

LAUDA Additional devices

Immersion coolers, through-flow coolers, circulation heat exchangers

Additional devices Immersion coolers

LAUDA through-flow coolers and immersion coolers are used as add-on devices to cool heating thermostats or any type of bath below ambient temperature. The preferred use of through-flow coolers is the use in conjunction with heating thermostats and integration into the cooling circuit.

LAUDA immersion coolers provide a quick way to extend the temperature range downwards when used in conjunction with heating thermostats, water baths and cooling traps. The thermostats work on the classical principle of direct evaporation, and the flexible hose connection means that they can be used without any problems. The ETK 50 even has adjustable temperature control.



Cooling using the LAUDA immersion cooler ETK 30



- Compact space-saving construction
- Carrying handles for easy transport
- Cooling coil made from high-grade stainless steel
- Flexible tube connection with special insulation (length 1.5 m)

Temperature range

-50...20 °C



Technical features		ETK 30	ETK 50
Working temperature range (without external heating)	°C	-40...20	-50...20
Operating temperature range (with external heating)	°C	-40...100	-50...100
Temperature probe		–	Pt 100
Control action		–	2-point action
Temperature stability (at -10 °C)	±K	–	0.5
Cooling output at	20 °C	kW	0.15
	-10 °C	kW	0.13
	-30 °C	kW	0.04
	-40 °C	kW	0.01
	-50 °C	kW	–
Cooling unit		air-cooled fully hermetic	air-cooled fully hermetic
Cooling coil (Ø x L)	mm	42x124	52x166
Base area (WxDxH)	mm	250x360x285	460x410x270
Weight	kg	17	33
Power consumption	kW	0.2	0.3
Cat. No. 230 V; 50/60 Hz		LFE 002	LFE 103 (230 V; 50 Hz)

LAUDA Additional devices

Additional devices Through-flow coolers

LAUDA through-flow coolers upgrade any type of heating thermostat with pump connections to a high-quality cooling thermostat and thus allow working below ambient temperature. Through-flow coolers replace cooling with tap water that is expensive and ecologically not recommendable. They provide a constant flow and temperature of cooling supply regardless of the variations. Therefore, it is possible to ensure optimum temperature stability over the entire period and allow reproducible temperature conditions at any time.



- Air-cooled, fully hermetic and thus absolutely maintenance-free cooling aggregates with heat exchangers in reasonable dimensions.
- Heat exchangers are made from stainless steel.
- All refrigerated parts inside the through-flow cooler are perfectly insulated. Therefore no condensation of water or risk of corrosion.
- Low-noise emissions

Temperature range
-40...150 °C



Through-flow cooler DLK 10



Technical features		DLK 10	DLK 25	DLK 45	DLK 45 LiBus
Working temperature range	°C	-15...150	-30...150	-40...150	-40...150
Cooling output at	20 °C kW	0.25	0.33	1.1	1.1
	0 °C kW	0.20	0.28	0.95	0.95
	-10 °C kW	0.10	0.25	0.85	0.85
	-20 °C kW	–	0.22	0.75	0.75
	-30 °C kW	–	0.20	0.55	0.55
	-40 °C kW	–	–	0.30	0.30
Heat exchanger connections for heat carrier		M16 x 1, nipples Ø 13 mm	M16 x 1, nipples Ø 13 mm	M16 x 1, nipples Ø 13 mm	M16 x 1, nipples Ø 13 mm
Special features		Control connection for mains supply		Proportional cooling: Ultras	Proportional cooling: Proline
Dimensions (WxDxH)	mm	200x400x320	290x540x330	470x560x430	470x560x430
Weight	kg	17	33	63	63
Power consumption	kW	0.2	0.5	0.9	0.9
Cat. No. 230 V; 50 Hz		LFD 010 (230 V; 50/60 Hz)	LFD 108	LFD 109	LFD 111

Additional devices Circulation heat exchangers



LAUDA UWT circulation heat exchangers are an economical alternative to circulation chillers when central facility cooling circuits can be used. This is economically and ecologically practical if heat removal from processes has to be performed either regularly or at a high power, and the removed heat should not enter the ambient environment. Regulated circulation heat exchangers – also known as system separators – guarantee temperatures, pressures and volume flow rates adapt to the application. The LAUDA UWT take cooling water from an existing primary circulation system and thermostat an internal bath volume in an individually-adjustable manner: this bath volume is then transported to the application via a pump in the laboratory circulation system.



- A: Application
- B: UWT
- C: Facility cooling supply
- a: Inlet of coolant
- b: Return flow of coolant
- c: Flow pipe for application
- d: Return pipe for application
- 1: Heat exchanger
- 2: Bath vessel with heat transfer liquid
- 3: Immersion pump for circulation
- 4: Pressure indication for UWT 6000 and UWT 10000



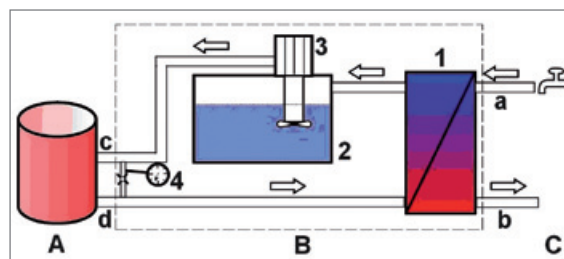
- High pump capacity for good heat exchange
- High temperature stability even when there are temperature fluctuations in the primary circuit
- Compact design for easy installation
- High degree of process safety thanks to adapted cooling capacity
- Free of refrigerants

Temperature range

8...25 °C

Standard accessories

Hose connections · remote plug for external control



Schematic circuit diagram of LAUDA circulation heat exchangers



410 mm



480 mm



480 mm

Technical features		UWT 3000	UWT 6000	UWT 10000
Working temperature range	°C	8...25	8...25	8...25
Resolution of setting	°C	0.1	0.1	0.1
Resolution of indication	°C	0.1	0.1	0.1
Temperature stability	±K	1	1	1
Cooling capacity	kW	3	6	10
at coolant inlet temperature	°C	9	9	9
at coolant pressure loss	bar	0.12	0.05	0.07
at cooling circuit volume flow	L/min	6	16	20
at laboratory circuit inlet temperature	°C	14	14	14
at output UWT	L/min	6	6	20
Pump pressure max.	bar	1.0*	1.0*	2.2**
Flow max.	L/min	30	30	33
Cooling and lab circuit connections		G 3/4	G 1 1/4	G 1 1/4
Filling volume	L	7...12	35...45	35...45
Dimensions (WxDxH)	mm	350x480x410	550x650x480	550x650x480
Weight	kg	34	68	74
Power consumption	kW	0.2	0.2	0.5
Cat. No 230 V; 50 Hz		LSO 1227	LSO 1228	LSO 1229

* Pump characteristics p. 70

** Also available with more powerful pump with 5.5 bar (LSW 1202); 40 L/min

LAUDA Overview of accessories

Overview of accessories for constant temperature equipment

The operation of constant temperature equipment often requires the use of accessories. Only with the appropriate testing stands, connecting parts, reducers, various hose connections, distributors or interface modules, etc. the applications can be achieved successfully.

Additional equipment

Solenoid valve for cooling water control



Proline shut down valve/reverse flow protection



Level controller



Proline automatic filling device



Atherman illuminators



Alpha accessories



Temperature probes

Platinum resistance thermometers in stainless steel tube



Connecting cables

Connecting cables



- Match your LAUDA equipment exactly; developed, constructed or programmed specifically for it
- Tested for practicality – your LAUDA contact person knows what works and what is appropriate
- Robust – LAUDA accessories are designed for durability



Order the detailed LAUDA accessories brochure. This and additional product information can also be found at www.lauda.de

Connecting plugs

Connecting plugs



Bath covers

Stainless steel bath covers



Stainless steel gable covers



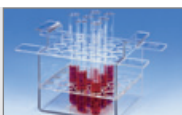
Cover plates for clear-view thermostats



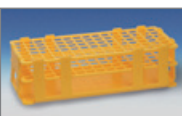
Overview of accessories for constant temperature equipment

Racks, platforms

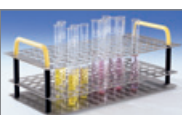
Polycarbonate racks up to 100 °C



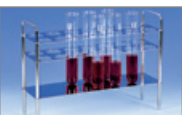
Polypropylene test tube racks, up to 95 °C



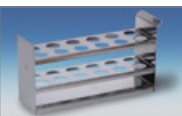
Stainless steel racks up to 100 °C



Stainless steel racks up to 300 °C



Stainless steel test tube racks up to 150 °C



Racks for calibration thermostats



Platforms and adjustable platforms



Accessories for notch bending tests



Accessories for pour point determination



Tubing

Polymer tubing



Insulation tubing



Tubing

Metal tubes (stainless steel flexible tube)



Equipment trolley

Equipment trolley and castor base

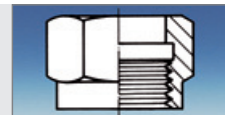


Connectors

Connectors



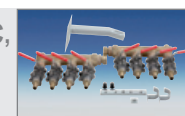
Screw caps



Manifold for temperature range -10...100 °C, for use with water/glycol



Manifold for temperature range -30...150 °C, for use with silicone oil and water/glycol



Integral XT bypass



Adapters



Double connectors



LAUDA Heat transfer liquids

Heat transfer liquids

Correct selection of the heat transfer liquid is of crucial importance for the safe and reliable operation of your thermostats. It must be suitable for the temperature range. In addition you should always use suitable tubing. More details can be found in our special brochure "Heat transfer liquids". Additional accessories are listed in the accessories brochure. Safety data sheets with the physical properties can be found on our website at: www.lauda.de.

Thanks to our decades of experience and continual tests we can offer you optimum heat transfer liquids for all LAUDA thermostats. Heat transfer liquids are available in three drum sizes: 5, 10 and 20 liters. When calculating the amount to be ordered, please consider the volume of the thermostat and the external circulation in addition to the bath volume.

In the table below, you can see precisely which heat transfer liquids are suitable for which temperature ranges. Please note that these details always relate to the temperature range of the heat transfer liquid, which is the limiting factor.



- Highly accurate thermostating, even at extreme temperatures
- Durability
- Simple and safe handling
- Reliability, suitable for long-term operation
- Optimal for long thermostat life
- Best possible compatibility with the environment
- Safety data sheets available upon request



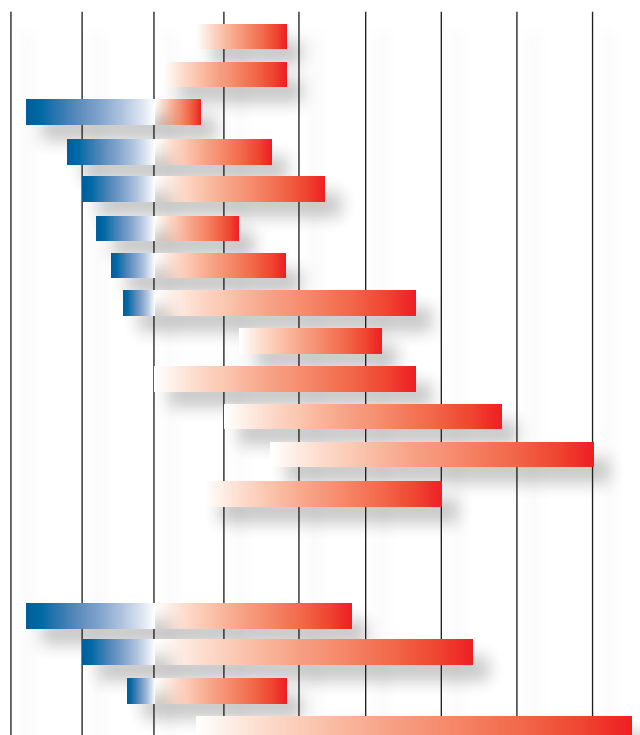
Order the detailed LAUDA brochure heat transfer liquids free of charge. This and additional product information can also be found at www.lauda.de

Open/half-open systems				
Designation	Temp. range	5 L	Cat. No.: 10 L	20 L
AquaStab	30...90 °C	LZB 123		
Aqua 90	5...90 °C	LZB 120	LZB 220	LZB 320
Kryo 85	Ⓢ -85...30 °C	LZB 113	LZB 213	LZB 313
Kryo 60	Ⓢ -60...80 °C	LZB 102	LZB 202	LZB 302
Kryo 51	Ⓢ -50...120 °C	LZB 121	LZB 221	LZB 321
Kryo 40	-40...60 °C	LZB 119	LZB 219	LZB 319
Kryo 30	-30...90 °C	LZB 109	LZB 209	LZB 309
Kryo 20	Ⓢ -20...180 °C	LZB 116	LZB 216	LZB 316
Therm 160	60...160 °C	LZB 106	LZB 206	LZB 306
Therm 180	Ⓢ 0...180 °C	LZB 114	LZB 214	LZB 314
Therm 240	Ⓢ 50...240 °C	LZB 122	LZB 222	LZB 322
Ultra 300	Ⓢ 80...300 °C	LZB 108	LZB 208	LZB 308
Ultra 350	30...200 °C	LZB 107	LZB 207	LZB 307

Closed systems flooded with cold oil (USH 400, Integral XT)				
Designation	Temp. range	5 L	Cat. No.: 10 L	20 L
Kryo 85	Ⓢ -90...140 °C	LZB 113	LZB 213	LZB 313
Kryo 55	Ⓢ -50...220 °C	LZB 124	LZB 224	LZB 324
Kryo 30	-30...90 °C	LZB 109	LZB 209	LZB 309
Ultra 350	30...350 °C	LZB 107	LZB 207	LZB 307

Ⓢ = Silicone oil

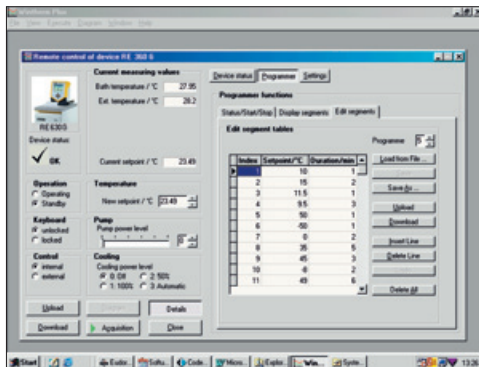
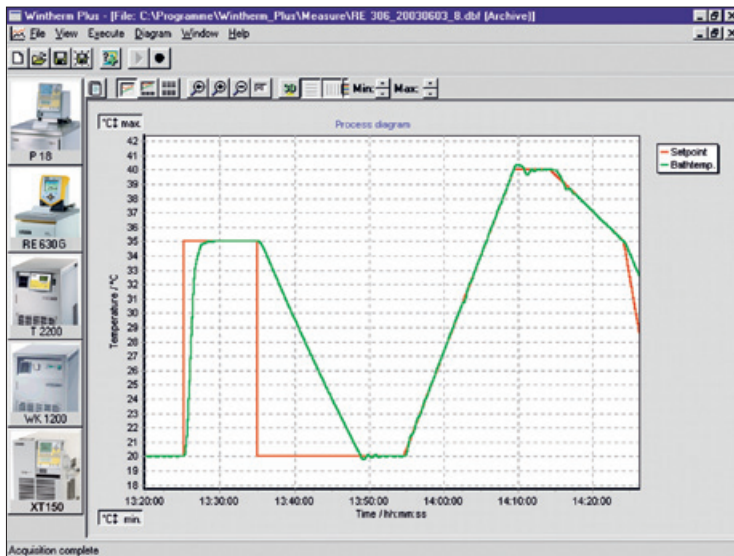
-100 °C -50 °C 0 °C 50 °C 100 °C 150 °C 200 °C 250 °C 300 °C



LAUDA Software

Wintherm Plus software

All LAUDA ECO Silver and ECO Gold thermostats, all Ecoline Staredition thermostats with control heads E 200 and E 300, all Proline thermostats and Proline Kryomats, all Ultra-thermostats, all circulation chillers WK/WKL with interface and all LAUDA Integral process thermostats can be controlled from any PC with the LAUDA Wintherm Plus software. Requirements of the PC: at least 64 MB RAM, serial interface.



Wintherm Plus features

- Remotely setting temperature set-point and live observance of actual bath temperature
- Monitoring of external temperature values
- Online graphic display of all values with a readily selectable time window to reduce the amount of data or to increase resolution
- Temperature program editor to create and archive temperature profiles and ramps
- Complete control of all thermostat functions such as control parameters, temperature range and pump capacity*
- Each measuring graph can be imported as an ASCII file or D-Base database into spreadsheet programs such as Microsoft Excel.
- A separate read and display software makes it possible to view and print out existing graphs in parallel and independently of the controller sections.
- Read-out of the data logger for devices with remote control Command or ECO Gold thermostats.
- Every measuring curve can be imported directly as bitmap or metafile into all graphic programs and Microsoft Word.
- Simultaneous control of up to 64 thermostats
- Up to 8 serial interfaces of the PC can be addressed as RS 232 or RS 485.
- Automatic recognition of connected thermostats
- Operating languages: German and English
- Supported operation systems: Windows XP, Windows VISTA, Windows 7

* Pump capacity not controllable with Wintherm Plus on LAUDA USH, WK/WKL and Integral T