

OPERATING INSTRUCTIONS

Compatible Control Thermostat

u n i s t a t c c

1,5 kW

Order-No. 667.0005

from Serial-No. 51217

220 – 240 V 1 ~ 50/60 Hz

400 – 440 V 2 ~ N 50/60 Hz

Contents

1.3/ 7.00

1.	Preparation	1
1.1	Power connection	1
1.2	Thermoregulation liquids	2
1.3	Filling of the bath	2
2	Internal Thermoregulation	2
3.	External Thermoregulation	2
3.1	External closed thermoregulation:	2
3.2	External open thermoregulation	2
4.	Starting	3
5.	Disturbances / Alarm Settings	3
5.1	Over-Temperature an Level-Protection	3
6.	Maintenance	4
7.	Service	4
8.	Transport	4

General Information

The unistat cc is an air-cooled cooling / heating thermostat with a temperature range:
from -40°C to +200°C.

The microprocessor-controller is exchangeable. The controller includes a microprocessor controller able to communicate with integrated programmer, external regulator and interfaces: analogue and RS232/ RS485.

1. Preparation

Before switching on pay attention to the following references:

The unit must be installed on a flat, level surface. A minimum distance of 15 cm must be kept free at the front and back of the cooler in order to insure a free in- and outlet of the cooling air.
Avoid light particles (paper...) in the drawing-in area at the cabinet's front.
Protect the unit against moisture.

1.1 Power connection



Please keep to the specifications of the actual version of EN 61010-1, if you integrate the thermostat (i.e. without plug) into your electrical installation.
Hard-wired units and Polyphase-Units have to have a switch or a circuit breaker as separation device.

It is your obligation:

- to install a switch or a circuit breaker in the installation of your building.
- to place this near to the unit so that it is easily reached by the user.
- to precisely mark this switch as separation device for this unit.

Units that are connected to the electricity via plug:

The cable must not be longer than 3 m (VDE 0411, part 100).



The connection of the three-phase unit to the electricity or the change of voltage of the unit must only be carried out by a competent electrician.

Please see nameplate and technical information for voltage and fuse protection.

230V connection:

Connect the thermostat to a 230V / 1~ / N / PE, 50 Hz power supply. For the fuses, please refer to the technical subsidiaries.

400V connection:

Connect the thermostat to a 400V / 2~ / N / PE, 50 Hz power supply. For the fuses, please refer to the technical subsidiaries.

1.2 Thermoregulation liquids

We would recommend that a suitable fluid from our range is selected.
When selecting a suitable fluid please consider the following points:

- You can use the thermostat in safety class FL if you use thermostat fluids with a flash point above 40°C and the overtemperature protection is set to a minimum of 5K below the flash point.
- The thermofluid selected must be compatible for use with stainless steel of German Standard 1.4301 (V2A) and Viton.
- The viscosity of the thermostat fluid must not exceed 50 mm²/s at the minimum operating temperature.
- Only use liquids whose freezing point is at least 20 K below operation temperature.
- Do not use thermostat fluids containing ether, esters or amines. These additives are to be found in many kinds of glycol.
- The density of the thermofluid must not exceed 1 kg/dm³.
- Do not use demineralized water, mineral water, sea water or CaCl₂ solutions.

1.3 Filling of the bath

Filling of the bath 15mm below the upper rim. Be aware of the extension of the volume with mounting temperatures, with silicon oil ca. 12% per 100K.

2 Internal Thermoregulation

Close the pump sockets by the screw plugs or check the tightness of the tube connections.

3. External Thermoregulation

3.1 External closed thermoregulation:

Remove the sleeve nuts, thread 16x1 at the pump connections and replace the seal disks at the pump connections by the adapter, nom. dia 12/ nom dia 8 which are standard equipment. You can connect the external consumer impervious to liquid by tubes. After having switched on the circulation it could be that you have to refill thermoregulation liquid.

3.2 External open thermoregulation

Connect the external open system the same way as the external closed system.



However pay attention to the following references:

If you use an external open system it might be that the lower vessel overflows when the unit is not working. If working, it will be necessary to throttle the pressure socket with the help of a drain cock in order to avoid that the thermoregulation fluid runs out of the thermostat completely.

4. Starting

Switch on the unit by the black main switch at the front of the cabinet. You can choose the compressor mode at the compatible control using the keys 'set' + 'alarm' + 'print' + 'Δ'. The message 'comp' is displayed. By repressing the key 'Δ' you can choose the following operating states: 'on', 'off', 'auto'. Each time you reuse the key 'Δ' the next operating state is displayed.

For your information we briefly explain the following terms:

Automatic compressor control: The regulator switches the refrigeration unit on or off according to the required heating or cooling capacity.

Power adjustment: The power input of the unit optimizes to a minimal value.

Compressor mode 'on': The cooling capacity adjusts to the momentary power requirements (Power adjustment). However, the automatic compressor control is not activated and the refrigeration unit is working permanently.

Compressor mode 'AUTO': Power adjustment is activated and the automatic compressor control is switched on.

Compressor mode 'off': The refrigeration unit switches off after about 20 seconds.

Additionally, the compressor can work permanently: unplug the main plug and remove the Compatible Control. At the end of the guideway of the Compatible Control you can see a switch, which in position '1' does not respect the mode chosen. In this position, the compressor is always switched on, the power adjustment, however, is activated.



This switch is particularly important when working with a digital slide-in module in a unit with black main switch. In that case the switch in the guideway has to be in position '1' in order to maintain the cooling capacity.

For further functions and settings please refer to the operating instruction of compatible control.

After the unit is switched on please check the tightness of the connection or hose lines (s. 1.3)

5. Disturbances / Alarm Settings

5.1 Over-Temperature and Level-Protection

The over-temperature and level-protection are security installations which cut off the system. If one of above mentioned security installations is activated "error" is displayed. You can restart the unit by the main switch after having cleared the error. Check the functioning of over temperature and level protection regularly, e.g. monthly.

The level protection interrupts as soon as the bath's liquid level has reached the minimum level. This appears when the pump draws in air from the bath over the heating.

The over-temperature limiter (overheat) at the cabinet's front above the main switch can only be set by a screw-driver. After having initiated alarm, the overheat reverses itself as soon as the thermoregulation liquid has cooled down. Adjust the over temperature protection to a temperature of max –5K flash point. Check the correct functioning of the over temperature protection (e.g. for a lower temperature).

The heating thermostat corresponds to the security class FL when using non-flammable liquids or flammable liquids whose flame points are over 40°C and when they are not heated over 5K below the flame point.

For further disturbances / alarm messages please refer to the operating instructions of compatible control § alarm messages

6. Maintenance

The cooling air for the refrigeration unit is drawn in at the back of the cabinet through the condenser. Please see that there are no light particles near this drawing-in area.

The condenser should be cleaned from time to time. With the help of a brush or vacuum cleaner you can clean the lamina of the black condenser at the back of the cabinet.

After a power failure the unit switches on by itself.

7. Service

In case of defect you may exchange the slide-in-module yourself.
For this remove the safety screw at the top of the compatible control.

Urgent request:

Please keep to your claim on guaranty and later on the very favourable exchange price by keeping the lead seal at the digital slide-in-module uninjured. Slide-in-modules without lead seal can in certain circumstances not be exchanged.

8. Transport

The unistat cc does not need a transport protection.

When transporting the thermostat you are neither allowed to tilt it nor to put it on its side.

See that the unit is packed sufficiently and mark the vertical position with arrows on the packing.

Constant temperature circulator bath with air-cooled refrigerating unit, CFC- and H-CFC free, heating capacity 1,5 kW, housing of stainless steel, force and suction pump, pump connection with external thread M16x1, adapter nom. dia 8 mm and nom. dia 12 mm, adjustable excess temperature protection and low liquid level protection, safety classification FL, compatible control microprocessor slide in module with integrated programmer, temperature sequence control, interfaces RS232, RS485 and analog (4...20mA) for bidirectional communication, connection for external Pt100, 10 fix temperatures, settings for safety and alarm functions a.m.m.

Technical Data

unistat cc

Operating temperature range	-40...200 °C
Temperature stability at -10°C	0.02 K
Temperature adjustment	digital
Temperature indication	digital
Resolution	0.1 K
Internal temperature sensor	Pt100
Sensor external connection	Pt100
External program input	4-20mA, 1-5V variabel
Recorder output	4-20mA, 1-5V variabel
Safety classification	FL
Cooling capacity	
at 100°C	0.5 kW
at 20°C	0.45 kW
at 0°C	0.43 kW
at -20°C	0.35 kW
at -30°C	0.15 kW
at -40°C	0.01 kW
Refrigerant	R507
Heating capacity	1.5 kW
Force pump max./ pressure of pump max.	18 l/min / 0.6 bar
Suction pump max./ suction max.	12 l/min / 0.3 bar
Pump connection/ for hose	M16x1 NW8/12
max. permissible kin. viscosity	50 mm ² /s
Bath volume	8.5 l
Bath volume with displacement rack	4.3 l
Width bath opening WxD	250 x 110
Bath depth	200 mm
Overall dimensions WxDxH	355x502x440 mm
Height of bath opening	260 mm
Net weight	42 kg
Power supply requirement	220-240V 1~ 50/60Hz
Power input	2.66 kW
Fuse	16A
Power supply requirement switchable	400/440V 2~N 50/60Hz
Circuit breakers three phase current	3x10A
min. ambient temperature/max. ambient temperature	30 / 5 °C

Order-No.:

667.0005

from Serial-No.:

51217

V1.1/02

Accessoires and periphery: Adapter nom. dia 8 / 12 mm*, dummy plugs*, sleeve nuts thread M16x1*, micro boltings, connection tubes, external sensor, connection cable, stopcock, displacement rack for reduction of the bath volume, calibration insert. * standard equipment

Output data go for: room temperature 20°C, cooling water: inlet 15°C and 3 bar differential pressure

Ersatzteilliste/List of spare parts

667.0005

ab/from Fert.Nr./serial No. 44681

bis 56111

unistat compatible control 1,5 kW

St.	Ident.Nr.	Bezeichnung	Discription
1	4560	Kompressor	compressor
1	0449	Anlaßkondensator 80 μ F	starting condenser 80 μ F
1	1614	Anlaßrelais	starting relay
1	0577	Verflüssiger	condenser
1	4045	Lüfter	fan
1	1133	Trockner 6 x 6	dryer 6 x 6
1	0218	Magnetventil	solenoid valve
1	1129	Magnetspule	solenoid coil
1	3817	Übertemperaturschutz	overtemperature protection
1	0512	Drehknopf-ÜT	knob-OT
1	3546	Pumpe komplett 1,5 kW	pump complete 1,5 kW
1	3480	Pumpenmotor	pump complete
1	0158	Heizung 1,5 kW	heating 1,5 kW
1	3766	Mikroschalter komplett	micro switch complete
1	2200	Fühler komplett Pt100	sensor complete Pt100
1	5142	Relaisplatine komplett 230 V	relay sheet bar complete 230 V
1	2352	Anlaßkondensator – Pumpe 4 μ F	starting condenser – pump 4 μ F
1	1329	Wippschalter	luffing switch
1	3470	Einbaugerätestecker	built-in-plug
	6087	Schlauchstecker	hose connector
	6088	Dichtscheibe	seal disk
	6089	Überwurfmutter M16x1	steeve nuts M16x1
	0557	Sechskantkappe (Ablaßhahn)	hetagon cap (drain plug)