

LAUDA Ultra USH High-temperature thermostats

High-temperature thermostats for special use for example in process engineering at temperatures from 20 up to 400 °C



Application examples

- Process engineering
- High-temperature applications
- Heating of distillation columns
- Special synthesis at high temperatures

Professional, high performance, broad temperature range

LAUDA Ultra USH high-temperature thermostats are compact heaters that require little space. If desired, they are also available with water counter-cooling. This allows rapid cooling

processes across the entire temperature range. The two-chamber structure with a cold-oil blanket extends the life of the heat transfer liquid and reduces the operating costs.

Your advantages at a glance

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The Ultra USH advantages

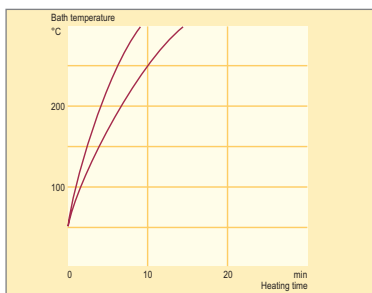
Your benefits



- Cold-oil flooded two-chamber structure
- Hot heat transfer liquid does not come into contact with atmospheric oxygen
 - Extends the life of the heat transfer liquid
 - Reduces odor nuisance



- Remote control with a separate control module
- Control and visual inspection can be carried out from a remote location
 - Operation while removed from the heating application



- Active heat transfer volume in the unit: 1.9 L only
- Allows rapid heating processes
 - Minimum volume changes across the entire temperature range



- Controlled MVH cooler allows cooling across the entire temperature range from as low as 20 °C
 - Special heat exchanger with intelligent valve control in the cooling circuits
- High cooling capacity up to 6 kW at 300 °C
 - Cooling water can be used for cooling up to a thermostat's operating temperature of 400 °C without build up of vapor and pressure overlay



- Extremely compact design with high heating capacity
- Problem-free work directly at the application
 - Short connecting hoses
 - Limited space required

LAUDA Ultra USH

Ultra USH High-performance thermostat USH 400

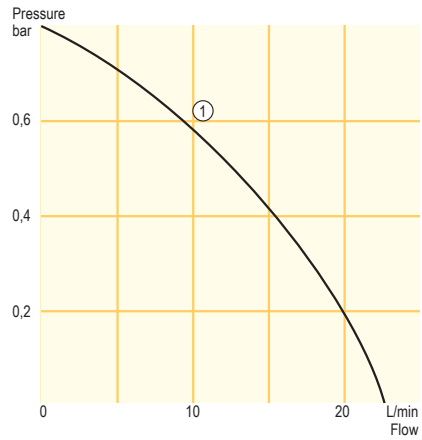
The high-temperature thermostats of the USH 400 range with the controlled chiller MVH (available as an optional accessory) have been designed especially for the thermostating of external applications at high temperatures up to 400 °C. The controlled chiller MVH guarantees controlled cooling at any temperature. The special construction eliminates direct contact of the heat-transfer oil with atmospheric oxygen. Thanks to the optimised thermal separation of the cooling chamber for the cold-oil blanket, there is no need for additional cooling up to an operating temperature of 250 °C. The heating capacity restriction and the low surface load of the heater ensure long service lives of the heat transfer medium.



USH 400 with MVH

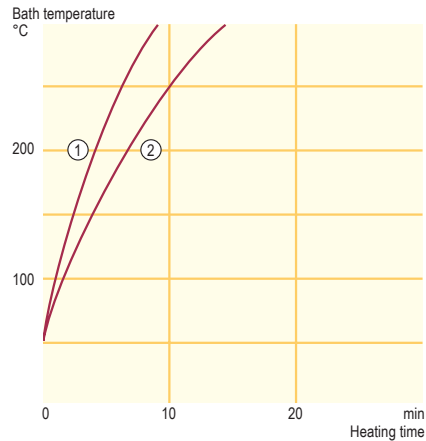


Pump characteristics Heat transfer liquid: Water



① USH 400
USH 400/6

Heating curves Heat transfer liquid: Ultra 300, bath closed



① USH 400 with 2 L ext.
② USH 400/6 with 2 L ext.

Temperature range

20...400 °C

Standard accessories

Nipples · screw caps · filler funnel · control unit



All technical data from page 90
Other power supply variants on page 101

Technical features		USH 400	USH 400/6
Working temperature range	°C	80...400*	80...400*
Temperature range with MVH	°C	20...400*	20...400*
Display resolution	°C	0.01	0.01
Temperature stability	±K	0.02...0.1	0.02...0.2
Heating capacity	kW	3.0	5.6
Cooling capacity with MHV (cooling water temperature 10 °C)	kW	6 at 300 °C, 2 at 100 °C	6 at 300 °C, 2 at 100 °C
Cooling water flow/pressure for MVH	L/min; bar	approx. 10; 0.5...6	approx. 10; 0.5...6
Pump pressure max.	bar	0.80	0.80
Pump flow (pressure) max.	L/min	22	22
Min. bath volume/with additional expansion vessel (1.2 L)	L	1.9/2.1	1.9/2.1
Expansion volume/with additional expansion vessel (1.2 L)	L	0.9/2.2	0.9/2.2
Loading	kW	3.2	5.8
Cat. No.		LTH 109 (230 V; 50 Hz)	LTH 211 (400 V; 3/N/PE; 50 Hz)

* Heat transfer liquid available up to 350 °C only

Ultra USH High-performance thermostat USH 400

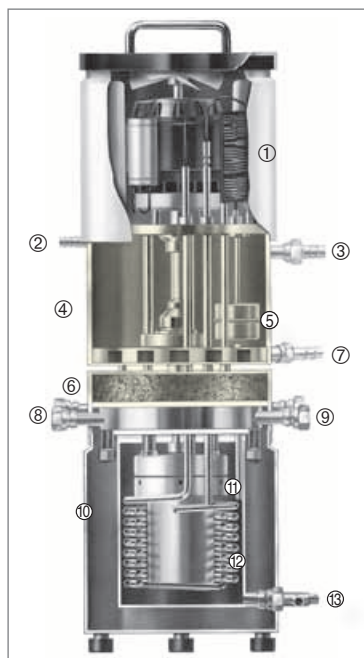
Thanks to the special two-chamber construction of the USH, the actual bath is divided into a heating chamber and a cold-oil blanket which are completely thermally decoupled. The cold-oil blanket is located above the actual heating chamber, which contains the heater and the pump. The two chambers are connected via tubes with small diameters. This enables the liquid from the heating chamber to expand into the cold-oil blanket, yet no active heat exchange between the chambers occurs. Even at the maximum temperature, the surface temperature of the cold-oil blanket always remains below 200 °C. This effect can be considerably improved by means of additional cooling with air or water. In order to further extend the service life of the heat transfer liquid, an inert-gas blanket may be introduced onto the cold-oil blanket.

Two-chamber construction

- ① Pump motor
- ② Inert gas blanket
- ③ Overflow
- ④ Cold-oil blanket
- ⑤ Float
- ⑥ Cooling chamber for cold-oil blanket
- ⑦ Connections for cooling chamber
- ⑧ Connection MVH
- ⑨ Pump outflow/return
- ⑩ Pump chamber
- ⑪ Heating chamber
- ⑫ Heater
- ⑬ Drain tap



Automatic vent valve



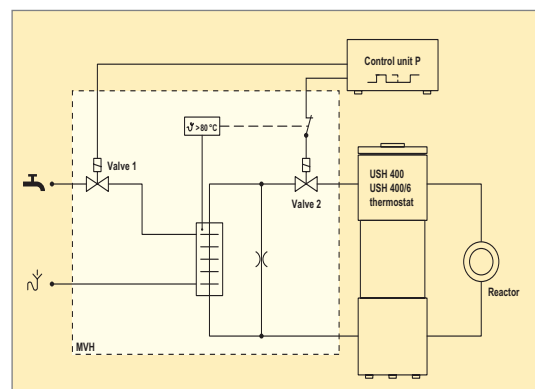
Ultra USH accessories

High-temperature chiller

For controlled cooling of thermostats in the operating temperature range above 100 °C without formation of vapor, to be connected to external water cooling

Cat.-No.	Description	Suitable for
LTZ 034	Controlled high-temperature chiller MVH	USH 400, USH 400/6

Order the detailed LAUDA accessories brochure and the heat transfer liquids brochure free of charge. These and additional product information can also be found at www.lauda.de



Working with controlled cooling MVH