr	Use the rotary knob to set the desired backup option. *L.User* stands for load user data (equipment configuration),
SUSEr	*S.User* stands for backup user data (equipment configuration),
L_CAL	*L_CAL* stands for load user calibration data,
S_CAL	*S_CAL* stands for backup user calibration data,
rECAL	*ReCAL* stands for load factory calibration,
QUIt	When the display shows *Quit*, the menu may be left without changing the data.
Set	
POP U	If *L.User* is confirmed with the Set key, *POP U* appears on the display. The last equipment configuration saved is loaded from the backup memory.
PUSHU	If *S.User* is confirmed with the Set key, *PushU* appears on the display. The current equipment configuration is loaded into the backup memory.
SUrE	If *L_CAL* is confirmed with the Set key, *Sure* appears on the display.
no	Use the rotary knob to set *Yes* and confirm with the Set key.
YES	
Set	
POP C	*POP C* appears on the display, the last saved calibration data are loaded from the backup memory into the main memory.
PUSHC	If *S_CAL* is confirmed with the Set key, *PushC* appears on the display. The current calibration data are loaded into the backup memory.
SUrE	If *ReCAL* is confirmed with the Set key, *Sure* appears on the display.
no	Use the rotary knob to set *Yes* and confirm with the Set key.
YES	
Set rECAL	*ReCAL* appears on the display, the factory calibration data are loaded from the backup memory into the main memory.

2.12 PUMP The Venting Function

In case of an external operation, an alterning operation of the pump can be very helpful when venting. The On- and OFF-time of the pump can be defined successively.



In order to activate the venting function press the set key when *Pump* is displayed.
Pu On is displayed for the On-time.

Set the required On-time of the pump with the help of the rotary knob and confirm with set key. The On-time range can be set between 3...90 seconds.

PuOff is displayed for the Off-time.
Set the required Off-time of the pump with the help of the rotary knob and confirm with set key. The Off-time range can be set between 3...90 seconds.

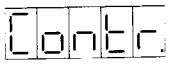
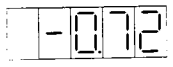
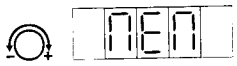
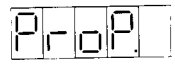
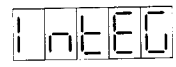
During the On-time the actual value and *PU xx* are displayed alternatingly, *xx* refers to the remaining On-time. The power LED is off.

During the Off-time the actual value and *Offxx* are displayed alternatingly, *xx* refers to the remaining Off-time.

Terminate the venting function with the set key the thermoregulation starts and the power LED is on.

2.13 Contr. Set parameters

With the help of the P-I-coefficients you can influence the action of the thermostat.

 	In order to set the parameters, press the Set key when *Contr.* is displayed.
Set 	Afterwards, the Shift is displayed (see §2.8).
	
	Select a pre-defined parameter set (Pid 0 ... Pid 8) with the help of the rotary knob. If the parameter setting PID 9 is selected, the freely programmable parameters are taken over.
	If *MEM* is selected, the parameters for parameter set PID 9 (proportional band and integral time parameters) can be set.
Set 	*ProP* for proportional coefficient will be displayed.
	Now set the coefficient with the help of the rotary knob.
Set 	*InteG* for integral coefficient is displayed.
	Now set the coefficient with the help of the rotary knob.
Set	Set with the Set key.

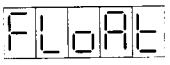
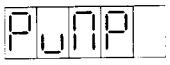
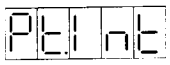
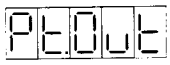
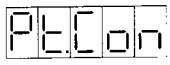
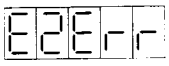
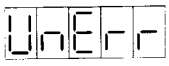
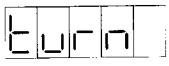
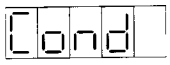
Pre-defined parameter sets are:

Pid.	0	1	2	3	4	5	6	7	8	9
Prop.	5000	3000	10000	5000	200	200	500	3000	5000	50...30000
Integr.	1000	1000	1000	500	200	0	0	0	0	0...30000

2.14 tEMP. Start Thermoregulation

 	The function menu is activated (see §2.1). In order to leave the funtion menu, turn the rotary knob until the message *Temp* is displayed.
Set	Confirm with set key.
	Thermoregulation starts, the type of unit is displayed.

3 Alarm messages Polystat Compatible Control

	Level in bath too low.
	Mech. overtemperature protection device has tripped
	Winding thermostat of the pump motor has responded.
	Internal circuit Pt100 sensor faulty or not connected
	External circuit Pt100 sensor faulty or not connected
	Condensation sensor faulty or not connected
	The control unit is installed in a module which is not recognised by the control unit.
	Error in controller hardware. Inform Service ☎.
	EEPROM error, notify Service ☎.
	Unplug the unit, notify Service ☎. Exchange Polystat Compatible Control
	Automatic cutout not activated. Turn the rotary knob to start it.
	In addition, the *Cond* message is displayed as soon as the condensation temperature exceeds 50°C. The cooling capacity is reduced. The alarm does not lead to deactivation of the unit.

huber

Digital Thermostat
constant temperature bath

polystat CC1, CC2, CC3

Einhängethermostate mit Plug & Play Technologie - Mikroprozessorgesteuert, einfache Bedienung mit Drehgeber und Digitalanzeige. Starke Druckpumpe, benetzte Teile aus Edelstahl oder hochwiderstandsfähigem Kunststoff. Alle Modelle mit 3 Jahren Garantie auf die Elektronik. 3 Modelle zur Auswahl:

Polystat cc1, mit Niveauschutz (Schwimmerschalter) und einstellbarem Übertemperaturschutz für unbeaufsichtigten Dauerbetrieb mit brennbaren und nicht brennbaren Flüssigkeiten (FL). Zusätzliche Sicherheit durch maximalen und minimalen Sollwert. Max. Temperatur 200°C.
Polystat cc2 (62), wie Polystat cc1, jedoch mit Programmgeber (5 Schritte), Führungsregler für externe Temperierung, 3 Fixtemperaturen und einfacher Rampenfunktion. Max. Temperatur 200°C.
Polystat cc3 (63), wie Polystat cc2, jedoch mit dem kompletten Funktionsumfang der Compatible Control Thermostate: Programmgeber (50 Schritte aufteilbar auf 10 Programme), Schnittstellen RS232, RS485 und analog (4...20mA) für bidirektionale Kommunikation. Anschluss für seriellen Drucker. Max. Temperatur 200°C.

New Immersion Circulators with Plug&Play Technology - microprocessor controlled, easy handling with encoder and digital display. Powerful force pump, moistened parts in stainless steel or high-resistant plastics. All models with 3 years warranty for electronic. 3 models available:

Polystat cc1, with level protection (float switch) and adjustable overtemperature protection for continuous operation without personal assistance for using flammable and non-flammable liquids (FL). Maximum and minimum setpoint for additional safety. Max. temperature 200°C.
Polystat cc2 (62), similar to Polystat cc1, but with programmer (5 steps), temperature sequence controller for external thermoregulation, 3 fixtemperatures and easy ramping function. Max. temperature 200°C.
Polystat cc3 (63), similar to Polystat cc2, but with all functions of the Compatible Control Thermostats: Programmer (50 steps, divisible into 10 programmes) and interfaces RS232, RS485 and analog (4...20mA) for bidirectional communication. Serial printer output. Max. temperature 200°C.

Technische Daten	**Technical Data**	**Polystat cc1-S3**	**cc2 (62)-S3**	**cc3 (63)-S3**
Arbeitstemperaturbereich	Operating temperature range		25...200°C	
mit Wasserkühlung	with water cooling		20...200°C	
mit Kühlgerät	with refrigeration chiller		-30..200°C	
Temperaturkonstanz bei 70°C (15l)	Temperature stability at 70°C (15 l bath)		0,02 K (DIN 58966)	
Temperatureinstellung	Temperature adjustment		digital	
Temperaturanzeige	Temperature indication		digital	
Absolutgenauigkeit	absolute accuracy	kalibrierbar / setup for calibration		
Temperaturfühler	Temperature sensor		Pt100	
Anschluss externer Fühler	connection external sensor	---	Pt100	Pt100
externer Programmeingang	external program input	---	---	4-20mA
Schreiber Ausgang	Recorder output	---	---	4-20mA
Sicherheitsklasse	Safety classification		FL	
Heizleistung	Heating capacity		1,0 kW	
Druckpumpe Anschluß 12mm	Force pump adapter nom 12 mm		10 l/min max.	
Anschluß 8 mm	adapter nom 8 mm		7 l/min max.	
Förderhöhe (Druck)	Pressure		0,2 bar max.	
Pumpenanschluß	Pump connection		M16x1	
Abmessungen B x T x H	Overall dimension w x l x h		120 x 135 x 300 mm	
Eintauchtiefe	immersion depht		150 mm	
Gewicht, netto	Net weight		4,0 kg	
Netzanschluss	Power supply requirement		110-120 V ~ 50/60 Hz	
Leistungsaufnahme/Absicherung	Power input / fuse		2100 Watt 10 A	
Bestell-Nr.	**Order-No.**	**688.0001-S3**	**688.0002-S3**	**688.0003-S3**
ab Fert.Nr.	**from serial no.**			**V1.0**

Zubehör* und Peripherie: Kühlschlange für Wasserkühlung, Pumpenadapter für externe Temperierung, Schlauchstutzen NW 8/ NW 12, Blindstopfen und Überwurfmuttern M16x1, Mikroverschraubungen, Verbindungsschläuche, Verbindungskabel*. Temperierbehälter aus Polycarbonat und Edelstahl und Einsätze für Küvetten und Laborglas.

Accessoires* and periphery: Cooling coil for water cooling, pump adapter for external thermoregulation, adapter nom. dia 8 mm/ 12 mm, dummy plugs and sleeve nuts thread M16x1, micro boltings, connection tubes, connection cable*. Waterbathes in polycarbonat and stainless steel and units for cells and glasses.

Peter Huber Kältemaschinenbau GmbH Werner-von-Siemens-Str. 1 D-77656 Offenburg Tel 0781/96030 Fax 0781/57211

huber

Digitaler Wärme-Thermostat
Circulator bath

polystat 201

Umwälzthermostate mit Plug & Play Technologie - Mikroprozessorgesteuert, einfache Bedienung mit Drehgeber und Digitalanzeige. Starke Druckpumpe, benetzte Teile aus Edelstahl oder hochwiderstandsfähigem Kunststoff. Alle Modelle mit 3 Jahren Garantie auf die Elektronik. Kühlschlange für Wasserkühlung. Max. Temperatur 200°C. 3 Modelle zur Auswahl:

Polystat 201-1, mit Niveauschutz (Schwimmerschalter) und einstellbarem Übertemperaturschutz für unbeaufsichtigten Dauerbetrieb mit brennbaren und nicht brennbaren Flüssigkeiten (FL). Zusätzliche Sicherheit durch maximalen und minimalen Sollwert.
Polystat 201-2, wie Polystat 201-1, jedoch mit Programmgeber (5 Schritte), Führungsregler für externe Temperierung, 3 Fixtemperaturen und einfacher Rampenfunktion.
Polystat 201-3, wie Polystat 201-2, jedoch mit dem kompletten Funktionsumfang der Compatible Control Thermostate: Programmgeber (50 Schritte aufteilbar auf 10 Programme), und Schnittstellen RS232, RS485 und Analog (4...20mA) für bidirektionale Kommunikation (FL). Anschluss für seriellen Drucker.

New Circulators with Plug&Play Technology - microprocessor controlled, easy handling with encoder and digital display. Powerful force pump, moisted parts in stainless steel or high-resistant plastics. All models with 3 years warranty for electronic. Cooling coil for (tap) water. Max. temperature 200°C. 3 models available:

Polystat 201-1, with level protection (float switch) and adjustable overtemperature protection for continuous operation without personal assistance for using flammable and non-flammable liquids (FL). Maximum and minimum setpoint for additional safety..
Polystat 201-2, similar to Polystat 201-1, but with programmer (5 steps), temperature sequence controller for external thermoregulation, 3 fixtemperatures and easy ramping function.
Polystat 201-3, similar to Polystat 201-2, but with all functions of the Compatible Control Thermostats: Programmer (50 steps, divisible into 10 programmes) interfaces RS232, RS485 and analog (4...20mA) for bidirectional communication (FL). Serial printer output.

Technische Daten	**Technical Data**	**polystat 201-1-S3**	**201-2-S3**	**201-3-S3**
Arbeitstemperaturbereich	Operating temperature range		70...200°C	
mit Wasserkühlung	with water cooling		20...200°C	
mit Kühlgerät	with refrigeration chiller		-30..200°C	
Temperaturkonstanz bei 70°C (15 l)	Temperature stability at 70°C (15 l)		0,05 K (DIN 58966)	
Temperatureinstellung	Temperature adjustment		digital	
Temperaturanzeige	Temperature indication		digital	
Absolutgenauigkeit	absolute accuracy	kalibrierbar / setup for calibration		
Temperaturfühler	Temperature sensor		Pt100	
externer Temperaturfühler	external Temperature sensor	---	Pt100	Pt100
externer Programmeingang	external program input	---	---	4-20mA
Schreiber Ausgang	Recorder output	---	---	4-20mA
Sicherheitsklasse	Safety classification		FL	
Heizleistung	Heating capacity		1,0 kW	
Druckpumpe Anschluß 12mm	Force pump (adapter nom 12 mm)		10 l/min max.	
Anschluß 8 mm	(adapter nom 8 mm)		7 l/min max.	
Förderhöhe (Druck)	Pressure		0,2 bar max.	
Pumpenanschluss	Pump connection		M16x1	
Pumpenanschluss für Schlauch	Pump connections for hose		NW8/ NW12	
Füllvolumen max.	Bath capacity max.		1,8 lit.	
Badöffnung Durchmesser / Tiefe	Bath opening diameter / depth		25 mm / 150 mm	
Abmessungen B x T x H	Overall dimension w x l x h		150 x 215 x 350 mm	
Arbeitshöhe Bad	Heith of bath opening		190 mm	
Gewicht, netto	Net weight		6,5 kg	
Netzanschluss	Power supply requirement		110-120 V ~ 50/60 Hz	
Leistungsaufnahme/Absicherung	Power input / fuse		2100 Watt 10 A	
Bestell-Nr.	**Order-No.**	**685.0001-S3**	**685.0002-S3**	**685.0002-S3**
ab Fert.Nr.	**from serial no.**			**V1.0**

Zubehör* und Peripherie: Schlauchstutzen NW 8*/ NW12*, Blindstopfen* und Überwurfmuttern M16x1*, Verbindungsschläuche, Verbindungskabel.

Accessoires* and periphery: adapter nom. dia 8 mm*/ 12 mm*, dummy plugs* and sleeve nuts thread M16x1*, connection tubes, connection cable.

Peter Huber Kältemaschinenbau GmbH Werner-von-Siemens-Str. 1 D-77656 Offenburg Tel 0781/96030 Fax 0781/57211

huber

Digitaler Wärme-Thermostat
Circulator bath

polystat 202

Umwälzthermostate mit Plug & Play Technologie - Mikroprozessorgesteuert, einfache Bedienung mit Drehgeber und Digitalanzeige. Starke Druckpumpe, benetzte Teile aus Edelstahl oder hochwiderstandsfähigem Kunststoff. Alle Modelle mit 3 Jahren Garantie auf die Elektronik. Kühlschlange für Wasserkühlung. Max. Temperatur 200°C. 3 Modelle zur Auswahl:

Polystat 202-1, mit Niveauschutz (Schwimmerschalter) und einstellbarem Übertemperaturschutz für unbeaufsichtigten Dauerbetrieb mit brennbaren und nicht brennbaren Flüssigkeiten (FL). Zusätzliche Sicherheit durch maximalen und minimalen Sollwert.
Polystat 202-2, wie Polystat 202-1, jedoch mit Programmgeber (5 Schritte), Führungsregler für externe Temperierung, 3 Fixtemperaturen und einfacher Rampenfunktion.
Polystat 202-3, wie Polystat 202-2, jedoch mit dem kompletten Funktionsumfang der Compatible Control Thermostate: Programmgeber (50 Schritte aufteilbar auf 10 Programme), Führungsregler für externe Temperierung und Schnittstellen RS232, RS485 und Analog (4...20mA) für bidirektionale Kommunikation (FL). Anschluss für seriellen Drucker.

New Circulators with Plug&Play Technology - microprocessor controlled, easy handling with encoder and digital display. Powerful force pump, moisted parts in stainless steel or high-resistant plastics. All models with 3 years warranty for electronic. Cooling coil for (tap) water. Max. temperature 200°C. 3 models available:

Polystat 202-1, with level protection (float switch) and adjustable overtemperature protection for continuous operation without personal assistance for using flammable and non-flammable liquids (FL). Maximum and minimum setpoint for additional safety.
Polystat 202-2, similar to Polystat 202-1, but with programmer (5 steps), temperature sequence controller for external thermoregulation, 3 fixtemperatures and easy ramping function.
Polystat 202-3, similar to Polystat 202-2, but with all functions of the Compatible Control Thermostats: Programmer (50 steps, divisible into 10 programmes), interfaces RS232, RS485 and analog (4...20mA) for bidirectional communication (FL). Serial printer output.

Technische Daten	**Technical Data**	**polystat 202-1-S3**	**202-2-S3**	**202-3-S3**
Arbeitstemperaturbereich	Operating temperature range		70...200°C	
mit Wasserkühlung	with water cooling		20...200°C	
mit Kühlgerät	with refrigeration chiller		-30..200°C	
Temperaturkonstanz bei 70°C	Temperature stability at 70°C		0,05 K (DIN 58966)	
Temperatureinstellung	Temperature adjustment		digital	
Temperaturanzeige	Temperature indication		digital	
Absolutgenauigkeit	absolute accuracy	kalibrierbar / setup for calibration		
Temperaturfühler	Temperature sensor		Pt100	
externer Temperaturfühler	external Temperature sensor	---	Pt100	Pt100
externer Programmeingang	external program input	---	---	4-20mA
Schreiber Ausgang	Recorder output	---	---	4-20mA
Sicherheitsklasse	Safety classification		FL	
Heizleistung	Heating capacity		1,0 kW	
Druckpumpe Anschluß 12mm	Force pump (adapter nom 12 mm)		10 l/min max.	
Anschluß 8 mm	(adapter nom 8 mm)		7 l/min max.	
Förderhöhe (Druck)	Pressure		0,2 bar max.	
Pumpenanschluss	Pump connection		M16x1	
Pumpenanschluss für Schlauch	Pump connections for hose		NW8/ NW12	
Füllvolumen	Bath capacity		4,5 lit.	
mit Verdrängereinsatz	with displacement rack		3,1 lit.	
Badöffnung B x T/ Tiefe	Bath opening w x l/ depth		105 x 90 mm / 150 mm	
Abmessungen B x T x H	Overall dimension w x l x h		150 x 285 x 350 mm	
Arbeitshöhe Bad	Heith of bath opening		190 mm	
Gewicht, netto	Net weight		8,3 kg	
Netzanschluss	Power supply requirement		110-120 V ~ 50/60 Hz	
Leistungsaufnahme/Absicherung	Power input / fuse		2100 Watt 10 A	
Bestell-Nr.	**Order-No.**	**686.0001-S3**	**686.0002-S3**	**686.0003-S3**
ab Fert.Nr.	**from serial no.**			**V1.0**

Zubehör* und Peripherie: Schlauchstutzen NW 8*/ NW12*, Blindstopfen* und Überwurfmuttern M16x1*, Verbindungsschläuche, Verbindungskabel.

Accessoires* and periphery: adapter nom. dia 8 mm*/ 12 mm*, dummy plugs* and sleeve nuts thread M16x1*, connection tubes, connection cable.

Peter Huber Kältemaschinenbau GmbH Werner-von-Siemens-Str. 1 D-77656 Offenburg Tel 0781/96030 Fax 0781/57211

huber **Digital Thermostat constant temperature bath** polystat A5, A6, A7, A11, A18

Polystat Badthermostat bestehend aus Einhängerthermostat polystat cc, durchsichtigem Badgefäß und Badbrücke. Badgefäß aus Polycarbonat mit Temperaturbereich bis max. 100°C. Badbrücken für A11 und A18 mit Öffnung für Kühlsonde (z.B. für HUBER Eintauchkühler TC40 - TC100E).
Benennung:
Beispiel: A5-2 durchsichtiges Bad mit 5 Ltr. Füllvolumen, kombiniert mit polystat cc2
A11-3 durchsichtiges Bad mit 11 Ltr. Füllvolumen, kombiniert mit polystat cc3

Polystat bath thermostat consisting of immersion circulators polystat cc, transparent baths and bath bridge. Baths made of polycarbonate with temperature range up to 100°C. Bath bridge for A11 and A18 with bore hole for cooling probe (e.g. for HUBER immersion cooler TC40-TC100E).
name:
example: A5-2 tansparent bath with 5 l bath capacity, in combination with polystat cc2
A11-3 tansparent bath with 11 l bath capacity, in combination with polystat cc3

Technische Daten	**Technical Data**	**A5-1**	**A5-2**	**A5-3**
Füllvolumen.	Bath capacity		5 lit.	
Badöffnung B x T / Badtiefe	Bath opening w x l / bath depth		120 x 110 / 150 mm	
Abmessungen B x T x H	Overall dimension w x l x h		132 x 275 x 320 mm	
Gewicht, netto	Net weight		4 kg	
Testglaseinsätze Typ A bis H	tube racks typ A to H		1 St.	
Bestell-Nr.	**Order-No.**		**688.0011-S3** **688.0012-S3** **688.0013-S3**	

Technische Daten	**Technical Data**	**A6-1**	**A6-2**	**A6-3**
Füllvolumen.	Bath capacity		6 lit.	
Badöffnung B x T / Badtiefe	Bath opening w x l / bath depth		120 x 210 / 150 mm	
Abmessungen B x T x H	Overall dimension w x l x h		132 x 375 x 320 mm	
Gewicht, netto	Net weight		4 kg	
Testglaseinsätze Typ A bis H	tube racks typ A to H		2 St.	
Bestell-Nr.	**Order-No.**		**688.0014-S3** **688.0015-S3** **688.0016-S3**	

Technische Daten	**Technical Data**	**A7-1**	**A7-2**	**A7-3**
Füllvolumen	Bath capacity		7 lit.	
Badöffnung B x T / Badtiefe	Bath opening w x l / bath depth		120 x 310 / 150 mm	
Abmessungen B x T x H	Overall dimension w x l x h		132 x 475 x 320 mm	
Gewicht, netto	Net weight		4,5 kg	
Testglaseinsätze Typ A bis H	tube racks typ A to H		3 St.	
Bestell-Nr.	**Order-No.**		**688.0017-S3** **688.0018-S3** **688.0019-S3**	

Technische Daten	**Technical Data**	**A11-1**	**A11-2**	**A11-3**
Füllvolumen.	Bath capacity		11 lit.	
Badöffnung B x T / Badtiefe	Bath opening w x l / bath depth		292 x 165 / 150 mm	
Abmessungen B x T x H	Overall dimension w x l x h		308 x 331 x 325 mm	
Gewicht, netto	Net weight		6,5 kg	
Testglaseinsätze Typ 1 oder 2	tube racks typ 1 or 2		2 St.	
Bestell-Nr.	**Order-No.**		**688.0020-S3** **688.0021-S3** **688.0022-S3**	

Technische Daten	**Technical Data**	**A18-1**	**A18-2**	**A18-3**
Füllvolumen	Bath capacity		18 lit.	
Badöffnung B x T / Badtiefe	Bath opening w x l / bath depth		292 x 325 / 150 mm	
Abmessungen B x T x H	Overall dimension w x l x h		308 x 491 x 325 mm	
Gewicht, netto	Net weight		7,5 kg	
Testglaseinsätze Typ 1 oder 2	tube racks typ 1 or 2		4 St.	
Bestell-Nr.	**Order-No.**		**688.0023-S3** **688.0024-S3** **688.0025-S3**	

Zubehör	**Accessoires:**	**A5**	**A6**	**A7**	**A11**	**A18**
Entleerungshahn	drain cock	6026	6026	6026	6026	6026
Badbrücke	bath bridge	6309	6309	6309	6310	6310

Testglaseinsätze / Test tube racks
aus Acryl für Polycarbonat-Bad A5-A7 max Temperatur 60°C / made of acryl for Polycarbonat bath A5-A7 max temperature 60°C

Typ / Type	**Bohrungen / Bore holes**	**Eintauchtiefe / Depth [mm]**	**Best.Nr. / Order.No.**
A	12 x ø22	60	6028
B	20 x ø17	60	6029
C	20 x ø17	95	6030
D	30 x ø13	55 (Hämolyse)	6031
E	6 x ø30	60	6032
F	36 x ø10	25 (Eppendorf)	6033
G	8 x ø20, 8 x ø13	50	6034
H	6 Küvetten und 8x ø23, 2 x ø34 6 cuvettes and 8x ø23, 2 x ø34	50	6036
aus Edelstahl für Bad A11-A18 / made of staliness steel for bath A11-A18			
1	36 x ø17	100	6037
2	45 x ø13	70	6038

Peter Huber Kältemaschinenbau GmbH Werner-von-Siemens-Str. 1 D-77656 Offenburg Tel 0781/96030 Fax 0781/57211

huber **Digital Thermostat constant temperature bath** polystat B8, B12, B15, B20, B25

Polystat Badthermostat bestehend aus Einhängerthermostat polystat cc, isoliertem Edelstahlbad mit PUR-Gehäuse (B8, B12, B20), bzw. mit Edelstahlmantel (B15, B25) und Badbrücke. Badbrücken mit Öffnung für Kühlsonde (z.B. für HUBER Eintauchkühler TC40 - TC100E).
Benennung:
Beispiel: B8-2 Edelstahlbad mit 8 Ltr. Füllvolumen, kombiniert mit polystat cc2
B25-3 Edelstahlbad mit 25 Ltr. Füllvolumen, kombiniert mit polystat cc3

Polystat bath thermostat consisting of immersion circulators polystat cc, insulated stainless steel bath with PUR-housing (B8,B12,B20), resp. with housing made of stainless steel (B15, B25) and bath bridge. Bath bridge with bore hole for cooling probe (e.g. for HUBER immersion cooler TC40-TC100E), and
name:
example: B8-2 stainless steel bath with 8 l bath capacity, in combination with polystat cc2
B25-3 stainless steel bath with 25 l bath capacity, in combination with polystat cc3

Technische Daten	**Technical Data**	**B8-1**	**B8-2**	**B8-3**
Arbeitstemperaturbereich	Operating temperature range		max 120°C	
Füllvolumen.	Bath capacity		8,5 lit.	
Badöffnung B x T / Badtiefe	Bath opening w x l / bath depth		235 x 168 / 150 mm	
Abmessungen B x T x H	Overall dimension w x l x h		290 x 350 x 375 mm	
Gewicht, netto	Net weight		11 kg	
Bestell-Nr.	**Order-No.**	**688.0026-S3**	**688.0027-S3**	**688.0028-S3**

Technische Daten	**Technical Data**	**B12-1**	**B12-2**	**B12-3**
Arbeitstemperaturbereich	Operating temperature range		max 120°C	
Füllvolumen	Bath capacity		12 lit.	
Badöffnung B x T / Badtiefe	Bath opening w x l / bath depth		300 x 193 / 150 mm	
Abmessungen B x T x H	Overall dimension w x l x h		355 x 380 x 375 mm	
Gewicht, netto	Net weight		15 kg	
Testglaseinsätze Typ 1 bis 4	tube racks typ 1 to 4		2 St.	
Bestell-Nr.	**Order-No.**	**688.0029-S3**	**688.0030-S3**	**688.0031-S3**

Technische Daten	**Technical Data**	**B15-1**	**B15-2**	**B15-3**
Arbeitstemperaturbereich max	Operating temperature range max		200°C	
Füllvolumen.	Bath capacity		15 lit.	
Badöffnung B x T / Badtiefe	Bath opening w x l / bath depth		300 x 193 / 200 mm	
Abmessungen B x T x H	Overall dimension w x l x h		355 x 380 x 415 mm	
Gewicht, netto	Net weight		16 kg	
Testglaseinsätze Typ 1 bis 4	tube racks typ 1 to 4		2 St.	
Bestell-Nr.	**Order-No.**	**688.0032-S3**	**688.0033-S3**	**688.0034-S3**

Technische Daten	**Technical Data**	**B20-1**	**B20-2**	**B20-3**
Arbeitstemperaturbereich max	Operating temperature range max		120°C	
Füllvolumen.	Bath capacity		20 lit.	
Badöffnung B x T / Badtiefe	Bath opening w x l / bath depth		300 x 370 / 150 mm	
Abmessungen B x T x H	Overall dimension w x l x h		355 x 558 x 375 mm	
Gewicht, netto	Net weight		17 kg	
Testglaseinsätze Typ 1 bis 4	tube racks typ 1 to 4		4 St.	
Bestell-Nr.	**Order-No.**	**688.0035-S3**	**688.0036-S3**	**688.0037-S3**

Technische Daten	**Technical Data**	**B25-1**	**B25-2**	**B25-3**
Arbeitstemperaturbereich max	Operating temperature range max		200°C	
Füllvolumen.	Bath capacity		25 lit.	
Badöffnung B x T / Badtiefe	Bath opening w x l / bath depth		300 x 370 / 200 mm	
Abmessungen B x T x H	Overall dimension w x l x h		355 x 558 x 415 mm	
Gewicht, netto	Net weight		19 kg	
Testglaseinsätze Typ 1 bis 4	tube racks typ 1 to 4		4 St.	
Bestell-Nr.	**Order-No.**	**688.0038-S3**	**688.0039-S3**	**688.0040-S3**

Zubehör	**Accessoires:**	**B8**	**B12**	**B15**	**B20**	**B25**
Entleerungshahn	drain cock	6026	6026	6026	6026	6026
Badbrücke	bath bridge	6303	6308	6308	6308	6308
variabl. Stellboden	var. Bottom		6297	6297	6298	6298
Bad-Deckel vorn	bath cover front	6214	6023	6023	6023	6023
Bad-Deckel hinten	bath cover back				6024	6024
Bad-Deckel einteilig	bath cover 1-piece				6025	6025

Testglaseinsätze / Test tube racks
aus Edelstahl für Bad B12-B25 / made of staliness steel for bath B12-B25

Typ / Type	**Bohrungen / Bore holes**	**Eintauchtiefe / Depth [mm]**	**Best.Nr. / Order.No.**
1	36 x ø17	100	6037
2	45 x ø13	70	6038
3	46 x ø17	100	6039
4	58 x ø13	70	6040

Peter Huber Kältemaschinenbau GmbH Werner-von-Siemens-Str. 1 D-77656 Offenburg Tel 0781/96030 Fax 0781/57211

huber

Digital Thermostat
constant temperature bath

polystat
K6-1, K6-2, K6-3

Bad- und Umwälzthermostat mit luftgekühlter Kältemaschine. Plug & Play Technologie - Mikroprozessorgesteuert, einfache Bedienung mit Drehgeber und Digitalanzeige. Starke Druckpumpe, benetzte Teile aus Edelstahl oder hochwiderstandsfähigem Plastik. Alle Modelle mit 3 Jahren Garantie auf die Elektronik.
3 Modelle zur Auswahl:

Polystat K6-1, mit Niveauschutz (Schwimmerschalter) für unbeaufsichtigten Dauerbetrieb mit nicht brennbaren Flüssigkeiten (FL). Zusätzliche Sicherheit durch maximalen und minimalen Sollwert. Max. Temperatur 200°C.

Polystat K6-2, wie Polystat cc1 jedoch mit einstellbarem Übertemperaturschutz (FL), Programmgeber (5 Schritte), 3 Fixtemperaturen und einfacher Rampenfunktion. Max. Temperatur 200°C.

Polystat K6-3, mit dem kompletten Funktionsumfang der Compatible Control Thermostate: Programmgeber (50 Schritte aufteilbar auf 10 Programme), Führungsregler für externe Temperierung und Schnittstellen RS232, RS 485 und Analog (4...20mA) für bidirektionale Kommunikation (FL). Anschluß für seriellen Drucker. Max. Temperatur 200°C.

Circulator bath with air-cooled refrigeration unit. Plug&Play Technology - microprocessor controlled, easy handling with encoder and digital display. Powerful force pump, moisted parts in stainless steel or high-resistant plastics. All models with 3 years warranty for electronic. 3 models available:

Polystat K6-1, with level protection (float switch) for continuous operation without personal assistance if using non-flammable liquids (FL). Maximum and minimum setpoint for additional safety. Max. temperature 200°C.

Polystat K6-2, similar to Polystat cc1, but with adjustable overtemperature protection (FL), programmer (5 steps), 3 fixtemperatures and easy ramping function. Max. temperature 200°C.

Polystat K6-3, with all functions of the Compatible Control Thermostats: Programmer (50 steps, divisible into 10 programs) temperature sequence controller for external thermoregulation and interfaces RS 232, RS 485 and analog (4...20mA) for bidirectional communication (FL). Serial printer output. Max. temperature 200°C.

Technische Daten	**Technical Data**	**Polystat K6-1-S3**	**K6-2-S3**	**K6-3-S3**
Arbeitstemperaturbereich	Operating temperature range		-25...200°C	-
Temperaturkonstanz bei 70°C (15l)	Temperature stability at 70°C (15l)		0,02 K (DIN 58966)	
Temperatureinstellung	Temperature adjustment		digital	
Temperaturanzeige	Temperature indication		digital	
Absolutgenauigkeit	absolute accuracy		kalibrierbar / setup for calibration	
Temperaturfühler	Temperature sensor		Pt 100	
externer Programmeingang	external program input	---	---	4-20mA
Schreiber Ausgang	Recorder output	---	---	4-20mA
Sicherheitsklasse	Safety classification		FL	
Heizleistung	Heating capacity		1,0 kW	
Kälteleistung bei 0°C	Cooling capacity at 0°C		0,15 kW	
bei -10°C	at -10°C		0,10 kW	
bei -20°C	at -20°C		0,05 kW	
Kältemittel	Refrigerent		R134a	
Füllvolumen max.	Bath capacity max		4,5 l	
Badöffnung B x T / Badtiefe	Bath opening w x l / bath depth		150 x 140 / 150 mm	
Abmessungen B x T x H	Overall dimension w x l x h		200 x 370 x 535 mm	
Druckpumpe Anschluß 12mm	Force pump (adapter nom 12 mm)		10 l/min max.	
Anschluß 8 mm	(adapter nom 8 mm)		7 l/min max.	
Förderhöhe (Druck)	Pressure		0,2 bar max.	
Pumpenanschluß/ für Schlauch	Pump connection/ for hose		M16x1 / NW8/NW12	
Gewicht, netto	Net weight		19 kg	
Netzanschluss	Power supply requirement		110-120 V ~ 50/60 Hz	
Leistungsaufnahme/Absicherung	Power input / fuse		2550 Watt 10 A	
Bestell-Nr.	**Order-No.**	**666.0011-S3**	**666.0012-S3**	**666.0013-S3**
ab Fert.Nr.	**from serial no.**			**V1.0**

Zubehör und Peripherie: Pumpenadapter für externe Temperierung*, Schlauchstutzen NW 8*/ NW12*, Blindstopfen* und Überwurfmuttern M16x1*, Mikroverschraubungen, Verbindungsschläuche Verbindungskabel*, Einsätze für Küvetten und Laborglas.

* im Lieferumfang enthalten

Accessoires and periphery: pump adapter for external thermoregulation*, adapter nom. dia 8 mm*/ 12 mm*, dummy plugs* and sleeve nuts thread M16x1*, micro boltings, connection tubes, connection cable*. units for cells and glasses.

* standard equipment

Leistungsangaben gelten bei: Umgebungstemperatur 20°C
Output data go for: room temperature 20°C

Peter Huber Kältemaschinenbau GmbH Werner-von-Siemens-Str. 1 D-77656 Offenburg Tel 0781/96030 Fax 0781/57211

huber

Kältebäder
cooling baths

polystat
K12/ K15/ K20/ K25

Die Kältebäder sind Wasserbäder mit luftgekühlter Kältmaschine. Gehäuse (K12 aus Kunststoff) und Wanne aus Edelstahl. Die Kältemaschine läuft im Dauerbetrieb.
*In Kombination mit Einhängethermostaten sind die Kältebäder bis 200°C einsetzbar (K12 bis 120°C). Die Kältemaschine kann bis 50°C arbeiten.

The cooling baths are water baths with air-cooled refrigerating unit. Housing (K12 of plastic) and tank of stainless steel. The refrigerating unit works continiously.
*Together with the immersion thermostats can the cooling baths be used up to 200°C (K12 up to 120°C). The cooling unit can operate up to 50°C.

Technische Daten			**Technical Data**			**Kältebad K12-S3**
Arbeitstemperaturbereich			Operating temperature range			-20...(50) 120°C*
Kälteleistung	bei	0°C	Cooling capacity	at	0°C	0,18 kW
	bei	-10°C		at	-10°C	0,10 kW
Kältemittel			Refrigerent			R134a
Füllvolumen min.-max.			Bath capacity from - to			8 - 12 lit.
Badöffnung B x T / Badtiefe			Bath opening w x l / bath depth			295 x 320 / 150 mm
Abmessungen B x T x H			Overall dimension w x l x h			350 x 558 x 125 mm
Gewicht, netto			Net weight			20 kg
Netzanschluss			Power supply requirement			110-120 V ~ 50/60 Hz
Leistungsaufnahme/Absicherung			Power input / fuse			326 Watt 6 Amp.
Bestell-Nr.			**Order-No.**			**653.0020-S3**
ab Fert.Nr.			**from Serial No.**			**52180** **V1.3/02**

Technische Daten			**Technical Data**			**Kältebad K15-S3**
Arbeitstemperaturbereich			Operating temperature range			-20...(50) 200°C*
Kälteleistung	bei	0°C	Cooling capacity	at	0°C	0,20 kW
	bei	-10°C		at	-10°C	0,12 kW
Kältemittel			Refrigerent			R134a
Füllvolumen min.-max.			Bath capacity from - to			11 - 15 l
Badöffnung B x T / Badtiefe			Bath opening w x l / bath depth			295 x 320 / 200 mm
Abmessungen B x T x H			Overall dimension w x l x h			355 x 558 x 240 mm
Gewicht, netto			Net weight			19 kg
Netzanschluss			Power supply requirement			110-120 V ~ 50/60 Hz
Leistungsaufnahme/Absicherung			Power input / fuse			326 Watt 6 Amp.
Bestell-Nr.			**Order-No.**			**645.0021-S3**
ab Fert.Nr.			**from Serial.No.**			**46720** **V1.2**

Technische Daten			**Technical Data**			**Kältebad K20-S3**
Arbeitstemperaturbereich			Operating temperature range			-30...(50) 200°C*
Kälteleistung	bei	0°C	Cooling capacity	at	0°C	0,35 kW
	bei	-10°C		at	-10°C	0,30 kW
	bei	-20°C		at	-20°C	0,21 kW
Kältemittel			Refrigerent			R290
Füllvolumen min.-max.			Bath capacity from - to			12 - 20 l
Badöffnung B x T / Badtiefe			Bath opening w x l / bath depth			295 x 500 / 150 mm
Abmessungen B x T x H			Overall dimension w x l x h			355 x 555 x 380 mm
Gewicht, netto			Net weight			33 kg
Netzanschluss			Power supply requirement			110-120 V ~ 50/60 Hz
Leistungsaufnahme/Absicherung			Power input / fuse			360 Watt 6 Amp.
Bestell-Nr.			**Order-No.**			**646.0021-S3**
ab Fert.Nr.			**from Serial.No.**			**46720** **V1.2**

Technische Daten			**Technical Data**			**Kältebad K25-S3**
Arbeitstemperaturbereich			Operating temperature range			-30...(50) 200°C*
Kälteleistung	bei	0°C	Cooling capacity	at	0°C	0,35 kW
	bei	-10°C		at	-10°C	0,30 kW
	bei	-20°C		at	-20°C	0,21 kW
Kältemittel			Refrigerent			R290
Füllvolumen min.-max.			Bath capacity from - to			17 - 25 l
Badöffnung B x T / Badtiefe			Bath opening w x l / bath depth			295 x 500 / 200 mm
Abmessungen B x T x H			Overall dimension w x l x h			355 x 555 x 420 mm
Gewicht, netto			Net weight			35 kg
Netzanschluss			Power supply requirement			110-120 V ~ 50/60 Hz
Leistungsaufnahme/Absicherung			Power input / fuse			360 Watt 6 Amp.
Bestell-Nr.			**Order-No.**			**647.0021-S3**
ab Fert.Nr.			**from Serial.No.**			**46720** **V1.2**

Zubehör	**Accessoires:**	**K12**	**K15**	**K20**	**K25**
Steuerkabel Kältebad-Polystat 640mm	control cable Cooling bath-Polystat	6535	6535	6535	6535
Entleerungshahn	drain cock	6026	6026	6026	6026
Badbrücke	bath bridge	6015	6015	6016	6016
variabl. Stellboden	var. Bottom	6297	6297	6298	6298
Bad-Deckel vorn	bath cover front	6023	6023	6023	6023
Bad-Deckel hinten	bath cover back			6024	6024
Bad-Deckel einteilig	bath cover 1-piece			6025	6025

Peter Huber Kältemaschinenbau GmbH Werner-von-Siemens-Str. 1 D-77656 Offenburg Tel 0781/96030 Fax 0781/57211

huber — Compatible Control Thermostat — CC302

Bad- und Umwälzthermostat. Gehäuse, Bad und alle flüssigkeitsbenetzten Teile aus Edelstahl. Mit Kühlschlange für Wasserkühlung, Druck- und Saugpumpe, Niveauschutz (Schwimmerschalter) und einstellbarem Übertemperaturschutz.

PLUG & PLAY Technologie: Mikroprozessorgesteuerte COMPATIBLE CONTROL Regler mit 3 Jahren Garantie. Alle Regler sind über Kreuz tauschbar und kalibrierfähig. 3 Modelle zur Auswahl:
CC302-1, einfachste Bedienung für unbeaufsichtigten Dauerbetrieb mit brennbaren und nicht brennbaren Flüssigkeiten (FL). Zusätzliche Sicherheit durch maximalen und minimalen Sollwert.
CC302-2, wie CC302-1, jedoch mit Programmgeber (5 Schritte), Führungsregler für externe Temperierung, 3 Fixtemperaturen und einfacher Rampenfunktion.
CC302-3, wie CC302-2, jedoch mit dem kompletten Funktionsumfang der COMPATIBLE CONTROL Thermostate: Programmgeber (50 Schritte aufteilbar auf 10 Programme), Schnittstellen RS232, RS485 und analog (4...20mA) für bidirektionale Kommunikation. Anschluß für seriellen Drucker.

Bath- and circulation-thermostat. Housing, bath and all moisted parts in stainless steel. With cooling coil for water-cooling, pressure- and suction pump, level protection (float switch) and adjustable overtemperature protection.

PLUG & PLAY Technology: Microprocessor controller COMPATIBLE CONTROL with 3-year warranty. The controllers are interchangeable crosswise and can be calibrated. 3 models are available.
CC302-1, with level protection (float switch) and adjustable overtemperature protection for continuous operation without personal assistance for using flammable and non-flammable liquids (FL). Maximum and minimum setpoint for additional safety.
CC302-2, similar to CC302-1, but with programmer (5 steps), temperature sequence controller for external thermoregulation, 3 fixtemperatures and easy ramping function.
CC302-3, similar to CC302-2, but with all functions of the Compatible Control Thermostats: Programmer (50 steps, divisible into 10 programmes) and interfaces RS232, RS485 and analog (4...20mA) for bidirectional communication. Serial printer output.

Technische Daten	**Technical Data**	**CC302-1**	**CC302-2**	**CC302-3**
Arbeitstemperaturbereich	Operating temperature range		60...300°C	
mit Wasserkühlung	with water cooling		20...300°C	
mit Kühlgerät	with refrigeration chiller		-20..300°C	
Temperaturkonstanz bei 70°C	Temperature stability at 70°C		0,02 K (DIN 58966)	
Temperatureinstellung	Temperature adjustment		digital	
Temperaturanzeige	Temperature indication		digital	
Absolutgenauigkeit	absolute accuracy		kalibrierbar / setup for calibration	
Temperaturfühler	Temperature sensor		Pt 100	
externer Programmeingang	external program input	---	---	4-20mA
Schreiber Ausgang	Recorder output	---	---	4-20mA
Sicherheitsklasse	Safety classification		FL	
Heizleistung	Heating capacity		2,0 kW	
Druckpumpe Anschluß 12mm	Force pump (adapter nom 12 mm)		18 l/min max.	
Anschluß 8 mm	(adapter nom 8 mm)			
Förderhöhe (Druck)	Pressure		0,5 bar max.	
Saugpumpe	Suction pump		15 l/min max.	
Saughöhe (Sog)	Suction		0,4 bar max.	
Pumpenanschluß	Pump connection		M16x1	
Füllvolumen max.	Bath capacity max.		8,5 lit.	
mit Verdrängereinsatz	with displacement rack		5,2 lit.	
Badöffnung B x T / Tiefe	Bath opening w x l / depth		180 x 120 / 155 mm	
Abmessungen B x T x H	Overall dimension w x l x h		230 x 365 x 405 mm	
Arbeitshöhe Bad	Heith of bath opening		190 mm	
Gewicht, netto	Net weight		18,2 kg	
Netzanschluß	Power supply requirement		230 V ~ 50 Hz	
Absicherung	fuse		10 A	
Bestell-Nr.	**Order-No.**	**683.0001**	**683.0002**	**683.0003**
ab Fert.Nr.	**from serial no.**		**36180**	**V1.0**

Zubehör und Peripherie: Schlauchstutzen NW 12*, Blindstopfen*, Überwurfmuttern M16x1*, Schlauchstutzen NW 8, Mikroverschraubungen, Verbindungsschläuche, Verdrängereinsatz zur Reduzierung des Badvolumens und Führungsregler für externe Temperierung, digitale Programmgeber, serielles Interface und Stromspannungsschnittstellen. * im Lieferumfang enthalten

Accessoires and periphery: Adapter nom. dia 12 mm*, dummy plugs* and sleeve nuts thread M16x1*, adapter nom. dia 8 mm, micro boltings, connection tubes, displacement rack for reducement of the bath volume and temperature sequence control for external thermoregulation, digital programmers, serial interface and current voltage converter. * standard equipment

Leistungsangaben gelten bei: Wassereintritt 15°C 3 bar, Umgebungstemperatur 20°C
Output data go for: water inlet 15°C 3 bar, room temperature 20°C

Peter Huber Kältemaschinenbau GmbH Werner-von-Siemens-Str. 1 D-77656 Offenburg Tel 0781/96030 Fax 0781/57211

Wärmethermostat CC302 / Heating Thermostat CC302

ab Fert.Nr. 36180 **Ersatzteilliste**

St.	Art.Nr.	Benennung
1	3817	Übertemperaturschutz
1	5562	Drehknopf - ÜT
1	5543	Geräteschalter
1	5544	Entstörfilter
1	5376	Fühler Pt100
1	5594-97	AC-Board-Platine P300
1	2352	Anlasskondensator 4 µF
1	3480	Pumpenmotor
1	2158	Heizung 230V/2kW
	0421	Verschlußschraube M12x1.5
	0422	O-Ring
	6088	Dichtscheibe
	6089	Überwurfmutter M16x1
	6086	Schlauchstutzen NW8
	6087	Schlauchstutzen NW12

from Serial-No. 36180 **List of spare parts**

Qut.	Id.No.	Description
1	3817	overtemperature protection
1	5562	knob - overtemperature
1	5543	appliance switch
1	5544	interferance filter
1	5376	sensor Pt100
1	5594-97	AC-board P300
1	2352	starting condenser(capacitor) 4 µF
1	3480	pump motor
1	2158	heating 230V/2kW
	0421	screw plug M12x1.5
	0422	O-seal
	6088	seal disk
	6089	sleeve nuts M16x1
	6086	hose adapter NW8
	6087	hose adapter NW12

683.0001		**CC302-1**
1	6401	Regler CC1 / controller CC1
683.0002		**CC302-2**
1	6402	Regler CC2 / controller CC2
683.0003		**CC302-3**
1	6403	Regler CC3 / controller CC3

688.0001-S3
688.0002-S3
688.0003-S3
from serial-no. 35079

List of spare parts
polystat cc1-S3
polystat cc2-S3
polystat cc3-S3

Qut.	O.No.	Name	Type
1	3817	overtemperature protection	
1	5562	knob - overtemperature	
1	5543	appliance switch 10A	
1	5544	interferance filter	F022 - 947/007
1	5573	interferance modul	VG-A/230
1	5844	pump motor pre-assebled	
1	0298	stainless steel float	
1	1655	snap switch	DB 2 C - A1LD
1	5376	sensor	Pt100
1	5540	heating	115V/ 1000 W
1	5537	knob controller	
1	0345	power supply cable	
1		AC-board	115V
1		AC-board polystat 61 NFL	115V
1	6401	controller polystat cc1-S3	
1	6402	controller polystat cc2-S3	
1	6403	controller polystat cc3-S3	

Spare Parts List
polystat K6-S3

from Serial No. 35211

Pc.	Order.No.	Description	Type
1	5226	compressor	TLS 4,5F
1	0146	condenser	
1	5389	fan	Typ 4650 N
1	0912	dryer	2 x 4
4	3820	device feet	
1	1328	rocker switch	
	0421	screw plug	M12x1.5
	0422	O-seal	
	6088	seal disc	
	6089	sleeve nut	M16x1
	6086	adapter	NW8
	6087	adapter	NW12

Order.No. 666.0011-S3 **polystat K6-1-S3**

1	6401	controller CC1

Order.No. 666.0012-S3 **polystat K6-2-S3**

1	6402	controller CC2

Order.No. 666.0013-S3 **polystat K6-3-S3**

1	6403	controller CC3

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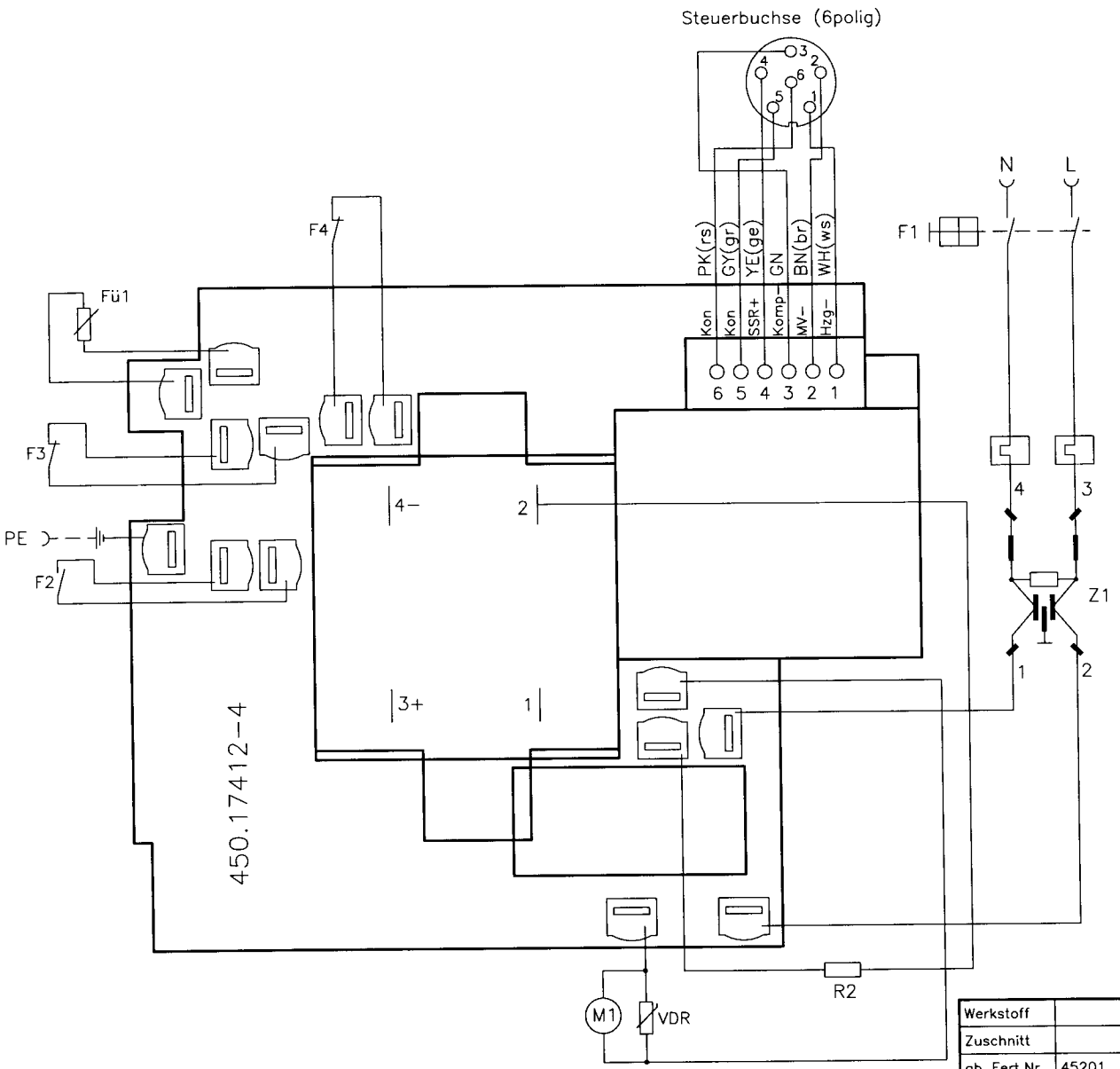

F1 Überstromschutzschalter 10A
F2 Niveauschalter (Schwimmer)
F3 Übertemperaturschutz
F4 Wicklungsthermostat
Fü1 Regelfühler Pt100
M1 Pumpenmotor
R2 Heizung 2000W
Z1 Netzfilter

Werkstoff		gez.	07.11.00/eg	007493
Zuschnitt		gepr.	07.11.00	Rieger
ab Fert.Nr.	45201	Ersatz für	688.3	
bis Fert.Nr.		Ersetzt durch		

M

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D – 77656 Offenburg–Elgersweier

Bezeichnung	Schaltplan
Nr.	688.5
Verwendung für	polstat cc1, cc2, cc3, 201–,202– 110V–120V 50/60Hz

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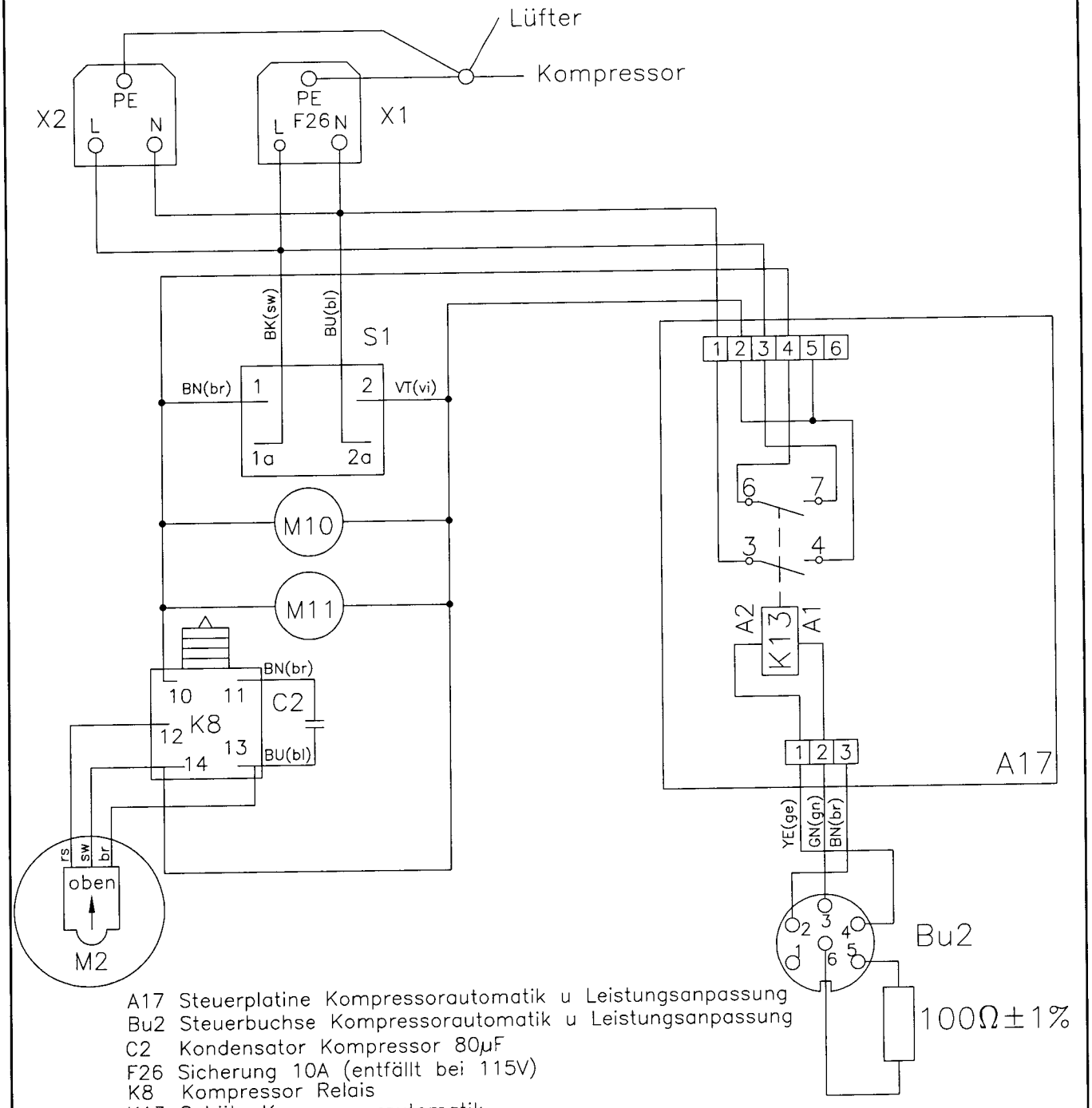

A17 Steuerplatine Kompressorautomatik u Leistungsanpassung
Bu2 Steuerbuchse Kompressorautomatik u Leistungsanpassung
C2 Kondensator Kompressor 80µF
F26 Sicherung 10A (entfällt bei 115V)
K8 Kompressor Relais
K13 Schütz Kompressorautomatik
M10 Lüfter
M11 Lüfter (entfällt bei K6,K12,K15)
M2 Kompressor
S1 Netzschalter
X1 Netzanschlußbuchse (entfällt bei 115V)
X2 Netzanschlußbuchse für polystat
bei K6 Netzstecker

Pos.	kommt vor	Anweisung	Änderung	Datum	Name	Gepr.

Werkstoff		gez.	28.03.01/se	007858
Zuschnitt		gepr.	28.03.01	Boschert
ab Fert.Nr.	46720	Ersatz für	653.2, 653.3	
bis Fert.Nr.		Ersetzt durch		

M 1:1

Peter Huber Kältemaschinenbau GmbH
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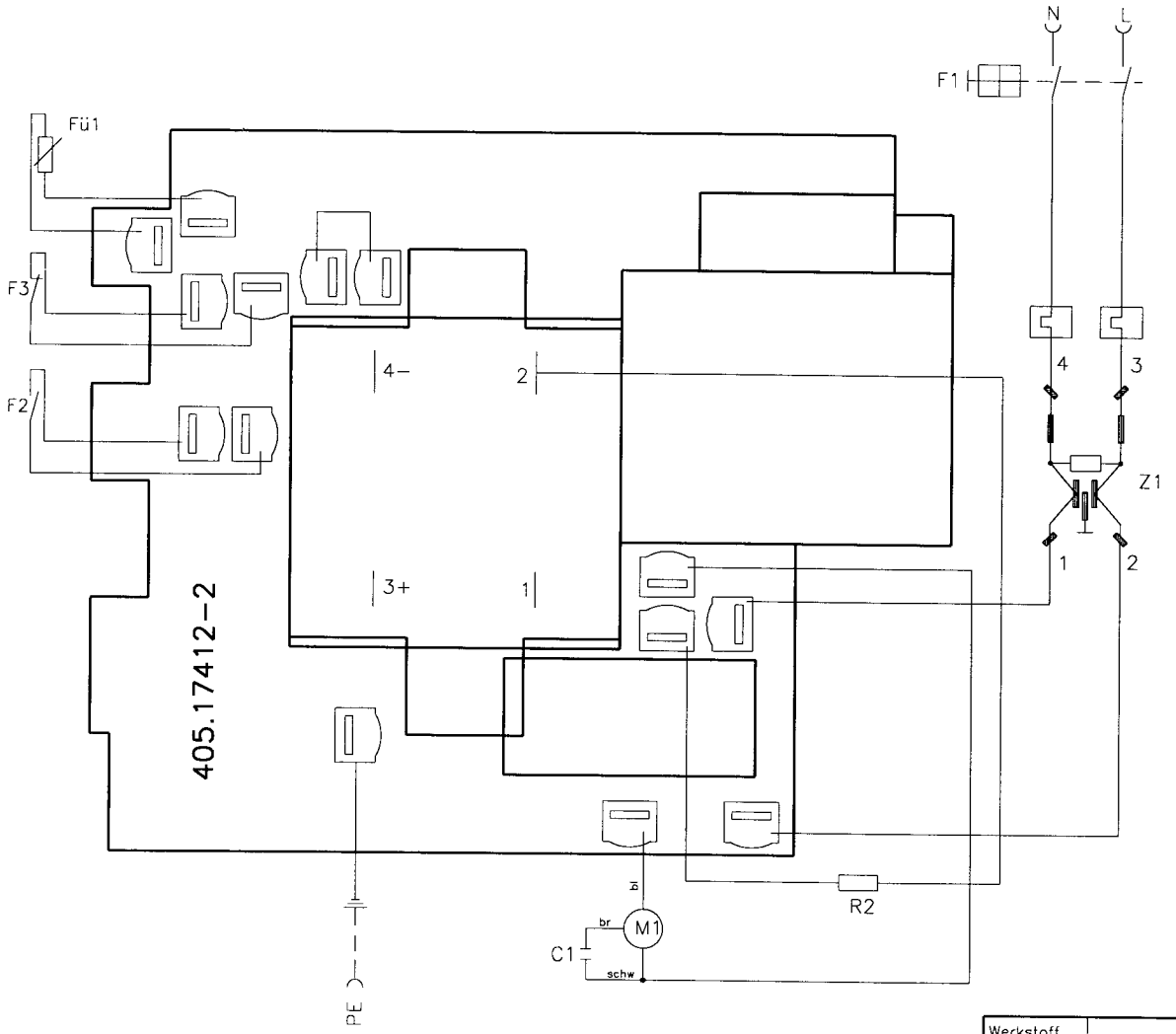
Bezeichnung	Schaltplan
Nr.	653.4
Verwendung für	K6,K12,K15,K20,K25 230V,115V

huber



C1 Kondensator Pumpe 4µF
F1 Überstromschutzschalter 10A
F2 Niveauschalter
F3 Übertemperaturschutz
Fü1 Regelfühler Pt100
M1 Pumpenmotor mit int.Wicklungsschutz
R2 Heizung 2000W
Z1 Netzfilter

Werkstoff		gez.	09.03.98/bü	00 5033	Peter Huber Kältemaschinenbau GmbH
Zuschnitt		gepr.	29.4.98	Rieger	D – 77656 Offenburg–Elgersweier
ab Fert.Nr.	36180	Ersatz für			Bezeichnung: Schaltplan
bis Fert.Nr.	46457	Ersetzt durch	633.2		Nr.: 631
Diese Zeichnung darf ohne die Genehmigung der Geschäftsleitung weder kopiert, noch Dritten zugängig gemacht werden.				M	Verwendung für: cc 302

Short manual Polystat cc1 (61)

(from Software V3.04)

Features of the set-key

The set key is for choosing the set point function or the menu function and, in general, for confirming an input. Changes and new settings have to be confirmed resp. memorized.
In case of a flashing display, the Set key serves as Enter key.

Enter = (Set) when display is blinking

Call up the Menu functions

Press the set key and switch on the thermostat at the mains switch.
Wait is displayed. Release the set key. After approx. 5 Sec. the first function of the function menu Limit is displayed. You can leaf through the different functions of the function menu using the encoder. By pressing the set key, the chosen function is called up.

Setting Parameters

With the help of the  (encoder) the chosen function can be activated.