

The right temperature worldwide

LAUDA



LAUDA – the big one

Thermostats, Circulation chillers, Water baths

Overall Brochure 2016/2017

NEW

LAUDA PRO

LAUDA Ultracool

LAUDA Kryoheater

Selecta

LAUDA – the big one – Overview

Aqualine
25...95 °C

The universal **water baths** for the laboratory
from **25 up to 95 °C**

Alpha
-25...100 °C

Heating and cooling thermostats
for cost effective thermostating in the laboratory
at temperatures from **-25 up to 100 °C**

ECO
-50...200 °C

Heating and cooling thermostats
for economical thermostating in the laboratory
from **-50 up to 200 °C**

PRO
-100...250 °C
Proline Kryomats
-90...200 °C

NEW

Bath and circulation thermostats
for professional temperature control from
-100 up to 250 °C

Cooling thermostats for professional use in
process engineering and material testing from
-90 up to 200 °C

Integral T
Integral XT
-90...320 °C
Kryoheater Selecta
-90...200 °C

NEW

Process thermostats for professional external
thermostating across a wide temperature range from
-90 up to 320 °C

Process thermostat for powerful professional
temperature control from **-90 up to 200 °C**

Microcool
-10...40 °C
Variocool
-20...40 °C
Ultracool
-5...25 °C

NEW

Circulation chillers for reliable continuous operation
in the lab and in research from **-10 up to 40 °C**

Circulation chillers for variable use in laboratory,
mini-plant and production for temperatures from
-20 up to 40 °C (optional up to 80 °C)

Process circulation chillers for industrial
applications with cooling outputs up to 265 kW
from **-5 up to 25 °C**

Special devices

Calibration thermostats, bridge thermostats,
clear-view thermostats, immersion coolers,
through-flow coolers

Heat transfer liquids

Heat transfer liquids p. 94

Software

Software p. 95

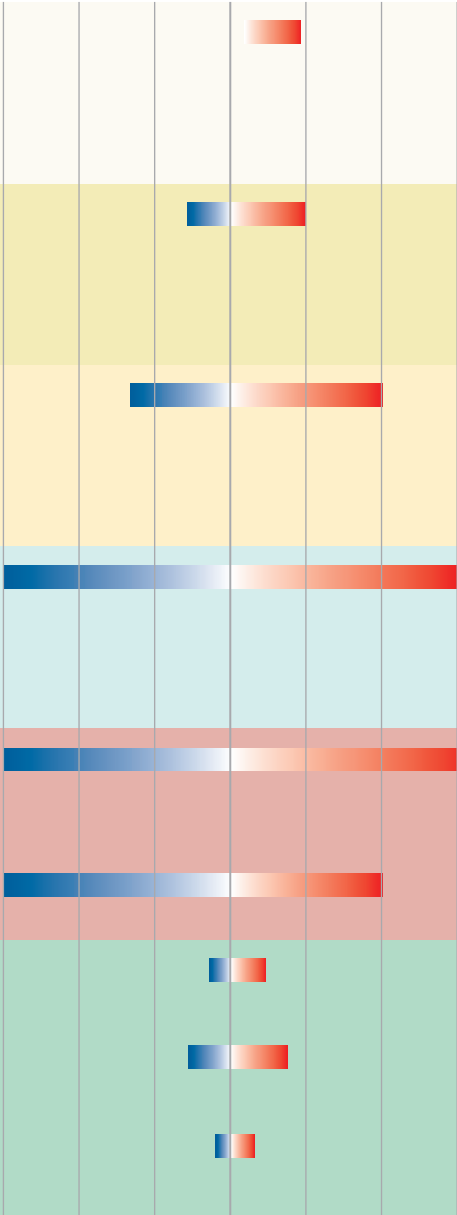
Technical data
Power supply variants
Glossary

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Power supply variants p. 110
Glossary p. 117





-90 °C -85 °C -40 °C 0 °C 100 °C 200 °C 300 °C 400 °C



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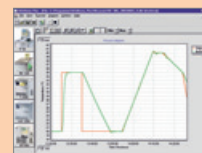
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LAUDA Technical data

LAUDA Voltage variants

LAUDA Glossary

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Advantages



Industry leading safety concepts

All products are compliant with the strictest safety requirements and constraints. Consideration is given to all the relevant DIN and international standards such as IEC, UL and CSA. Furthermore, intelligent technologies and sophisticated safety concepts provide a good feeling to any application. As such, the LAUDA PRO and ECO, for example, have “double safety circuit” technology with reciprocal checking μ -controllers, which switch off the equipment in the event of a fault. The electronic low-level protection detection of the ECO allows operation only when the function is fault-free.



Convenient use

LAUDA equipment stands out for its excellent handling, optimum ergonomics and intuitive operation. For the thermostats of LAUDA PRO, for example, the user can choose between the two remote control units, Base and Command Touch. The Base, with OLED display, is suitable for universal operating requirements in daily use. Command Touch, with a color multi-touch display, offers maximum operating convenience using a future-proof software platform.



Proverbial quality

For more than 60 years now, LAUDA has been developing, engineering and producing high-class constant temperature equipment of outstanding quality. From the start, the owners and directors promised to deliver the highest quality standards to their clients, business partners and to the global scientific community. The guarantee of user-friendliness, optimum functionality and high safety standards has always been the full attention and concentration of all LAUDA employees – which, now more than ever, produces what has become the proverbial LAUDA longevity and durability.



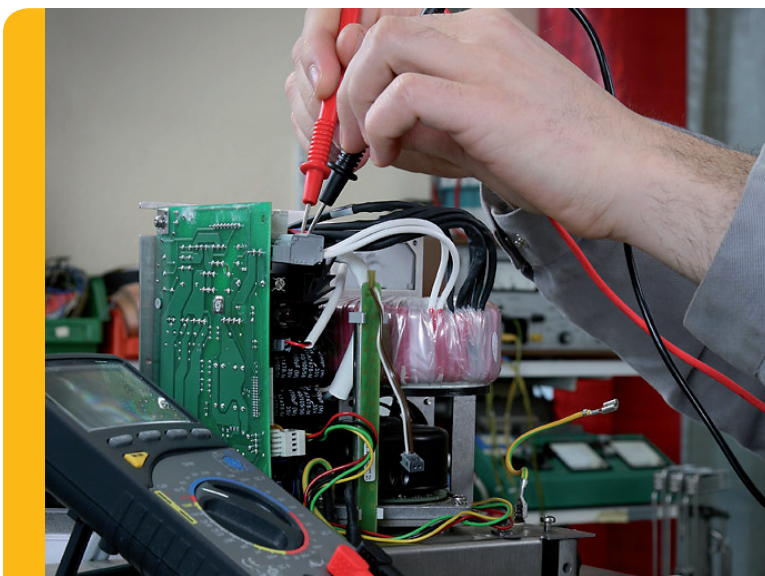
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First class support – internationally

The LAUDA team at our headquarters and in the international subsidiaries and agencies, the professionally and comprehensively trained sales representatives, and the staff of the specialist laboratory facilities provide friendly, fair and competent advice. Together with our clients, LAUDA helps application experts to configure application-specific systems.



Reliable service

LAUDA equipment is known for its robustness and durability. However, should you ever need support – usually after many years of installation – we are there for you: as a LAUDA customer, you have access to comprehensive services, ensuring greater flexibility and profitability. One thing is certain: LAUDA service will not let you down.

World market leader with tradition

1956 The first year

In the small town of Lauda located in the German region of Baden, Dr. Rudolf Wobser founds the Messgerätewerk Lauda Dr. R. Wobser KG.

1964 The first systems for industry

Now LAUDA is building industrial heating and cooling systems for technical laboratories and production as well.

1967 The first measuring instruments

Again LAUDA is putting groundbreaking new developments on the market: the first tensiometer and the first film balance.

1977 Dr. Gerhard and Karlheinz Wobser take over the management

After the death of their father Dr. Rudolf Wobser, the brothers take over the management and divide the areas of responsibility.

1989 The first year under today's new name

LAUDA sees an expansion of the range of products, and thus the company is renamed from Messgerätewerk Lauda Dr. R. Wobser KG into LAUDA DR. R. WOBSEY GMBH & CO. KG.

2003 Dr. Gunther Wobser is appointed Managing Director

Karlheinz Wobser retires. Dr. Gunther Wobser, part of the company since 1997, is appointed managing director.

2005 Establishment of the first subsidiary LAUDA France

The French subsidiary shall support the representations and customers in the market by consultation and service.

2006 The constant size – 50 years of LAUDA

The 50th anniversary is celebrated on March 1, 2006.

2008 Expansion course with new subsidiaries

By setting up the subsidiaries LAUDA America Latina C.A., LAUDA China Co., Ltd. and LAUDA Brinkmann, LP. USA, LAUDA consistently continues the world-wide expansion course.

2010 Dr. Gerhard Wobser resigns from office

After 39 years as a Managing Director, Dr. Gerhard Wobser resigns from office in March 2010. His son, Dr. Gunther Wobser, takes over his duties.

2011 Acquisition of LAUDA Ultracool

With the acquisition of LAUDA Ultracool S. L. in Barcelona LAUDA adds industrial chillers to its portfolio.

2012 New subsidiary in Great Britain

In Birmingham, the subsidiary LAUDA Technology is founded.

2013 New building structure

Inauguration of a modern logistics center and a new production hall.

2014 Reorganization of divisions

LAUDA implements the reorganization of its divisions and appoints Dr. Marc Stricker as the COO. With Noah Precision in the US, LAUDA adds thermoelectric thermostats to its product range. LAUDA establishes a branch in Italy.

2015 Independent company for measuring instruments

The new subsidiary LAUDA Scientific takes over the development, sales and service activities for LAUDA measuring instruments.

2016 LAUDA celebrates its 60th birthday

LAUDA has its 60th company anniversary on March 1, 2016



The President & CEO Dr. Gunther Wobser (left) and the COO Dr. Marc Stricker



Expansion of the LAUDA headquarters



Company founder
Dr. Rudolf Wobser



Karlheinz Wobser

Dr. Gerhard Wobser

LAUDA, Ultra-Kryomat, Kryomat, LAUDA Vario pump and iVisc are registered trademarks of the LAUDA DR. R. WOBSEY GMBH & CO. KG

With around 420 employees, more than EUR 70 million in annual turnover and twelve foreign subsidiaries, LAUDA is the global leader in the manufacture of innovative constant temperature equipment and systems for science, application technology and production. With more than 60 years of experience and a unique product portfolio ranging from compact laboratory thermostats to industrial circulation chillers to customized heating and cooling systems with more than 400 kilowatts of cooling power, LAUDA is the only company that can guarantee optimized temperature throughout the entire value-added chain for its 10,000 plus customers worldwide.

Quality products from LAUDA keep temperatures constant to an impressive 5 thousandth °C or make targeted changes in an area spanning -150 to 400 °C. Through active cooling or warming, production processes are accelerated or, indeed, made possible in the first place. In such cases, LAUDA, for example, replaces the uneconomical mains-water cooling with environmentally friendly and cost-efficient devices or, alternatively, uses existing forms of primary energy such as thermal discharge.

As a highly specialized niche provider, LAUDA ranks either first or second in almost all future-oriented sectors. In the semi-conductor industry, all the renowned manufacturers and suppliers place their trust in LAUDA thermostats and heating and cooling systems. LAUDA quality products also enable both the research and mass production of vital medicines. In the growing medical technology market, circulation chillers made by LAUDA cool patients and guarantee safe openheart surgery. LAUDA industrial circulation chillers provide reliable and cost effective cooling for printing machines, injection moulding plants and laser processing machines equipment. Further principle applications include material inspection, biotechnology and the temperature regulation of laboratory instruments and machines. LAUDA thermostats are also used in the measuring instruments. For example, in order to determine the viscosity of aviation fuel under real conditions at 10,000-meter altitude, the sample is cooled in the laboratory down to -60 °C.

Through numerous innovations and ongoing investment, LAUDA is sustainably improving its excellent market position and is growing both in the main European market as well as overseas.

LAUDA – The right temperature worldwide



LAUDA PRO P 10



Command Touch remote control unit



Base remote control unit

LAUDA PRO: Outstanding overall concept.

The new forward-looking LAUDA PRO thermostats operate within a temperature range of -100 up to 250 °C.

A significant conceptual innovation is the separation of thermostats for internal and external applications. Thermostatic baths for heating and cooling have been optimized for internal applications. A new category is that of the circulation thermostats for external applications. It thus facilitates rapid temperature change using small volumes of active liquid.

The user can choose between the two remote control units, Base and Command Touch, that are required for operating the new thermostats. The Base, with OLED display, is suitable for universal operating requirements in daily use. Command Touch, with a color multi-touch display, offers maximum operating convenience using a future-proof software platform.

All thermostats are equipped with an Ethernet interface and a USB interface, alongside a Pt100 connection, as standard. The low temperature thermostats can be supplied with natural refrigerants. The hybrid cooling, which is also standard, also permits cooling of the refrigerating machine with water.



LAUDA Kryoheater Selecta

LAUDA Kryoheater Selecta: Reliable and powerful

Powerful temperature control thermostating on an industrial scale makes the LAUDA Kryoheater Selecta process thermostats a real success. A working temperature range from -90 up to 200 °C, a powerful pump, energy-saving cascade cooling and nitrogen overlay means that the Kryoheater Selecta provides reliable continuous operation.

Subsidiaries

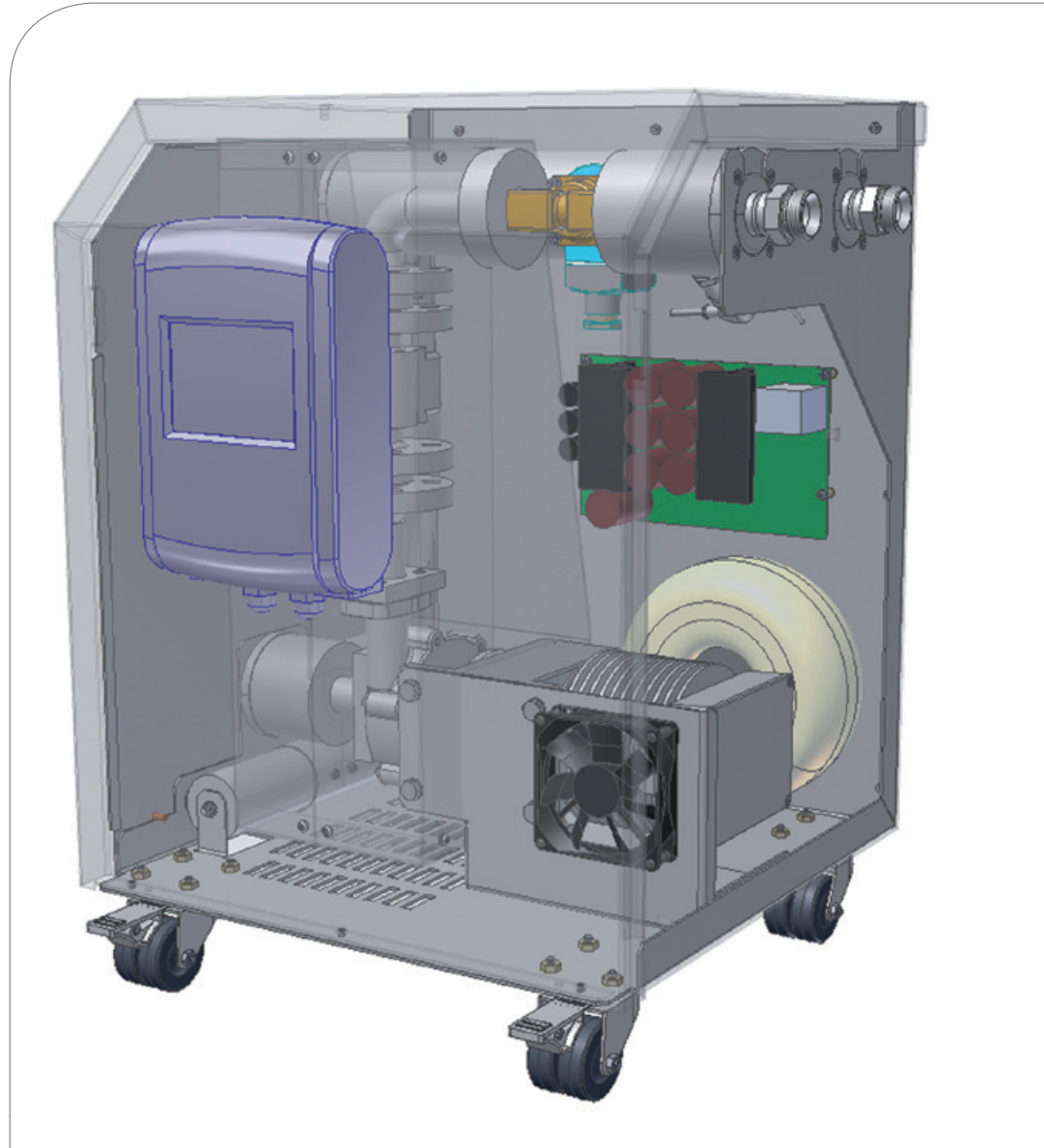
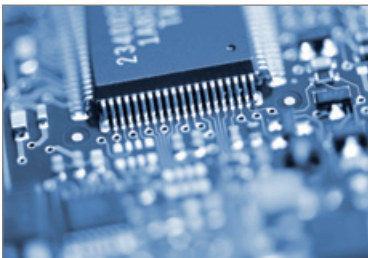
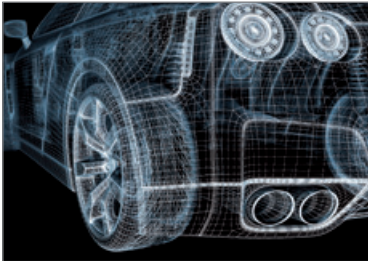
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LAUDA cooperates with more than 90 representatives around the world. Thoroughly trained and highly qualified employees in sales and service of our representatives give friendly and competent advice to our customers worldwide. Please refer to www.lauda.de for detailed contact data of your local LAUDA representative (sector: Contact → LAUDA partners worldwide).

LAUDA OEM equipment

Customer-specific consultation with appropriate equipment selection and development of individual constant temperature equipment solutions



Application examples

- Automobile industry
- Semi-conductor industry
- Machine construction
- Temperature simulation in test rigs
- Medical technology
- Temperature monitoring of reactors in the chemical, pharmaceutical and biotechnology industries
- Analysis technology

Optimized customer-specific solutions

LAUDA's comprehensive product portfolio and more than 60 years of development competence guarantee a focused consultation and equipment selection for our worldwide OEM customers. From an initial idea to series production, with LAUDA series products and customized modi-

fications a customer specific development and also manufacturing to order can be offered. The individual service concept developed with the OEM customer ensures an optimal cost benefit ratio for all applications. The result is decades of successful partnerships.

LAUDA Heating and cooling systems

Heating, cooling, chilling from -150 up to 550 °C



Application examples

- Temperature control of stirrer tanks
- Temperature control of reactors in chemistry, pharmaceuticals and biotechnology
- Environmental simulation, automotive and solar technology
- Use in material testing, research and production
- Temperature control of heat exchangers and evaporators
- Solvent re-condensation
- Direct evaporator for air cleaning contaminated gas

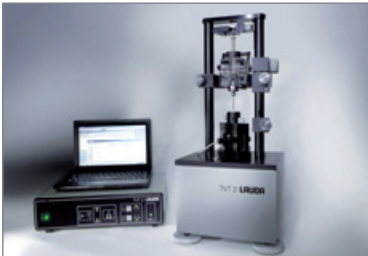
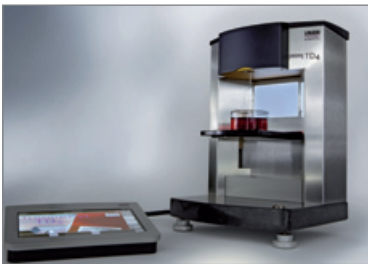
Made-to-measure installations for industrial applications

In accordance with the principle of "Modular Engineering", LAUDA plans and builds process cooling systems, heat transfer systems and secondary circuit units precisely in accordance with the customer's wishes: process-oriented, made-to-measure and precisely in accordance with the regulations, and with compliance with the strictest of safety stan-

dards. LAUDA installations heat and cool within the temperature range of -150 to 550 °C, with an accuracy of up to one tenth of a Celsius degree. Since the requirements for Constant temperature equipment are continuously growing, the modern LAUDA Heating and cooling modules are also flexible as far as expansion and modification are concerned.

LAUDA Scientific GmbH

Measuring instruments for the analysis of polymers, plastics, oils and surfactants



Application examples

- Viscometer with high precision and modularity
- Tensiometer for research and quality assurance
- Clear-view thermostats for temperature control in viscometry from -60 to 230 °C
- Fully automatic sample preparation system for the manufacture of dilutions

Reliable precision, competent service

LAUDA measuring instruments have been combining precision, reliability and durability for decades. Together with sophisticated experience in sales and service, the basis for the foundation of a self-sufficient company for the measuring instruments sector: LAUDA Scientific.

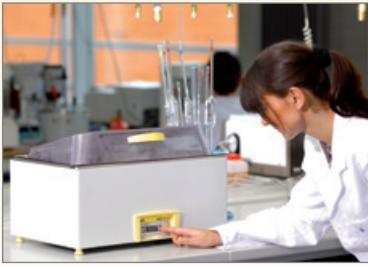
Our products and services are thus even more precisely adapted to the current demands of the

market and our customers - from practice-oriented product development to our precise maintenance service.

LAUDA Scientific also offers viscometers, tensiometers, visco-thermostats and sample preparation systems. There is lots of information at www.lauda-scientific.de

LAUDA Aqualine

The universal water baths for the laboratory
from 25 up to 95 °C



Application examples

- Preparation of medical samples for analysis
- Temperature control of cytological samples
- Pre-thermostating of samples for spectroscopic tests
- Use in colleges, hospitals and education

Reliable, compact and ergonomic

The **LAUDA Aqualine** water baths offer an affordable entry into laboratory thermostating. The equipment range for basic applications in the laboratory stands out for its simple operation with digital LED display and high reliability. The devices have no circulating pumps and no

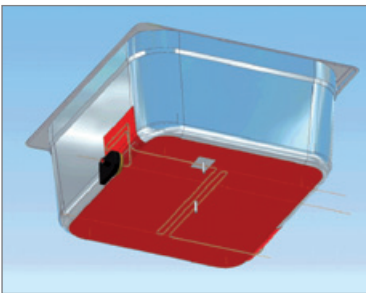
fittings within the bath. Consequently, they are corrosion-resistant, easy to clean or disinfect, and provide maximum use of internal bath space. The heating elements housed under the bath vessel ensure homogenous temperature distribution without localized overheating.

Your advantages at a glance



The Aqualine advantages

Your benefits



- Heating of the bath bottom across the entire base
- Patented low-level protection, minimum fill level of only 2 cm

- Excellent temperature homogeneity in the bath and optimum use of the internal space
- Bath operation almost independent of the fill level



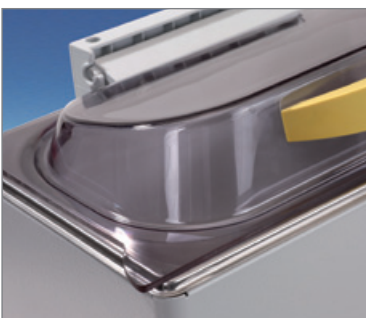
- Recessed operating elements
- Luminous digital LED display
- Controller electronics integrated into the housing

- Dirt and drip-proof electronics
- Easy operation
- Smallest possible unit footprint



- No heaters, sensors or other fittings in the bath vessel

- Easy-clean interior
- No niches for hidden growth of germs
- Full use of the bath



- Transparent polycarbonate gable covers removable without tools are a standard feature.

- Easy and quick visual inspection of the samples in the bath
- Easy cleaning, no height restrictions

- Optimized roof shape

- Prevents sample contamination from condensation

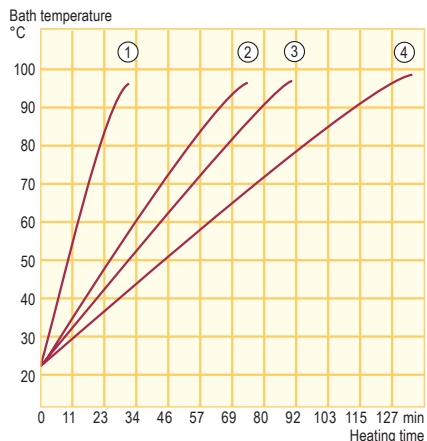
LAUDA Aqualine

Aqualine Water baths

The LAUDA Aqualine water baths are available in five different sizes. Depending on the size and the quantity of the samples, the user has the right bath depth or opening for his application at his disposal. All the baths are made from moulded stainless steel, and do not have any fittings. As a result, the interior is used to its full advantage, and the number of samples per bath is maximised. Above all, the LAUDA Aqualine is designed for the requirements of biological, medical and biochemical laboratories. Thanks to the patented heating concept, the baths also achieve a high level of temperature homogeneity.



Heating curves Heat transfer liquid: Water, bath closed



- ① AL 2
- ② AL 5 · AL 12
- ③ AL 18
- ④ AL 25

Temperature range

25...95 °C

Included accessories

Transparent polycarbonate gable cover

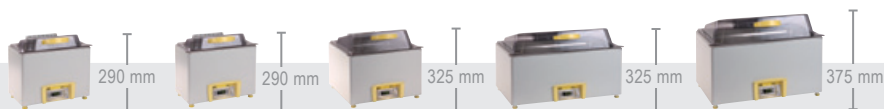


AL 5 water bath



All technical data on page 96 and following

Other power supply variants on page 110



Technical features		AL 2	AL 5	AL 12	AL 18	AL 25
Working temperature range	°C	25...95	25...95	25...95	25...95	25...95
Temperature stability at 37 °C	±K	0.2	0.2	0.2	0.2	0.2
Heater power	kW	0.5	0.5	1.0	1.2	1.2
Bath volume	L	0.9...1.7	1...5	2...12	3...18	3...25
Bath opening/Bath depth	mm	300x151/65	300x151/150	329x300/150	505x300/150	505x300/200
Cat. No. 230 V; 50/60 Hz		LCB 0723	LCB 0724	LCB 0725	LCB 0726	LCB 0727

Aqualine accessories (excerpt)

Test tube racks

Cat. No.	Description	Qty. Tubes	Ø mm
UE 041	Rack white	21	30
UE 040	Rack white	24	25
UE 039	Rack white	40	20
UE 042	Rack white	60	16
UE 037	Rack white	90	13
UE 047	Rack yellow	21	30
UE 046	Rack yellow	24	25
UE 045	Rack yellow	40	20
UE 048	Rack yellow	60	16
UE 043	Rack yellow	90	13
Suitable for	1 x in AL 5 2 x in AL 12 4 x in AL 18, AL 25		

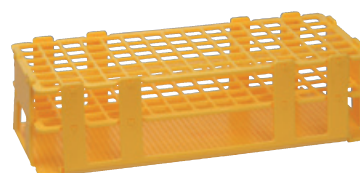
Test tube rack

Stainless steel up to 150 °C, WxDxH (mm): 180x60x80

Cat. No.	Description	Qty. Tubes	Ø mm
UE 038	Test tube rack stainless steel	12	20
Suitable for	1 x in AL 5 3 x in AL 12 6 x in AL 18, AL 25		

Platform

Cat. No.	Suitable for	Usable area mm
LCZ 0689	1 x in AL 12 2 x in AL 18, AL 25	140x270



UE 043



UE 038



LCZ 0689



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

LAUDA Alpha

Heating and cooling thermostats for cost-effective thermostating in the laboratory at temperatures from -25 up to 100 °C



Application examples

- Sample preparation for chemico-pharmaceutical analysis
- Quality control
- Precise temperature control in sensitive areas such as medical serology
- Versatile thermostating tasks in the field of biotechnology

Reliable technology, modern design, favorable price

LAUDA Alpha is the cost-effective choice in the area of high-quality LAUDA thermostats. The temperature range from -25 to 100 °C covers the larger part of all basic thermostatic applications within the laboratory. This is exactly the working temperature range of the LAUDA Alpha. This well-priced equipment range is made possible

by minimizing any unnecessary features, with the focus on reliability and user-friendliness. The thermostats are suitable for operation with non-flammable liquids (water, water/glycol) and for both internal and external thermostating tasks. A 1-point-calibration of the thermostats can be carried out by the user.

Your advantages at a glance

+	The Alpha advantages	Your benefits
	<ul style="list-style-type: none"> • 3-button operation with large, clearly legible LED display • Low level protection with acoustic and visual alarm • Timer function integrated 	<ul style="list-style-type: none"> • Easy and intuitive menu navigation • Easily legible display values • Automatic shut-off of heater and pump when level of heat transfer liquid is too low • Automatic shut-down (stand-by) after preset time
	<ul style="list-style-type: none"> • Automatic compressor control supplies strong cooling output only when needed – up to 425 W 	<ul style="list-style-type: none"> • Cost-effective operation • No unnecessary energy consumption • Equipment-saving principle extends the life of the compressor
	<ul style="list-style-type: none"> • Alpha immersion and heating thermostats with screw clamp 	<ul style="list-style-type: none"> • Easy to change to different bath vessels with a wall thickness of up to 30 mm
	<ul style="list-style-type: none"> • Variable flow rates via inserts and fittings 	<ul style="list-style-type: none"> • The rate of circulation can be adapted to the size of the bath
	<ul style="list-style-type: none"> • Removal of the front cover without tools 	<ul style="list-style-type: none"> • Easy cleaning of the cool air inlet • Extended maintenance intervals

LAUDA Alpha

Alpha Immersion thermostat

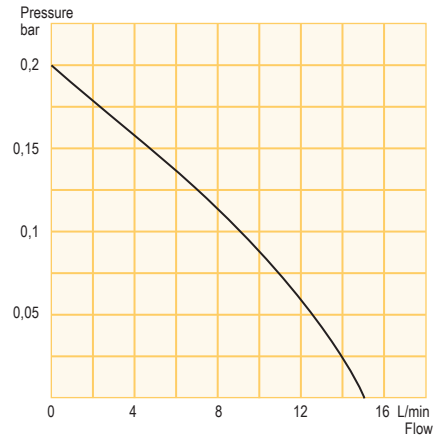
The immersion thermostat A can be used for any bath with a wall thickness of up to 30 mm by means of the screw clamp included in the scope of delivery. Using the additional pump circulation set and a cooling coil, the immersion thermostat can be expanded to form a full-fledged thermostating system.



Immersion thermostat A



Pump characteristic Heat transfer liquid: Water



Temperature range
25...100 °C

Included accessories
Screw clamp · fitting in 2 sizes

Additional accessories see p. 21
Pump circulation set · cooling coil



All technical data on page 96 and following
Other power supply variants on page 110



Technical features		A
Working temperature range	°C	25...100
Temperature stability	±K	0.05
Heater power	kW	1.5
Pump pressure max.	bar	0.2
Pump flow max.*	L/min	15
Cat. No. 230 V; 50/60 Hz		LCE 0226

* Reducible to 5 L/min

Alpha Heating thermostats

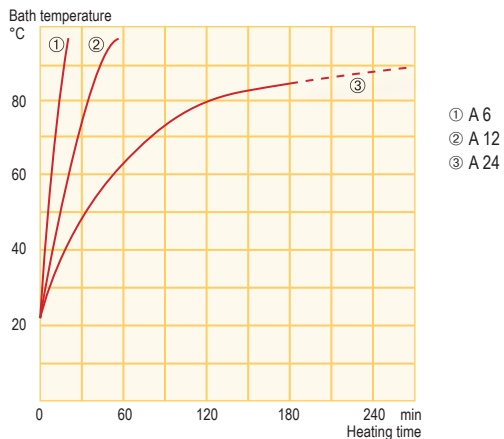
The heating thermostats A 6, A 12 and A 24 operate in the temperature range between 25 and 100 °C. As in the case of the immersion thermostats, a cooling coil and pump circulation set as well as a bath cover set are available as optional accessories.



Heating thermostat A 12 with cooling coil (accessory)



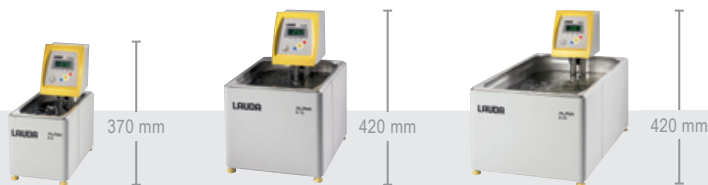
Heating curves Heat transfer liquid: Water, bath closed



Temperature range
25...100 °C

Included accessories
Screw clamp · fitting in 2 sizes

Additional accessories see p. 21
Pump circulation set · cooling coil · bath cover set



All technical data on page 96 and following
Other power supply variants on page 110

Technical features		A 6	A 12	A 24
Working temperature range	°C	25*...100	25*...100	25*...100
Temperature stability	±K	0.05	0.05	0.05
Heater power	kW	1.5	1.5	1.5
Pump pressure max.	bar	0.2	0.2	0.2
Pump flow max.	L/min	15	15	15
Bath volume	L	2.5...5.5	8...12	18...25
Bath opening	mm	145x161	235x161	295x374
Bath depth	mm	150	200	200
Cat. No. 230 V; 50/60 Hz		LCB 0733	LCB 0734	LCB 0735

* With open bath

LAUDA Alpha

Alpha Cooling thermostats

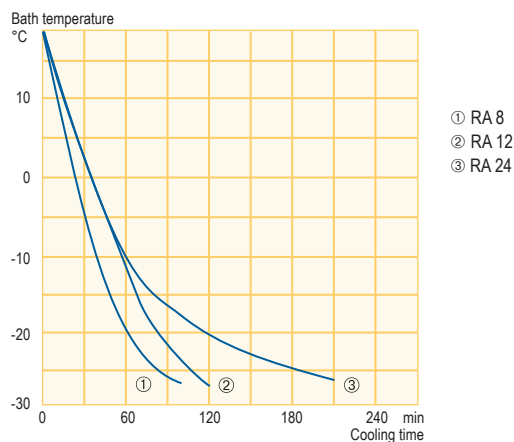
The cooling technology of the cooling thermostats RA 8, RA 12 and RA 24 enables cooling performance through the entire temperature range of -25 up to 100 °C. Emptying the heat transfer liquid is done by a drain connection on the rear side of the devices. Bath covers and pump kits are included in the standard equipment.



Cooling thermostat RA 24



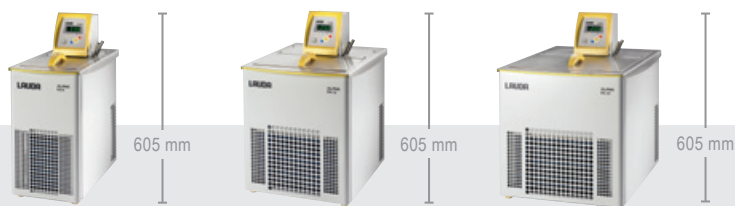
Cooling curves Heat transfer liquid: Ethanol, bath closed



Temperature range
-25...100 °C

Included accessories
Pump circulation set · bath cover · pump link for pump connections

Additional accessories
Racks · tubings



All technical data on page 100 and following
Other power supply variants on page 112

Technical features		RA 8	RA 12	RA 24
Working temperature range*	°C	-25...100	-25...100	-25...100
Temperature stability	±K	0.05	0.05	0.05
Heater power	kW	1.5	1.5	1.5
Cooling output at 20 °C	kW	0.225	0.325	0.425
Pump pressure max.	bar	0.2	0.2	0.2
Pump flow max.	L/min	15	15	15
Bath volume	L	5...7.5	9.5...14.5	14...22
Bath opening	mm	165x177	300x203	350x277
Bath depth	mm	160	160	160
Cat. No.		LCK 1907	LCK 1908	LCK 1909

* Working temperature range is equal to ACC range

Alpha accessories (excerpt)

Pump circulation set

For thermostating of external applications

Cat. No.	Description
LCZE 005	With 13 mm nipples
For all Alpha immersion and heating thermostats	

Cooling coil

For additional cooling of heating baths by means of cold water

Cat. No.	Description
LCZE 004	With 12 mm nipples
For all Alpha immersion and heating thermostats	

Test tube racks

Polypropylene up to 95 °C*

Cat. No.	Description	Qty. Tubes	Ø mm
UE 047/UE 041	Rack yellow/white	21	30
UE 046/UE 040	Rack yellow/white	24	25
UE 045/UE 039	Rack yellow/white	40	20
UE 048/UE 042	Rack yellow/white	60	16
UE 043/UE 037	Rack yellow/white	90	13
Suitable for	3 x A 24 2 x RA 12 3 x RA 24		

* Test tube rack stainless steel up to 150 °C, see page 13

Bath cover sets

For assembly on LAUDA Alpha heating baths.
Consisting of bath bridge, bath cover, 2 blanking plates and 4 screws.

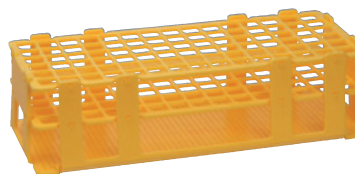
Cat. No.	Description
LCZE 006	Bath cover set A 6
LCZE 007	Bath cover set A 12
LCZE 008	Bath cover set A 24



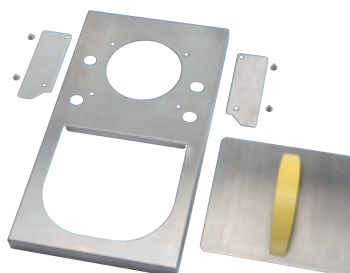
LCZE 005



LCZE 004



UE 043



LCZE 006



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

LAUDA ECO

Heating and cooling thermostats
Economical thermostating in the laboratory
from -50 up to 200 °C



Application examples

- Precise temperature regulation in quality assurance and analytics
- Sample preparation in chemistry and pharmacy
- Temperature control in electronics and life sciences
- Cooling in material tests

Precise, economical, flexible

The **LAUDA ECO** stands out due to its range of functionality and ease of use. A menu navigation in plain text allows easy operation of the devices. Both control heads are equipped with a mini-USB interface as standard. Further interfaces are available as modules. Another innovation is the practical allocation of a flow-rate switch at the front on the control head.

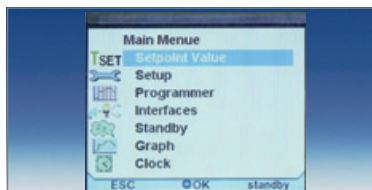
This means that individual adjustment of the flow between internal and external circulation is possible even during operation. Variants in 230 V; 50 Hz are available with natural refrigerants as standard. The most powerful units are equipped with the energy-saving LAUDA SmartCool system. All cooling thermostats are available as air-cooled or water-cooled variants.

Your advantages at a glance



The ECO advantages

Your benefits



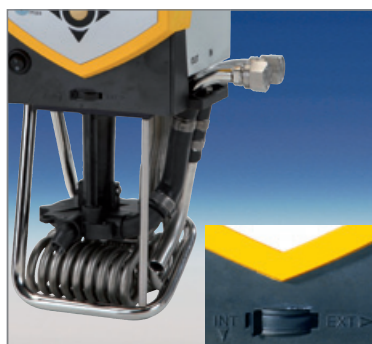
- Menu navigation via monochrome LCD (Silver) or colored TFT display (Gold)
- Programmer with both models

- Easy and clear operation
- Parameters are clearly readable
- Automation of temperature variations and test series



- Cooling outputs of 180, 200, 300 and 700 W and minimal temperature ranges from -15 up to -50 °C
- All cooling thermostats available as air and water cooled versions
- With natural refrigerants
- Energy-saving SmartCool System with 700 W cooling output

- Application related temperature control
- Choice of models regarding ambient conditions
- Very low global warming potential (GWP)
- Energy and cost savings with digital cooling management



- Strong circulation pump with six levels; flow rate switch placed at the front of the control head for internal or external circulation
- Pump connections as standard with cooling thermostats
- Cooling coil as standard with heating thermostats

- Adaptation of pump power to applications and different bath sizes
- Convenient working even at ambient temperature, without cooling
- Temperature control of external applications
- Connection of cooling water or external cooling for work below ambient temperature



- Mini-USB interface as standard
- Upper module slot: Analog, RS 232/485, contact, Profibus, Ethernet, EtherCAT module, to insert as an accessory
- Lower module slot: Pt100/LiBus module as accessory

- Computer connection and easy software updates
- Provides user with flexible control options
- Precise control of external applications
- Command remote control via LiBus



- Drain valves standard on all heating and cooling thermostats with stainless steel baths at the back of the devices

- Easy and safe changing of heat transfer liquids

ECO Control head Silver

The control heads Silver with 2.0 kW heater power (230 V) are now perfectly suited for thermostating tasks up to 200 °C. They are fitted with a monochrome LCD display.



Silver

- 2.0 kW heater power (230 V), working temperature range up to 200 °C
- LCD display, resolution of indication 0.01 °C
- Operation via cursor and softkeys
- Simultaneous display of set and actual temperature, navigation in plain text
- Selectable operating temperature range and additional button for overtemperature protection setting
- Safety class III, FL for flammable liquids
- 1-point calibration by the user
- Programmer with one program and 20 segments
- Vario pump with six levels, flow rate switch for internal or external circulation
- Mini-USB interface as standard

ECO Control head Gold

The control heads Gold with a heating power of 2,6 kW (230 V) have a working temperature range of up to 200 °C. They are provided with a larger colored TFT display. Temperature profiles can be displayed graphically. A comprehensive programmer with five programs and 150 temperature-time segments is a further distinctive feature compared to Silver.



Gold

- 2.6 kW heater power (230 V), working temperature range up to 200 °C
- Colored TFT display, resolution of indication 0.01 °C
- Operation via cursor and softkeys
- Simultaneous display of set and actual temperature, navigation in plain text
- Selectable operating temperature range and additional button for overtemperature protection setting
- Safety class III, FL for flammable liquids
- 1-point calibration by the user
- Graphical display of temperature profiles
- Programmer with five programs and 150 segments
- Vario pump with six levels, flow rate switch for internal or external circulation
- Mini-USB interface as standard

ECO Immersion thermostats

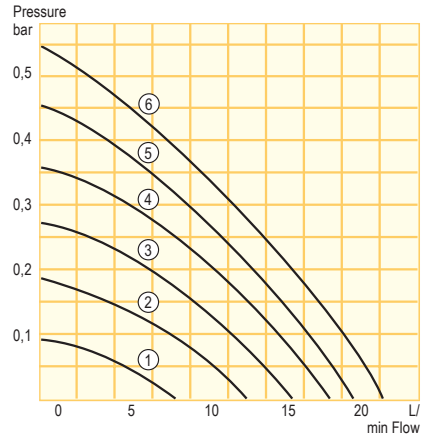
The ECO immersion thermostats can be used for any bath with a wall thickness of up to 30 mm and a bath depth of at least 150 mm by means of the screw clamp included in the scope of delivery.



Immersion thermostat Gold



Pump characteristics Heat transfer liquid: Water



- ① Step 1
- ② Step 2
- ③ Step 3
- ④ Step 4
- ⑤ Step 5
- ⑥ Step 6

Temperature range
20...200 °C

Included accessories
Screw clamp

Additional accessories
Baths · cooling coil · pump connection set · Interface modules:
analog, RS 232/485, contact, Profibus, Ethernet, EtherCAT,
Pt100/LiBus module



All technical data on page 96 and following
Other power supply variants on page 110



325 mm



325 mm

Technical features		Silver	Gold
Working temperature range	°C	20...200	20...200
Temperature stability	±K	0.01	0.01
Heater power	kW	2.0	2.6
Pump pressure max.	bar	0.55	0.55
Pump flow max.	L/min	22	22
Bath depth	mm	Min. 150	Min. 150
Cat. No.	230 V; 50/60 Hz	LCE 0227	LCE 0228

ECO Heating thermostats with stainless steel bath and control head Silver

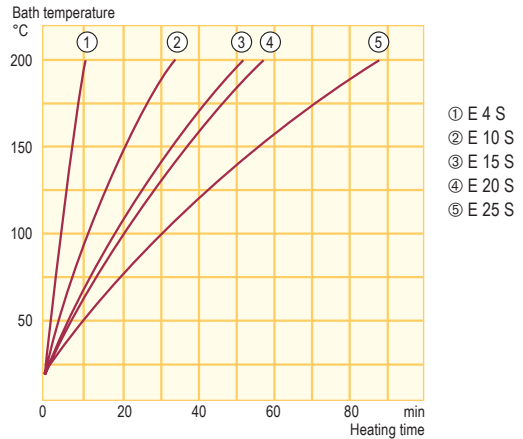
The heating thermostats with control head Silver are suitable for a temperature range of up to 200 °C. All heating thermostats are equipped with a cooling coil as standard. The E 4 S is fitted with a bath cover and pump connections for external applications with nipples made from plastic.



Heating thermostat E 4 S



Heating curves Heat transfer liquid: Therm 240, bath closed



- ① E 4 S
- ② E 10 S
- ③ E 15 S
- ④ E 20 S
- ⑤ E 25 S

Pump characteristics on page 23

Temperature range

20...200 °C

Included accessories

Cooling coil · bath cover and pump connections with 13 mm plastic nipples and closing plugs (E 4 S only)

Additional accessories

Hoses · bath covers · pump circulation set · Interface modules: analog, RS 232/485, contact, Profibus, Ethernet, EtherCAT, Pt100/LiBus module · Command remote control

All technical data on page 96 and following
Other power supply variants on page 110

Technical features		E 4 S	E 10 S	E 15 S	E 20 S	E 25 S	E 40 S
Working temperature range	°C	20...200	20...200	20...200	20...200	20...200	20...200
Temperature stability	±K	0.01	0.01	0.01	0.01	0.01	0.01
Heater power	kW	2.0	2.0	2.0	2.0	2.0	2.0
Pump pressure max.	bar	0.55	0.55	0.55	0.55	0.55	0.55
Pump flow max.	L/min	22	22	22	22	22	22
Bath volume	L	3...3.5	7.5...11	12...16	13...19	16...25	32...40
Bath opening/depth	mm	135x105/150	300x190/150	300x190/200	300x365/150	300x365/200	300x613/200
Cat. No. 230 V; 50/60 Hz		LCB 0736	LCB 0738	LCB 0740	LCB 0742	LCB 0744	LCB 0746

ECO Heating thermostats with stainless steel bath and control head Gold

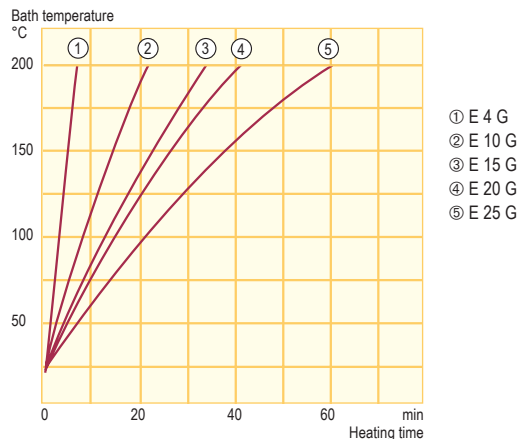
The heating thermostats with control head Gold can be used in a temperature range of up to 200 °C. All heating thermostats are equipped with a cooling coil as standard. The E 4 G is fitted with a bath cover and pump connections for external applications with M16 x 1 threads.



Heating thermostat E 20 G



Heating curves Heat transfer liquid: Therm 240, bath closed



Pump characteristics on page 23

Temperature range
20...200 °C

Included accessories

Cooling coil · bath cover and pump connection set with M16 x 1 thread (E 4 G only)

Additional accessories

Hoses · bath covers · pump circulation set · Interface modules: analog, RS 232/485, contact, Profibus, Ethernet, EtherCAT, Pt100/LiBus module · Command remote control



All technical data on page 96 and following

Other power supply variants on page 110



Technical features		E 4 G	E 10 G	E 15 G	E 20 G	E 25 G	E 40 G
Working temperature range	°C	20...200	20...200	20...200	20...200	20...200	20...200
Temperature stability	±K	0.01	0.01	0.01	0.01	0.01	0.01
Heater power	kW	2.6	2.6	2.6	2.6	2.6	2.6
Pump pressure max.	bar	0.55	0.55	0.55	0.55	0.55	0.55
Pump flow max.	L/min	22	22	22	22	22	22
Bath volume	L	3...3.5	7.5...11	12...16	13...19	16...25	32...40
Bath opening/depth	mm	135x105/150	300x190/150	300x190/200	300x365/150	300x365/200	300x613/200
Cat. No. 230 V; 50/60 Hz		LCB 0737	LCB 0739	LCB 0741	LCB 0743	LCB 0745	LCB 0747

ECO Heating thermostats with transparent bath and control head Silver and Gold

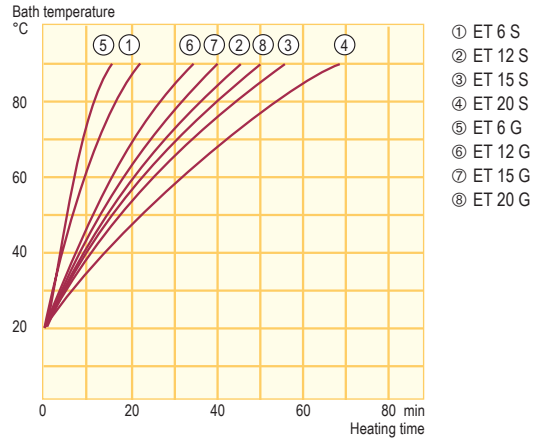
LAUDA ECO units with transparent plastic baths provide the necessary visibility in all cases where test samples need to be observed during thermostating. The thermostats with baths made from polycarbonate can be used in the temperature range of up to 100 °C. They have a filling volume of 5 up to 20 liters.



Heating thermostat ET 12 S



Heating curves Heat transfer liquid: Water, bath closed



Pump characteristics on page 23

Temperature range
20...100 °C

Included accessories

Cooling coil (not for ET 15 S/G) · closing plugs · pump connection set with 13 mm plastic nipples (ET 15 S) or M16 x 1 thread (ET 15 G)

Additional accessories

Hoses · Interface modules: analog, RS 232/485, contact, Profibus, Ethernet, EtherCAT, Pt100/LiBus module · Command remote control



All technical data on page 96 and following
Other power supply variants on page 110



349 mm



389 mm



532 mm



389 mm

Technical features		ET 6 S	ET 12 S	ET 15 S	ET 20 S
Working temperature range	°C	20...100	20...100	20*...100	20...100
Temperature stability	±K	0.01	0.01	0.01	0.01
Heater power	kW	2.0	2.0	2.0	2.0
Pump pressure max.	bar	0.55	0.55	0.55	0.55
Pump flow max.	L/min	22	22	22	22
Bath volume	L	5..6	9.5...12	15	15...20
Bath opening/depth	mm	130x285/160	300x175/160	275x130/310	300x350/160
Cat. No. 230 V; 50/60 Hz		LCM 0096	LCD 0286	LCD 0288	LCD 0290

Technical features		ET 6 G	ET 12 G	ET 15 G	ET 20 G
Working temperature range	°C	20...100	20...100	20*...100	20...100
Temperature stability	±K	0.01	0.01	0.01	0.01
Heater power	kW	2.6	2.6	2.6	2.6
Pump pressure max.	bar	0.55	0.55	0.55	0.55
Pump flow max.	L/min	22	22	22	22
Bath volume	L	5..6	9.5...12	15	15...20
Bath opening/depth	mm	130x285/160	300x175/160	275x130/310	300x350/160
Cat. No. 230 V; 50/60 Hz		LCM 0097	LCD 0287	LCD 0289	LCD 0291

* Possible with external cooling

ECO

Air-cooled cooling thermostats with control head Silver

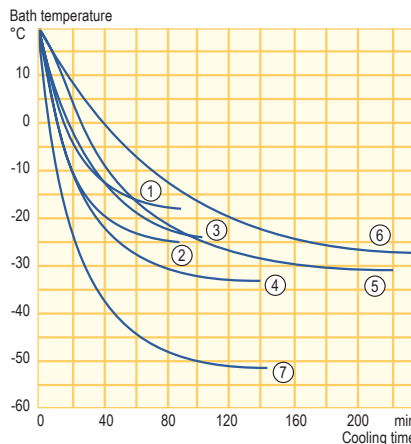
The cooling thermostats with control head Silver are available in the temperature range from -50 up to 200 °C. They are equipped with a bath cover and pump connections for external applications as standard. The pump connections are nipples made of high-quality plastic with an outer diameter of 13 mm. The RE 415 S is the basic model with minimized foot print. The RE 1050 SN with SmartCool digital cooling management can be used down to -50 °C and provides a cooling capacity of 700 W at 20 °C. Thanks to the larger baths, both models RE 1225 SN and RE 2025 SN are excellently suited to applications inside the bath.



Cooling thermostat RE 1050 SN



Cooling curves Heat transfer liquid: Ethanol, bath closed



- ① RE 415 S
- ② RE 420 SN
- ③ RE 620 SN
- ④ RE 630 SN
- ⑤ RE 1225 SN
- ⑥ RE 2025 SN
- ⑦ RE 1050 SN

Pump characteristics on page 23

Temperature range

-50...200 °C

Included accessories

Bath cover · pump connections with 13 mm plastic nipples · closing plugs

Additional accessories

Hoses · Interface modules: analog, RS 232/485, contact, Profibus, Ethernet, EtherCAT, Pt100/LiBus module · Command remote control



All technical data on page 100 and following

Other power supply variants on page 112



Technical features		RE 415 S	RE 420 SN	RE 620 SN	RE 630 SN	RE 1050 SN	RE 1225 SN	RE 2025 SN
Working temperature range*	°C	-15...200	-20...200	-20...200	-30...200	-50...200	-25...200	-25...200
Temperature stability	±K	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Heater power	kW	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Cooling output at 20 °C	kW	0.18	0.2	0.2	0.3	0.7	0.3	0.3
Pump pressure max.	bar	0.55	0.55	0.55	0.55	0.55	0.55	0.55
Pump flow max.	L/min	22	22	22	22	22	22	22
Bath volume	L	3.3...4	3.3...4	4.6...5.7	4.6...5.7	8...10	9.3...12	14...20
Bath opening/depth	mm	130x105/160	130x105/160	150x130/160	150x130/160	200x200/160	200x200/200	300x350/160
Cat. No. 230 V; 50 Hz		LCK 1910	LCK 1940	LCK 1942	LCK 1944	LCK 1946	LCK 1948	LCK 1950

* Working temperature range is equal to ACC range

ECO Air-cooled cooling thermostats with control head Gold

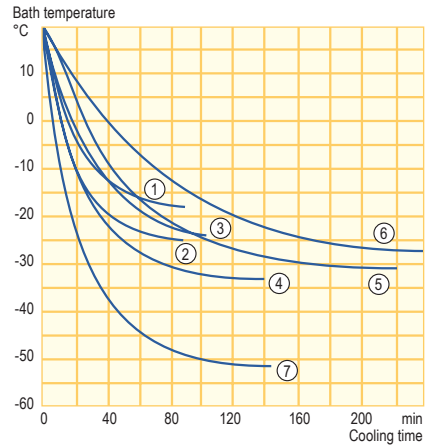
The cooling thermostats with control head Gold work up to 200 °C. Included as standard is a bath cover and pump connections made of stainless steel with M16 x 1 threads. The RE 1050 GN has an especially high cooling capacity and reaches temperatures down to -50 °C. The integrated Smart-Cool system ensures remarkable energy and cost savings. The RE 415 G with small foot print saves valuable laboratory space.



Cooling thermostat RE 1050 GN



Cooling curves Heat transfer liquid: Ethanol, bath closed



- ① RE 415 G
- ② RE 420 GN
- ③ RE 620 GN
- ④ RE 630 GN
- ⑤ RE 1225 GN
- ⑥ RE 2025 GN
- ⑦ RE 1050 GN

Pump characteristics on page 23

Temperature range

-50...200 °C

Included accessories

Bath cover · pump connections with M16 x 1 thread · closing plugs

Additional accessories

Hoses · Interface modules: analog, RS 232/485, contact, Profibus, Ethernet, EtherCAT, Pt100/LiBus module · Command remote control



All technical data on page 110 and following

Other power supply variants on page 112



Technical features		RE 415 G	RE 420 GN	RE 620 GN	RE 630 GN	RE 1050 GN	RE 1225 GN	RE 2025 GN
Working temperature range*	°C	-15...200	-20...200	-20...200	-30...200	-50...200	-25...200	-25...200
Temperature stability	±K	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Heater power	kW	2.6	2.6	2.6	2.6	2.6	2.6	2.6
Cooling output at 20 °C	kW	0.18	0.2	0.2	0.3	0.7	0.3	0.3
Pump pressure max.	bar	0.55	0.55	0.55	0.55	0.55	0.55	0.55
Pump flow max.	L/min	22	22	22	22	22	22	22
Bath volume	L	3.3...4	3.3...4	4.6...5.7	4.6...5.7	8...10	9.3...12	14...20
Bath opening/depth	mm	130x105/160	130x105/160	150x130/160	150x130/160	200x200/160	200x200/200	300x350/160
Cat. No. 230 V; 50 Hz		LCK 1911	LCK 1941	LCK 1943	LCK 1945	LCK 1947	LCK 1949	LCK 1951

* Working temperature range is equal to ACC range

ECO

Water-cooled cooling thermostats with control head Silver and Gold

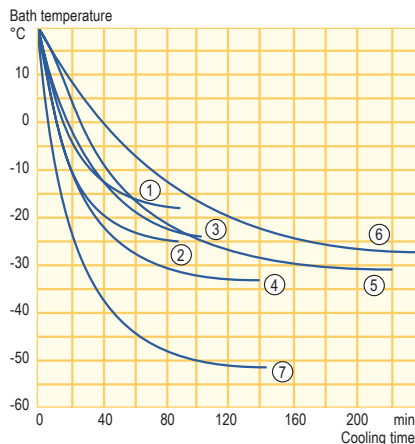
The cooling thermostats with control heads Silver and Gold are also available as water cooled models. By discharging process heat to the cooling water, heating-up of the environment will be reduced. This is an advantage when using several devices or at high ambient temperatures.



Cooling thermostat RE 1050 GWN



Cooling curves Heat transfer liquid: Ethanol, bath closed



- ① RE 415 SW
RE 415 GW
- ② RE 420 SWN
RE 420 GWN
- ③ RE 620 SWN
RE 620 GWN
- ④ RE 630 SWN
RE 630 GWN
- ⑤ RE 1225 SWN
RE 1225 GWN
- ⑥ RE 2025 SWN
RE 2025 GWN
- ⑦ RE 1050 SWN
RE 1050 GWN

Pump characteristics on page 23

Temperature range
-50...200 °C

Included accessories

Bath cover · pump connections with 13 mm plastic nipples (Silver) or M16 x 1 thread (Gold) and 13 mm nipples · closing plugs

Additional accessories

Hoses · Interface modules: analog, RS 232/485, contact, Profibus, Ethernet, EtherCAT, Pt100/LiBus module · Command remote control



All technical data on page 100, 102 and following
Other power supply variants on page 112

Technical features		RE 415 SW	RE 420 SWN	RE 620 SWN	RE 630 SWN	RE 1050 SWN	RE 1225 SWN	RE 2025 SWN
Working temperature range*	°C	-15...200	-20...200	-20...200	-30...200	-50...200	-25...200	-25...200
Temperature stability	±K	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Heater power	kW	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Cooling output at 20 °C	kW	0.18	0.2	0.2	0.3	0.7	0.3	0.3
Pump pressure max.	bar	0.55	0.55	0.55	0.55	0.55	0.55	0.55
Pump flow max.	L/min	22	22	22	22	22	22	22
Bath volume	L	3.3...4	3.3...4	4.6...5.7	4.6...5.7	8...10	9.3...12	14...20
Bath opening/depth	mm	130x105/160	130x105/160	150x130/160	150x130/160	200x200/160	200x200/200	300x350/160
Cat. No. 230 V; 50 Hz		LCK 1924	LCK 1954	LCK 1956	LCK 1958	LCK 1960	LCK 1962	LCK 1964

Technical features		RE 415 GW	RE 420 GWN	RE 620 GWN	RE 630 GWN	RE 1050 GWN	RE 1225 GWN	RE 2025 GWN
Working temperature range*	°C	-15...200	-20...200	-20...200	-30...200	-50...200	-25...200	-25...200
Temperature stability	±K	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Heater power	kW	2.6	2.6	2.6	2.6	2.6	2.6	2.6
Cooling output at 20 °C	kW	0.18	0.2	0.2	0.3	0.7	0.3	0.3
Pump pressure max.	bar	0.55	0.55	0.55	0.55	0.55	0.55	0.55
Pump flow max.	L/min	22	22	22	22	22	22	22
Bath volume	L	3.3...4	3.3...4	4.6...5.7	4.6...5.7	8...10	9.3...12	14...20
Bath opening/depth	mm	130x105/160	130x105/160	150x130/160	150x130/160	200x200/160	200x200/200	300x350/160
Cat. No. 230 V; 50 Hz		LCK 1925	LCK 1955	LCK 1957	LCK 1959	LCK 1961	LCK 1963	LCK 1965

* Working temperature range is equal to ACC range

ECO accessories (excerpt)

ECO transparent baths up to 100 °C

Transparent baths made of polycarbonate in order to view the objects being subjected to thermostating

Cat. No.	Description	Volume max. L	Int. dimensions (WxDxH)
LCZ 0703	6 T	6	130x420x160
LCZ 0704	12 T	12	300x315x160
LCZ 0705	15 T	15	416x130x310
LCZ 0706	20 T	20	300x490x160

ECO stainless steel baths up to 200 °C

The insulated baths made from stainless steel can be used up to 200 °C. All stainless steel baths are equipped with a built in drain tap. The outer jacket is made of powder-coated sheet steel.

Cat. No.	Description	Volume max. L	Int. dimensions (WxDxH)
LCZ 0707	B 4	3,5	135x240x150
LCZ 0708	B 10	11	300x329x150
LCZ 0709	B 15	16	300x329x200
LCZ 0710	B 20	19	300x505x150
LCZ 0711	B 25	25	300x505x200
LCZ 0712	B 40	40	300x750x200

Cooling coil set

For cooling of any heating baths

Cat. No.	Description	Suitable for
LCZ 0719	Cooling coil set ET 15, connectors to the right side	ET 15 S, ET 15 G

Bath covers

Cat. No.	Description	Suitable for
HDQ 133	Bath cover, stainless steel	E 10 S, E 10 G, E 15 S, E 15 G
HDQ 134	Bath cover, stainless steel	E 20 S, E 20 G, E 25 S, E 25 G
LCZ 0718	Bath cover, stainless steel	E 40 S, E 40 G (three pieces)

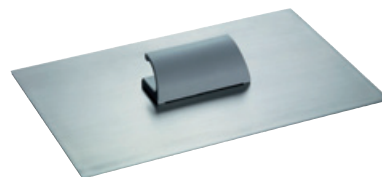
Pump connection sets

For thermostating of external applications. Both pump connection sets are usable with ECO Silver and ECO Gold.

Cat. No.	Description
LCZ 0716	With 13 mm plastic nipples
LCZ 0717	With M16 x 1 stainless steel connections, screw caps and 13 mm nipples



LCZ 0719



HDQ 133



LCZ 0716



LCZ 0717

ECO accessories (excerpt)

Interface modules

Cat. No.	Description	Suitable for
LRZ 912	Analog module	Upper module slot
LRZ 913	RS 232/485 interface	Upper module slot
LRZ 914	Contact module with 1 input and 1 output	Upper module slot
LRZ 915	Contact module with 3 inputs and 3 outputs	Upper module slot
LRZ 917	Profibus module	Upper module slot
LRZ 918	Pt100/LiBus module	Lower module slot
LRZ 921	Ethernet module	Upper module slot
LRZ 922	EtherCAT module with M8 connection	Upper module slot
LRZ 923	EtherCAT module with RJ45 connection	Upper module slot
LCZ 9727	Module box with LiBus for 2 modules	LiBus module



LRZ 912 LRZ 913 LRZ 914 LRZ 915 LRZ 917



LRZ 918



LRZ 921



LRZ 922



LRZ 923



LCZ 9727

Command remote control

With RS 232/485 interface as standard

Cat. No.	Description
LRT 914	Command remote control with graphic LCD for remote control via LiBus. Only possible in combination with Pt100/LiBus module (LRZ 918)



LRT 914

Solenoid valve for cooling water control

Water-conscious cooling of heating thermostats

Cat. No.	Description	Temperature range
LCZ 9664	Solenoid valve with LiBus-connector	-10...155 °C



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

NEW LAUDA PRO

Bath and circulation thermostats for professional temperature control from -100 up to 250 °C



Application examples


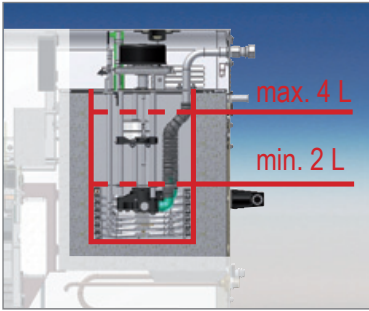
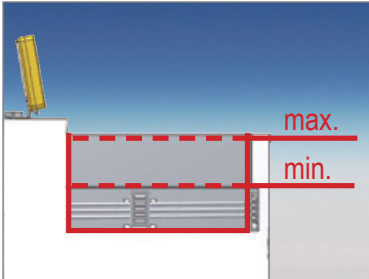

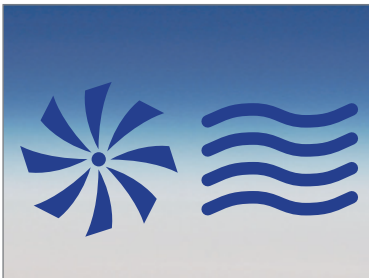
- Functional testing of electronic components
- Material testing of metal and plastic samples
- Sensor calibration
- Thermal control of chemical and biological reactions
- Precise temperature control for crystallization processes
- Temperature control of measuring and test rigs, heat exchangers and distillation apparatus

Flexible operation, outstanding performance data

The **LAUDA PRO** offers the user a future-proof product line having an outstanding overall concept. A significant innovation in the concept is the subdivision into thermostats for internal applications and thermostats for external applications. Heating and cooling bath thermostats have been optimized for internal applications. Circulation thermostats for external applications are a new category. Small active volumes enable rapid temperature changes. A new approach was also taken with the operating concept. There are two operating units available, Base and Com-

mand Touch. These can be removed from the thermostat for very high levels of flexibility. On the one hand, this permits remote control of the devices, and, other hand, this considerably reduces the height of the devices. All thermostats are equipped with an Ethernet and a USB interface as well as a Pt100 connection as standard. The cooling thermostats are also available with natural refrigerants. In addition, they are also equipped with a hybrid cooling system as standard. This enables additional cooling of the refrigerating machine with water.

Your advantages at a glance

+	The PRO advantages	Your benefits
	<ul style="list-style-type: none"> Operating unit rotates 360° and can be removed 	<ul style="list-style-type: none"> 360° access to the bath Spatial separation of operating unit and bath Low equipment height Remote control unit
	<ul style="list-style-type: none"> Low filling volume combined with a powerful Varioflex pump 	<ul style="list-style-type: none"> Rapid temperature change Low operating costs and material deployment
	<ul style="list-style-type: none"> Low minimum filling height Optimized bath circulation 	<ul style="list-style-type: none"> Full bath functionality A wide level range allows the use of variable probes Very high temperature stability and homogeneity
	<ul style="list-style-type: none"> USB, Ethernet and Pt100 interface equipped as standard while other interface modules are available 	<ul style="list-style-type: none"> Robust control system via local network Flexible actuation possibilities
	<ul style="list-style-type: none"> Hybrid cooling for the refrigeration circuit allows for cooling with both ambient air and supplementary cooling water All devices are available with natural refrigerants 	<ul style="list-style-type: none"> Reduction of waste heat to the ambient, flexible deployment to suit environmental conditions Environment-friendly, low global warming potential (GWP)

LAUDA PRO

Flexible operation

The user can choose between two operating units, Base or Command Touch, for the PRO product line. The remote control units are removable. The Base operating unit with OLED display is suitable for universal operating requirements for day-to-day use. The Command Touch operating unit with multi-touch display offers very high operating convenience on a future-proof software platform. Parallel connection of Base and Command Touch is possible.

Remote control unit Base



Remote control unit Command Touch



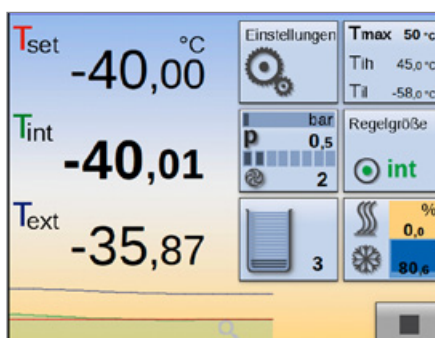
Remote control unit Base

- Bright high contrast OLED display
- Convenient operation using softkeys and cursor
- Clear menu navigation
- Programmer with 1 program, 20 segments
- Removable
- Temperature display in °C or °F
- Cable extension up to 50 meters
- Menu navigation in 5 languages

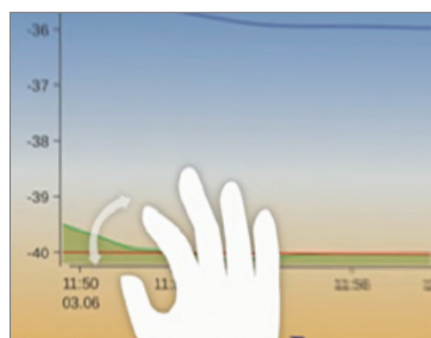


Remote control unit Command Touch

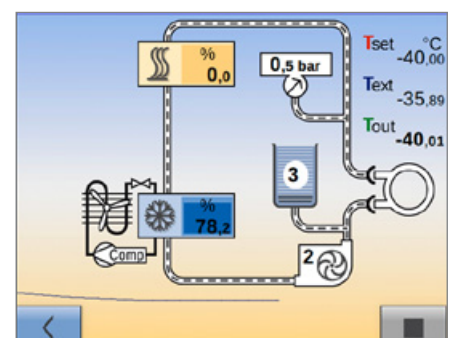
- Large color touch screen (5.7")
- Multi-touch operation using freely-configurable tiles – can be operated wearing gloves
- Zoomable graphic view
- Programmer with 100 programs, each with 50 segments
- Weekly timer and count-down function
- Ramp function
- Data logging, export to USB stick
- Individual user rights for up to 20 users
- Removable
- Temperature display in °C or °F
- Cable extension possible up to 50 meters
- Menu navigation in 8 languages



Freely-configurable tile sequences



Zoomable graphic view



Hydraulic circuit diagram with direct operating facility

PRO Heating bath thermostats

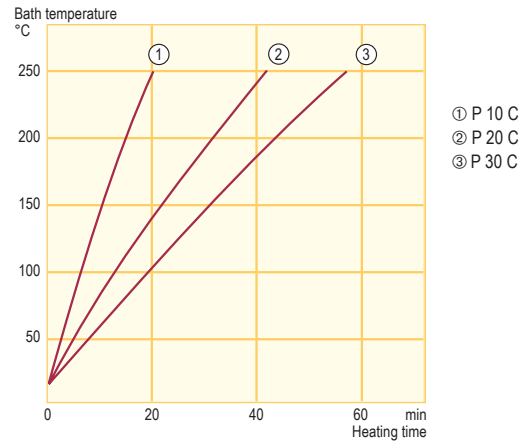
The PRO heating bath thermostats P 10, P 20 and P 30 work up to a maximum temperature of 250 °C. The thermostats, having volumes of 10, 20 and 30 liters, are optimized for internal bath applications and offer excellent temperature stability. The removable operating unit, including mount, allows considerable reduction in the height of device.



Heating bath thermostat P 10 with control unit Base.
Also available with control unit Command Touch.



Heating curves Heat transfer liquid: Ultra 300, bath closed



Temperature range
30...250 °C

Included as standard
USB, Ethernet interface, Pt100 connection socket

Accessories included
Bath cover · 2 hose olives with cap nuts for the cooling coil



All technical data on page 98 and following
Other power supply variants on page 110

Technical features		P 10	P 20	P 30
Working temperature range*	°C	40...250	35...250	30...250
Temperature stability	±K	0.01	0.01	0.01
Heater power	kW	3.6	3.6	3.6
Bath volume	L	5.5...10	11...20	15.5...28.5
Bath opening/Bath dept	mm	240x150/200	300x290/200	340x385/200
Cat. No. 230 V; 50/60 Hz	Base	L000001	L000002	L000003
Cat. No. 230 V; 50/60 Hz	Command Touch	L000004	L000005	L000006

*Working temperature range with water cooling 20 ... 250 °C

PRO Cooling bath thermostats

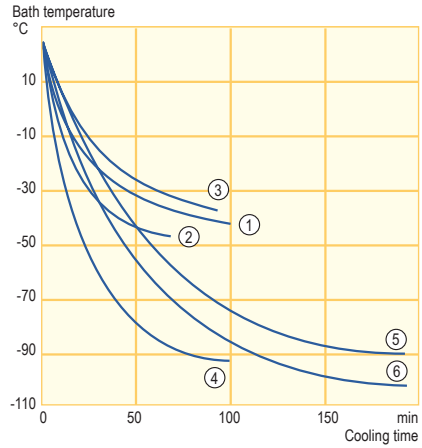
The PRO cooling bath thermostats for internal bath applications offer a working temperature range from -100 up to 200 °C. A multi-stage adjustable pump ensures good mixing of the bath. With their bath sizes from 10 to 30 liters and cooling outputs from 0.4 to 1.5 kW, the cooling thermostats are suitable for a wide range of applications. Hybrid cooling of the refrigerating machine permits cooling using ambient air and, supplementary cooling water. Standard bath edge heating on all devices prevents the formation of ice on the surface of the bath cover.



Cooling bath thermostat RP 2040 C with control unit Command Touch. Also available with control unit Base.



Cooling curves Heat transfer liquid: Ethanol, bath closed



- ① RP 2040 C
- ② RP 2045 C
- ③ RP 3035 C
- ④ RP 1090 C
- ⑤ RP 2090 C
- ⑥ RP 10100 C

Temperature range

-100...200 °C

Included as standard

USB, Ethernet interface, Pt100 connection socket

Accessories included

Bath cover · 2 hose olives with cap nuts for water cooling



All technical data on page 102 and following
Other power supply variants on page 112

Technical features		RP 2040	RP 2045	RP 3035	RP 1090	RP 2090	RP 10100
Working temperature range*	°C	-40...200	-45...200	-35...200	-90...200	-90...200	-100...200
Temperature stability	±K	0.01	0.01	0.01	0.01	0.01	0.01
Heater power	kW	3.6	3.6	3.6	3.6	3.6	3.6
Cooling output at 20 °C	kW	0.8	1.5	0.8	0.8	0.8	0.4
Bath volume	L	12.5...21	12.5...21	17.5...29.5	6.5...11	12.5...21	6.5...11
Bath opening/depth	mm	300x290/200	300x290/200	340x375/200	240x150/200	300x290/200	240x150/200
Cat. No. 230 V; 50 Hz	Base	L000007	L000008	L000009	L000010	L000011	L000012
Cat. No. 230 V; 50 Hz	Command Touch	L000013	L000014	L000015	L000016	L000017	L000018

* Working temperature range is equal to ACC range

PRO Heating circulation thermostats

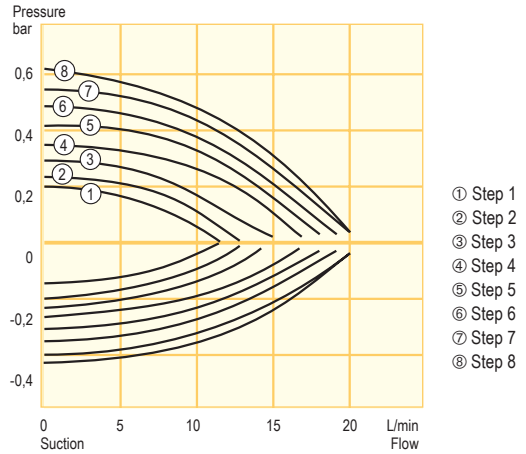
The PRO heating circulation thermostats are designed for external applications up to 250 °C. The low filling volume permits rapid heating in the external applications. The compact construction permits space-saving installation of the thermostats. An integrated cooling coil, fitted as standard, provides cooling.



Heating circulation thermostat P 2 E with control unit Base.
Also available with control unit Command Touch.



Pump characteristics Heat transfer liquid: Water



Temperature range
80...250 °C

Included as standard
USB, Ethernet interface, Pt100 connection socket

Accessories included
2 hose olives 13 mm for pump connection · 2 hose olives 10 mm with cap nut G³/₈ for cooling water connection



All technical data on page 98 and following
Other power supply variants on page 110

Technical features		P 2 E
Working temperature range*	°C	80...250
Temperature stability	±K	0.05
Heater power	kW	2.5
Pump pressure max.	bar	0.7
Pump suction max.	bar	0.4
Pump flow (pressure) max.	L/min	22
Pump flow (suction) max.	L/min	20
Filling volume	L	2.4...4.4
Cat. No. 230 V; 50/60 Hz	Base	L000019
Cat. No. 230 V; 50/60 Hz	Command Touch	L000020

*Working temperature range with water cooling 20 ... 250 °C

LAUDA PRO

PRO Cooling circulation thermostats

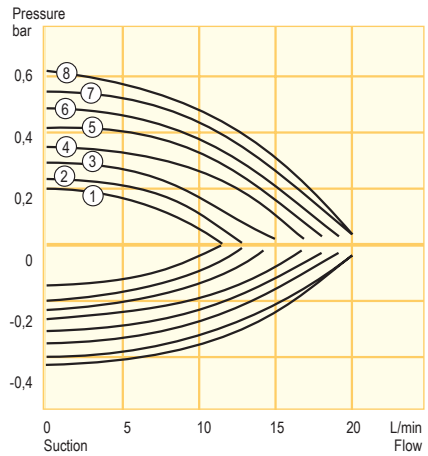
The PRO cooling circulation thermostats are ideal for external applications where rapid temperature changes are required. The cooling output of 0.6 and 0.8 kW, combined with a very small filling volume permit these rapid temperature changes. The thermostats have a working temperature range of -45 up to 200 °C. All devices are fitted with a pressure-suction pump. Hybrid cooling of the refrigerating machine permits cooling using ambient air and, supplementary cooling water.



Cooling circulation thermostat RP 240 EC with control unit Command Touch. Also available with control unit Base.

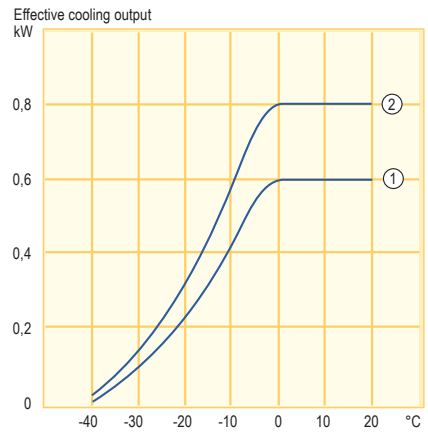


Pump characteristics Heat transfer liquid: Water



- ① Step 1
- ② Step 2
- ③ Step 3
- ④ Step 4
- ⑤ Step 5
- ⑥ Step 6
- ⑦ Step 7
- ⑧ Step 8

Cooling output Heat transfer liquid: Ethanol



- ① PR 240 E(C)
- ② PR 245 E(C)

Temperature range

-45...200 °C

Included as standard

USB, Ethernet interface, Pt100 connection socket

Accessories included

2 hose olives 13 mm for pump connection · 2 hose olives 10 mm with cap nut G³/₈ for cooling water connection



All technical data on page 102 and following
Other power supply variants on page 112

Technical features		RP 240 E	RP 245 E
Working temperature range*	°C	-40...200	-45...200
Temperature stability	±K	0.05	0.05
Heater power	kW	2.5	2.5
Cooling output at 20 °C	kW	0.6	0.8
Pump pressure max.	bar	0.7	0.7
Pump suction max.	bar	0.4	0.4
Pump flow (pressure) max.	L/min	22	22
Pump flow (suction) max.	L/min	20	20
Filling volume	L	2.4...4.4	2.4...4.4
Cat. No. 230 V; 50/60 Hz	Base	L000021	L000022
Cat. No. 230 V; 50/60 Hz	Command Touch	L000023	L000024

* Working temperature range is equal to ACC range

PRO accessories (excerpt)

Interface modules

Cat. No.	Description
LRZ 912	Analog module
LRZ 913	RS 232/485 interface
LRZ 914	Contact module NAMUR, 1 x In, 1 x Out
LRZ 915	Contact module, 3 x In, 3 x Out
LRZ 917	Profibus module
LRZ 922	EtherCAT module with M8 connection
LRZ 923	EtherCAT module with RJ45 connection
LCZ 9727	Module box with LiBus for 2 modules



LRZ 912 LRZ 913 LRZ 914 LRZ 915 LRZ 917



LRZ 922



LRZ 923



LCZ 9727

Polymer tubing

Cat. No.	Designation	d _i (mm)	d _e (mm)	Temp.-Range °C
RKJ 059	Silicone tube	11	15	10...100
RKJ 111	EPDM tube	9	11	10...120
RKJ 112	EPDM tube	12	14	10...120
LZS 021	EPDM tube insulated	12	35	-35...90
LZS 007	Silicone tube insulated	12	33	-60...100

d_i = internal diameter ; d_e = external diameter



LZS 007

Metal hoses with cold insulation

For connections with thread M16 x 1

Cat. No.	Designation	Length/cm	d _i (mm)	d _e (mm)	Temp.-Range °C
LZM 052	MK 50	50	10	44	-90...150
LZM 053	MK 100	100	10	44	-90...150
LZM 054	MK 150	150	10	44	-90...150
LZM 055	MK 200	200	10	44	-90...150
LZM 046	MC 50 S	50	10	34	-60...350
LZM 049	MC 200 S	200	10	34	-60...350
LZM 098	MC 300 S	300	10	34	-60...350
LZM 045	Pump link	18	10	44	-90...150

d_i = internal diameter ; d_e = external diameter



LZM 052/LZM 053/LZM 054/LZM 055



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

LAUDA Proline Kryomats

Cooling thermostats for professional use in process engineering and material testing from -90 up to 200 °C



Application examples

Constant temperatures

- Notch bending test
- Drop test

Changing temperatures

- Determination of pour point
- Brookfield test of lubricants
- Test of slide bearings

High cooling output, compact size, large baths, up to 40 liters

The **Proline Kryomats** are floor-standing, low-temperature thermostats suitable for a wide variety of applications. They never fail to impress through their compact design and high cooling capacities, especially at low temperatures. All Proline Kryomats are fitted with the Command remote control for easy and user-friendly operation. The units are equipped with a pressure

pump optimized for internal circulation adjustable from performance level five to eight. To prevent moisture in the atmosphere from condensing at low temperatures, bath bridge and bath edge heating are integrated into the design. Proline Kryomats stand out for having the latest technologies and an excellent price-performance ratio.

Your advantages at a glance



The Proline Kryomats advantages

Your benefits



- Removable Command remote control with graphic LCD
- Automatic adjustment of the control parameters via integrated software for adaptive control

- Easy and intuitive operation. Quick setting changes
- Saves time-consuming calculation of control parameters



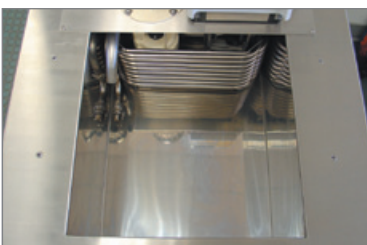
- Offset control head
- Integrated bath edge and bath bridge heating
- Use of innovative cooling technology

- Allows installation of optional supplementary pumps for external applications
- Avoids condensation and ice build-up
- High cooling capacity and low operating temperatures with very small footprint



- Adjustable pump nozzle

- Optimum circulation and temperature distribution throughout the entire bath



- Spacious baths with large bath openings
- Thread sleeves as standard on the edge of the bath

- Accommodates various sample shapes and sizes with efficient flow
- Allow for the fixing of testing equipment without further conversion measures



- Intelligent cooling fan control
- Optimised cooling airflow
- Internal release valve

- Optimum heat discharge while reducing noise emission
- Bath drain at front of unit
- No protruding release valve

LAUDA Proline Kryomats

Proline Kryomats Air-cooled cooling thermostats

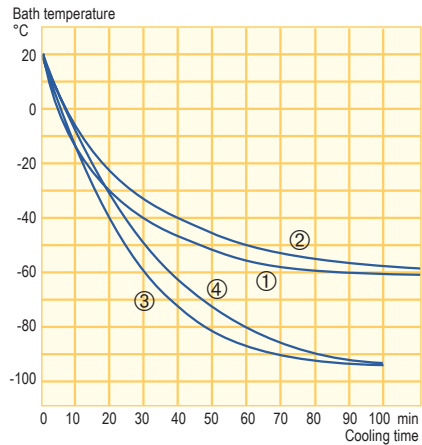
The air-cooled Proline Kryomats have a working temperature range from -50 and -90 up to 200 °C. The models are available with bath volumes of 30 and 40 liters. The Proline SmartCool system, with its energy-saving digital cooling management, ensures that the cooling output is run in accordance with the application needs. That saves up to 75 percent of energy compared to standard cooling methods. Two different booster pumps are available as options (ex works) especially for external applications that require a considerable increase in volume flow/discharge pressure.



Cooling thermostat RP 4050 C



Cooling curves Heat transfer liquid: Ethanol, bath closed



- ① RP 3050 C
- ② RP 4050 C
- ③ RP 3090 C
- ④ RP 4090 C

Temperature range

-90...200 °C

Included accessories

Bath cover · 4 closing plugs for pump connections ·
2 connectors 13 mm

Additional accessories

Interface modules: analog, RS 232/485, contact, Profibus,
Ethernet, EtherCAT module

Options

Booster pumps



All technical data on page 102 and following
Other power supply variants on page 113



Technical features		RP 3050 C	RP 4050 C	RP 3090 C	RP 4090 C
Working temperature range*	°C	-50...200	-50...200	-90...200	-90...200
Temperature stability	±K	0.05	0.05	0.05	0.05
Heater power	kW	3.5	3.5	3.5	3.5
Cooling output at 20 °C	kW	5.0	5.0	3.0	3.0
Pump pressure max.	bar	0.5	0.5	0.5	0.5
Pump flow (pressure) max.	L/min	19	19	19	19
Bath volume	L	23...31	32...44	23...31	32...44
Bath opening/depth	mm	350x200/250	350x350/250	350x200/250	350x350/250
Cat. No. 400 V; 3/N/PE; 50 Hz		LUK 239	LUK 241	LUK 245	LUK 247

* Working temperature range is equal to ACC range

Proline Kryomats

Water-cooled cooling thermostats

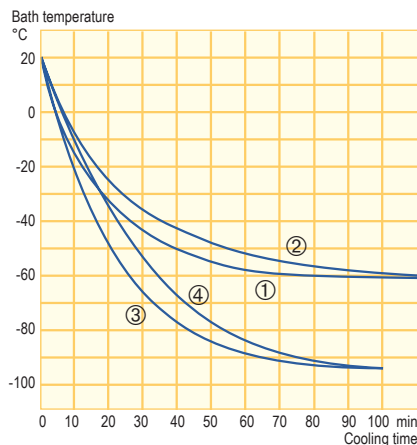
In the case of the water-cooled Proline Kryomats, the process heat is dissipated with the use of facility cooling water. This largely prevents unnecessary heating of the surrounding environment. As a result of this type of cooling, even higher cooling capacities are achieved than with the air-cooled units. The electronic cooling water management minimizes water consumption. The booster pumps, available as options (ex works), are particularly recommended for external applications where increased volume flow or greater pressures are required.



Cooling thermostat RP 4090 CW



Cooling curves Heat transfer liquid: Ethanol, bath closed



- ① RP 3050 CW
- ② RP 4050 CW
- ③ RP 3090 CW
- ④ RP 4090 CW

Temperature range

-90...200 °C

Included accessories

Bath cover · 4 closing plugs for pump connections · G 3/4" lock-nut with 1/2" hose clip · 2 connectors 13 mm

Additional accessories

Tubing for cooling water · Interface modules: analog, RS 232/485, contact, Profibus, Ethernet, EtherCAT module

Options

Booster pumps



All technical data on page 102 and following
Other power supply variants on page 113



Technical features		RP 3050 CW	RP 4050 CW	RP 3090 CW	RP 4090 CW
Working temperature range*	°C	-50...200	-50...200	-90...200	-90...200
Temperature stability	±K	0.05	0.05	0.05	0.05
Heater power	kW	3.5	3.5	3.5	3.5
Cooling output at 20 °C	kW	6.0	6.0	4.0	4.0
Pump pressure max.	bar	0.5	0.5	0.5	0.5
Pump flow (pressure) max.	L/min	19	19	19	19
Bath volume	L	23...31	32...44	23...31	32...44
Bath opening/depth	mm	350x200/250	350x350/250	350x200/250	350x350/250
Cat. No.		LUK 240	LUK 242	LUK 246	LUK 248

* Working temperature range is equal to ACC range

LAUDA Proline Kryomats

Proline Kryomats accessories (excerpt)

Interface modules

An RS 232/485 interface is integrated as a standard feature. The control head is equipped for two interface modules to be plugged into the rear of the unit.

Cat. No.	Description
LRZ 912	Analog module, 2 x In, 2 x Out, 0(4)...20 mA or 0...10 V
LRZ 913	RS 232/485 interface, electrically isolated, 9-pin SUB-D socket
LRZ 914	Contact module NAMUR, 1 x In, 1 x Out, NE 28, 2 DIN socket
LRZ 915	Contact module SUB-D, 3 x In, 3 x Out, 15-pin SUB-D
LRZ 917	Profibus module, electrically isolated, 9-pin SUB-D socket
LRZ 921	Ethernet module
LRZ 922	EtherCAT module with M8 connection
LRZ 923	EtherCAT module with RJ45 connection
LCZ 9729	Module box with LiBus for 2 modules



LRZ 912 LRZ 913 LRZ 914 LRZ 915 LRZ 917



LRZ 921 LRZ 922 LRZ 923

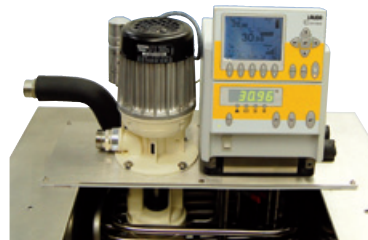


LCZ 9727

Booster pumps (only ex works)

For higher flow rates and pressure for external systems, connections M30 x 1.5 O

Cat. No.	Temperature range	Pressure max.	Pump flow max.
LWZ 080	-100...150 °C	0.9 bar	90 L/min
LWZ 086	-40...150 °C	3.2 bar	40 L/min



LWZ 080

Baskets

For notch bending test

Cat. No.	Suitable for
LUZ 008	RP 3050 C, RP 3050 CW, RP 3090 C, RP 3090 CW
LUZ 009	RP 4050 C, RP 4050 CW, RP 4090 C, RP 4090 CW



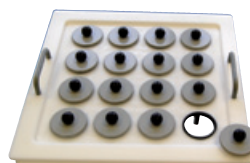
LUZ 008

Proline Kryomats accessories (excerpt)

Pour point determination

Bath cover accomodates up to 16 metal beakers

Cat. No.	Suitable for
UP 065	RP 4050 C, RP 4050 CW, RP 4090 C, RP 4090 CW

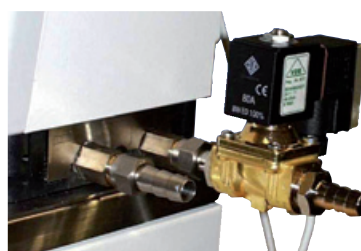


UP 065

Automatic filling device

For automatic replacement of liquid losses in thermostat bath, for example by evaporation. Also from vessels with max. 1 m suction height

Cat. No.	Description
LCZ 9661	Automatic filling device with LiBus



LCZ 9661

Cooling water tubes

Not suitable for Ultra 350 and mineral oil

Cat. No.	Designation	d _i (mm)	d _e (mm)	Temp.-range °C	Pressure range
RKJ 031	PDM tube, with textile inlay	13	19	-40...100	max. 10 bar
RKJ 032	PDM tube, with textile inlay	19	27	-40...100	max. 10 bar

d_i = internal diameter ; d_e = external diameter



RKJ 031



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

LAUDA Integral

Process thermostats for professional external thermostating across a wide temperature range from -90 up to 320 °C



Application examples

- Process technology
- Process engineering
- Production
- Research
- Thermostating of stirrer tanks
- Temperature control of reactors in chemistry, pharmacy or biotechnology
- Thermal tests on test stands
- Use in material tests

Extremely flexible and rapid temperature change

Integral T and XT process thermostats are particularly suited for external temperature control of reactors, mini plants and calorimeters. They provide broad temperature ranges and rapid temperature changes. The temperature of external applications can be controlled precisely with defined heating and cooling speeds. With

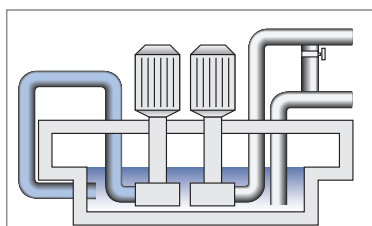
the Integral T, internal circulation allows temperature control independently of external current resistances. The Integral XT units work on the basis of the flow principle with a cold-oil blanket. As a result, significantly greater temperature ranges and quicker temperature changes are possible.

Your advantages at a glance



The Integral T advantages

Your benefits



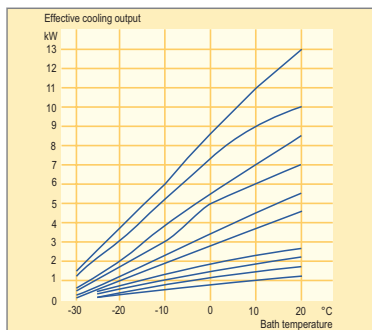
- Small active internal volume
- Bypass valve between inlet and outlet as a standard feature

- Rapid temperature change and effective control of exothermic reactions
- Pressure reducer to protect pressure-sensitive applications and glass



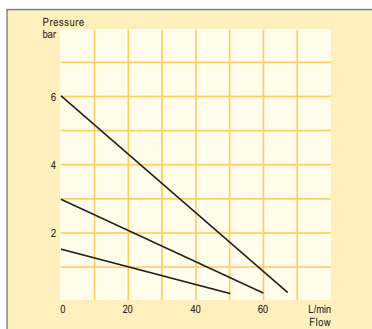
- Pivoting control unit with clear keypad and large display

- Easily accessible yet splash-water protected interfaces
- Easy and intuitive to operate



- Specific equipment range with heating outputs up to 9 kW and cooling outputs up to 13 kW
- Limited target temperature range from -30 to 150 °C

- Application-specific temperature control with high heating and cooling speeds
- Economical temperature control by limitation to essential functions



- Strong submersible pump, large expansion volume with overflow connection
- Additional pump as a standard feature with T 4600 units and larger
- Enhanced pump and low-pressure pump available as options

- Suitable for large external circuits
- Full cooling capacity independent from external flow
- May be adapted to various applications



- Compact design, all devices fitted with castors
- Remote control options available with use of accessory

- Saves valuable laboratory space
- Flexible positioning
- Mounting and sub-assembly option

LAUDA Integral T

Integral T Process thermostats up to 2.7 kW

Integral T process thermostats make rapid thermostating with powerful heating and cooling outputs combined with a small active internal volume possible. This minimises thermal drift and exothermic reactions are effectively controlled. Its compact construction is space-saving and the castor set makes the Integral T mobile.

The T control unit can simply be flipped open. The following interfaces are then accessible from below: connector for standby contact input, malfunction (alarm) contact output, analogue inputs and outputs, external Pt 100 and serial RS 232/RS 485 interface.

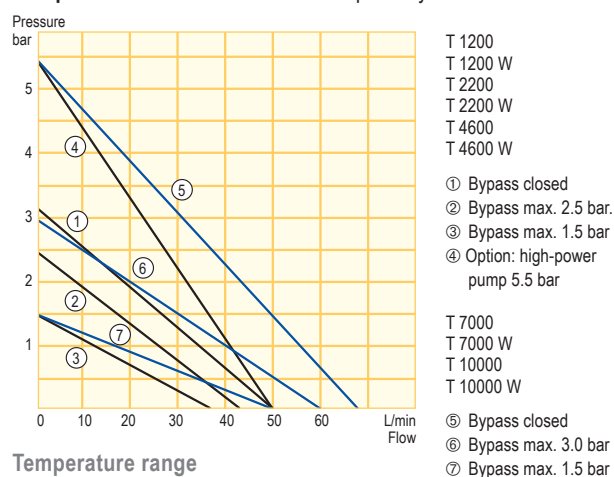


Process thermostat T 2200



- Programmer with max. 150 temperature/time segments, for up to 5 programs
- Parallel display of 2 temperature values and discharge pressure
- External control via Pt100 temperature probe or standard signal
- Analogue inputs (3) and outputs (2), can be configured to 0...10 V or 0/4...20 mA
- Error message for low level, overtemperature, pumps and cooling compressor
- Remote "malfunction" display and stand-by switch via neutral contact
- RS 232/485 interface for PC and LAUDA Wintherm Plus control software

Pump characteristics Heat transfer liquid: Kryo 30



Temperature range

-25...120 °C

Options T 1200...T 2200 W

Flow control instrument · low-pressure pump 1 bar, 30 L/min** · high-power pump 5.5 bar**

Additional accessories T 1200...T 2200 W

Fiber-reinforced rubber tubing · insulation for rubber tubing · metal hose · 4-port manifold · remote control



All technical data on page 104 and following
Other power supply variants on page 113

Technical features		T 1200	T 1200 W	T 2200	T 2200 W
Working temperature range*	°C	-25...120	-25...120	-25...120	-25...120
Temperature stability	±K	0.2	0.2	0.2	0.2
Heater power	kW	2.25	2.25	2.25	2.25
Cooling output at 20 °C	kW	1.2	1.6	2.2	2.7
Pump pressure max.	bar	3.2	3.2	3.2	3.2
Pump flow max.	L/min	40	40	40	40
Internal volume	L	3...7	3...7	3...7	3...7
Cat. No. 230 V; 50 Hz		LWP 101	LWP 102	LWP 103	LWP 104

* Working temperature range is equal to ACC range

** Using such a pump changes the available cooling capacity

Integral T Process thermostats up to 13 kW

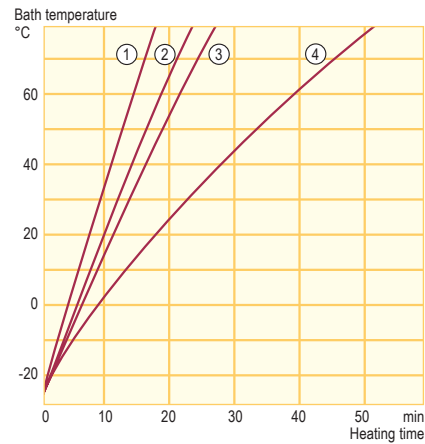
From the T 4600 units and larger, the Integral T is equipped with an additional pump allowing for more powerful circulation in the internal circuit. An adjustable bypass valve between the supply pipe and the bath of the external circuit allows for pressure reduction (e.g. in order to protect pressure-sensitive applications).



Process thermostat T 7000

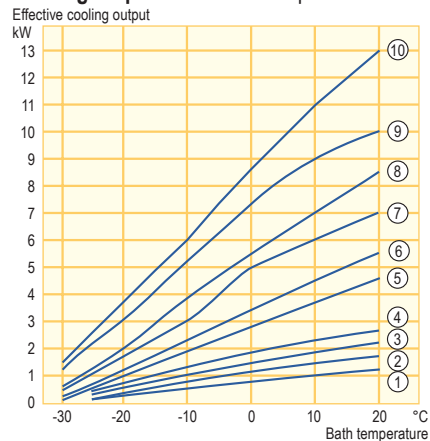


Heating curves Heat transfer liquid: Kryo 30 External volume: 10 L



- ① T 10000 · T 10000 W
- ② T 4600 · T 4600 W
- ③ T 7000 · T 7000 W
- ④ T 1200 · T 1200 W
T 2200 · T 2200 W

Cooling output Heat transfer liquid: Ethanol



- ① T 1200
- ② T 1200 W
- ③ T 2200
- ④ T 2200 W
- ⑤ T 4600
- ⑥ T 4600 W
- ⑦ T 7000
- ⑧ T 7000 W
- ⑨ T 10000
- ⑩ T 10000 W

Temperature range

-30...120 °C (optional up to 150 °C)

Options T 4600...T 10000 W:

Extended temperature range up to 150 °C (not for T 4600) ·
flow control instrument · high-power pump 5.5 bar***
(only T 4600, T 4600 W)

Additional accessories T 4600...T 10000 W:

Fiber-reinforced rubber tubing · insulation for rubber tubing ·
metal hose · 4-port manifold · remote control



All technical data on page 104 and following
Other power supply variants on page 113

Technical features		T 4600	T 4600 W	T 7000	T 7000 W	T 10000	T 10000 W
Working temperature range*	°C	-30...120	-30...120	-30...120 **	-30...120 **	-30...120 **	-30...120 **
Temperature stability	±K	0.2	0.2	0.3	0.3	0.3	0.3
Heater power	kW	6.0	6.0	6.0	6.0	9.0	9.0
Cooling output at 20 °C	kW	4.6	5.5	7.0	8.5	10.0	13.0
Pump pressure max.	bar	3.2	3.2	6.0	6.0	6.0	6.0
Pump flow max.	L/min	40	40	60	60	60	60
Internal volume	L	6...18	6...18	8...20	8...20	8...20	8...20
Cat. No. 400 V; 3/N/PE; 50 Hz		LWP 205	LWP 206	LWP 207	LWP 208	LWP 209	LWP 210

* Working temperature range is equal to ACC range

** Available from -30 up to 150 °C upon request

*** Using such a pump changes the available cooling capacity

LAUDA Integral XT

Extremely broad temperature range and rapid temperature changes:
LAUDA Integral XT



Application examples

- Temperature control of stirrer tanks
- Temperature control of reactors in chemistry, pharmacy or biotechnology
- Thermal tests on test stands
- Use in material tests

LAUDA Integral XT process thermostats allow extremely rapid temperature changes, resulting from the small, internal, thermally active heat transfer medium. The instruments work according to the highly

efficient flow principle with a broad working temperature range. The process thermostats are used where rapid temperature changes or high refrigeration and heating performance are required.

Your advantages at a glance

+

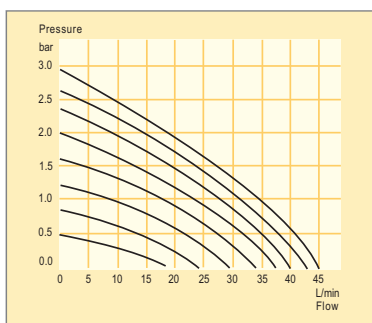
The Integral XT advantages

Your benefits



- Removable Command remote control with graphic LCD
- Automatic adjustment of the control parameters via integrated software for adaptive control
- Also available as explosion-proof version

- Easy and intuitive operation, quick setting changes
- Saves time-consuming calculation of control parameters
- Operation in ex-zones



- Eight-level Vario pump adjustment
- Infinitely variable control of pump pressure
- Magnetically coupled pump

- Application-specific adaptation of flow and pressure to the application
- Pressure reduction to protect pressure-sensitive applications
- No sealing problems at the pump shaft across the entire temperature range



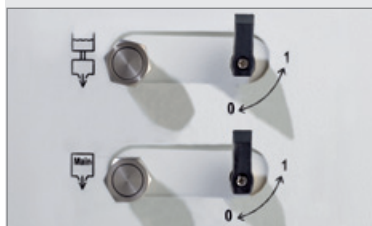
- Two slots for interface modules available
- RS 232/485 interface included

- High flexibility for the user for the broadest range of system integrations



- Recessed filling inlet on the top of the equipment
- Practical drain taps on the sides of the equipment

- Simple filling with heat transfer liquid from the top of the unit
- Quick and complete drainage of the heat transfer liquid from the system



- Software-based/controlled filling and draining
- Automatic degassing after filling process

- Professional and safe start-up
- Temperature control of external application without gas introduction



- SelfCheck assistant shows equipment status clearly on the display

- High level of operating safety and constant monitoring of all equipment functions

LAUDA Integral XT

Integral XT Air-cooled process thermostats down to -80 °C

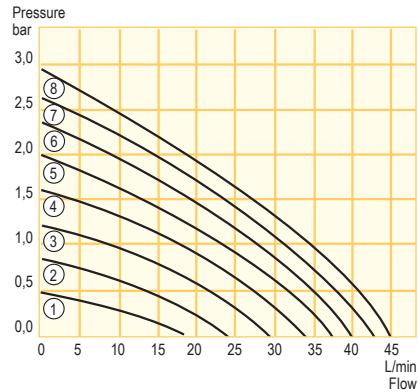
The LAUDA Integral XT process thermostats are ideally designed for the requirements of rapid and precise temperature control of an external application in process plant and pilot plant environments. The air-cooled process thermostats offer high performance in a small footprint while still providing functionality across a wide temperature range. The special high-temperature version enables process temperatures up to 300 °C. The models XT 750 S and XT 750 HS are available with increased heater power. The large expansion vessel in the LAUDA Integral XT absorbs temperature-induced changes in volume, thereby ensuring smooth operation even in large connected external systems.



Integral XT 750

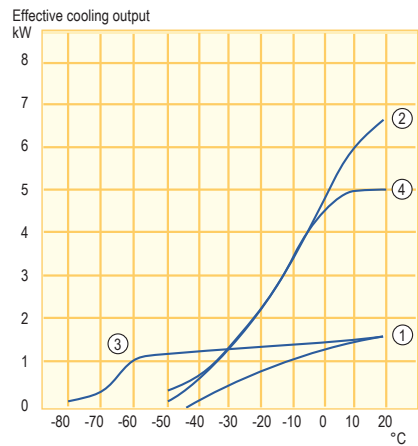


Pump characteristics for all XT except for XT 1850 W, XT 1850 WS Heat transfer liquid: Water



- ① Step 1
- ② Step 2
- ③ Step 3
- ④ Step 4
- ⑤ Step 5
- ⑥ Step 6
- ⑦ Step 7
- ⑧ Step 8

Cooling output Heat transfer liquid: Ethanol



- ① XT 150
- ② XT 750 · XT 750 H
- ③ XT 280
- ④ XT 550

Temperature range

-80...300 °C

Included accessories

Command remote control with RS 232/485 interface



All technical data on page 104 and following
Other power supply variants on page 113



660 mm



1285 mm



1285 mm



1285 mm



1285 mm

Technical features		XT 150	XT 280	XT 550	XT 750 (XT 750 S)	XT 750 H (XT 750 HS)
Working temperature range*	°C	-45...220	-80...220	-50...220	-50...220	-50...300
Temperature stability at -10 °C	±K	0.05	0.1	0.05	0.05	0.05
Heater power	kW	3.5	4.0	5.3	5.3 (8.0)	5.3 (8.0)
Cooling output at 20 °C	kW	1.5	1.5	5.0	6.7	6.7
Pump pressure max.	bar	2.9	2.9	2.9	2.9	2.9
Pump flow max.	L/min	45	45	45	45	45
Filling volume min.	L	2.6	5.0	5.0	5.0	5.3
Filling volume of expansion vessel	L	5.5	6.7	6.7	6.7	6.7
Cat. No. 400 V; 3/PE; 50 Hz		LWP 112**	LWP 534	LWP 524	LWP 520 (LWP 552)	LWP 522 (LWP 553)

* Working temperature range is equal to ACC range ** 230 V; 50 Hz

Integral XT

Water-cooled process thermostats down to -50 °C

Independent of variations in ambient temperature, Integral XT water-cooled process thermostats achieve constantly high cooling performance. The temperature of the ambient air remains virtually unchanged due to the dissipation of the process heat through the cooling water. This is a particular advantage in setups similar to production as in process plants or in the mini-plant, where work is conducted under the most strained conditions. Water-cooled Integral XT systems are also the perfect choice for air-conditioned spaces, since they do not tax or place an unnecessary burden on air-conditioning systems. The XT 950 WS provides an increased heater power.

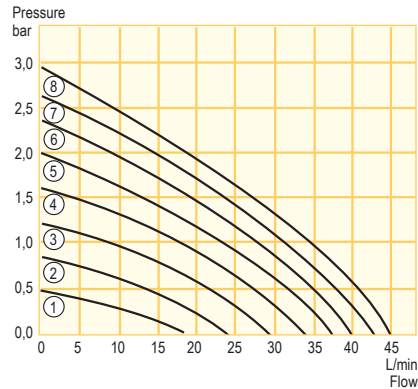


Integral XT 350 HW



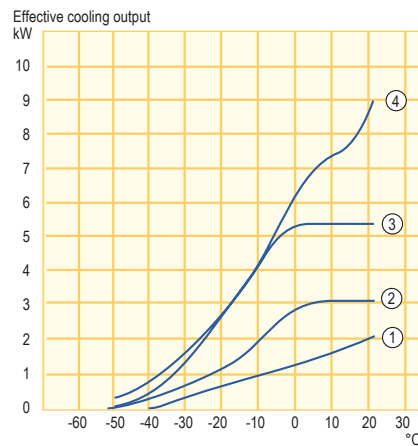
Pump characteristics for all XT except for XT 1850 W, XT 1850 WS

Heat transfer liquid: Water



- ① Step 1
- ② Step 2
- ③ Step 3
- ④ Step 4
- ⑤ Step 5
- ⑥ Step 6
- ⑦ Step 7
- ⑧ Step 8

Cooling output Heat transfer liquid: Ethanol



- ① XT 250 W
- ② XT 350 W
- ③ XT 350 HW
- ④ XT 550 W
- ⑤ XT 950 W
- ⑥ XT 950 WS

Temperature range
-50...300 °C

Included accessories

Command remote control with RS 232/485 interface



All technical data on page 104 and following
Other power supply variants on page 113



Technical features		XT 250 W	XT 350 W	XT 350 HW	XT 550 W	XT 950 W (XT 950 WS)
Working temperature range*	°C	-45...220	-50...220	-50...300	-50...220	-50...220
Temperature stability at -10 °C	±K	0.05	0.1	0.1	0.1	0.1
Heater power	kW	3.5	3.5	3.5	5.3	5.3 (8.0)
Cooling output at 20 °C	kW	2.1	3.1	3.1	5.4	9.0
Pump pressure max.	bar	2.9	2.9	2.9	2.9	2.9
Pump flow max.	L/min	45	45	45	45	45
Filling volume min.	L	2.6	5.0	5.3	5.0	5.0
Filling volume of expansion vessel	L	5.5	6.7	6.7	6.7	6.7
Cat. No. 230 V; 50 Hz		LWP 113	LWP 117	LWP 119	–	–
Cat. No. 400 V; 3/PE; 50 Hz		–	–	–	LWP 525	LWP 521 (LWP 554)

* Working temperature range is equal to ACC range

LAUDA Integral XT

Integral XT Water-cooled process thermostats down to -90 °C

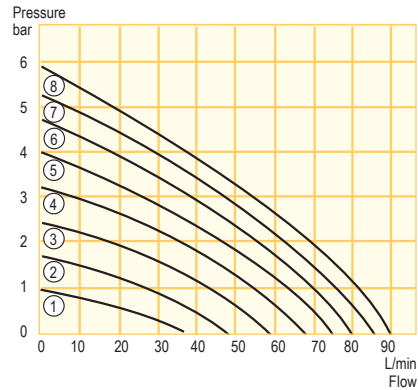
The LAUDA Integral XT 1590 WS and XT 490 W process thermostats stand out for their high cooling outputs at very low temperatures. Thanks to the two-stage cascade system, the thermostats are particularly suited for applications in the ultra-low range down to -90 °C. The water-cooled devices achieve cooling outputs of up to 18.5 kW and maximum heating capacities of 10.6 kW. The XT 1850 WS provides an increased heater power.



Integral XT 1590 W

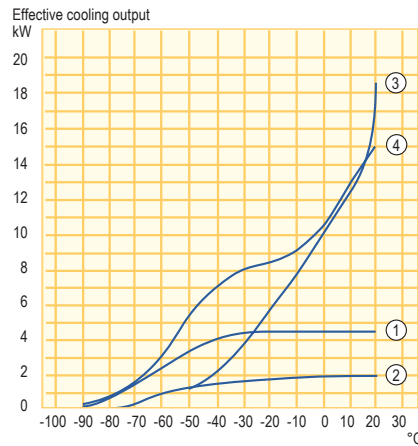


Pump characteristics for XT 1850 W, XT 1850 WS Heat transfer liquid: Water



- ① Step 1
- ② Step 2
- ③ Step 3
- ④ Step 4
- ⑤ Step 5
- ⑥ Step 6
- ⑦ Step 7
- ⑧ Step 8

Cooling output Heat transfer liquid: Ethanol



- ① XT 490 W
- ② XT 280 W
- ③ XT 1850 W (XT 1850 WS)
- ④ XT 1590 WS

Temperature range
-90...220 °C

All Integral XT include
Command remote control with RS 232/485 interface



All technical data on page 104
and following
Other power supply variants on page 113



Technical features		XT 280 W	XT 1850 W (XT 1850 WS)	XT 490 W	XT 1590 WS
Working temperature range*	°C	-80...220	-50...220	-90...220	-90...220
Temperature stability at -10 °C	±K	0.1	0.3	0.1	0.3
Heater power	kW	4.0	10.6 (16.0)	5.3	8.0
Cooling output at 20 °C	kW	2.0	18.5	4.4	15.0
Pump pressure max.	bar	2.9**	5.8	2.9**	2.9**
Pump flow max.	L/min	45	90	45	45
Filling volume min.	L	5.0	9.0	9.5	10.5
Filling volume of expansion vessel	L	6.7	17.4	17.4	17.4
Cat. No. 400 V; 3/PE; 50 Hz		LWP 535	LWP 532 (LWP 533)	LWP 539	LWP 551

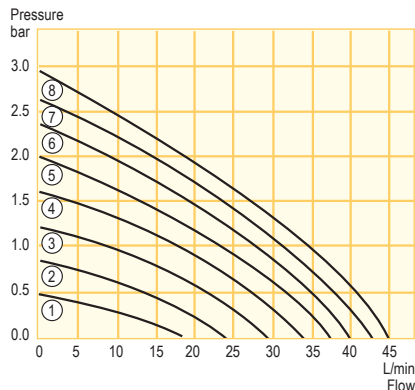
* Working temperature range is equal to ACC range ** Pump characteristics p. 57

Integral XT High-temperature thermostats up to 320 °C

The LAUDA Integral XT high-temperature thermostats allow for a maximum working temperature of 320 °C. The process thermostats are operated using the Command remote control, which is already utilized in the other XT models. The powerful pump can be regulated at eight different levels, supplying a maximum pressure of 2.9 bar and a flow rate of up to 45 L/min. The model XT 4 H provides a heating power of 3.5 kW. The XT 8 H is equipped with an 8.0 kW heating system.



Pump characteristics for all XT except for XT 1850 W
Heat transfer liquid: Water



- ① Step 1
- ② Step 2
- ③ Step 3
- ④ Step 4
- ⑤ Step 5
- ⑥ Step 6
- ⑦ Step 7
- ⑧ Step 8

Temperature range

80...320 °C

Included accessories

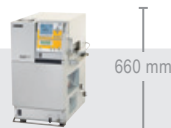
Command remote control with RS 232/485 interface



Integral XT 8 H



All technical data on page 104 and following
Other power supply variants on page 114



Technical features		XT 4 H	XT 8 H
Working temperature range	°C	80...320	80...320
Temperature stability at 150 °C with oil	±K	0.05	0.05
Heater power max.	kW	3.5	8.0
Pump pressure max.	bar	2.9	2.9
Pump flow max.	L/min	45	45
Filling volume min.	L	2.6	2.6
Filling volume of expansion vessel	L	5.5	5.5
Pump connection thread	mm	M30 x 1.5 (DN 20)	M30 x 1.5 (DN 20)
Dimensions (WxDxH)	mm	335x550x660	335x550x660
Cat. No. 230 V; 50 Hz		LWP 147	LWP 549 (400 V; 3/PE; 50 Hz)

LAUDA Integral XT

Integral XT High-temperature thermostats with water counter-cooling up to 320 °C

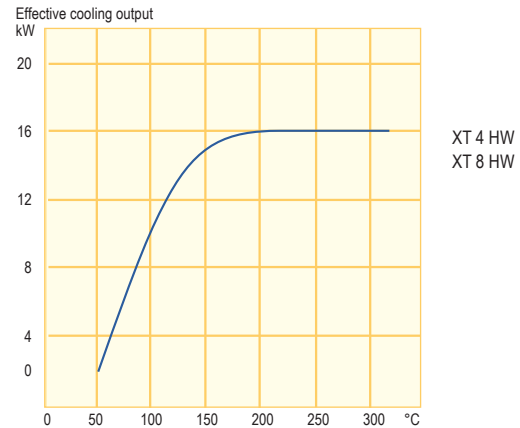
With the XT 4 HW and the XT 8 HW models, water-generated counter-cooling allows for quick cool-down across the entire temperature range from 30 up to 320 °C. Especially at higher temperatures, the water counter-cooling is very efficient and cost effective.



Integral XT 4 HW



Cooling output of the water counter-cooling



Temperature range
30...320 °C

Included accessories
Command remote control with RS 232/485 interface



All technical data on page 104 and following
Other power supply variants on page 114



Technical features		XT 4 HW	XT 8 HW	
Working temperature range	°C	30...320	30...320	
Temperature stability at 150 °C with oil	±K	0.1	0.1	
Heater power max.	kW	3.5	8.0	
Cooling output (water counter-cooling) at 15 °C cooling water temperature				
	300 °C	kW	16	16
	200 °C	kW	16	16
	150 °C	kW	15	15
	100 °C	kW	9	9
	50 °C	kW	2	2
Pump pressure max.	bar	2.9	2.9	
Pump flow max.	L/min	45	45	
Filling volume min.	L	2.6	2.6	
Filling volume of expansion vessel	L	5.5	5.5	
Pump connection thread	mm	M30 x 1.5 (DN 20)	M30 x 1.5 (DN 20)	
Dimensions (WxDxH)	mm	335x550x660	335x550x660	
Connection water cooling		R3/4 A	R3/4 A	
Cat. No. 230 V; 50 Hz		LWP 148	LWP 550 (400 V; 3/PE; 50 Hz)	

Integral T accessories (excerpt)

Reinforced polymer tubing

Special polymer tubing for high pressures

Cat. No.	Description	Temperature range °C	Max. pressure in bar
RKJ 031	Polymer tubing 1/2", fiber-reinforced	-40...100	20
RKJ 032	Polymer tubing 3/4", fiber-reinforced	-40...100	20
RKJ 033	Polymer tubing 1", fiber-reinforced	-40...100	20
RKJ 103	Polymer tubing 1/2", with textile insert	-40...120	9
RKJ 104	Polymer tubing 3/4", with textile insert	-40...120	9
RKJ 105	Polymer tubing 1", with textile insert	-40...120	3

Insulated metal hoses

For T 1200...T 4600						
Cat. No.	Description	Length (cm)	Thread	d _i (mm)	d _e (mm)	Temperature range °C
LZM 075	MTK 100	100	G 3/4"	20	47	-60...150
LZM 076	MTK 200	200	G 3/4"	20	47	-60...150

For T 7000...T 10000						
Cat. No.	Description	Length (cm)	Thread	d _i (mm)	d _e (mm)	Temperature range °C
LZM 078	MTK 101	100	G 1 1/4-G 1	25	50	-60...150
LZM 079	MTK 201	200	G 1 1/4-G 1	25	50	-60...150

d_i = internal diameter, d_e = external diameter

Manifold connectors

For joining multiple external systems (suitable for water/glycol and silicone oil)

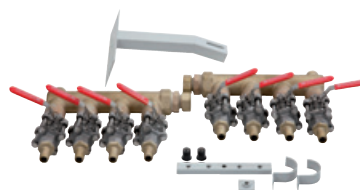
Cat. No.	Description	Connection	Male thread	Temperature range °C
LWZ 084	Four-port manifold	G 3/4"	4 x 3/4"	-30...150
LWZ 075	Four-port manifold	G 3/4"	4 x 1/2"	-30...150
LWZ 085	Four-port manifold	G 3/4"	4 x 10 mm	-30...150
LWZ 082	Four-port manifold	G 1 1/4"	4 x 3/4"	-30...150



RKJ 031



LZM 075



LWZ 075

Options	Cat. No.	T 1200	T 1200 W*	T 2200	T 2200 W*	T 4600	T 4600 W*	T 7000	T 7000 W*	T 10000 W**	T 10000 W**
Enlarged temperature range up to 150 °C	LWZ 029	-	-	-	-	-	-	●	●	●	●
Flow control instrument	LWZ 035 LWZ 036	●	●	●	●	●	●	-	-	-	-
Low-pressure pump 1 bar**, 30 L/min, 50-Hz version	LWZ 041-1	●	●	●	●	-	-	-	-	-	-
High-power pump 5.5 bar**, 40 L/min 50-Hz version (see pump characteristics at the top of page 50)	LWZ 031-4 LWZ 032-4	●	●	●	●	-	-	-	-	-	-
Pump connections M38 x 1,5 O	LWZ 093	-	-	-	-	-	-	●	●	●	●

* W = water-cooled version ** Using such a pump changes the available cooling capacity

LAUDA Integral XT

Integral XT accessories (excerpt)

Slot-in and interface modules

Cat. No.	Description
LRZ 912	Analog module, 2 x In, 2 x Out, 0(4)...20 mA or 0...10 V
LRZ 913	RS 232/485 interface, electrically isolated, 9-pin SUB-D
LRZ 914	Contact module NAMUR, 1 x In, 1 x Out, NE 28, 2 DIN sockets
LRZ 915	Contact module SUB-D, 3 x In, 3 x Out, 15-pin SUB-D
LRZ 917	Profibus interface, electrically isolated, 9-pin SUB-D
LRZ 921	Ethernet module
LRZ 922	EtherCAT module with M8 connection
LRZ 923	EtherCAT module with RJ45 connection



LRZ 912 LRZ 913 LRZ 914 LRZ 915 LRZ 917



LRZ 921 LRZ 922 LRZ 923

Command Ex i remote control

(explosion protection II 2G Ex ia IIC T4 Gb)

Cat. No.	Description
LRT 915	Command Ex i remote control including 10 m cable and barrier box
LRT 916	Command Ex i remote control including 25 m cable and barrier box



LRT 915

High-pressure pump

Cat. No.	Description
LWZ 077-1	High-pressure pump*, suitable for all XT with exception of XT 1850 W (S) (230 V; 50 Hz), resulting max. pump pressure 5.8 bar

* Using such a pump changes the available cooling capacity



LWZ 077-1

Metal hoses M30 x 1.5 l

Cat. No.	Description	Length (cm)	Temperature range °C
LZM 091	M30X 100S	100	-100...350
LZM 092	M30X 200S	200	-100...350
LZM 093	M30X 300S	300	-100...350
Field of application	With special insulation for cooling and heating thermostats, for all heat transfer liquids		

(l = inner thread)



LZM 091

Metal hoses M38 x 1.5 l

Cat. No.	Description	Length (cm)	Temperature range °C
LZM 094	M38X 100S	100	-100...350
LZM 095	M38X 200S	200	-100...350
LZM 096	M38X 300S	300	-100...350

(l = inner thread)



LZM 094

Integral XT accessories (excerpt)

Additional adapters and connectors

Cat. No.	Description
HKA 152	Reducer, M30 x 1.5 O on M16 x 1 I
UD 660	Reducer, M30 x 1.5 I on M16 x 1 O
HKA 164	Reducer, M38 x 1.5 O on M30 x 1.5 I
EOV 194	Screw-in stud, M30 x 1.5 O on G 3/4" A
EOV 207	Screw-in stud, M30 x 1.5 O on NPT 3/4" A
EOV 206	Screw-in stud, M30 x 1.5 O on G 1" O
EOV 208	Double connector, M30 x 1.5 O
HKA 160	Adapter, M30 x 1.5 O on spherical line RD = 28
HKA 163	Flange adapter, M38 x 1.5 O on DIN 2633/DN40
HKA 165	Angle connector, M38 x 1.5 I on M38 x 1.5 A
HKA 153	Angle connector, M30 x 1.5 I on M30 x 1.5 A

(O = outer thread, I = inner thread)

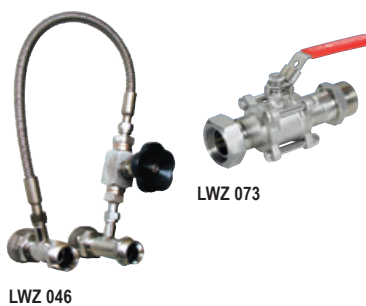
Nipples

Cat. No.	Description
HKA 161	Nipple, 1/2" nipples on spherical line for M30 x 1.5
HKA 162	Nipple, 3/4" nipples on spherical line for M30 x 1.5
EOV 196	Screw cap, M30 x 1.5

Miscellaneous

Cat. No.	Description	Temperature range °C
LWZ 046	Bypass, M30 x 1.5 I/O	-40...350
LWZ 071	Bypass, M38 x 1.5 I/O	-40...350
LWZ 089	Bypass, M30 x 1.5 I/O	-90...220
LWZ 073	Ball valve, M30 x 1.5 I on M30 x 1.5 O	-30...180
LWZ 074	Ball valve, M38 x 1.5 I on M38 x 1.5 O	-30...180

(O = outer thread, I = inner thread)



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

NEW

LAUDA Kryoheater Selecta

Process thermostat for powerful professional temperature control in the working range of -90 up to 200 °C



Application examples

- Test stands
- Reactors
- Distillation plants
- Freeze-drying
- Temperature stress test for environmental simulation

High efficiency, compact design, intuitive operation

LAUDA process thermostats of the Kryoheater Selecta (KHS) series ensure high-performance temperature control at high energy efficiency and reliability. The compact device construction provides a long service life and maintenance friendliness. Corresponding to the lowest working temperature, two-stage compressors (up to -60 °C) and/or cascade cooling systems (up to

-90 °C) are used. The condenser is cooled by means of cooling water. The cooling capacity is controlled continuously and precisely by injection control. A step switch ensures energy-saving and low-wear partial load operation using an automatic compressor system. By means of the electric heating, Kryoheater Selecta can cover an operating temperature of up to 200 °C.

Your advantages at a glance



The Kryoheater Selecta advantages

Your benefits



- Powerful pump (flow rate 85 L/min max. pressure 5.5 bar max.)
- Magnetic coupling
- Integrated frequency conversion
- Pressure limitation
- High volume flow even in case of pressure loss
- No sealing problems at the pump shaft as it is hydraulically sealed
- Highly precise user-specific speed control (40 to 100 percent)
- Protection of the consumer against excess pressure



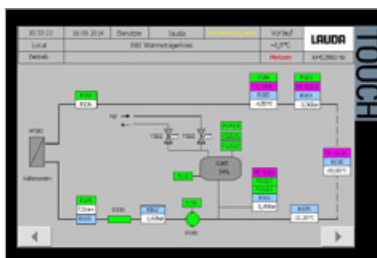
- Nitrogen overlay of the expansion vessel
- Pressure-resistant expansion vessel made of stainless steel
- No condensation of the air humidity
- No odours
- No evaporation and no oxidation of the heat transfer liquid
- Enables larger operating temperature range of the heat transfer liquids



- Automatic on/off of the second refrigeration step for KHS 2190 W (cascade cooling up to -90 °C)
- Up to 50 percent energy conservation in applications over -20 °C



- Protection class IP 54
- Robust construction using steel frames
- Industrial control cabinet
- Safe, reliable and long-term use in production environments
- Protection of the control against all environmental influences, such as dust, dirt, liquids and touch
- Simple maintenance and service by ideal accessibility to all components



- PLC control (programmable logic controller)
- 7" touch panel
- Detailed display of parameters
- Visualisation of alarm and error messages
- Extensive data exchange with process control systems
- Intuitive operation
- Quick analysis of process data
- Identification of disturbance variables



- Use of a refrigerant with low global warming potential (GWP* < 2,500)
- Low amount of refrigerant
- Fulfills the European F Gas Directive No. 517/2014

*GWP = Global Warming Potential

LAUDA Kryoheater Selecta

Process thermostats for dynamic temperature control from -90 to 200 °C

The Kryoheater Selecta series consists of the two systems KHS 3560 W and KHS 2190 W, which are used in chemical and pharmaceutical production as well as for the simulation of environmental conditions in test stands of the automobile and aerospace industries.

Connections	Nominal size	Nominal pressure	Note
① Heat transfer liquid inlet	DN 25	PN16	DIN 2633
② Heat transfer liquid outlet	DN 25	PN16	DIN 2633
③ Cooling water inlet	G1"; external	PN16	
④ Cooling water outlet	G1"; external	PN16	
⑤ Nitrogen inlet	G1/4"; internal		
⑥ Exhaust pipe	G1/2"; internal		DIN 2633
⑦ Filling and drainage valves	G1/2"; internal		



Technical features		KHS 3560 W	KHS 2190 W
Working temperature range	°C	-60 ... 200	-90 ... 200
Ambient temperature range	°C	5 ... 40	5 ... 40
Temperature stability	±K	0.5	0.5
Heater power	kW	18.0	18.0
Cooling output at 20 °C cooling water temperature		Measured with Kryo 65	Measured with Kryo 90
	200 °C kW	35.0	21.0
	20 °C kW	35.0	21.0
	10 °C kW	32.0	20.0
	0 °C kW	30.0	18.0
	-10 °C kW	29.0	15.0
	-20 °C kW	18.0	11.0
	-30 °C kW	14.0	10.5
	-40 °C kW	10.0	10.0
	-50 °C kW	6.0	9.5
	-60 °C kW	2.5	9.0
	-70 °C kW	–	6.3
	-80 °C kW	–	3.5
	-90 °C kW	–	1.0
Cooling water consumption max. at 20 °C cooling water temperature; 3 bar differential pressure	L/h	3960	2280
Pump pressure max.	bar	5.5	5.5
Pump flow max.	L/min	85	85
Heat transfer liquid connection		DN 25	DN 25
Connection – water cooling		G1". external	G1". external
Filling volume min. (without expansion vessel)	L	15	15
Volume of expansion vessel	L	40	40
Overall dimensions (WxDxH)	mm	920x1200x1700	920x1200x1700
Total power consumption	kW	29.5	32.8
Noise level	dB(A)	68	68
Weight	kg	850	850
Cat. No. 400 V; 3/PE; 50 Hz		LWP 556	LWP 557
Cat. No. 440–480 V; 3/PE; 60 Hz		LWP 656	LWP 657
Cat. No. 400 V; 3/PE; 50 Hz & 440–480 V; 3/PE; 60 Hz		LWP 756	LWP 757

Advantages ensured by nitrogen overlay

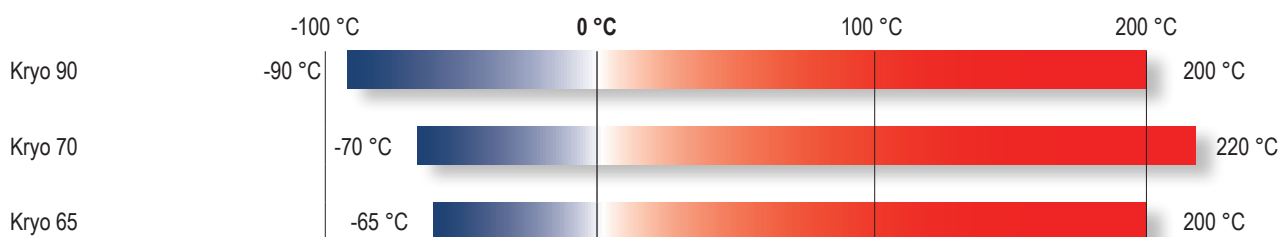
A nitrogen overlay permits the insulation of the heat transfer liquid from atmospheric oxygen in pressureless operation. This prevents an oxidation at high temperatures. Thus the life of the heat transfer liquid is extended drastically on the one hand and in addition the maximum operating temperature permitted is increased. In addition, the overlay prevents the condensation of air humidity at low temperatures. The Kryohheater Selecta process thermostats have been designed for pressurised operation. By a pressurized operation with nitrogen the advantages mentioned above are reached, and in addition the boiling points of the heat transfer liquids and thus the maximum permissible operating temperatures are increased.



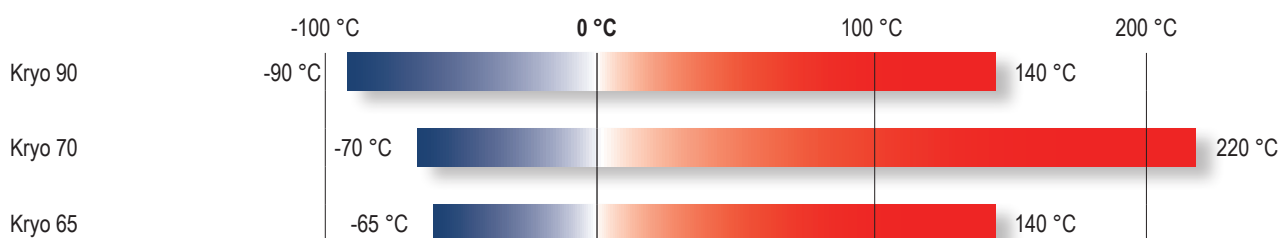
Heat transfer liquids

For a safe and reliable operation of your thermostats we recommend heat transfer liquids Kryo 65, Kryo 70 and Kryo 90.

With nitrogen overlay



Without nitrogen overlay



LAUDA Kryoheater Selecta

Interface/data protocol

The standard equipment is

- Lemo sockets for external temperature control
- USB interface to read out data and for information transmission for diagnosis or configuration
- A freely selectable analog or digital interface

If more than one interface is needed, they can be selected as option.
The following interfaces* can be used:

Cat. No.	Description
LWZ 937	Analog, 4 x In, 4 x Out, 0...10 V or 4...20 mA
LWZ 938	Profibus, 9-pole Sub-D
LWZ 939	Profinet, RJ 45
LWZ 940	EtherCAT, RJ 45
LWZ 941	RS-232/-485, 9-pole Sub-D

*A parallel operation of the bus systems (Profibus, Profinet, EtherCAT) is not possible. However, an RS-232/485 interface can be operated parallel with another bus data protocol.



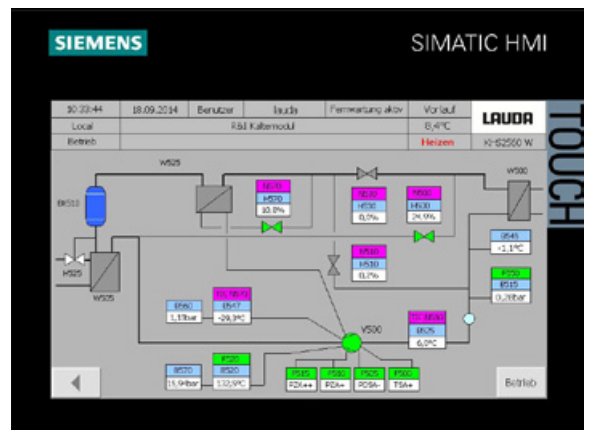
Operation/control

Simple and intuitively designed user interface

- Visualisation of heating and cooling circle, warning messages and failures
- Clear overview of the parameters - directly recognizable on the piping schematic

PLC (programmable logic controller) fitted in an industrial switch cabinet

- Comfortable and extensive interlinking with other IT systems
- High process transparency ensured by large information density in the control system
- Long-time compatible, vibration-resistant, maintenance-free and scalable
- Extremely high reliability
- Remote maintenance and remote diagnosis (update of parameter sets or software online possible)



Selecta accessories (excerpt)

Heat transfer liquids

	Unit	Kryo 65	Kryo 70	Kryo 90
Cat. No.	10 L	LZB 218	LZB 227	LZB 228
Cat. No.	20 L	LZB 318	LZB 327	LZB 328

Cooling water tube EPDM

Cat. No.	Description	d _i (mm)	d _a (mm)	Pressure range	Temp. range (°C)
RKJ 033	Fiber-reinforced	25	34	max. 10 bar	-40...100

Stainless steel tube clip

EZS 016	External Ø: 1"	25-40
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Metal hoses with cold insulation

Cat. No.	Description	d _i (mm)	d _a (mm)	Length (cm)	Temp. range (°C)
LZM 094	M38X 100S	25	78	100	-100...350
LZM 095	M38X 200S	25	78	200	-100...350
LZM 096	M38X 300S	25	78	300	-100...350

Quick coupling

Cat. No.	Description	Material
EOF 539	With 1" internal thread	Brass
EOF 540	With hose nozzle 1", attachable with counter nut	Brass

Adapter

Cat. No.	Description
EDF 222	Flat graphite gasket DN25-PN40 DIN 2690
HKA 198	Flange adapter M38 x 1,5 A to DIN 2633/DN25

Options

Cat. No.	Description
LWZ 936	Remote maintenance by modem
EZ 214	Machine foot in steel with height adjustment
LWZ 943*	Additional expansion vessel, filling volume 50 L

*Installation of an optional expansion vessel causes an enlargement of the housing height from 1,650 to 2,350 mm.



RKJ 033



EZS 016



LZM 094/LZM 095/LZM 096



EOF 539



EOF 540



EDF 222



HKA 198



LWZ 936



EZ 214

LAUDA Microcool

Circulation chillers for reliable continuous operation in the lab and in research from -10 up to 40 °C



Excellent price-performance ratio, compact design and simple to use



Application examples

- Cooling of rotary evaporators
- Cooling of distillation systems
- Supply of cooling traps
- Cooling of analytical devices

LAUDA Microcool has been designed as a circulation chiller line with five compact models and cooling capacities from 0.25 to 1.2 kW. The user interface with large LED display and the membrane keyboard make the devices easy to use. An RS-232 interface and alarm contact are integrated as standard. What is unusual in this price category

of circulation chillers is the high-quality block pump with magnetic coupling. The magnetic coupling of pump and electric motor exclude sealing problems on the pump shaft. LAUDA Microcool circulation chillers are used whenever heat needs to be dissipated reliably and quickly, e.g. in laboratories for rotary evaporators, distillation systems or analytical devices.

Your advantages at a glance



The Microcool advantages

Your benefits



- Five device types in four housing sizes
- Cooling capacities from 250 W up to 1200 W

- Clear device portfolio for simple selection
- Covers the majority of basic lab uses



- User interface with large LED display and membrane keyboard
- Autostart timer and auto-shutdown function
- Illuminated window for checking heat transfer liquid level

- Simple and intuitive use
- Timer-based activation and deactivation of the circulation chillers
- Quick optical detection of the filling level



- Block pump with magnetic coupling of pump and electric motor
- Integrated adjustable bypass and pressure gauge at MC 600, MC 1200 and MC 1200 W
- Integrated overflow connection

- Prevents sealing problems at the pump shaft
- Integrated pump pressure adjustment for connected delicate glassware
- Controlled filling of the devices



- RS-232 interface and alarm contact standard

- System integration into processes without additional costs



- Compact design and low space requirements
- Integrated filling funnel on top of the device
- Easily removable front grid

- Saves valuable laboratory space
- Simple and safe filling
- Easy-to-clean condenser

LAUDA Microcool

Microcool Circulation chiller with cooling capacity up to 1200 Watt

The compact MC 250 and MC 350 makes them ideal for being positioned on the benchtop. The circulation chillers are equipped with a magnetic coupling pump. This supplies a pump pressure of 0.35 bar and a maximum pump flow of 16 L/min.

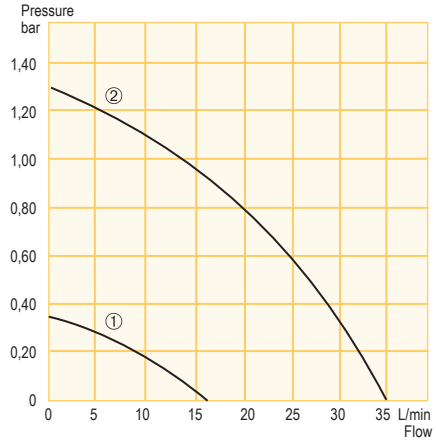
The 600 and 1200 Watt cooling capacity models are floor standing instruments designed to fit underneath the lab bench. They are equipped with a pressure gauge to display the pressure and casters which can be controlled and locked. Pump pressure can be adjusted via the integrated bypass. At 1200 Watt, the most powerful device is also available in a water-cooled version as the MC 1200 W.



Circulation chiller MC 250



Pump characteristics Heat transfer liquid: Water



- ① MC 250, MC 350
- ② MC 600
MC 1200
MC 1200 W

Temperature range

-10...40 °C

Included as standard

RS 232 interface · alarm contact

Included accessories (except of MC 250, MC 350)

Nipples (3/4") · screw caps



All technical data on page 106 and following

Other power supply variants on page 114



465 mm



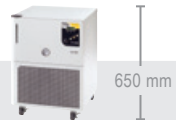
500 mm



595 mm



650 mm



650 mm

Technical features		MC 250	MC 350	MC 600	MC 1200	MC 1200 W
Working temperature range*	°C	-10...40	-10...40	-10...40	-10...40	-10...40
Temperature stability	±K	0.5	0.5	0.5	0.5	0.5
Cooling output at 20 °C	kW	0.25	0.35	0.6	1.2	1.2
Pump pressure max.	bar	0.35	0.35	1.3	1.3	1.3
Pump flow max.	L/min	16	16	35	35	35
Cat. No. 230 V; 50 Hz		LWM 118	LWM 119	LWM 120	LWM 121	LWM 122

* Working temperature range is equal to ACC range

Microcool accessories (excerpt)

EPDM tubing

Cat. No.	Description	d _i (mm)	d _e (mm)	Temperature range °C	Pressure range max. bar
RKJ 111	Polymer tubing	9	11	10...120	1
RKJ 112	Polymer tubing	12	14	10...120	1
LZS 021	Insulated	12	21	-35...90	-
RKJ 031	Reinforced fibres	13 (1/2")	19	-40...100	20
RKJ 032	Reinforced fibres	19 (3/4")	27	-40...100	20
RKJ 009	Tube insulation for 1/2"	23	33	-50...105	-
RKJ 013	Tube insulation for 3/4"	29	39.5	-50...105	-

d_i = internal diameter ; d_e = external diameter

Adapter G 3/4"

Cat. No.	Designation	Description
LWZ 016	Nipple	3/4" Screw cap, 1/2" nipple
LWZ 040	Nipple	3/4" Screw cap, 10 mm nipple

Stainless steel hose clamps

To secure hoses

Cat. No.	Description
EZS 012	Hose clamp for external diameter 10-16 mm, 1/2"
EZS 013	Hose clamp for external diameter 12-22 mm, 1/2"
EZS 015	Hose clamp for external diameter 20-32 mm, 3/4"

Heat transfer liquids

Cat. No.	Description	Temperature range °C
LZB 120	Aqua 90, 5 L	5...90
LZB 220	Aqua 90, 10 L	5...90
LZB 320	Aqua 90, 20 L	5...90
LZB 109	Kryo 30, 5 L	-30...90
LZB 209	Kryo 30, 10 L	-30...90
LZB 309	Kryo 30, 20 L	-30...90



RKJ 031



LWZ 016



EZS 012



LZB 209



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

LAUDA Variocool

Circulation chillers for variable use in laboratory, mini-plant and production for temperatures from -20 up to 40 °C (optional up to 80 °C)



Application examples

- Central cooling water supply in laboratories
- Cooling of analytical devices
- Temperature control of bio-reactors
- Supply to cooling traps

Numerous options, compact design, easy operation

The **LAUDA Variocool** circulation chillers offer a broad performance spectrum for demanding temperature control tasks. The color TFT screen makes operation easy. A USB interface and an alarm contact are integrated as standard features. Additional interfaces are available as accessories. They are located in the front of the device, allowing for easy access.

The circulation chillers with their multitude of options are very well suited to a number of different areas of application. Optional pumps, for example, enable higher pressures and flows. Optional heating units, which are adapted to the cooling capacity, enable the quick heating of the connected application when needed.

Your advantages at a glance

+

The Variocool advantages

Your benefits



- All models are equipped with electronic expansion valves.
- 13 models in air or water-cooled design with cooling capacities from 600 W up to 10 kW
- Due to their compact design, units up to 2 kW of cooling capacity can be placed under the laboratory table

- Cost savings thanks to reduced energy consumption
- The appropriate solution to every requirement
- Saves valuable lab space



- Display and operation via color TFT screen and membrane keyboard
- Electronic fill gauge on the display and low level alarm when fluid level too low

- Easy and clear setup options
- Early detection of insufficient fluid



- Options:
 - High power pumps
 - Heaters
 - Outdoor installation
 - Sound absorption

- Flexible customization to applications
- Good temperature control up to $\pm 0,05$ K



- USB interface and alarm contact standard features in the front of the device
- Retrofittable interfaces as accessory:
 - analog module
 - RS-232/485 interface
 - contact modules
 - profibus module
 - Pt100/LiBus module
 - Ethernet module
 - EtherCAT module

- Easy accessibility
- Flexible control options



- Front grill can be easily removed without tool
- Tower design for larger models (from VC 7000)
- Microchannel condensers in all air-cooled models
- All models (except VC 600) with adjustable bypass and pressure gauge

- Easy to clean condenser
- Space-saving setup
- Reduced footprint and lower refrigerant quantity
- Connection of pressure sensitive applications

LAUDA Variocool

Variocool Circulation chillers with cooling capacities up to 2 kW

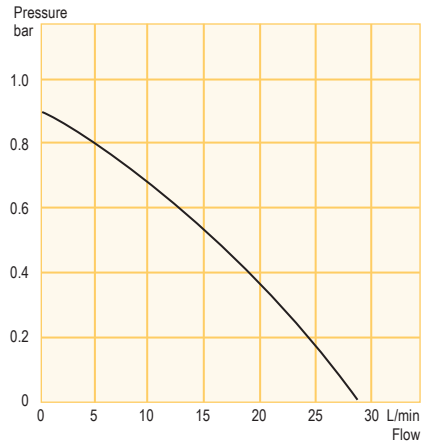
Variocool circulation chillers function in an operating temperature range of -20 to 40 °C. Optional heaters can be added to increase the maximum temperature to 80 °C. For greater pressure requirements, optional pumps are available with the VC 1200 version or higher. With the exception of the VC 600, all models are also available as water-cooled versions (W). All devices are equipped with lockable casters. The compact dimensions of the models from VC 600 to VC 2000 (W) allows to place them under the laboratory table.



Circulation chiller VC 600



Pump characteristic Heat transfer liquid: Water



Temperature range

-20...40 °C (-20...80 °C with optional heater)

Included as standard

USB interface · alarm contact

Included accessories

Nipples · screw caps

Additional accessories

Interface modules: analog, RS 232/485, contact, Profibus, Ethernet, EtherCAT, Pt100/LiBus module

Options

High-power pumps** · heater



All technical data on page 106 and following

Other power supply variants on page 114



Technical features		VC 600	VC 1200	VC 1200 W	VC 2000	VC 2000 W
Working temperature range*	°C	-20...40	-20...40	-20...40	-20...40	-20...40
Working temperature range with optional heater	°C	-20...80	-20...80	-20...80	-20...80	-20...80
Temperature stability	±K	0.05	0.05	0.05	0.05	0.05
Cooling output at 20 °C	kW	0.6	1.2	1.2	2.0	2.0
Pump pressure max.	bar	0.9	0.9	0.9	0.9	0.9
Pump flow	L/min	28	28	28	28	28
Cat. No. 230 V; 50 Hz		LWG 175	LWG 176	LWG 182	LWG 177	LWG 183

* Working temperature range is equal to ACC range

**Using such a pump changes the available cooling capacity, and causes a change of the height of the housing from 650 mm to 790 mm for VC 1200 (W) and VC 2000 (W)

Variocool Circulation chillers with cooling capacities up to 5 kW

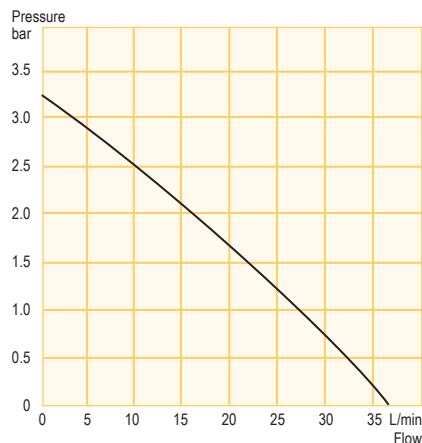
The models VC 3000 and VC 5000 offer cooling capacities of 3 and 5 kW. They are also available in water-cooled design (W). For flexible adaption to different applications the chillers can also be delivered with optional high-power pumps or heaters. Further options are an outdoor-installation for VC 5000 and a sound absorption for VC 5000 and VC 5000 W.



Circulation chiller VC 3000 W



Pump characteristic Heat transfer liquid: Water



Temperature range

-20...40 °C (-20...80 °C with optional heater)

Included as standard

USB interface · alarm contact

Included accessories

Nipples · screw caps

Additional accessories

Interface modules: analog, RS 232/485, contact, Profibus, Ethernet, EtherCAT, Pt100/LiBus module

Options

High-power pumps** · heater · outdoor installation (VC 5000) · sound absorption (VC 5000, VC 5000 W)



All technical data on page 106 and following

Other power supply variants on page 114, 115



Technical features		VC 3000	VC 3000 W	VC 5000	VC 5000 W
Working temperature range*	°C	-20...40	-20...40	-20...40	-20...40
Working temperature range with optional heater	°C	-20...80	-20...80	-20...80	-20...80
Temperature stability	±K	0.05	0.05	0.05	0.05
Cooling output at 20 °C	kW	3.0	3.0	5.0	5.0
Pump pressure max.	bar	3.2	3.2	3.2	3.2
Pump flow	L/min	37	37	37	37
Cat. No. 230 V; 50 Hz		LWG 178	LWG 184	–	–
Cat. No. 400 V; 3/N/PE; 50 Hz		–	–	LWG 279	LWG 285

* Working temperature range is equal to ACC range

** Using such a pump changes the available cooling capacity

LAUDA Variocool

Variocool Circulation chillers with cooling capacities up to 10 kW

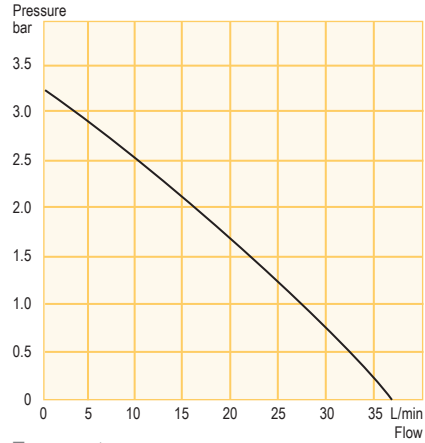
The highly efficient tower design circulation chillers provide cooling capacities between 7 and 10 kW. Options like heating or high-power pumps add to the devices' areas of application. The models are available in air or water-cooled design. All models are equipped with controllable casters which can be locked.



Circulation chiller VC 7000



Pump characteristic Heat transfer liquid: Water



Temperature range

-20...40 °C (-20...80 °C with optional heater)

Included as standard

USB interface · alarm contact

Included accessories

Nipples · screw caps

Additional accessories

Interface modules: analog, RS 232/485, contact, Profibus, Ethernet, EtherCAT, Pt100/LiBus module

Options

High-power pumps** · heater · outdoor installation (VC 7000, VC 10000) · sound absorption



All technical data on page 106 and following

Other power supply variants on page 115



1250 mm



1250 mm



1250 mm



1250 mm

Technical features		VC 7000	VC 7000 W	VC 10000	VC 10000 W
Working temperature range*	°C	-20...40	-20...40	-20...40	-20...40
Working temperature range with optional heater	°C	-20...80	-20...80	-20...80	-20...80
Temperature stability	±K	0.1	0.1	0.1	0.1
Cooling output at 20 °C	kW	7.0	7.0	10.0	10.0
Pump pressure max.	bar	3.2	3.2	3.2	3.2
Pump flow	L/min	37	37	37	37
Cat. No. 400 V; 3/N/PE; 50 Hz		LWG 280	LWG 286	LWG 281	LWG 287

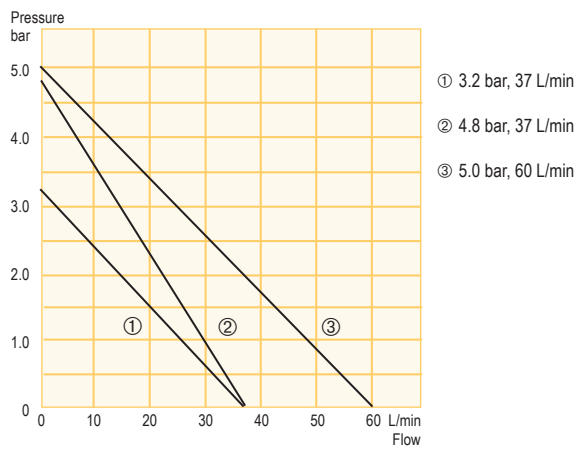
* Working temperature range is equal to ACC range

** Using such a pump changes the available cooling capacity

Options Variocool

For all Variocool models, different options can be ordered. The options can only be installed during production. Please check the following tables for compatibility of options with the corresponding circulation chiller type.

Pump characteristics optional pumps



Options

Heaters	For all types. Extension of the temperature up to 80 °C.
High-power pumps	For all types, except VC 600.
Outdoor installation	For models VC 5000, VC 7000, VC 10000. An additional protection with a roof is necessary.
Sound absorption	For models VC 5000 up to 10000 W.

Options – not power supply dependent

Option	Cat. No.	VC 5000	VC 5000 W	VC 7000	VC 7000 W	VC 10000	VC 10000 W
Outdoor installation	LWZ 922	●	–	–	–	–	–
Outdoor installation	LWZ 923	–	–	●	–	●	–
Sound absorption	LWZ 126	●	–	–	–	–	–
Sound absorption	LWZ 127	–	●	–	–	–	–
Sound absorption	LWZ 128	–	–	●	–	●	–
Sound absorption	LWZ 135	–	–	–	●	–	●

LAUDA Variocool

Options – power supply dependent

		230 V; 50 Hz						400 V; 3/N/PE; 50 Hz						
Option	Cat. No.	VC 600	VC 1200*	VC 1200 W*	VC 2000*	VC 2000 W*	VC 3000	VC 3000 W	VC 5000	VC 5000 W	VC 7000	VC 7000 W	VC 10000	VC 10000 W
Heater 1.5 kW	LWZ 1095	●	●	●	●	●	●	●	-	-	-	-	-	-
Heater 2.25 kW	LWZ 1107	-	●	●	●	●	-	-	-	-	-	-	-	-
Heater 4.5 kW	LWZ 2096	-	-	-	-	-	-	●	●	●	●	-	-	-
Heater 7.5 kW	LWZ 2097	-	-	-	-	-	-	-	-	-	-	●	●	-
Pump, 3.2 bar 37 L/min**	LWZ 1100	-	●	●	-	-	-	-	-	-	-	-	-	-
Pump, 3.2 bar 37 L/min**	LWZ 1101	-	-	-	●	●	-	-	-	-	-	-	-	-
Pump, 4.8 bar 37 L/min**	LWZ 1103	-	●	●	-	-	-	-	-	-	-	-	-	-
Pump, 4.8 bar 37 L/min**	LWZ 1104	-	-	-	●	●	-	-	-	-	-	-	-	-
Pump, 4.8 bar 37 L/min**	LWZ 1102	-	-	-	-	-	●	●	-	-	-	-	-	-
Pump, 4.8 bar 37 L/min**	LWZ 2105	-	-	-	-	-	-	-	●	●	●	●	●	●
Pump, 5.0 bar 60 L/min**	LWZ 2106	-	-	-	-	-	-	-	●	●	●	●	●	●

		115 V; 60 Hz		220 V; 60 Hz		208-220 V; 60 Hz						208-220 V; 3/PE; 60 Hz			
Option	Cat. No.	VC 600	VC 600	VC 1200*	VC 1200 W*	VC 2000*	VC 2000 W*	VC 3000	VC 3000 W	VC 5000	VC 5000 W	VC 7000	VC 7000 W	VC 10000	VC 10000 W
Heater 1.15 kW	LWZ 4095	●	-	-	-	-	-	-	-	-	-	-	-	-	-
Heater 1.35 kW	LWZ 2095	-	●	-	-	-	-	-	-	-	-	-	-	-	-
Heater 1.20-1.35 kW	LWZ 8095	-	-	●	●	●	●	●	●	-	-	-	-	-	-
Heater 1.8-2.1 kW	LWZ 8107	-	-	●	●	●	●	-	-	-	-	-	-	-	-
Heater 3.65-4.1 kW	LWZ 3096	-	-	-	-	-	-	-	-	●	●	●	●	-	-
Heater 6.1-6.9 kW	LWZ 3097	-	-	-	-	-	-	-	-	-	-	-	-	●	●
Pump, 3.2 bar 37 L/min**	LWZ 8100	-	-	●	●	-	-	-	-	-	-	-	-	-	-
Pump, 3.2 bar 37 L/min**	LWZ 8101	-	-	-	-	●	●	-	-	-	-	-	-	-	-
Pump, 4.8 bar 37 L/min**	LWZ 2103	-	-	●	●	-	-	-	-	-	-	-	-	-	-
Pump, 4.8 bar 37 L/min**	LWZ 2104	-	-	-	-	●	●	-	-	-	-	-	-	-	-
Pump, 4.8 bar 37 L/min**	LWZ 2102	-	-	-	-	-	-	●	●	-	-	-	-	-	-
Pump, 4.8 bar 37 L/min**	LWZ 3105	-	-	-	-	-	-	-	-	●	●	●	●	●	●
Pump, 5.0 bar 60 L/min**	LWZ 3106	-	-	-	-	-	-	-	-	●	●	●	●	●	●

		100 V; 50/60 Hz		200 V; 50/60 Hz						200 V; 3/PE; 50/60 Hz					
Option	Cat. No.	VC 600	VC 600	VC 1200*	VC 1200 W*	VC 2000*	VC 2000 W*	VC 3000	VC 3000 W	VC 5000	VC 5000 W	VC 7000	VC 7000 W	VC 10000	VC 10000 W
Heater 1.0 kW	LWZ 6095	●	-	-	-	-	-	-	-	-	-	-	-	-	-
Heater 1.1 kW	LWZ 5095	-	-	●	●	●	●	●	●	-	-	-	-	-	-
Heater 1.7 kW	LWZ 5107	-	-	●	●	●	●	-	-	-	-	-	-	-	-
Heater 3.4 kW	LWZ 4096	-	-	-	-	-	-	-	-	●	●	●	●	-	-
Heater 5.7 kW	LWZ 4097	-	-	-	-	-	-	-	-	-	-	-	-	●	●
Pump, 3.2 bar 37 L/min**	LWZ 5100	-	-	●	●	-	-	-	-	-	-	-	-	-	-
Pump, 3.2 bar 37 L/min**	LWZ 5101	-	-	-	-	●	●	-	-	-	-	-	-	-	-
Pump, 4.8 bar 37 L/min**	LWZ 5103	-	-	●	●	-	-	-	-	-	-	-	-	-	-
Pump, 4.8 bar 37 L/min**	LWZ 5104	-	-	-	-	●	●	-	-	-	-	-	-	-	-
Pump, 4.8 bar 37 L/min**	LWZ 5102	-	-	-	-	-	-	●	●	-	-	-	-	-	-
Pump, 4.8 bar 37 L/min**	LWZ 4105	-	-	-	-	-	-	-	-	●	●	●	●	●	●
Pump, 5.0 bar 60 L/min** ^①	LWZ 4106	-	-	-	-	-	-	-	-	●	●	●	●	●	●

* Use with high-power pumps causes a change of the height of the housing from 650 mm to 790 mm.

** Using such a pump changes the available cooling capacity

① At 200 V; 3/PE-50 Hz: 4.3 bar; 60 L/min

Variocool accessories (excerpt)

Tubings EPDM

(also to use for cooling water)

Cat. No.	d _i (mm)	d _e (mm)	Temp. range °C	Pressure range max. bar
RKJ 031	13 (1/2")	19	-40...100	20
RKJ 032	19 (3/4")	27	-40...100	20
RKJ 033	25 (1")	34	-40...100	20
RKJ 111	9	11	10...120	1
RKJ 112	12	14	10...120	1

d_i = internal diameter; d_e = external diameter



RKJ 031

Manifold connectors for VC 1200 (W) to VC 5000 (W)

For joining multiple external systems

Cat. No.	Description	Connection	Tube connection
LWZ 132	Two-port manifold	G 3/4"	2 x 1/2" and 2 x 3/4"
LWZ 133	Four-port manifold	G 3/4"	4 x 1/2" and 4 x 3/4"



LWZ 133

Ball valve

Cat. No.	Description
LWZ 134	Ball valve G 3/4"

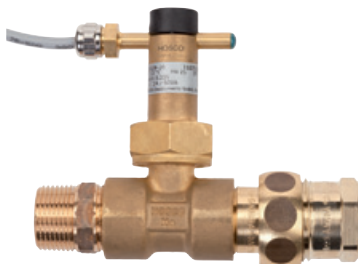


LWZ 134

Flow control instrument

For control of the flow of the heat transfer liquid. If the flow is too low a contact is switched. For mounting on the fitting of the return flow.

Cat. No.	Designation	Suitable for
LWZ 119	Flow control instrument 1 1/4"	VC 7000 (W)...VC 10000 (W)
LWZ 129	Flow control instrument M16 x 1	VC 600
LWZ 118	Flow control instrument 3/4"	VC 1200 (W)...VC 5000 (W)



LWZ 118

Interface modules

Cat. No.	Description
LRZ 912	Analog module, 2 x In, 2 x Out, 0(4)...20 mA or 0...10 V
LRZ 913	RS 232/485 interface, electrically isolated, 9-pin SUB-D
LRZ 914	Contact module NAMUR, 1 x In, 1 x Out, NE 28, 2 DIN sockets
LRZ 915	Contact module SUB-D, 3 x In, 3 x Out, 15-pin SUB-D
LRZ 917	Profibus interface, electrically isolated, 9-pin SUB-D
LRZ 918	Pt100/LiBus module
LRZ 921	Ethernet module
LRZ 922	EtherCAT module with M8 connection
LRZ 923	EtherCAT module with RJ45 connection
LCZ 9727	Module box with LiBus for 2 modules



LRZ 912 LRZ 913 LRZ 914 LRZ 915 LRZ 917



LRZ 918 LRZ 921 LRZ 922 LRZ 923



LCZ 9727

LAUDA Ultracool

Process circulation chillers for industrial applications with cooling outputs up to 265 kW from -5 up to 25 °C



Application examples

- Digital printing
- Laser cutting
- Laser sorting
- Point welding
- Induction heating
- Injection molding
- Centralized cooling water supply

High cooling outputs, compact design, versatile options


LAUDA Ultracool chillers provide reliable temperature control and ensure secure processing. The models are plug & operate systems equipped with a cold water tank, a centrifugal pump and an internal bypass. All chillers are already equipped with an antifreeze protection thermostat to prevent freezing of the heat exchanger. Integrated pres-

sure switches protect the circuit against pressure levels that drift too high or too low. Housings made from galvanized steel and externally coated with epoxy resin protects against corrosion even under aggressive ambient conditions. All models are suitable for outdoor installation.

Your advantages at a glance


+

The Ultracool advantages
Your benefits




- Centrifugal high-quality water pump with internal bypass
- Use of plate heat exchangers outside of the water tank
- Evaporator and pump in stainless steel construction
- Level switch

- Allows flow rates from 0 to 100 percent
- Efficient heat exchange and low energy loss
- Corrosion resistant
- Pump protection in case of low level




- Integrated water filter and antibacterial additive
- Insulated water tank made of polyethylene
- Use of thermostatic expansion valve

- Protection of application and chiller system
- Corrosion resistant and durable
- Automatic adjustment to changing work load conditions and optimal cooling output




- Protection class IP 54
- Suitable for ambient temperatures up to 50 °C
- Housing made from galvanized steel and externally coated with epoxy resin
- Antifreeze protection thermostat
- Use of refrigerants with low global warming potential (GWP* < 2,500)

- Suitable for outdoor installation
- Operation under extreme ambient temperature conditions
- Protection against corrosion even under aggressive ambient conditions
- Prevents freezing of heat exchanger
- Fulfills the European F Gas Directive No. 517/2014



- Versatile options and accessories, including pump, special color, stainless steel housing, wheels, external bypass, water-cooled versions, deionized water.

- Customization possibilities for OEM



- Compact and smart design
- Integrated pressure switches
- Large cold water tank

- User friendly installation and maintenance and reduction of footprint to save installation space
- Protection of the refrigeration circuit against pressures that drift too high or too low
- Keeps water temperature constant even under varying load conditions

*GWP = Global Warming Potential

LAUDA Ultracool

Ultracool UC Mini chillers up to 4.9 kW

The three UC Mini chillers are available with cooling outputs from 2.1 up to 4.9 kW. The models work with a hermetic compressor and a centrifugal pump. The pump is noise reduced and works with a very flat flow rate/pressure characteristic. This allows the user to easily adjust the water flow without jeopardizing the pressure.

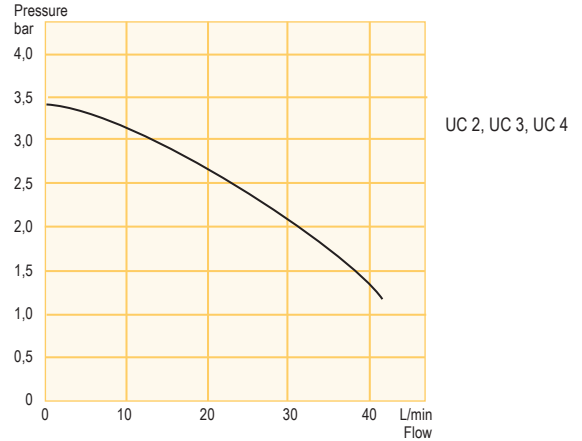
Compared to the previous models the device dimensions were significantly reduced. Due to the optimized geometry of the devices an easy access to the components that need to be serviced regularly is provided. The temperature range in which the coolers can be used now covers an extended temperature from 0 up to 50 °C ambient. Additionally outdoor installation of these circulation chillers is available as an option and allows the use at ambient temperatures down to -15 °C.



Circulation chiller UC 4



Pump characteristics, Standard pump (3 bar), 50 Hz



Options and accessories UC Mini

- 5 bar pump
- Refrfluid 1 (heat transfer liquid with antifreeze + bactericide + anticorrosive)
- External bypass
- Modbus remote control
- Increased temperature stability ± 1 K (instead of ± 2 K)
- Water-cooled version
- Stainless steel housing
- Feet
- Customized color
- Condenser air filter
- 3-phase power supply
- Outdoor installation (IP 54)
- Motor fan speed regulator (for ambient temperatures below 0 °C)



All technical data on page 108 and following
Other power supply variants on page 115

NEW

NEW

NEW

Technical features UC Mini		UC 2	UC 3	UC 4
Working temperature range	°C	-5...25	-5...25	-5...25
Ambient temperature range*	°C	-15...50	-15...50	-15...50
Cooling output**	kW	2.1	4.1	4.9
Pump pressure max.	bar	3.4	3.4	3.4
Pump flow max.	L/min	42	42	42
Volume water tank	L	20	20	20
Cat. No. 230 V; 50 Hz		E6002411	E6003411	E6004411
Cat. No. 230 V; 60 Hz		E6002431	E6003431	E6004431

* -15 °C only with option motor fan speed regulator (see page 87)

** At 10 °C water outlet temperature and 25 °C ambient temperature, for 50 Hz versions

Ultracool UC Midi chillers up to 26.3 kW

Six UC Midi types have cooling outputs ranging from 7.1 up to 26.3 kW. The models work with a reciprocating or scroll compressor and a centrifugal pump. The noise-reduced pump allows customers to easily adjust the water flow. The use of R 134a as refrigerant ensures very low working pressures inside the refrigeration system and operation in ambient temperatures up to 50 °C. The integrated motor fan speed regulator allows operation in ambient conditions up to -15 °C and reduces the noise level additionally.

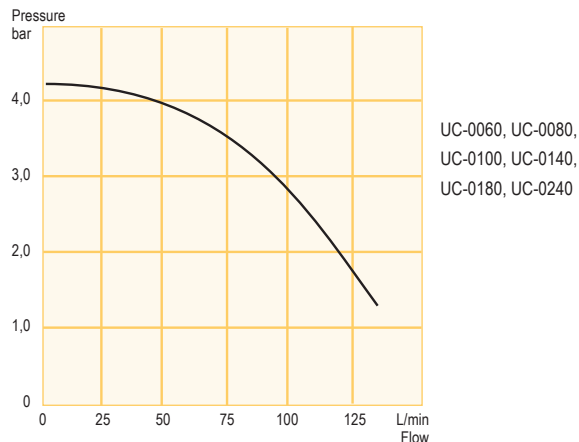
The models UC-0060 to UC-0240 are also available as UC laser models with pre-configured options included.



Circulation chiller UC-0240 SP



Pump characteristics, Standard pump (3 bar), 50 Hz



Options and accessories UC Midi

- 5 bar pump
- Refrfluid 1 (heat transfer liquid with antifreeze + bactericide + anticorrosive)
- External bypass
- Modbus remote control
- Auto filling kit
- Increased temperature stability ± 1 K (instead of ± 2 K)
- Water pre-heater
- Water-cooled version
- Feet (wheels as standard)
- External threaded BSP (British Standard Pipe) or NPT stainless steel connections
- Customized color
- Condenser air filter



All technical data on page 108 and following
Other power supply variants on page 115

Technical features UC Midi Superplus		UC-0060 SP	UC-0080 SP	UC-0100 SP	UC-0140 SP	UC-0180 SP	UC-0240 SP
Working temperature range	°C	-5...25	-5...25	-5...25	-5...25	-5...25	-5...25
Ambient temperature range	°C	-15...50	-15...50	-15...50	-15...50	-15...50	-15...50
Cooling output*	kW	7,1	9,4	11,4	14,0	22,0	26,3
Pump pressure max.	bar	4,2	4,2	4,2	4,2	4,2	4,2
Pump flow max.	L/min	130	130	130	130	130	130
Volume water tank	L	100	100	100	100	100	100
Cat. No. 400 V; 3/PE; 50 Hz		E6006323	E6008323	E6010323	E6014323	E6018323	E6024323
Cat. No. 460 V; 3/PE; 60 Hz		E6006341	E6008341	E6010341	E6014341	E6018341	E6024341

* At 10 °C water outlet temperature and 25 °C ambient temperature, for 50 Hz versions

LAUDA Ultracool

Ultracool UC Maxi chillers up to 265 kW

Within the Ultracool Maxi range, there are four chillers with cooling outputs from 34.1 up to 64.4 kW which work with one single refrigeration circuit. The five models from 87.9 up to 265 kW of cooling capacities work with two independent refrigeration circuits to provide a backup security. All Maxi models are equipped with scroll compressors, work with R 407C as refrigerant and are suitable for outdoor installation. The internal pipes for the water circuit are made of PP-R (polypropylene random copolymer) and are thermowelded. Besides the main advantage that these connections are absolutely leak free, PP-R is corrosion and frost proof, allow for smaller pressure drops and are long lasting.

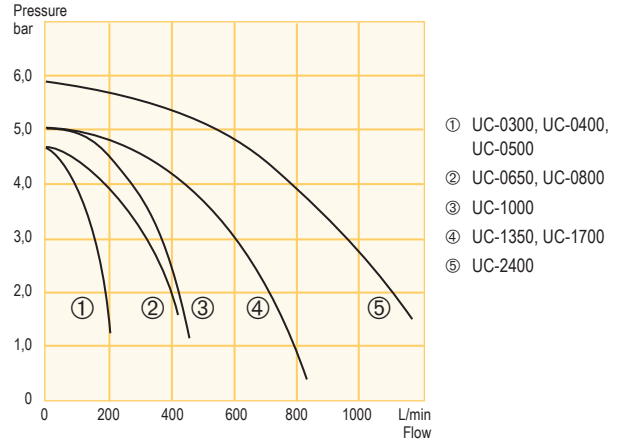
The models UC-0300 to UC-0650 are also available as UC laser models with pre-configured options included.



Circulation chiller UC-0400 SP



Pump characteristics, Standard pump (3 bar), 50 Hz



Options and accessories UC Maxi

- 5 bar pump
- Refrfluid 1 (heat transfer liquid with antifreeze + bactericide + anticorrosive)
- External bypass
- Auto filling kit
- Increased temperature stability ± 1 K (instead of ± 2 K)
- Water pre-heater
- Water-cooled version
- External threaded BSP or NPT stainless steel connections
- Motor fan speed regulator (for ambient temperatures below 0 °C)
- Modbus remote control



All technical data on page 108 and following
Other power supply variants on page 115

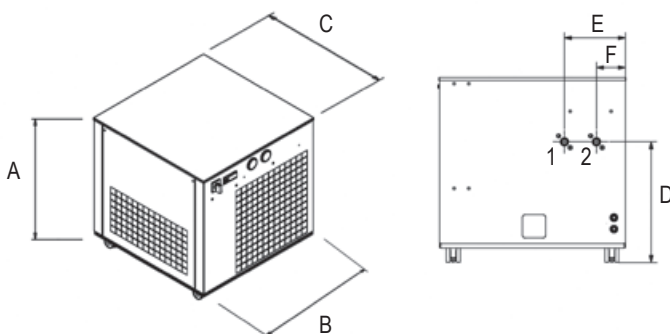
Technical features UC Maxi Superplus	UC-0300 SP	UC-0400 SP	UC-0500 SP	UC-0650 SP	UC-0800 SP	UC-1000 SP	UC-1350 SP	UC-1700 SP	UC-2400 SP	
Working temperature range	°C	-5...25	-5...25	-5...25	-5...25	-5...25	-5...25	-5...25	-5...25	
Ambient temperature range*	°C	-15...45	-15...45	-15...45	-15...45	-15...45	-15...45	-15...45	-15...45	
Cooling output**	kW	34.1	43.3	48.7	64.4	87.9	106.4	139.2	175.7	265.0
Pump pressure max.	bar	4.7	4.7	4.7	4.7	4.7	5.0	5.0	5.0	5.9
Pump flow max.	L/min	230	230	230	420	420	330	750	750	1160
Volume water tank	L	200	200	200	300	300	500	500	500	500
Cat. No. 400 V; 3/PE; 50 Hz	E6030323	E6040323	E6050323	E6065323	E6080223	E6100221	E6135221	E6170221	E6240221	
Cat. No. 460 V; 3/PE; 60 Hz	E6030341	E6040341	E6050341	E6065341	E6080241	E6100241	E6135241	E6170241	E6240241	

* -15 °C only with option motor fan speed regulator (see page 89)

** At 10 °C water outlet temperature and 25 °C ambient temperature, for 50 Hz versions

Unit dimensions

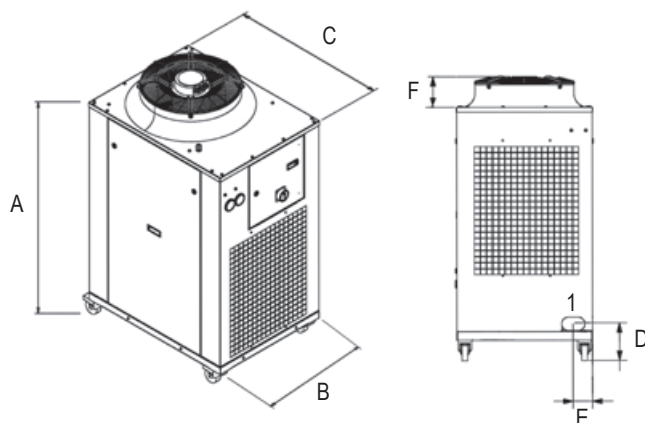
UC Mini UC 2, UC 3, UC 4



Typ	A	B	C mm	D	E	F
UC 2	635	640	640	414	210	100
UC 3	635	640	640	414	210	100
UC 4	635	640	640	414	210	100

1: water outlet
2: water inlet

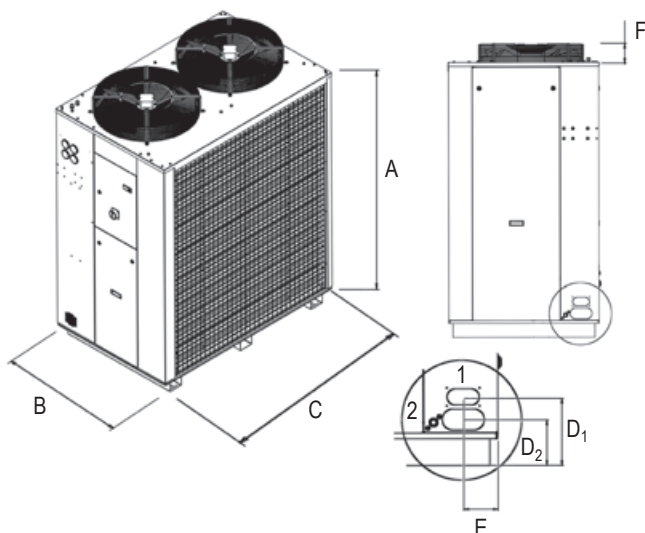
UC Midi UC-0060 to UC-0240



Typ	A	B	C mm	D	E	F
UC-0060	1330	715	945	188	101	162
UC-0080	1330	715	945	188	101	162
UC-0100	1330	715	945	188	101	162
UC-0140	1330	715	945	188	101	162
UC-0180	1330	715	945	188	101	162
UC-0240	1330	715	945	188	101	162

1: connection port
- water inlet
- water outlet
- drain and overflow

UC Maxi UC-0300 to UC-0650



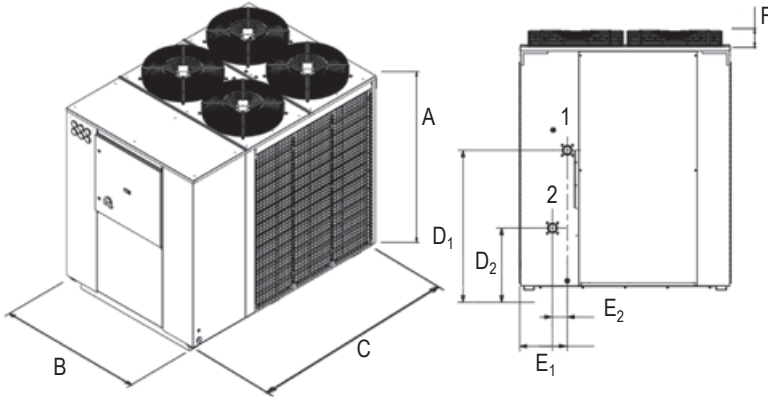
Typ	A	B	C mm	D ₁	D ₂	E	F
UC-0300	1843	1006	1566	239	160	120	125
UC-0400	1843	1006	1566	239	160	120	125
UC-0500	1843	1006	1566	239	160	120	125
UC-0650	1843	1006	1566	239	160	120	125

1: water inlet and outlet
2: overflow and drain pipe

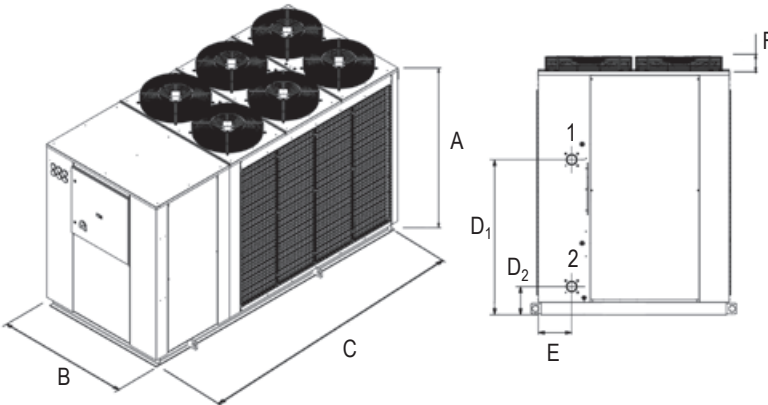
LAUDA Ultracool

Unit dimensions

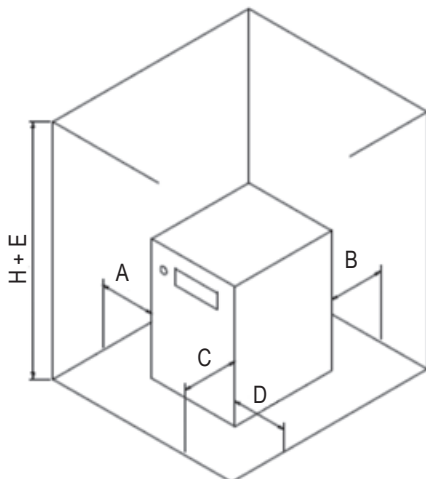
UC Maxi UC-0800 to UC-1000



UC Maxi UC-1350 to UC-2400



Minimum space requirements around the Ultracool chillers:



H = height of chiller (see unit dimensions)

Typ	A	B	C mm	D ₁	D ₂	E ₁	E ₂	F
UC-0800	1885	1545	2230	1123	548	345	110	124
UC-1000	1965	1660	3400	1253	228	270	270	124

1: water inlet
2: water outlet

Typ	A	B	C mm	D ₁	D ₂	E	F
UC-1350	1965	1660	3400	1253	228	270	124
UC-1700	1965	1660	3400	1253	228	270	124
UC-2400	1965	1660	3585	1413	273	297	124

1: water inlet
2: water outlet

The Ultracool chillers generate a certain amount of heat during operation. This heat must be removed efficiently. Find the minimum distances around the different chiller types in the table below.

Minimum distance in m	A	B	C	D	E
Mini	0.5	0.5	0.5	0.5	0.5
Midi	1	1	1	1	1
Maxi	2	2	2	2	2

Ultracool options and accessories

This table shows a short description of the available standard options for LAUDA Ultracool chiller units. Please be aware that not all chiller models can be combined with these options. Ask your LAUDA Ultracool representative for compatibility of the options with the different chiller models. Also additional options not listed below can be integrated into the chillers.

Options	
TF	Chiller without pump and water tank
SP5	5 bar water pump
SPI3	3 bar water pump entirely in stainless steel
SPI5	5 bar water pump entirely in stainless steel
AF	Auto filling kit. For automatic filling of the water tank
CF	Condenser air filter. For protection in dusty environments
FS	Flow switch. Stops the unit when there is no flow
FT	Feet for floor fixation
MB	Modbus connectivity (RS 485 interface)
PHD	Phase detector
PWP	Water heater to pre-heat the water while the unit is idle
RCP	Remote Control Panel
SC	Special RAL color for the housing
SR	Motor fan speed regulator. For ambient temperatures below 0 °C. Also reduction of noise and power consumption
SS	Stainless steel housing
TS	Increased temperature stability of ± 1 K
W	Water-cooled version
OD	Outdoor installation for UC Mini. Design in protection class IP 54
°C	Programming in °C
°F	Programming in °F

Accessories	
IK10	2 x 10 m installation kit. Includes 2 hoses and 2 sets of fittings
IK20	2 x 20 m installation kit. Includes 2 hoses and 2 sets of fittings
IK50	2 x 50 m installation kit. Includes 2 hoses and 2 sets of fittings
EB/EBU	External by-pass (BSP)/External by-pass (NPT)
EFM/EFMU	Water flow meter (BSP)/Water flow meter (NPT) For installation in the water circuit for exact indication of the water flow.
PRV/PRVU	Pressure Reducing Valve (BSP)/Pressure Reducing Valve (NPT)
PSC	Power Supply Cable (5 m)
SV/SVU	Water solenoid valve kit (BSP)/Water solenoid valve kit (NPT) To be installed in the water inlet to prevent water returning when the pump is off.
TC/TCU	Stainless steel threaded connections (BSP)/Stainless steel threaded connections (NPT)
TCW/TCWU	Threaded connections for water-cooling ports (BSP)/Threaded connections for water-cooling ports (NPT)
EB + SV/EBU + SVU	External by-pass + water solenoid valve kit (BSP)/External by-pass + water solenoid valve kit (NPT)

Heat transfer liquid	Description	Container size in liter	Cat. No.
Refrifluid 1	Water/glycol mixture, including Refrifluid B	25 Liters	E7012402
Refrifluid 1	Water/glycol mixture, including Refrifluid B	50 Liters	E7012404
Refrifluid 1	Water/glycol mixture, including Refrifluid B	100 Liters	E7012406

Additive for heat transfer liquid	Description	Container size in liter	Cat. No.
Refrifluid B	Concentrated antibacterial and anticorrosive additive	2 Liters	E7011852
Refrifluid B	Concentrated antibacterial and anticorrosive additive	4 Liters	E7011854

LAUDA Special devices

Calibration thermostats, bridge thermostats, clear-view thermostats, immersion coolers, through-flow coolers



Particular application solutions

LAUDA special devices offer the user optimized temperature control solutions for quite individual applications. It is possible to carry out rapid cooling or heating thermostats using the flow coolers and immersion coolers. Calibration thermostats are the first choice if you are concerned with temperature stability and homogeneity in the test chamber. Using the variants Ecoline Staredition and Proline, calibration and

adjusting is possible in the temperature range from -40 up to 300 °C. In order to observe the objects directly during temperature control in the range from -60 up to 230 °C, the clear-view thermostats are ideally suited. Bridge thermostats with variable pull-out telescopic rods permit temperature control of any baths up to a width of 550 mm.

LAUDA Special devices

Calibration thermostats

Calibration thermostats Ecoline Staredition and Proline

The calibration thermostats of the LAUDA Ecoline Staredition range offer you temperature stabilities to ± 0.01 K at temperatures down to -30 °C. The RE 212 J model with its two-line display, digital interface and basic programmer is convincing. The even more user-friendly RE 312 J offers the possibility of external control for even better accuracy and the PC software LAUDA Wintherm Plus. In the heating range, the compact Proline PJ 12/PJ 12 C models reach maximum temperatures up to 300 °C. The PJJ 12/PJJ 12 C were designed especially for operation with the LAUDA DLK 45 through-flow cooler and reach temperatures down to -40 °C.

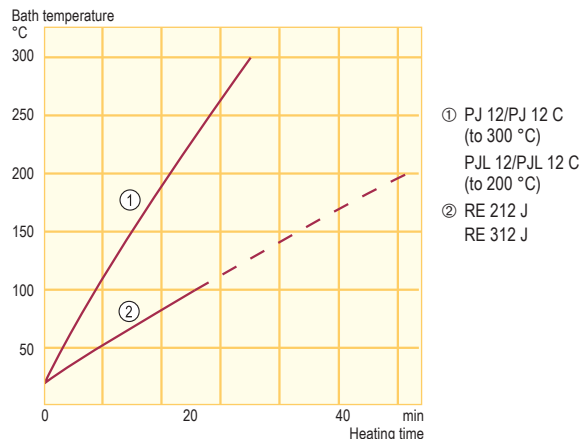


Ecoline Staredition RE 312 J



Proline PJ 12 C

Heating curves Heat transfer liquid: Ultra 300, bath closed



Temperature range

$-40 \dots 300$ °C

Included accessories

Nipples · screw caps · pump link
(only RE 212 J and RE 312 J) · bath cover (PJ/PJJ)

Additional accessories

Bath cover (RE 212 J, RE 312 J) · calibration racks



All technical data on page 98 and following
Other power supply variants on page 111

Technical features		RE 212 J	RE 312 J
Working temperature range*	°C	$-30 \dots 200$	$-30 \dots 200$
Temperature stability	\pm K	0.01	0.01
Resolution of indication	°C	0.05	0.05/0.01
Heater power	kW	2.25	2.25
Cooling output at 20 °C	kW	0.30	0.30
Pump pressure max.	bar	0.40	0.40
Pump flow (pressure) max.	L/min	17	17
Bath volume	L	9...12	9...12
Bath opening/usable depth	mm	\varnothing 150/180	\varnothing 150/180
Cat. No. 230 V; 50 Hz		LCK 1879	LCK 1880

Technical features		PJ 12	PJ 12 C	PJJ 12	PJJ 12 C
Working temperature range	°C	30...300	30...300	30...200	30...200
Operating temperature range	°C	0...300	0...300	$-40^{**} \dots 200$	$-40^{**} \dots 200$
Temperature stability	\pm K	0.01	0.01	0.01	0.01
Resolution of indication	°C	0.1	0.1/0.01/0.001	0.1	0.1/0.01/0.001
Heater power	kW	3.5	3.5	3.5	3.5
Pump pressure max.	bar	0.8	0.8	0.8	0.8
Pump flow (pressure) max.	L/min	25	25	25	25
Bath volume	L	8.5...13.5	8.5...13.5	8.5...13.5	8.5...13.5
Bath opening/depth	mm	\varnothing 120/320	\varnothing 120/320	\varnothing 120/320	\varnothing 120/320
Usable depth	mm	300	300	300	300
Cat. No. 230 V; 50/60 Hz		LCB 0720	LCB 0721	LCB 0718	LCB 0719

* Working temperature range is equal to the ACC range.

**At -40 °C in conjunction with LAUDA through-flow cooler DLK 45 (see page 93)

LAUDA Special devices

Proline bridge thermostats

Proline Bridge thermostats

LAUDA Proline bridge thermostats are available in two versions with different pump models and immersion depths. The PB models have a pressure/suction pump and require a bath depth of 200 mm, while the PBD models have a more powerful pressure pump (D) and require a bath with a depth of 320 mm. In addition, both series of models differ in the selected control head: Master or Command (C). Through variably extendable telescopic rods, all models can be attached without problem to baths with a width from 310 mm up to 550 mm.



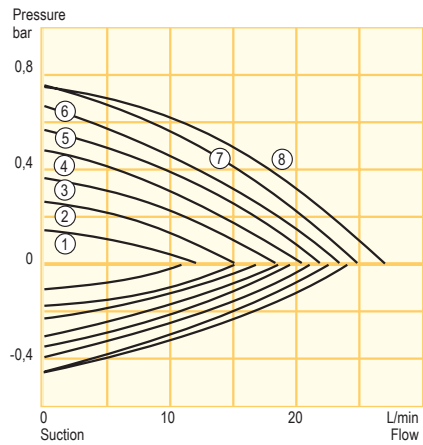
Bridge thermostat PBD C
– Bath not included in scope of delivery –



All technical data on page 98 and following
Other power supply variants on page 111

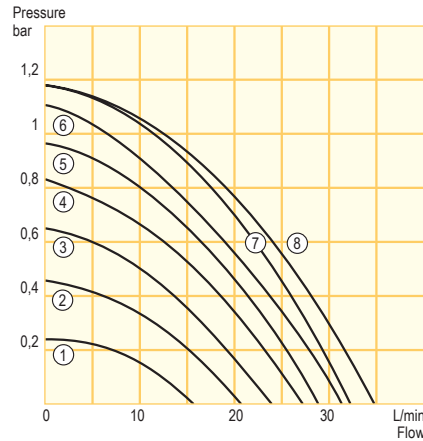


Pump characteristics for PB and PBC,
Heat transfer liquid: Water



- ① Step 1
- ② Step 2
- ③ Step 3
- ④ Step 4
- ⑤ Step 5
- ⑥ Step 6
- ⑦ Step 7
- ⑧ Step 8

Pump characteristics for PBD and PBD C
P 12 and P 12 C, Heat transfer liquid: Water



- ① Step 1
- ② Step 2
- ③ Step 3
- ④ Step 4
- ⑤ Step 5
- ⑥ Step 6
- ⑦ Step 7
- ⑧ Step 8

Temperature range
30...300 °C

Included accessories

2 nipples and 4 closing plugs for pump connections · telescopic rods

Additional accessories

Automatic filling device · water bath
Interface modules: analog, RS 232/485, contact, Profibus, Ethernet, EtherCAT module

Technical features		PB/PB C	PBD/PBD C
Working temperature range	°C	30...300	30...300
Operating temperature range	°C	-30*...300	-30*...300
Temperature stability	±K	0.01	0.01
Heater power	kW	3.5	3.5
Pump pressure max.	bar	0.7	1.1
Pump suction max.	bar	0.4	–
Pump flow (pressure) max.	L/min	25	32
Pump flow (suction) max.	L/min	23	–
Bath volume up to approx.	L	80	80
Bath opening	mm	Telescopic rods can be extended for bath widths 310...550	
Bath depth min.	mm	200	320
Cat. No. Master 230 V; 50/60 Hz		LCG 0090	LCG 0092
Cat. No. Command 230 V; 50/60 Hz		LCG 0091	LCG 0093

* Only achievable with LAUDA through-flow cooler

LAUDA Special devices

Proline clear-view thermostats

Proline Clear-view thermostats

LAUDA clear-view thermostats are optimized for directly observing inserted objects. The temporal and spatial temperature stability required for precisely determining the viscosity is guaranteed for the full temperature range. As such, they are ideal for use with the fully automated LAUDA PVS or iVisc viscometers. Thanks to the double-chamber principle, a constant liquid level in the measuring room is guaranteed regardless of the rate and temperature. The PVL models are equipped with five layers of insulating glass and by connecting a DLK 45 through-flow cooler or Proline RP 890 cooling thermostat are suited to low-temperature measurements down to -40 or -60 °C.

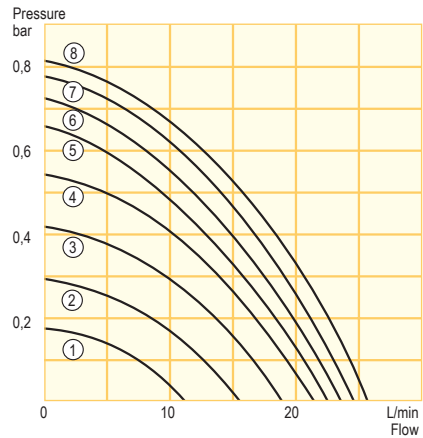


Clear-view thermostats PV 24 C



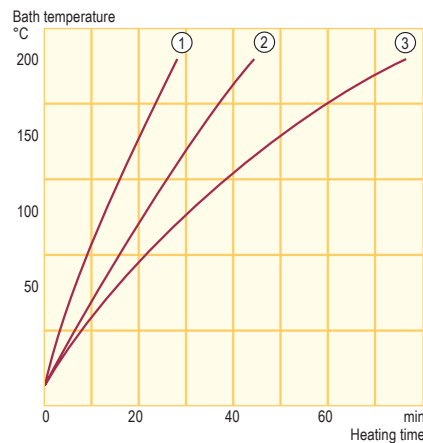
All technical data on page 98 and following
Other power supply variants on page 111

Pump characteristics Heat transfer liquid: Water



- ① Step 1
- ② Step 2
- ③ Step 3
- ④ Step 4
- ⑤ Step 5
- ⑥ Step 6
- ⑦ Step 7
- ⑧ Step 8

Heating curves Heat transfer liquid: Therm 240, bath closed



- ① PV 15 (up to 230 °C)
PVL 15 (up to 100 °C)
- ② PV 24 (up to 230 °C)
PVL 24 (up to 100 °C)
- ③ PV 36

Temperature range

30...230 °C

Included accessories

2 nipples and 4 closing plugs for pump connections ·
2 nipples for cooling coil

Additional accessories

Window heating system – PVL 15 (C), PVL 24 (C) only ·
solenoid valve for cooling water · additional cooler · Command
remote control · Interface modules: analog, RS 232/485,
contact, Profibus, Ethernet, EtherCAT module

Technical features		PV 15/PV 15 C	PV 24/PV 24 C	PV 36/PV 36 C	PVL 15/PVL 15 C	PVL 24/PVL 24 C
Working temperature range	°C	30...230	30...230	30...230	30...100	30...100
Operating temperature range	°C	0*...230	0*...230	0*...230	-60**...100	-60**...100
Temperature stability	±K	0.01	0.01	0.01	0.01	0.01
Heater power	kW	3.5	3.5	3.5	3.5	3.5
Pump pressure max.	bar	0.8	0.8	0.8	0.8	0.8
Pump suction max.	bar	–	–	–	–	–
Pump flow (pressure) max.	L/min	25	25	25	25	25
Pump flow (suction) max.	L/min	–	–	–	–	–
Bath volume	L	11...15	19...24	28...36	11...15	19...24
Bath opening/Bath depth	mm	230x135/320	405x135/320	585x135/320	230x135/320	405x135/320
Glass pane size	mm	149x230	326x230	506x230	149x230	326x230
Cat. No. Master 230 V; 50/60 Hz		LCD 0276	LCD 0278	LCD 0280	LCD 0282	LCD 0284
Cat. No. Command 230 V; 50/60 Hz		LCD 0277	LCD 0279	LCD 0281	LCD 0283	LCD 0285

* Only achievable with LAUDA add-on cooler ** Only achievable with LAUDA Proline Edition X RP 890

LAUDA Special devices

Immersion coolers

Immersion coolers

LAUDA immersion coolers are used as add-on devices to cool heating thermostats or any type of bath below ambient temperature.

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



Other power supply variants on page 116

Technical features		ETK 30	ETK 50
Working temperature range (without external heating)	°C	-30...20	-50...20
Operating temperature range (with external heating)	°C	-30...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
Dimensions (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 Special devices

Through-flow coolers

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



Other power supply variants on page 116



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 0.22	0.33	1.1	1.1
	0 °C	kW 0.12	0.28	0.95	0.95
	-10 °C	kW 0.08	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: Ultra	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

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/hoses. 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 packing units: 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

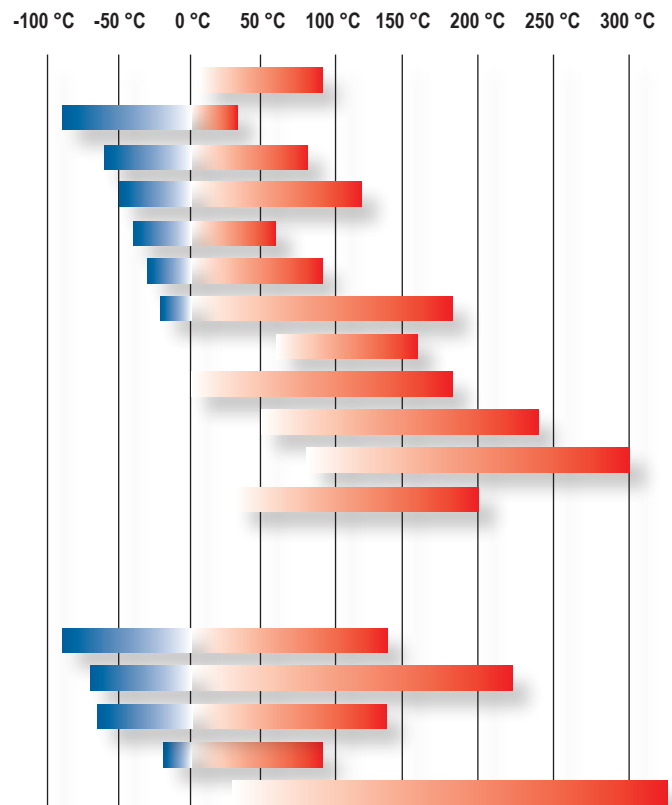


Order the detailed LAUDA brochure heat transfer liquids free of charge. This and additional product information can also be found at www.lauda.de

Open/half-open systems				
Designation	Temp. range	5 L	Cat. No.: 10 L	20 L
Aqua 90	5...90 °C	LZB 120	LZB 220	LZB 320
Kryo 90	Ⓢ -90...30 °C	LZB 128	LZB 228	LZB 328
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

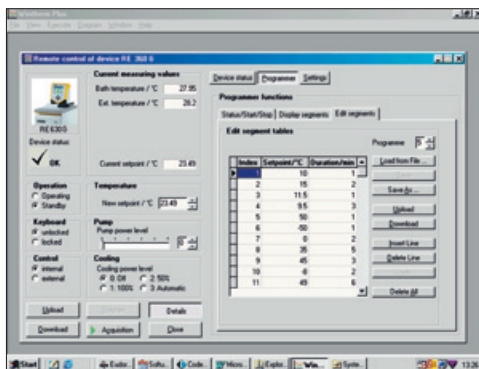
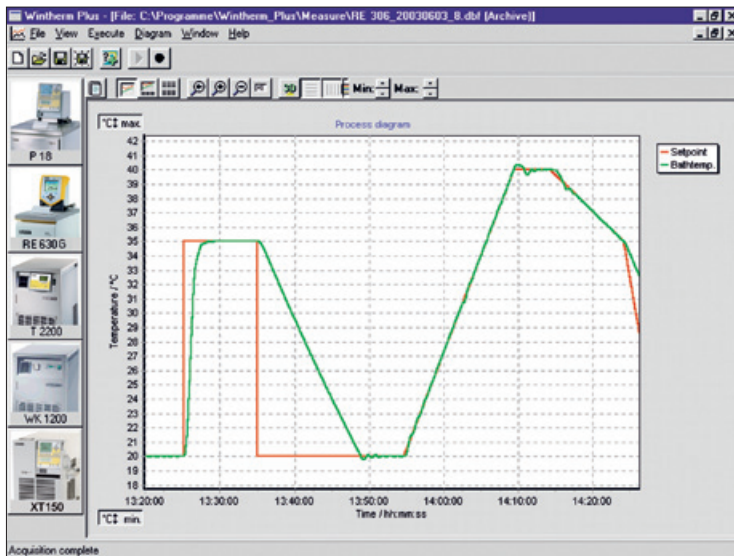
Closed systems flooded with cold oil (Integral XT)				
Designation	Temp. range	5 L	Cat. No.: 10 L	20 L
Kryo 90	Ⓢ -90...140 °C	LZB 128	LZB 228	LZB 328
Kryo 70	Ⓢ -70...220 °C	LZB 127	LZB 227	LZB 327
Kryo 65	-65...140 °C	LZB 118	LZB 218	LZB 318
Kryo 30	-30...90 °C	LZB 109	LZB 209	LZB 309
Ultra 350	30...350 °C	LZB 107	LZB 207	LZB 307

Ⓢ = Silicone oil



Wintherm Plus software

All LAUDA ECO Silver and ECO Gold thermostats, all Proline and PRO thermostats and Proline Kryomats, all circulation chillers Variocool and Microcool 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, USB interface or Ethernet interface.



Wintherm Plus features

- Remote setting of 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 or Variocool
- Every measuring curve can be imported directly as bitmap or metafile into all graphic programs and Microsoft Word.
- Simultaneous control of up to 16 thermostats
- Serial interfaces of the PC can be addressed as RS 232 or RS 485.
- Driving of the thermostats via USB for ECO and Variocool as well as per Ethernet
- Automatic recognition of connected thermostats
- Operating languages: German and English
- Supported operation systems: Windows XP, Windows VISTA, Windows 7 (32 and 64 Bit), Windows 8 (32 and 64 Bit)

* Pump capacity not controllable with Wintherm Plus on LAUDA Microcool, Variocool and Integral T

LAUDA Technical data according to DIN 12876 standard



Technical data

Type	Page	Working temperature range ^① °C	Working temperature range with water cooling ^① °C	Operating temperature range ^② °C	Resolution of setting °C	Resolution of indication ±K	Temperature stability	Safety fittings ^③	Heater power kW	Pump type ^④ bar	Pump pressure max. L/min	Pump flow max. (pressure) mm	Pump connection thread mm	Ø Nipples
LAUDA Aqualine														
AL 2	14	25...95	-	-	0.1/1	0.1	0.2 ^⑤	I, NFL	0.5	-	-	-	-	-
AL 5	14	25...95	-	-	0.1/1	0.1	0.2 ^⑤	I, NFL	0.5	-	-	-	-	-
AL 12	14	25...95	-	-	0.1/1	0.1	0.2 ^⑤	I, NFL	1.0	-	-	-	-	-
AL 18	14	25...95	-	-	0.1/1	0.1	0.2 ^⑤	I, NFL	1.2	-	-	-	-	-
AL 25	14	25...95	-	-	0.1/1	0.1	0.2 ^⑤	I, NFL	1.2	-	-	-	-	-

LAUDA Alpha														
A	18	25...100	20...100	-25...100	0.1/1	0.1	0.05	I, NFL	1.5	D	0.2	15	- ^⑥	- ^⑥
A 6	19	25*...100	20...100	-25...100	0.1/1	0.1	0.05	I, NFL	1.5	D	0.2	15	- ^⑥	- ^⑥
A 12	19	25*...100	20...100	-25...100	0.1/1	0.1	0.05	I, NFL	1.5	D	0.2	15	- ^⑥	- ^⑥
A 24	19	25*...100	20...100	-25...100	0.1/1	0.1	0.05	I, NFL	1.5	D	0.2	15	- ^⑥	- ^⑥

* With open bath

LAUDA ECO														
Silver	25	20...200	20...200	-20...200	0.01	0.01	0.01	III, FL	2.0	V	0.55	22	- ^⑦	- ^⑦
Gold	25	20...200	20...200	-20...200	0.01	0.01	0.01	III, FL	2.6	V	0.55	22	- ^⑦	- ^⑦
ET 6 S	28	20...100	20...100	-20...100	0.01	0.01	0.01	III, FL	2.0	V	0.55	22	- ^⑦	- ^⑦
ET 12 S	28	20...100	20...100	-20...100	0.01	0.01	0.01	III, FL	2.0	V	0.55	22	- ^⑦	- ^⑦
ET 15 S	28	20...100	20...100	-20...100	0.01	0.01	0.01	III, FL	2.0	V	0.55	22	- ^⑦	13
ET 20 S	28	20...100	20...100	-20...100	0.01	0.01	0.01	III, FL	2.0	V	0.55	22	- ^⑦	- ^⑦
ET 6 G	28	20...100	20...100	-20...100	0.01	0.01	0.01	III, FL	2.6	V	0.55	22	- ^⑦	- ^⑦
ET 12 G	28	20...100	20...100	-20...100	0.01	0.01	0.01	III, FL	2.6	V	0.55	22	- ^⑦	- ^⑦
ET 15 G	28	20...100	20...100	-20...100	0.01	0.01	0.01	III, FL	2.6	V	0.55	22	M16 x 1	13
ET 20 G	28	20...100	20...100	-20...100	0.01	0.01	0.01	III, FL	2.6	V	0.55	22	- ^⑦	- ^⑦
E 4 S	26	20...200	20...200	-20...200	0.01	0.01	0.01	III, FL	2.0	V	0.55	22	- ^⑦	13
E 10 S	26	20...200	20...200	-20...200	0.01	0.01	0.01	III, FL	2.0	V	0.55	22	- ^⑦	- ^⑦
E 15 S	26	20...200	20...200	-20...200	0.01	0.01	0.01	III, FL	2.0	V	0.55	22	- ^⑦	- ^⑦
E 20 S	26	20...200	20...200	-20...200	0.01	0.01	0.01	III, FL	2.0	V	0.55	22	- ^⑦	- ^⑦
E 25 S	26	20...200	20...200	-20...200	0.01	0.01	0.01	III, FL	2.0	V	0.55	22	- ^⑦	- ^⑦
E 40 S	26	20...200	20...200	-20...200	0.01	0.01	0.01	III, FL	2.0	V	0.55	22	- ^⑦	- ^⑦
E 4 G	27	20...200	20...200	-20...200	0.01	0.01	0.01	III, FL	2.6	V	0.55	22	M16 x 1	13
E 10 G	27	20...200	20...200	-20...200	0.01	0.01	0.01	III, FL	2.6	V	0.55	22	- ^⑦	- ^⑦
E 15 G	27	20...200	20...200	-20...200	0.01	0.01	0.01	III, FL	2.6	V	0.55	22	- ^⑦	- ^⑦
E 20 G	27	20...200	20...200	-20...200	0.01	0.01	0.01	III, FL	2.6	V	0.55	22	- ^⑦	- ^⑦
E 25 G	27	20...200	20...200	-20...200	0.01	0.01	0.01	III, FL	2.6	V	0.55	22	- ^⑦	- ^⑦
E 40 G	27	20...200	20...200	-20...200	0.01	0.01	0.01	III, FL	2.6	V	0.55	22	- ^⑦	- ^⑦

① At pump level 1 ② With external cooling/through-flow cooler ③ III, FL: for use with flammable and non-flammable liquids; I, NFL: for use with non-flammable liquids
 ④ Pump connection sets for ECO Silver and ECO Gold available as accessories. See page 32. ⑤ Pump connection sets for Alpha available as accessoires. See page 21.



Bath volume min.	Bath volume max.	Bath opening (WxD)	Bath depth	Usable depth	Height top of bath	Height gable cover	Glass pane size (WxH)	Dimensions (WxDxH)	Weight	Power supply [®]	Loading	Cat. No.	Type
L	L	mm	mm	mm	mm	mm	mm	mm	kg	V; Hz	kW		
LAUDA Aqualine													
0.9	1.7	300x151	65	–	–	55	343x186x290	4.5	230; 50/60	0.6	LCB 0723	AL 2	
1.0	5.0	300x151	150	–	–	55	343x186x290	5.0	230; 50/60	0.6	LCB 0724	AL 5	
2.0	11.7	329x300	150	–	–	90	372x335x325	8.5	230; 50/60	1.1	LCB 0725	AL 12	
3.0	18.2	505x300	150	–	–	90	548x335x325	11.5	230; 50/60	1.3	LCB 0726	AL 18	
3.0	25.2	505x300	200	–	–	90	548x335x375	13.5	230; 50/60	1.3	LCB 0727	AL 25	

LAUDA Alpha												
–	50.0	–	Min. 150	Min. 100	–	–	125x150x300	3.5	230; 50/60	1.5	LCE 0226	A
2.5	5.5	145x161	150	130	212	–	181x332x370	6.2	230; 50/60	1.5	LCB 0733	A 6
8	12	235x161	200	180	262	–	270x332x420	7.5	230; 50/60	1.5	LCB 0734	A 12
18	25	295x374	200	180	262	–	332x535x420	10.5	230; 50/60	1.5	LCB 0735	A 24

LAUDA ECO												
–	–	–	Min. 150	–	–	–	130x135x325	3.0	230; 50/60	2.1	LCE 0227	Silver
–	–	–	Min. 150	–	–	–	130x135x325	3.4	230; 50/60	2.7	LCE 0228	Gold
5.0	6.0	130x285	160	140	169	–	143x433x349	4.1	230; 50/60	2.1	LCM 0096	ET 6 S
9.5	12.0	300x175	160	140	208	–	322x331x389	6.4	230; 50/60	2.1	LCD 0286	E T 12 S
13.5	15.0	275x130	310	290	356	–	428x148x532	6.4	230; 50/60	2.1	LCD 0288	E T 15 S
15.0	20.0	300x350	160	140	208	–	322x506x389	7.6	230; 50/60	2.1	LCD 0290	E T 20 S
5.0	6.0	130x285	160	140	169	–	143x433x349	4.5	230; 50/60	2.7	LCM 0097	E T 6 G
9.5	12.0	300x175	160	140	208	–	322x331x389	6.8	230; 50/60	2.7	LCD 0287	E T 12 G
13.5	15.0	275x130	310	290	356	–	428x148x532	6.8	230; 50/60	2.7	LCD 0289	E T 15 G
15.0	20.0	300x350	160	140	208	–	322x506x389	8.0	230; 50/60	2.7	LCD 0291	E T 20 G
3.0	3.5	135x105	150	130	196	–	168x272x376	6.6	230; 50/60	2.1	LCB 0736	E 4 S
7.5	11.0	300x190	150	130	196	–	331x361x376	8.6	230; 50/60	2.1	LCB 0738	E 10 S
12.0	16.0	300x190	200	180	246	–	331x361x426	10.3	230; 50/60	2.1	LCB 0740	E 15 S
13.0	19.0	300x365	150	130	196	–	331x537x376	11.8	230; 50/60	2.1	LCB 0742	E 20 S
16.0	25.0	300x365	200	180	246	–	331x537x426	13.1	230; 50/60	2.1	LCB 0744	E 25 S
32.0	40.0	300x613	200	180	248	–	350x803x428	17.2	230; 50/60	2.1	LCB 0746	E 40 S
3.0	3.5	135x105	150	130	196	–	168x272x376	7.0	230; 50/60	2.7	LCB 0737	E 4 G
7.5	11.0	300x190	150	130	196	–	331x361x376	9.0	230; 50/60	2.7	LCB 0739	E 10 G
12.0	16.0	300x190	200	180	246	–	331x361x426	10.7	230; 50/60	2.7	LCB 0741	E 15 G
13.0	19.0	300x365	150	130	196	–	331x537x376	12.2	230; 50/60	2.7	LCB 0743	E 20 G
16.0	25.0	300x365	200	180	246	–	331x537x426	13.5	230; 50/60	2.7	LCB 0745	E 25 G
32.0	40.0	300x613	200	180	248	–	350x803x428	17.6	230; 50/60	2.7	LCB 0747	E 40 G

[®] D: pressure pump; V: Vario pump, pressure pump with 6 selectable pump levels

[®] Other power supply variants on page 110

[®] At 37 °C

LAUDA Technical data according to DIN 12876 standard



Technical data

NEW

Type	Page	Working temperature range ^① °C	Working temperature range with water cooling ^② °C	Operating temperature range ^③ °C	Resolution of setting °C	Resolution of indication °C	Temperature stability ±K	Safety fittings ^④ III. FL	Heater power kW	Pump type ^⑤ V	Pump pressure max. bar	Pump suction max. bar	Pump flow max. L/min	Pump flow max. (pressure) L/min	Pump flow max. (suction) mm	Pump connection thread Ø Nipples mm
LAUDA PRO																
P 10	37	40...250	20...250	-30...250	0.01	0.01	0.01	III. FL	3.6	V	-	-	-	-	-	-
P 20	37	35...250	20...250	-30...250	0.01	0.01	0.01	III. FL	3.6	V	-	-	-	-	-	-
P 30	37	30...250	20...250	-30...250	0.01	0.01	0.01	III. FL	3.6	V	-	-	-	-	-	-
P 10 C	37	40...250	20...250	-30...250	0.01	0.01	0.01	III. FL	3.6	V	-	-	-	-	-	-
P 20 C	37	35...250	20...250	-30...250	0.01	0.01	0.01	III. FL	3.6	V	-	-	-	-	-	-
P 30 C	37	30...250	20...250	-30...250	0.01	0.01	0.01	III. FL	3.6	V	-	-	-	-	-	-
P 2 E	39	80...250	20...250	-30...250	0.01	0.01	0.05	III. FL	2.5	VF	0.7	0.4	22	20	M16 x 1	13
P 2 EC	39	80...250	20...250	-30...250	0.01	0.01	0.05	III. FL	2.5	VF	0.7	0.4	22	20	M16 x 1	13

LAUDA Proline																		
Type	Page	Working temperature range ^① °C	Working temperature range with water cooling ^② °C	Operating temperature range ^③ °C	Einstellaufösung °C	Resolution of indication °C	Temperature stability ±K	Safety fittings ^④ III. FL	Heater power kW	Pump type ^⑤ VFP	Pump pressure max. bar	Pump suction max. bar	Pump flow max. 20 °C L/min	Pump flow max. 0 °C L/min	Pump flow max. -10 °C L/min	Pump flow max. -20 °C L/min	Pump connection thread Ø Nipples mm	
PV 15	91	30...230	20...230	0...230	0.1/0.01	0.01	0.01	III. FL	3.5	VFP	0.8	-	25	-	-	-	M16 x 1	13
PV 24	91	30...230	20...230	0...230	0.1/0.01	0.01	0.01	III. FL	3.5	VFP	0.8	-	25	-	-	-	M16 x 1	13
PV 36	91	30...230	20...230	0...230	0.1/0.01	0.01	0.01	III. FL	3.5	VFP	0.8	-	25	-	-	-	M16 x 1	13
PV 15 C	91	30...230	20...230	0...230	0.01	0.1/0.01/0.001	0.01	III. FL	3.5	VFP	0.8	-	25	-	-	-	M16 x 1	13
PV 24 C	91	30...230	20...230	0...230	0.01	0.1/0.01/0.001	0.01	III. FL	3.5	VFP	0.8	-	25	-	-	-	M16 x 1	13
PV 36 C	91	30...230	20...230	0...230	0.01	0.1/0.01/0.001	0.01	III. FL	3.5	VFP	0.8	-	25	-	-	-	M16 x 1	13
PVL 15	91	30...100	20...100	-60...100	0.1/0.01	0.01	0.01	III. FL	3.5	VFP	0.8	-	25	-	-	-	M16 x 1	13
PVL 24	91	30...100	20...100	-60...100	0.1/0.01	0.01	0.01	III. FL	3.5	VFP	0.8	-	25	-	-	-	M16 x 1	13
PVL 15 C	91	30...100	20...100	-60...100	0.01	0.1/0.01/0.001	0.01	III. FL	3.5	VFP	0.8	-	25	-	-	-	M16 x 1	13
PVL 24 C	91	30...100	20...100	-60...100	0.01	0.1/0.01/0.001	0.01	III. FL	3.5	VFP	0.8	-	25	-	-	-	M16 x 1	13
PB	90	30...300	20...300	-30...300	0.1/0.01	0.01	0.01	III. FL	3.5	VF	0.7	0.4	25	23	M16 x 1	13		
PB C	90	30...300	20...300	-30...300	0.01	0.1/0.01/0.001	0.01	III. FL	3.5	VF	0.7	0.4	25	23	M16 x 1	13		
PBD	90	30...300	20...300	-30...300	0.1/0.01	0.01	0.01	III. FL	3.5	VFP	1.1	-	32	-	-	-	M16 x 1	13
PBD C	90	30...300	20...300	-30...300	0.01	0.1/0.01/0.001	0.01	III. FL	3.5	VFP	1.1	-	32	-	-	-	M16 x 1	13

Type	Page	Working temperature range ^① °C	Working temperature range with water cooling ^② °C	Operating temperature range ^③ °C	Einstellaufösung °C	Resolution of indication °C	Temperature stability ±K	Safety fittings ^④ III. FL	Heater power kW	Effective cooling output (measured with ethanol, 20 °C ambient temperature)				Pump type ^⑤ VFP	Pump pressure max. bar
										20 °C kW	0 °C kW	-10 °C kW	-20 °C kW		
LAUDA Calibration thermostats															
RE 212 J	89	-30...200	-	-	0.1/0.01	0.05	0.01	III. FL	2.25	0.30	0.23	0.13	0.04	V	0.40
RE 312 J	89	-30...200	-	-	0.1/0.01	0.05/0.01	0.01	III. FL	2.25	0.30	0.23	0.13	0.04	V	0.40
PJ 12	89	30...300	20...300	0...300	0.1/0.01	0.01	0.01	III. FL	3.5	-	-	-	-	VFP	0.8
PJ 12 C	89	30...300	20...300	0...300	0.01	0.1/0.01/0.001	0.01	III. FL	3.5	-	-	-	-	VFP	0.8
PJL 12	89	30...200	20...200	-40...200	0.1/0.01	0.01	0.01	III. FL	3.5	-	-	-	-	VFP	0.8
PJL 12 C	89	30...200	20...200	-40...200	0.01	0.1/0.01/0.001	0.01	III. FL	3.5	-	-	-	-	VFP	0.8

① At pump level 1 ② With external cooling/add-on cooler ③ III, FL: for use with flammable and non-flammable liquids; I, NFL: for use with non-flammable liquids



Bath volume min.	Bath volume max.	Bath opening (WxD)	Bath depth	Usable depth	Height top of bath	Glass pane size (WxH)	Dimensions (WxDxH)	Weight	Power supply®	Loading	Cat. No.	Type
L	L	mm	mm	mm	mm	mm	mm	kg	V; Hz	kW		
LAUDA PRO												
5.5	10.0	240x150	200	180	250	–	310x335x365	13.0	200-230; 50/60	3.7	L000001	P 10
11.0	20.0	300x290	200	180	250	–	350x475x365	19.0	200-230; 50/60	3.7	L000002	P 20
15.5	28.5	340x385	200	180	250	–	400x600x365	23.0	200-230; 50/60	3.7	L000003	P 30
5.5	10.0	240x150	200	180	250	–	310x335x415	13.0	200-230; 50/60	3.7	L000004	P 10 C
11.0	20.0	300x290	200	180	250	–	350x475x415	19.0	200-230; 50/60	3.7	L000005	P 20 C
15.5	28.5	340x385	200	180	250	–	400x600x415	23.0	200-230; 50/60	3.7	L000006	P 30 C
2.4	4.4	–	–	–	–	–	250x365x425	16.0	200-230; 50/60	2.7	L000019	P 2 E
2.4	4.4	–	–	–	–	–	250x365x425	16.0	200-230; 50/60	2.7	L000020	P 2 EC

LAUDA Proline												
11.0	15.0	230x135	320	285	390	149x230	506x282x590	26.0	230; 50/60	3.6	LCD 0276	PV 15
19.0	24.0	405x135	320	285	390	326x230	740x282x590	36.0	230; 50/60	3.6	LCD 0278	PV 24
28.0	36.0	585x135	320	285	390	506x230	1040x282x590	44.0	230; 50/60	3.6	LCD 0280	PV 36
11.0	15.0	230x135	320	285	390	149x230	506x282x590®	26.0	230; 50/60	3.6	LCD 0277	PV 15 C
19.0	24.0	405x135	320	285	390	326x230	740x282x590®	36.0	230; 50/60	3.6	LCD 0279	PV 24 C
28.0	36.0	585x135	320	285	390	506x230	1040x282x590®	44.0	230; 50/60	3.6	LCD 0281	PV 36 C
11.0	15.0	230x135	320	285	390	149x230	506x282x590	28.0	230; 50/60	3.6	LCD 0282	PVL 15
19.0	24.0	405x135	320	285	390	326x230	740x282x590	39.0	230; 50/60	3.6	LCD 0284	PVL 24
11.0	15.0	230x135	320	285	390	149x230	506x282x590®	28.0	230; 50/60	3.6	LCD 0283	PVL 15 C
19.0	24.0	405x135	320	285	390	326x230	740x282x590®	39.0	230; 50/60	3.6	LCD 0285	PVL 24 C
–	80.0	**	Min. 200	–	–	–	–x185x400	8.0	230; 50/60	3.6	LCG 0090	PB
–	80.0	**	Min. 200	–	–	–	–x185x520®	8.0	230; 50/60	3.6	LCG 0091	PB C
–	80.0	**	Min. 320	–	–	–	–x185x400	8.0	230; 50/60	3.6	LCG 0092	PBD
–	80.0	**	Min. 320	–	–	–	–x185x520®	8.0	230; 50/60	3.6	LCG 0093	PBD C

** The telescopic rod can be extended for bath widths 310...550 mm

Pump flow max. (pressure)	Pump connection thread	Ø Nipples	Bath volume min.	Bath volume max.	Bath opening (WxD)	Bath depth	Usable depth	Height top of bath	Dimensions (WxDxH)	Weight	Power supply®	Loading	Cat. No.	Type
L/min	mm	mm	L	L	mm	mm	mm	mm	mm	kg	V; Hz	kW		
LAUDA Calibration thermostats														
17	M16 x 1	13	9.0	12.0	Ø 150	200	180	441	250x400x602	30.0	230; 50	2.3	LCK 1879	RE 212 J
17	M16 x 1	13	9.0	12.0	Ø 150	200	180	441	250x400x602	30.0	230; 50	2.3	LCK 1880	RE 312 J
25	M16 x 1	13	8.5	13.5	Ø 120	320	300	374	220x360x574	17.0	230; 50/60	3.6	LCB 0720	PJ 12
25	M16 x 1	13	8.5	13.5	Ø 120	320	300	374	220x360x574®	17.0	230; 50/60	3.6	LCB 0721	PJ 12 C
25	M16 x 1	13	8.5	13.5	Ø 120	320	300	374	220x360x574	17.0	230; 50/60	3.6	LCB 0718	PJL 12
25	M16 x 1	13	8.5	13.5	Ø 120	320	300	374	220x360x574®	17.0	230; 50/60	3.6	LCB 0719	PJL 12 C

® V: Vario pump, pressure pump with 5 selectable output steps; VF: Varioflex pump, pressure/suction pump with 8 selectable output steps; VFP: Varioflex pump, pressure pump with 8 selectable output steps
 ® Other power supply variants on page 110, 111
 ® With Command remote control: 56 mm higher

LAUDA Technical data according to DIN 12876 standard



Technical data

Type	Page	Working temperature range (equal to ACC range) ^①	Resolution of setting	Resolution of indication	Temperature stability	Safety fittings ^②	Heater power	Effective cooling output ^③ (measured with ethanol, 20 °C ambient temperature)													
								20 °C	0 °C	-20 °C	-30 °C	-40 °C	-45 °C	-50 °C	-55 °C	-60 °C	-70 °C	-80 °C	-90 °C		
LAUDA ECO																					
RE 415 SW	31	-15...200	0.01	0.01	0.02	III, FL	2.0	0.18	0.12	0.03 ^③	-	-	-	-	-	-	-				
RE 420 SW	31	-20...200	0.01	0.01	0.02	III, FL	2.0	0.20	0.15	0.03	-	-	-	-	-	-	-				
RE 620 SW	31	-20...200	0.01	0.01	0.02	III, FL	2.0	0.20	0.15	0.03	-	-	-	-	-	-	-				
RE 630 SW	31	-30...200	0.01	0.01	0.02	III, FL	2.0	0.30	0.24	0.10	0.02	-	-	-	-	-	-				
RE 1050 SW	31	-50...200	0.01	0.01	0.02	III, FL	2.0	0.70	0.60	0.35	0.19	0.10	-	0.02	-	-	-				
RE 1225 SW	31	-25...200	0.01	0.01	0.02	III, FL	2.0	0.30	0.24	0.09	0.04 ^③	-	-	-	-	-	-				
RE 2025 SW	31	-25...200	0.01	0.01	0.02	III, FL	2.0	0.30	0.23	0.06	0.03 ^③	-	-	-	-	-	-				
RE 415 GW	31	-15...200	0.01	0.01	0.02	III, FL	2.6	0.18	0.12	0.03 ^③	-	-	-	-	-	-	-				
RE 420 GW	31	-20...200	0.01	0.01	0.02	III, FL	2.6	0.20	0.15	0.03	-	-	-	-	-	-	-				
RE 620 GW	31	-20...200	0.01	0.01	0.02	III, FL	2.6	0.20	0.15	0.03	-	-	-	-	-	-	-				
RE 630 GW	31	-30...200	0.01	0.01	0.02	III, FL	2.6	0.30	0.24	0.10	0.02	-	-	-	-	-	-				
RE 1050 GW	31	-50...200	0.01	0.01	0.02	III, FL	2.6	0.70	0.60	0.35	0.19	0.10	-	0.02	-	-	-				
RE 1225 GW	31	-25...200	0.01	0.01	0.02	III, FL	2.6	0.30	0.24	0.09	0.04 ^③	-	-	-	-	-	-				
RE 2025 GW	31	-25...200	0.01	0.01	0.02	III, FL	2.6	0.30	0.23	0.06	0.03 ^③	-	-	-	-	-	-				

LAUDA Proline Kryomats																	
RP 3050 C	44	-50...200	0.01	0.1/0.01/0.001	0.05	III, FL	3.5	5.00	5.00	3.00	1.60	1.00	0.50	-	0.25	-	-
RP 4050 C	44	-50...200	0.01	0.1/0.01/0.001	0.05	III, FL	3.5	5.00	5.00	3.00	1.60	1.00	0.50	-	0.25	-	-
RP 3090 C	44	-90...200	0.01	0.1/0.01/0.001	0.05	III, FL	3.5	3.00	3.00	2.90	2.50	2.30	2.00	-	1.60	-	1.30
RP 4090 C	44	-90...200	0.01	0.1/0.01/0.001	0.05	III, FL	3.5	3.00	3.00	2.90	2.50	2.30	2.00	-	1.60	-	1.30
RP 3050 CW	45	-50...200	0.01	0.1/0.01/0.001	0.05	III, FL	3.5	6.00	6.00	3.50	1.80	1.10	0.60	-	0.25	-	-
RP 4050 CW	45	-50...200	0.01	0.1/0.01/0.001	0.05	III, FL	3.5	6.00	6.00	3.50	1.80	1.10	0.60	-	0.25	-	-
RP 3090 CW	45	-90...200	0.01	0.1/0.01/0.001	0.05	III, FL	3.5	4.00	4.00	3.70	3.10	2.70	2.30	-	1.80	-	1.40
RP 4090 CW	45	-90...200	0.01	0.1/0.01/0.001	0.05	III, FL	3.5	4.00	4.00	3.70	3.10	2.70	2.30	-	1.80	-	1.40

NEW

Type	Page	Working temperature range (equal to ACC range)	Resolution of setting	Resolution of indication	Temperature stability	Safety fittings ^②	Heater power	Effective cooling output at 20 °C water temperature													
								20 °C	10 °C	0 °C	-10 °C	-20 °C	-30 °C	-40 °C	-50 °C	-60 °C	-70 °C	-80 °C	-90 °C	-100 °C	
LAUDA PRO																					
RP 2040	38	-40...200	0.01	0.01	0.01	III, FL	3.60	0.80	0.80	0.80	0.60	0.40	0.19	0.06	-	-	-				
RP 2045	38	-45...200	0.01	0.01	0.01	III, FL	3.60	1.50	1.43	1.17	0.84	0.52	0.28	0.13	-	-	-				
RP 3035	38	-35...200	0.01	0.01	0.01	III, FL	3.60	0.80	0.80	0.80	0.58	0.35	0.16	-	-	-	-				
RP 1090	38	-90...200	0.01	0.01	0.01	III, FL	3.60	0.80	0.75	0.72	0.69	0.66	0.63	0.60	0.54	0.37	0.24				
RP 2090	38	-90...200	0.01	0.01	0.01	III, FL	3.60	0.80	0.71	0.68	0.65	0.62	0.61	0.58	0.52	0.34	0.18				
RP 10100	38	-100...200	0.01	0.01	0.01	III, FL	3.60	0.40	0.40	0.40	0.40	0.40	0.39	0.37	0.35	0.32	0.25				
RP 2040 C	38	-40...200	0.01	0.01	0.01	III, FL	3.60	0.80	0.80	0.80	0.60	0.40	0.19	0.06	-	-	-				
RP 2045 C	38	-45...200	0.01	0.01	0.01	III, FL	3.60	1.50	1.43	1.17	0.84	0.52	0.28	0.13	-	-	-				
RP 3035 C	38	-35...200	0.01	0.01	0.01	III, FL	3.60	0.80	0.80	0.80	0.58	0.35	0.16	-	-	-	-				
RP 1090 C	38	-90...200	0.01	0.01	0.01	III, FL	3.60	0.80	0.75	0.72	0.69	0.66	0.63	0.60	0.54	0.37	0.24				
RP 2090 C	38	-90...200	0.01	0.01	0.01	III, FL	3.60	0.80	0.71	0.68	0.65	0.62	0.61	0.58	0.52	0.34	0.18				
RP 10100 C	38	-100...200	0.01	0.01	0.01	III, FL	3.60	0.40	0.40	0.40	0.40	0.40	0.39	0.37	0.35	0.32	0.25				
RP 240 E	40	-40...200	0.01	0.01	0.05	III, FL	2.50	0.60	0.60	0.60	0.41	0.24	0.12	0.02	-	-	-				
RP 245 E	40	-45...200	0.01	0.01	0.05	III, FL	2.50	0.80	0.80	0.80	0.53	0.34	0.15	0.04	-	-	-				
RP 240 EC	40	-40...200	0.01	0.01	0.05	III, FL	2.50	0.60	0.60	0.60	0.41	0.24	0.12	0.02	-	-	-				
RP 245 EC	40	-45...200	0.01	0.01	0.05	III, FL	2.50	0.80	0.80	0.80	0.53	0.34	0.15	0.04	-	-	-				

Due to national and international regulations, the application and the transport of ECO devices with natural refrigerants is limited on the area of the EU and Switzerland in 230 V; 50 Hz only.

① At pump level 2 (ECO and Proline Kryomats) and pump level 3 (Proline) ② III, FL: for use with flammable and non-flammable liquids ③ Cooling output at -25 °C



	Pump type [®]	Pump pressure max.	Pump suction max.	Pump flow max. (pressure)	Pump flow max. (suction)	Pump connection thread	Ø Nipples	Bath volume min.	Bath volume max.	Bath opening (WxD)	Bath depth	Usable depth	Height top of bath	Dimensions (WxDxH)	Weight	Power supply [®]	Loading	Cat. No.	Type
	bar	bar	L/min	L/min	mm	mm	L	L	mm	mm	mm	mm	mm	mm	kg	V; Hz	kW		
LAUDA ECO																			
V	0.55	–	22	–	– [Ⓢ]	13	3.3	4.0	130x105	160	140	365	180x350x546	20.5	230; 50	2.2	LCK 1924	RE 415 SW	
V	0.55	–	22	–	– [Ⓢ]	13	3.3	4.0	130x105	160	140	374	180x396x555	22.5	230; 50	2.2	LCK 1926	RE 420 SW	
V	0.55	–	22	–	– [Ⓢ]	13	4.6	5.7	150x130	160	140	400	200x430x581	24.3	230; 50	2.2	LCK 1928	RE 620 SW	
V	0.55	–	22	–	– [Ⓢ]	13	4.6	5.7	150x130	160	140	400	200x430x581	28.2	230; 50	2.3	LCK 1930	RE 630 SW	
V	0.55	–	22	–	– [Ⓢ]	13	8.0	10.0	200x200	160	140	443	280x440x624	35.6	230; 50	2.7	LCK 1932	RE 1050 SW	
V	0.55	–	22	–	– [Ⓢ]	13	9.3	12.0	200x200	200	180	443	250x435x624	31.2	230; 50	2.3	LCK 1934	RE 1225 SW	
V	0.55	–	22	–	– [Ⓢ]	13	14.0	20.0	300x350	160	140	443	350x570x624	38.4	230; 50	2.3	LCK 1936	RE 2025 SW	
V	0.55	–	22	–	M16 x 1	13	3.3	4.0	130x105	160	140	365	180x350x546	20.9	230; 50	2.8	LCK 1925	RE 415 GW	
V	0.55	–	22	–	M16 x 1	13	3.3	4.0	130x105	160	140	374	180x396x555	22.9	230; 50	2.8	LCK 1927	RE 420 GW	
V	0.55	–	22	–	M16 x 1	13	4.6	5.7	150x130	160	140	400	200x430x581	24.7	230; 50	2.8	LCK 1929	RE 620 GW	
V	0.55	–	22	–	M16 x 1	13	4.6	5.7	150x130	160	140	400	200x430x581	28.6	230; 50	2.9	LCK 1931	RE 630 GW	
V	0.55	–	22	–	M16 x 1	13	8.0	10.0	200x200	160	140	443	280x440x624	36.0	230; 50	3.3	LCK 1933	RE 1050 GW	
V	0.55	–	22	–	M16 x 1	13	9.3	12.0	200x200	200	180	443	250x435x624	31.6	230; 50	2.9	LCK 1935	RE 1225 GW	
V	0.55	–	22	–	M16 x 1	13	14.0	20.0	300x350	160	140	443	350x570x624	38.5	230; 50	2.9	LCK 1937	RE 2025 GW	

LAUDA Proline Kryomats																		
V	0.5	–	19	–	M16 x 1	13	23.0	31.0	350x200	250	230	905	600x700x1160 [®]	130.0	400; 3/N/PE; 50	5.0	LUK 239	RP 3050 C
V	0.5	–	19	–	M16 x 1	13	32.0	44.0	350x350	250	230	905	600x700x1160 [®]	130.0	400; 3/N/PE; 50	5.0	LUK 241	RP 4050 C
V	0.5	–	19	–	M16 x 1	13	23.0	31.0	350x200	250	230	905	600x700x1160 [®]	155.0	400; 3/N/PE; 50	5.0	LUK 245	RP 3090 C
V	0.5	–	19	–	M16 x 1	13	32.0	44.0	350x350	250	230	905	600x700x1160 [®]	155.0	400; 3/N/PE; 50	5.0	LUK 247	RP 4090 C
V	0.5	–	19	–	M16 x 1	13	23.0	31.0	350x200	250	230	905	600x700x1160 [®]	130.0	400; 3/N/PE; 50	5.0	LUK 240	RP 3050 CW
V	0.5	–	19	–	M16 x 1	13	32.0	44.0	350x350	250	230	905	600x700x1160 [®]	130.0	400; 3/N/PE; 50	5.0	LUK 242	RP 4050 CW
V	0.5	–	19	–	M16 x 1	13	23.0	31.0	350x200	250	230	905	600x700x1160 [®]	155.0	400; 3/N/PE; 50	5.0	LUK 246	RP 3090 CW
V	0.5	–	19	–	M16 x 1	13	32.0	44.0	350x350	250	230	905	600x700x1160 [®]	155.0	400; 3/N/PE; 50	5.0	LUK 248	RP 4090 CW

	Pump type [®]	Pump pressure max.	Pump suction max.	Pump flow max. (pressure)	Pump flow max. (suction)	Pump connection thread	Ø Nipples	Bath volume min.	Bath volume max.	Bath opening (WxD)	Bath depth	Usable depth	Height top of bath	Dimensions (WxDxH)	Weight	Power supply [®]	Loading	Cat. No.	Type
	bar	bar	L/min	L/min	mm	mm	L	L	mm	mm	mm	mm	mm	mm	kg	V; Hz	kW		
LAUDA PRO																			
V	–	–	–	–	–	–	12.5	21.0	300x290	200	180	568	400x565x680	54	230; 50	3.7	L000007	RP 2040	
V	–	–	–	–	–	–	12.5	21.0	300x290	200	180	568	400x565x680	59	230; 50	3.7	L000008	RP 2045	
V	–	–	–	–	–	–	17.5	29.5	340x375	200	180	568	440x600x680	57	230; 50	3.7	L000009	RP 3035	
V	–	–	–	–	–	–	6.5	10.5	240x150	200	180	618	440x600x730	83	230; 50	3.7	L000010	RP 1090	
V	–	–	–	–	–	–	12.5	21.0	300x290	200	180	618	500x600x730	89	230; 50	3.7	L000011	RP 2090	
V	–	–	–	–	–	–	6.5	10.5	240x150	200	180	618	500x600x730	83	230; 50	3.7	L000012	RP 10100	
V	–	–	–	–	–	–	12.5	21.0	300x290	200	180	568	400x565x730	54	230; 50	3.7	L000013	RP 2040 C	
V	–	–	–	–	–	–	12.5	21.0	300x290	200	180	568	400x565x730	59	230; 50	3.7	L000014	RP 2045 C	
V	–	–	–	–	–	–	17.5	29.5	340x375	200	180	568	440x600x730	57	230; 50	3.7	L000015	RP 3035 C	
V	–	–	–	–	–	–	6.5	10.5	240x150	200	180	618	440x600x730	83	230; 50	3.7	L000016	RP 1090 C	
V	–	–	–	–	–	–	12.5	21.0	300x290	200	180	618	500x600x730	89	230; 50	3.7	L000017	RP 2090 C	
V	–	–	–	–	–	–	6.5	10.5	240x150	200	180	618	500x600x730	83	230; 50	3.7	L000018	RP 10100 C	
VF	0.7	0.4	22	20	M16 x 1	13	2.4	4.4	–	–	–	–	300x430x675	46	230; 50	3.7	L000021	RP 240 E	
VF	0.7	0.4	22	20	M16 x 1	13	2.4	4.4	–	–	–	–	300x430x675	46	230; 50	3.7	L000022	RP 245 E	
VF	0.7	0.4	22	20	M16 x 1	13	2.4	4.4	–	–	–	–	300x430x675	46	230; 50	3.7	L000023	RP 240 EC	
VF	0.7	0.4	22	20	M16 x 1	13	2.4	4.4	–	–	–	–	300x430x675	46	230; 50	3.7	L000024	RP 245 EC	

[®] V: Vario pump, pressure pump with 6 selectable output steps for ECO, 4 for Proline Kryomats and 8 for PRO; VF: Varioflex pump, pressure/suction pump with 8 selectable output steps [®] Other power supply variants on page 112, 113 [®] With Command remote control: 56 mm higher [®] Pump connection sets for ECO Silver and ECO Gold available as accessories. See page 32.



Pump pressure max.	Pump flow max.	Pump connection thread	For tubing	Filling volume	Dimensions (WxDxH)	Pressure measurement/parameter	Protection level	Noise level	Additional features	Weight	Loading	Power supply®	Cat. No.	Type
bar	L/min	i. d. (mm)		L	mm			dB(A)		kg	kW	V; Hz		
LAUDA Integral T														
3.2	40	G 3/4(15)	3/4"	3...7	450x550x790	↑	IP 32	60	↑	77	2.7	230; 50	LWP 101	T 1200
3.2	40	G 3/4(15)	3/4"	3...7	450x550x790	↑	IP 32	58	Level indication	82	2.7	230; 50	LWP 102	T 1200 W
3.2	40	G 3/4(15)	3/4"	3...7	450x550x790	↑	IP 32	60	↓	89	3.1	230; 50	LWP 103	T 2200
3.2	40	G 3/4(15)	3/4"	3...7	450x550x790	↑	IP 32	58	↓	94	3.1	230; 50	LWP 104	T 2200 W
3.2	40	G 3/4(15)	3/4"	6...18	550x650x970	Digital/Bypass	IP 32	63	↑	123	8.5	400; 3/N/PE; 50	LWP 205	T 4600
3.2	40	G 3/4(15)	3/4"	6...18	550x650x970	Digital/Bypass	IP 32	61	Level indication	128	8.3	400; 3/N/PE; 50	LWP 206	T 4600 W
6.0	60	G 1 1/4(20)	1"	8...20	850x670x970	↓	IP 32	65	indication, additional pump for internal circulation	175	11.5	400; 3/N/PE; 50	LWP 207	T 7000
6.0	60	G 1 1/4(20)	1"	8...20	850x670x970	↓	IP 32	63	↓	180	11.2	400; 3/N/PE; 50	LWP 208	T 7000 W
6.0	60	G 1 1/4(20)	1"	8...20	1050x770x1120	↓	IP 32	69	↓	235	16.0	400; 3/N/PE; 50	LWP 209	T 10000
6.0	60	G 1 1/4(20)	1"	8...20	850x670x970	↓	IP 32	67	↓	242	15.5	400; 3/N/PE; 50	LWP 210	T 10000 W

Pump pressure max.	Pump flow max.	Pump connection thread	Filling volume	Filling volume expansion vessel	Dimensions (WxDxH)	Pressure measurement	Protection level	Additional features	Weight	Loading	Power supply®	Cat. No.	Type
bar	L/min	i. d. (mm)	L	L	mm				kg	kW	V; Hz		
LAUDA Integral XT													
2.9	45	M30 x 1.5 (DN 20)	2.6	5.5	335x550x660	Digital	IP21C	Level indication	60	3.7	230; 50	LWP 147	XT 4 H
2.9	45	M30 x 1.5 (DN 20)	2.6	5.5	335x550x660	Digital	IP21C	Level indication	62	8.8	400; 3/PE; 50	LWP 549	XT 8 H
2.9	45	M30 x 1.5 (DN 20)	2.6	5.5	335x550x660	Digital	IP21C	Level indication	64	3.7	230; 50	LWP 148	XT 4 HW
2.9	45	M30 x 1.5 (DN 20)	2.6	5.5	335x550x660	Digital	IP21C	Level indication	66	8.8	400; 3/PE; 50	LWP 550	XT 8 HW

Pump pressure max.	Pump flow max.	Pump connection thread	Filling volume min.	Filling volume expansion vessel	Dimensions (WxDxH)	Pressure measurement/parameter	Protection level	Additional features	Weight	Loading	Power supply®	Cat. No.	Type
bar	L/min	i. d. (mm)	L	L	mm				kg	kW	V; Hz		
LAUDA Integral XT													
2.9	45	M30 x 1.5 (DN 20)	2.6	5.5	335x550x660	Digital	IP21C	Level indication	87	3.68	230; 50	LWP 112	XT 150
2.9	45	M30 x 1.5 (DN 20)	5.0	6.7	460x550x1285	Digital	IP21C	Level indication	180	9.00	400; 3/PE; 50	LWP 534	XT 280
2.9	45	M30 x 1.5 (DN 20)	5.0	6.7	460x550x1285	Digital	IP21C	Level indication	150	7.80	400; 3/PE; 50	LWP 524	XT 550
2.9	45	M30 x 1.5 (DN 20)	5.0	6.7	460x550x1285	Digital	IP21C	Level indication	155	7.80	400; 3/PE; 50	LWP 520	XT 750
2.9	45	M30 x 1.5 (DN 20)	5.0	6.7	460x550x1285	Digital	IP21C	Level indication	155	9.70	400; 3/PE; 50	LWP 552	XT 750 S
2.9	45	M30 x 1.5 (DN 20)	5.3	6.7	460x550x1285	Digital	IP21C	Level indication	160	7.80	400; 3/PE; 50	LWP 522	XT 750 H
2.9	45	M30 x 1.5 (DN 20)	5.3	6.7	460x550x1285	Digital	IP21C	Level indication	160	9.70	400; 3/PE; 50	LWP 553	XT 750 HS
2.9	45	M30 x 1.5 (DN 20)	2.6	5.5	335x550x660	Digital	IP21C	Level indication	90	3.68	230; 50	LWP 113	XT 250 W
2.9	45	M30 x 1.5 (DN 20)	5.0	6.7	460x550x1285	Digital	IP21C	Level indication	180	9.00	400; 3/PE; 50	LWP 535	XT 280 W
2.9	45	M30 x 1.5 (DN 20)	5.0	6.7	460x550x1285	Digital	IP21C	Level indication	150	3.68	230; 50	LWP 117	XT 350 W
2.9	45	M30 x 1.5 (DN 20)	5.0	6.7	460x550x1285	Digital	IP21C	Level indication	150	3.68	230; 50	LWP 119	XT 350 HW
2.9	45	M30 x 1.5 (DN 20)	5.0	6.7	460x550x1285	Digital	IP21C	Level indication	155	7.80	400; 3/PE; 50	LWP 525	XT 550 W
2.9	45	M30 x 1.5 (DN 20)	5.0	6.7	460x550x1285	Digital	IP21C	Level indication	160	7.80	400; 3/PE; 50	LWP 521	XT 950 W
2.9	45	M30 x 1.5 (DN 20)	5.0	6.7	460x550x1285	Digital	IP21C	Level indication	160	9.70	400; 3/PE; 50	LWP 554	XT 950 WS
5.8	90	M38 x 1.5 (DN 25)	9.0	17.4	700x550x1600	Digital	IP21C	Level indication	250	13.80	400; 3/PE; 50	LWP 532	XT 1850 W
5.8	90	M38 x 1.5 (DN 25)	9.0	17.4	700x550x1600	Digital	IP21C	Level indication	250	17.30	400; 3/PE; 50	LWP 533	XT 1850 WS
2.9	45	M30 x 1.5 (DN 20)	9.5	17.4	700x550x1600	Digital	IP21C	Level indication	245	9.00	400; 3/PE; 50	LWP 539	XT 490 W
2.9	45	M30 x 1.5 (DN 20)	10.5	17.4	700x550x1600	Digital	IP21C	Level indication	280	-*	-*	-*	XT 1590 W
2.9	45	M30 x 1.5 (DN 20)	10.5	17.4	700x550x1600	Digital	IP21C	Level indication	280	13.80	400; 3/PE; 50	LWP 551	XT 1590 WS

® Other power supply variants on page 113

* Available as power supply variants (see page 113)

LAUDA Technical data according to DIN 12876 standard



Technical data

Type	Page	Working temperature range (equal to ACC range) °C	Ambient temperature range °C	Resolution of setting °C	Resolution of indication °C	Temperature stability ±K	Cooling output (measured with ethanol, 20 °C ambient temperature)			
							20 °C kW	10 °C kW	0 °C kW	-10 °C kW
LAUDA Microcool										
MC 250	70	-10...40	5...40	0.1	0.1	0.5	0.25	0.20	0.15	0.09
MC 350	70	-10...40	5...40	0.1	0.1	0.5	0.35	0.27	0.20	0.12
MC 600	70	-10...40	5...40	0.1	0.1	0.5	0.60	0.50	0.36	0.15
MC 1200	70	-10...40	5...40	0.1	0.1	0.5	1.20	1.05	0.75	0.40
MC 1200 W	70	-10...40	5...40	0.1	0.1	0.5	1.20	1.05	0.75	0.40

Type	Page	Working temperature range (equal to ACC range) °C	Working temperature range with optional heater °C	Ambient temperature range °C	Resolution of setting °C	Resolution of indication °C	Temperature stability ±K	Safety fittings ^①	Cooling output (measured with ethanol and with standard pump ^② , 20 °C ambient temperature)					Heater power optional heater kW
									20 °C kW	10 °C kW	0 °C kW	-10 °C kW	-20 °C kW	
LAUDA Variocool														
VC 600	74	-20...40	-20...80	5...40	0.01	0.01	0.05	I, NFL	0.60	0.50	0.36	0.21	0.08	1.5
VC 1200	74	-20...40	-20...80	5...40	0.01	0.01	0.05	I, NFL	1.20	1.00	0.70	0.40	0.18	1.5/2.25
VC 1200 W	74	-20...40	-20...80	5...40	0.01	0.01	0.05	I, NFL	1.20	1.00	0.70	0.40	0.18	1.5/2.25
VC 2000	74	-20...40	-20...80	5...40	0.01	0.01	0.05	I, NFL	2.00	1.50	1.06	0.68	0.38	1.5/2.25
VC 2000 W	74	-20...40	-20...80	5...40	0.01	0.01	0.05	I, NFL	2.00	1.50	1.06	0.68	0.38	1.5/2.25
VC 3000	75	-20...40	-20...80	5...40	0.01	0.01	0.05	I, NFL	3.00	2.40	1.68	1.03	0.60	1.5
VC 3000 W	75	-20...40	-20...80	5...40	0.01	0.01	0.05	I, NFL	3.00	2.40	1.68	1.03	0.60	1.5
VC 5000	75	-20...40	-20...80	5...40	0.01	0.01	0.05	I, NFL	5.00	3.90	2.75	1.70	1.00	4.5
VC 5000 W	75	-20...40	-20...80	5...40	0.01	0.01	0.05	I, NFL	5.00	3.90	2.75	1.70	1.00	4.5
VC 7000	76	-20...40	-20...80	5...40	0.01	0.01	0.1	I, NFL	7.00	5.30	3.70	2.40	1.50	4.5
VC 7000 W	76	-20...40	-20...80	5...40	0.01	0.01	0.1	I, NFL	7.00	5.30	3.70	2.40	1.50	4.5
VC 10000	76	-20...40	-20...80	5...40	0.01	0.01	0.1	I, NFL	10.00	7.60	5.30	3.50	2.00	7.5
VC 10000 W	76	-20...40	-20...80	5...40	0.01	0.01	0.1	I, NFL	10.00	7.60	5.30	3.50	2.00	7.5

① I, NFL: only for non-flammable liquids

② Using an optional pump changes the available cooling capacity



Pump pressure max.	Pump flow max.	Pump connection thread (inner diameter in mm)	For tubings	Filling volume	Dimensions (WxDxH)	Protection level	Noise level	Weight	Loading	Power supply [®]	Cat. No.	Type
bar	L/min			L	mm		dB(A)	kg	kW	V; Hz		
LAUDA Microcool												
0.35	16	Ø 10 mm	1/2"	2...4	200x350x465	IP32	60	26	0.23	230 V; 50 Hz	LWM 118	MC 250
0.35	16	Ø 10 mm	1/2"	3...5	240x400x500	IP32	60	35	0.70	230 V; 50 Hz	LWM 119	MC 350
1.30	35	G 3/4 (15)	3/4"	4...8	350x480x595	IP32	57	51	0.70	230 V; 50 Hz	LWM 120	MC 600
1.30	35	G 3/4 (15)	3/4"	7...14	450x550x650	IP32	59	64	1.15	230 V; 50 Hz	LWM 121	MC 1200
1.30	35	G 3/4 (15)	3/4"	7...14	450x550x650	IP32	59	64	1.15	230 V; 50 Hz	LWM 122	MC 1200 W

Pump pressure max.	Pump flow max. (pressure)	Pump connection thread (inner diameter in mm)	For tubings	Filling volume	Dimensions (WxDxH)	Protection level	Noise level	Weight	Loading	Power supply [®]	Cat. No.	Type
bar	L/min	i. d. (mm)		L	mm		dB(A)	kg	kW	V; Hz		
LAUDA Variocool												
0.9	28	M16 x 1 (10)	1/2"	8	350x480x595	IP32	47	39	0.7	230 V; 50 Hz	LWG 175	VC 600
0.9	28	G 3/4 (15)	3/4"	15	450x550x650 [®]	IP32	51	54	1.1	230 V; 50 Hz	LWG 176	VC 1200
0.9	28	G 3/4 (15)	3/4"	15	450x550x650 [®]	IP32	50	51	1.1	230 V; 50 Hz	LWG 182	VC 1200 W
0.9	28	G 3/4 (15)	3/4"	15	450x550x650 [®]	IP32	52	57	1.6	230 V; 50 Hz	LWG 177	VC 2000
0.9	28	G 3/4 (15)	3/4"	15	450x550x650 [®]	IP32	50	54	1.6	230 V; 50 Hz	LWG 183	VC 2000 W
3.2	37	G 3/4 (15)	3/4"	33	550x650x970	IP32	57	93	1.8	230 V; 50 Hz	LWG 178	VC 3000
3.2	37	G 3/4 (15)	3/4"	33	550x650x970	IP32	55	89	1.8	230 V; 50 Hz	LWG 184	VC 3000 W
3.2	37	G 3/4 (15)	3/4"	33	550x650x970	IP32	65	98	3.3	400 V; 3/N/PE; 50 Hz	LWG 279	VC 5000
3.2	37	G 3/4 (15)	3/4"	33	550x650x970	IP32	64	94	3.3	400 V; 3/N/PE; 50 Hz	LWG 285	VC 5000 W
3.2	37	G 1 1/4 (20)	1"	64	650x670x1250	IP32	66	138	4.3	400 V; 3/N/PE; 50 Hz	LWG 280	VC 7000
3.2	37	G 1 1/4 (20)	1"	64	650x670x1250	IP32	60	131	4.3	400 V; 3/N/PE; 50 Hz	LWG 286	VC 7000 W
3.2	37	G 1 1/4 (20)	1"	64	650x670x1250	IP32	67	147	5.8	400 V; 3/N/PE; 50 Hz	LWG 281	VC 10000
3.2	37	G 1 1/4 (20)	1"	64	650x670x1250	IP32	61	140	5.8	400 V; 3/N/PE; 50 Hz	LWG 287	VC 10000 W

[®] Other power supply variants on page 114

[®] Use with high-power pumps causes a change of the height of the housing from 650 mm to 790 mm.

LAUDA Technical data



Technical data

NEW

LAUDA Kryoheater Selecta

Type	Page	Working temperature range (equal to ACC range) °C	Ambient temperature range °C	Temperature stability ±K	Heater power kW	Cooling output*														
						200 °C kW	20 °C kW	10 °C kW	0 °C kW	-10 °C kW	-20 °C kW	-30 °C kW	-40 °C kW	-50 °C kW	-60 °C kW	-70 °C kW	-80 °C kW	-90 °C kW		
KHS 3560 W	64	-60...200	5...40	0.5	18.0	35.00	35.00	32.00	30.00	29.00	18.00	14.00	10.00	6.00	2.50	-	-	-		
KHS 2190 W	64	-90...200	5...40	0.5	18.0	21.00	21.00	20.00	18.00	15.00	11.00	10.50	10.00	9.50	9.00	6.30	3.50	1.00		

* At 20 °C water temperature

NEW

LAUDA Ultracool

Type	Page	Working temperature range °C	Temperature stability ±K	Ambient temperature range °C	Cooling output at water outlet temperature*								Refrigerant circuit		Motor fan	
					25 °C kW	20 °C kW	15 °C kW	10 °C kW	5 °C kW	0 °C kW	-5 °C kW	No.	kW	m ³ /h		
UC 2	82	-5...25	2	-15...50**	2.80	2.80	2.50	2.10	1.80	1.50	1.20	1	1	0.15	2400	
UC 3	82	-5...25	2	-15...50**	5.50	5.50	4.80	4.10	3.40	2.80	2.20	1	1	0.15	2400	
UC 4	82	-5...25	2	-15...50**	6.90	6.90	5.90	4.90	4.10	3.40	2.80	1	1	0.15	2400	
UC-0060 SP	83	-5...25	2	-15...50	10.80	10.20	8.60	7.10	5.80	4.70	3.80	1	1	1.04	7000	
UC-0080 SP	83	-5...25	2	-15...50	15.80	14.70	11.90	9.40	7.30	5.60	4.10	1	1	1.04	7000	
UC-0100 SP	83	-5...25	2	-15...50	18.60	17.10	14.30	11.40	8.80	6.60	4.80	1	1	1.04	7000	
UC-0140 SP	83	-5...25	2	-15...50	22.30	20.20	17.10	14.00	11.00	8.40	6.30	1	1	1.04	7000	
UC-0180 SP	83	-5...25	2	-15...50	32.90	30.20	26.00	22.00	18.00	14.50	11.50	1	1	1.04	9000	
UC-0240 SP	83	-5...25	2	-15...50	37.30	34.60	30.30	26.30	22.30	18.20	14.50	1	1	1.04	9000	
UC-0300 SP	84	-5...25	2	-15...45**	50.30	48.20	40.90	34.10	28.20	23.10	18.60	1	2	1.2	18000	
UC-0400 SP	84	-5...25	2	-15...45**	62.50	59.70	51.20	43.30	35.10	28.10	22.00	1	2	1.2	18000	
UC-0500 SP	84	-5...25	2	-15...45**	68.40	65.60	56.80	48.70	41.20	33.50	26.80	1	2	1.2	18000	
UC-0650 SP	84	-5...25	2	-15...45**	84.60	84.60	75.20	64.40	53.60	43.90	35.50	1	2	2.5	23000	
UC-0800 SP	84	-5...25	2	-15...45**	114.30	114.30	103.00	87.90	72.30	57.80	45.40	2	4	2.4	36000	
UC-1000 SP	84	-5...25	2	-15...45**	140.80	140.80	126.10	106.40	85.90	67.00	51.20	2	4	2.4	40800	
UC-1350 SP	84	-5...25	2	-15...45**	182.10	182.10	163.70	139.20	113.70	90.00	69.80	2	6	3.6	57000	
UC-1700 SP	84	-5...25	2	-15...45**	228.40	228.40	205.90	175.70	144.60	115.60	90.80	2	6	3.6	55200	
UC-2400 SP	84	-5...25	2	-15...45**	336.90	336.90	308.80	265.00	223.10	182.80	148.20	2	6	7.5	66000	

* 25 °C ambient temperature without auxiliary units ** -15 °C only with option motor fan speed regulator



Cooling water consumption max. at 20 °C cooling water temperature; 3 bar differential pressure	Pump pressure max.	Pump flow max.	Heat transfer liquid connection	Connection – water cooling	Filling volume	Filling volume expansion vessel	Dimensions (WxDxH)	Weight	Loading	Power supply	Cat. No.	Type
L/min	bar	L/min			L	L	mm	kg	kW	V; Hz		
3960	5.5	85	DN 25	G1". external	15	40	920x1200x1700	850	29.5	400; 3/PE; 50	LWP 556	KHS 3560
2280	5.5	85	DN 25	G1". external	15	40	920x1200x1700	850	32.8	400; 3/PE; 50	LWP 557	KHS 2190

LAUDA Kryoheater Selecta

Pump pressure max.	Pump flow max.	Pump pressure nominal	Pump flow nominal	Water circuit connection*	Volume water tank	Dimensions (WxDxH)	Protection level	Noise level	Weight	Loading	Max. fuse	Power supply ^①	Cat. No.	Type
bar	L/min	bar	L/min		L	mm		dB(A)	kg	kW	A			
3.4	42	3.3	5.6	Rp 1/2	19	640x640x635	IP 44	50.1	80	1.4	16	230 V; 50 Hz	E6002411	UC 2
3.4	42	3.0	10.3	Rp 1/2	19	640x640x635	IP 44	50.4	85	1.5	16	230 V; 50 Hz	E6003411	UC 3
3.4	42	2.8	13.8	Rp 1/2	19	640x640x635	IP 44	50.4	85	1.8	16	230 V; 50 Hz	E6004411	UC 4
4.2	130	4.0	20.1	HT DN25	100	715x945x1490	IP 54	56.3	165	3.8	20	400 V; 3/PE; 50 Hz	E6006323	UC-0060 SP
4.2	130	4.0	26.6	HT DN25	100	715x945x1490	IP 54	60.1	175	4.1	25	400 V; 3/PE; 50 Hz	E6008323	UC-0080 SP
4.2	130	3.9	33.6	HT DN25	100	715x945x1490	IP 54	58.5	175	4.6	25	400 V; 3/PE; 50 Hz	E6010323	UC-0100 SP
4.2	130	3.7	43.8	HT DN25	100	715x945x1490	IP 54	58.1	180	5.6	25	400 V; 3/PE; 50 Hz	E6014323	UC-0140 SP
4.2	130	3.2	62.6	HT DN25	100	715x945x1490	IP 54	56.0	210	6.6	32	400 V; 3/PE; 50 Hz	E6018323	UC-0180 SP
4.2	130	2.7	84.1	HT DN25	100	715x945x1490	IP 54	57.5	230	8.0	40	400 V; 3/PE; 50 Hz	E6024323	UC-0240 SP
4.7	230	3.9	98.0	HT DN40	200	1005x1565x1965	IP 54	50.2	450	9.4	40	400 V; 3/PE; 50 Hz	E6030323	UC-0300 SP
4.7	230	3.6	124.0	HT DN40	200	1005x1565x1965	IP 54	53.5	450	11.4	40	400 V; 3/PE; 50 Hz	E6040323	UC-0400 SP
4.7	230	3.3	150.0	HT DN40	200	1005x1565x1965	IP 54	55.3	450	13.6	50	400 V; 3/PE; 50 Hz	E6050323	UC-0500 SP
4.7	420	3.7	196.0	HT DN40	300	1005x1565x1965	IP 54	59.2	630	18.5	63	400 V; 3/PE; 50 Hz	E6065323	UC-0650 SP
4.7	420	3.4	247.0	Rp 2	300	1545x2230x2010	IP 54	58.3	1020	27.5	80	400 V; 3/PE; 50 Hz	E6080223	UC-0800 SP
5.0	330	3.3	299.0	Rp 2 1/2	500	1660x3400x2090	IP 54	63.1	1460	32.4	100	400 V; 3/PE; 50 Hz	E6100221	UC-1000 SP
5.0	750	4.3	392.0	Rp 2 1/2	500	1660x3400x2090	IP 54	62.2	1570	43.8	150	400 V; 3/PE; 50 Hz	E6135221	UC-1350 SP
5.0	750	3.6	494.0	Rp 2 1/2	500	1660x3400x2090	IP 54	61.3	1630	54.9	150	400 V; 3/PE; 50 Hz	E6170221	UC-1700 SP
5.9	1160	3.8	733.0	DIN-2566 DN80	500	1660x3585x2090	IP 54	62.7	1690	71.4	200	400 V; 3/PE; 50 Hz	E6240221	UC-2400 SP

*Rp = G = BSP internal parallel thread
 NPT(F) = NPT internal taper thread
 HT DN = hose tail for internal nominal pipe diameter (mm)
 DIN-2566 DN = DIN-2566 flange for internal nominal pipe diameter (mm)

① Other power supply variants on page 115

LAUDA Power supply variants



Power supply variants

Type	Cat. No.	Heater power kW	Loading kW	Cat. No.	Heater power kW	Loading kW	Cat. No.	Heater power kW	Loading kW
230 V; 50/60 Hz			115 V; 60 Hz			100 V; 50/60 Hz			
LAUDA Aqualine – single phase									
AL 2	LCB 0723	0.5	0.6	LCB 4723	0.45	0.6	LCB 6723	0.34	0.5
AL 5	LCB 0724	0.5	0.6	LCB 4724	0.45	0.6	LCB 6724	0.34	0.5
AL 12	LCB 0725	1.0	1.1	LCB 4725	1.0	1.1	LCB 6725	0.76	0.9
AL 18	LCB 0726	1.2	1.3	LCB 4726	1.2	1.3	LCB 6726	0.9	1.0
AL 25	LCB 0727	1.2	1.3	LCB 4727	1.2	1.3	LCB 6727	0.9	1.0

Type	Cat. No.	Heater power kW	Loading kW	Cat. No.	Heater power kW	Loading kW	Cat. No.	Heater power kW	Loading kW
LAUDA Alpha – single phase									
A	LCE 0226	1.5	1.5	LCE 4226	1.15	1.2	LCE 6226	1.0	1.0
A 6	LCB 0733	1.5	1.5	LCB 4733	1.15	1.2	LCB 6733	1.0	1.0
A 12	LCB 0734	1.5	1.5	LCB 4734	1.15	1.2	LCB 6734	1.0	1.0
A 24	LCB 0735	1.5	1.5	LCB 4735	1.15	1.2	LCB 6735	1.0	1.0

Type	Cat. No.	Heater power kW	Loading kW	Cat. No.	Heater power kW	Loading kW	Cat. No.	Heater power kW	Loading kW	Cat. No.	Heater power kW	Loading kW
230 V; 50/60 Hz			220 V; 60 Hz			115 V; 60 Hz			100 V; 50/60 Hz			
LAUDA ECO – single phase												
Silver	LCE 0227	2.0	2.1	LCE 2227	1.9	2.0	LCE 4227	1.3	1.4	LCE 6227	1.0	1.1
Gold	LCE 0228	2.6	2.7	LCE 2228	2.4	2.5	LCE 4228	1.3	1.4	LCE 6228	1.0	1.1
E 4 S	LCB 0736	2.0	2.1	LCB 2736	1.9	2.0	LCB 4736	1.3	1.4	LCB 6736	1.0	1.1
E 10 S	LCB 0738	2.0	2.1	LCB 2738	1.9	2.0	LCB 4738	1.3	1.4	LCB 6738	1.0	1.1
E 15 S	LCB 0740	2.0	2.1	LCB 2740	1.9	2.0	LCB 4740	1.3	1.4	LCB 6740	1.0	1.1
E 20 S	LCB 0742	2.0	2.1	LCB 2742	1.9	2.0	LCB 4742	1.3	1.4	LCB 6742	1.0	1.1
E 25 S	LCB 0744	2.0	2.1	LCB 2744	1.9	2.0	LCB 4744	1.3	1.4	LCB 6744	1.0	1.1
E 40 S	LCB 0746	2.0	2.1	LCB 2746	1.9	2.0	LCB 4746	1.3	1.4	LCB 6746	1.0	1.1
E 4 G	LCB 0737	2.6	2.7	LCB 2737	2.4	2.5	LCB 4737	1.3	1.4	LCB 6737	1.0	1.1
E 10 G	LCB 0739	2.6	2.7	LCB 2739	2.4	2.5	LCB 4739	1.3	1.4	LCB 6739	1.0	1.1
E 15 G	LCB 0741	2.6	2.7	LCB 2741	2.4	2.5	LCB 4741	1.3	1.4	LCB 6741	1.0	1.1
E 20 G	LCB 0743	2.6	2.7	LCB 2743	2.4	2.5	LCB 4743	1.3	1.4	LCB 6743	1.0	1.1
E 25 G	LCB 0745	2.6	2.7	LCB 2745	2.4	2.5	LCB 4745	1.3	1.4	LCB 6745	1.0	1.1
E 40 G	LCB 0747	2.6	2.7	LCB 2747	2.4	2.5	LCB 4747	1.3	1.4	LCB 6747	1.0	1.1
ET 6 S	LCM 0096	2.0	2.1	LCM 2096	1.9	2.0	LCM 4096	1.3	1.4	LCM 6096	1.0	1.1
ET 12 S	LCD 0286	2.0	2.1	LCD 2286	1.9	2.0	LCD 4286	1.3	1.4	LCD 6286	1.0	1.1
ET 15 S	LCD 0288	2.0	2.1	LCD 2288	1.9	2.0	LCD 4288	1.3	1.4	LCD 6288	1.0	1.1
ET 20 S	LCD 0290	2.0	2.1	LCD 2290	1.9	2.0	LCD 4290	1.3	1.4	LCD 6290	1.0	1.1
ET 6 G	LCM 0097	2.6	2.7	LCM 2097	2.4	2.5	LCM 4097	1.3	1.4	LCM 6097	1.0	1.1
ET 12 G	LCD 0287	2.6	2.7	LCD 2287	2.4	2.5	LCD 4287	1.3	1.4	LCD 6287	1.0	1.1
ET 15 G	LCD 0289	2.6	2.7	LCD 2289	2.4	2.5	LCD 4289	1.3	1.4	LCD 6289	1.0	1.1
ET 20 G	LCD 0291	2.6	2.7	LCD 2291	2.4	2.5	LCD 4291	1.3	1.4	LCD 6291	1.0	1.1

Type	Cat. No.	Heater power kW	Loading kW	Cat. No.	Heater power kW	Loading kW
200-230 V; 50/60 Hz			100-120 V; 50/60 Hz			
LAUDA PRO – single phase						
P 10	3.6	3.7		1.8	1.9	
P 20	3.6	3.7		1.8	1.9	
P 30	3.6	3.7		1.8	1.9	
P 10 C	3.6	3.7		1.8	1.9	
P 20 C	3.6	3.7		1.8	1.9	
P 30 C	3.6	3.7		1.8	1.9	
P 2 E	2.5	2.7		1.8	1.9	
P 2 EC	2.5	2.7		1.8	1.9	



Type	Cat. No.	Heater power kW Loading kW		Cat. No.	Heater power kW Loading kW		Cat. No.	Heater power kW Loading kW		Cat. No.	Heater power kW Loading kW		Cat. No.	Heater power kW Loading kW					
230 V; 50/60 Hz				115 V; 60 Hz				100 V; 50/60 Hz				200 V; 50/60 Hz				208-220 V; 60 Hz			
LAUDA Proline – single phase																			
PV 15	LCD 0276	3.5	3.6	LCD 4276	1.8	1.8	LCD 6276	1.4	1.4	–	–	–	–	–	–				
PV 24	LCD 0278	3.5	3.6	–	–	–	–	–	–	LCD 5278	2.8	2.9	LCD 8278	3.5	3.6				
PV 36	LCD 0280	3.5	3.6	–	–	–	–	–	–	LCD 5280	2.8	2.9	LCD 8280	3.5	3.6				
PV 15 C	LCD 0277	3.5	3.6	LCD 4277	1.8	1.8	LCD 6277	1.4	1.4	–	–	–	–	–	–				
PV 24 C	LCD 0279	3.5	3.6	–	1.8	1.8	–	1.4	1.4	LCD 5279	2.8	2.9	LCD 8279	3.5	3.6				
PV 36 C	LCD 0281	3.5	3.6	–	1.8	1.8	–	1.4	1.4	LCD 5281	2.8	2.9	LCD 8281	3.5	3.6				
PVL 15	LCD 0282	3.5	3.6	LCD 4282	1.8	1.8	LCD 6282	1.4	1.4	–	–	–	–	–	–				
PVL 24	LCD 0284	3.5	3.6	LCD 4284	1.8	1.8	LCD 6284	1.4	1.4	–	–	–	–	–	–				

230 V; 50/60 Hz				115 V; 60 Hz				100 V; 50/60 Hz			
LAUDA Proline – single phase											
PVL 15 C	LCD 0283	3.5	3.6	LCD 4283	1.8	1.8	LCD 6283	1.4	1.4		
PVL 24 C	LCD 0285	3.5	3.6	LCD 4285	1.8	1.8	LCD 6285	1.4	1.4		
PB	LCG 0090	3.5	3.6	LCG 4090	1.8	1.8	LCG 6090	1.4	1.4		
PB C	LCG 0091	3.5	3.6	LCG 4091	1.8	1.8	LCG 6091	1.4	1.4		
PBD	LCG 0092	3.5	3.6	LCG 4092	1.8	1.8	LCG 6092	1.4	1.4		
PBD C	LCG 0093	3.5	3.6	LCG 4093	1.8	1.8	LCG 6093	1.4	1.4		

230 V; 50/60 Hz				230 V; 50 Hz				230 V; 60 Hz				115 V; 60 Hz				200 V; 50/60 Hz				100 V; 50/60 Hz				208-220 V; 60 Hz			
LAUDA Calibration thermostats – single phase																											
RE 212 J	–	–	–	LCK 1879	2.25	2.3	LCK 2879	2.25	2.3	LCK 4879	1.3	1.4	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
RE 312 J	–	–	–	LCK 1880	2.25	2.3	LCK 2880	2.25	2.3	LCK 4880	1.3	1.4	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
PJ 12	LCB 0720	3.5	3.6	–	–	–	–	–	–	LCB 4720	1.8	1.8	LCB 5720	2.8	2.9	LCB 6720	1.4	1.4	LCB 8720	3.5	3.6						
PJ 12 C	LCB 0721	3.5	3.6	–	–	–	–	–	–	LCB 4721	1.8	1.8	LCB 5721	2.8	2.9	LCB 6721	1.4	1.4	LCB 8721	3.5	3.6						
PJL 12	LCB 0718	3.5	3.6	–	–	–	–	–	–	LCB 4718	1.8	1.8	LCB 5718	2.8	2.9	LCB 6718	1.4	1.4	LCB 8718	3.5	3.6						
PJL 12 C	LCB 0719	3.5	3.6	–	–	–	–	–	–	LCB 4719	1.8	1.8	LCB 5719	2.8	2.9	LCB 6719	1.4	1.4	LCB 8719	3.5	3.6						



Type	Cat. No.	Heater power kW	Loading kW	Cat. No.	Heater power kW	Loading kW	Cat. No.	Heater power kW	Loading kW						
400 V; 3/N/PE; 50 Hz				208 V; 3/PE; 60 Hz			200 V; 3/PE; 50/60 Hz								
LAUDA Proline Kryomats – three phase															
RP 3050 C	LUK 239	3.5	5.0	LUK 339	3.0	5.0	LUK 439	2.8	5.0						
RP 4050 C	LUK 241	3.5	5.0	LUK 341	3.0	5.0	LUK 441	2.8	5.0						
RP 3090 C	LUK 245	3.5	5.0	LUK 345	3.0	5.0	LUK 445	2.8	5.0						
RP 4090 C	LUK 247	3.5	5.0	LUK 347	3.0	5.0	LUK 447	2.8	5.0						
RP 3050 CW	LUK 240	3.5	5.0	LUK 340	3.0	5.0	LUK 440	2.8	5.0						
RP 4050 CW	LUK 242	3.5	5.0	LUK 342	3.0	5.0	LUK 442	2.8	5.0						
RP 3090 CW	LUK 246	3.5	5.0	LUK 346	3.0	5.0	LUK 446	2.8	5.0						
RP 4090 CW	LUK 248	3.5	5.0	LUK 348	3.0	5.0	LUK 448	2.8	5.0						
230 V; 50 Hz			230 V; 60 Hz			208-230 V; 60 Hz			200 V; 50 Hz		200 V; 60 Hz				
LAUDA Integral T – single phase															
T 1200	LWP 101	2.25	2.7	–	–	–	LWP 801	1.85	2.7	LWP 811	1.7	2.7			
T 1200 W	LWP 102	2.25	2.7	–	–	–	LWP 802	1.85	2.7	–	–	–			
T 2200	LWP 103	2.25	3.1	LWP 203	2.25	3.1	LWP 803	1.85	3.1	–	–	LWP 846	1.7	3.1	
T 2200 W	LWP 104	2.25	3.1	LWP 204	2.25	3.1	LWP 804	1.85	3.1	–	–	–	–	–	
400 V; 3/N/PE; 50 Hz				208 V; 3/PE; 60 Hz			400 V; 3/PE; 50 Hz			440-480 V; 3/PE; 60 Hz					
LAUDA Integral T – three phase															
T 4600	LWP 205	6.0	8.5	LWP 305	4.9	8.5	LWP 505	6.0	8.5	–	–	–			
T 4600 W	LWP 206	6.0	8.3	LWP 306	4.9	8.3	–	–	–	–	–				
T 7000	LWP 207	6.0	11.5	–	–	–	LWP 507	6.0	8.3	LWP 607	5.3	11.5			
T 7000 W	LWP 208	6.0	11.2	–	–	–	–	–	–	LWP 608	5.3	11.2			
T 10000	LWP 209	9.0	16.0	–	–	–	–	–	–	LWP 609	7.95	15.0			
T 10000 W	LWP 210	9.0	15.5	–	–	–	–	–	–	LWP 610	7.95	14.5			
230 V; 50 Hz			200 V; 50/60 Hz			208-220 V; 60 Hz									
LAUDA Integral XT – single phase															
XT 150	LWP 112	3.5	3.68	LWP 512	2.65	3.2	LWP 812	2.9	3.5						
XT 250 W	LWP 113	3.5	3.68	LWP 513	2.65	3.2	LWP 813	2.9	3.5						
XT 350 W	LWP 117	3.5	3.68	LWP 517	2.65	3.2	LWP 817	2.9	3.5						
XT 350 HW	LWP 119	3.5	3.68	LWP 519	2.65	3.2	LWP 819	2.9	3.5						
208-220 V; 3/PE; 60 Hz			200 V; 3/PE; 50/60 Hz			400 V; 3/PE; 50 Hz			440-480 V; 3/PE; 60 Hz			400 V; 3/PE; 50 Hz & 440-480 V; 3/PE; 60 Hz			
LAUDA Integral XT – three phase															
XT 280	LWP 334	2.9	7.0	LWP 434	2.65	6.5	LWP 534	4.0	9.0	–	–	–	–	–	
XT 550	LWP 324	5.7	7.6	LWP 424	5.3	6.9	LWP 524	5.3	7.8	–	–	–	–	–	
XT 750	LWP 320	5.7	7.6	LWP 420	5.3	6.9	LWP 520	5.3	7.8	–	–	–	–	–	
XT 750 S	–	–	–	–	–	–	LWP 552	8.0	9.7	–	–	–	–	–	
XT 750 H	LWP 322	5.7	7.6	LWP 422	5.3	6.9	LWP 522	5.3	7.8	–	–	–	–	–	
XT 750 HS	–	–	–	–	–	–	LWP 553	8.0	9.7	–	–	–	–	–	
XT 280 W	LWP 335	2.9	7.0	LWP 435	2.65	6.5	LWP 535	4.0	9.0	–	–	–	–	–	
XT 490 W	LWP 339	5.7	9.5	LWP 439	5.3	8.6	LWP 539	5.3	9.0	–	–	–	–	–	
XT 550 W	LWP 325	5.7	7.6	LWP 425	5.3	6.9	LWP 525	5.3	7.8	–	–	–	–	–	
XT 950 W	LWP 321	5.7	7.6	LWP 421	5.3	6.9	LWP 521	5.3	7.8	–	–	–	–	–	
XT 950 WS	–	–	–	–	–	–	LWP 554	8.0	9.7	–	–	–	–	–	
XT 1850 W	–	–	–	–	–	–	LWP 532	10.6	13.8	LWP 632	14.0	20.8	LWP 732	10.6 & 14.0	20.8
XT 1850 WS	–	–	–	–	–	–	LWP 533	16.0	17.3	–	–	–	–	–	
XT 1590 W	–	–	–	–	–	–	–	–	–	LWP 642	7.0	16.6	LWP 742	5.3 & 7.0	16.6
XT 1590 WS	–	–	–	–	–	–	LWP 551	8.0	13.8	–	–	–	–	–	

LAUDA Power supply variants



Power supply variants

Type	Cat. No.	Heater power kW	Loading kW	Cat. No.	Heater power kW	Loading kW	Cat. No.	Heater power kW	Loading kW
230 V; 50 Hz			200 V; 50/60 Hz			208-220 V; 60 Hz			
LAUDA Integral XT – single phase									
XT 4 H	LWP 147	3.5	3.7	LWP 547	2.65	3.2	LWP 847	3.2	3.5
XT 4 HW	LWP 148	3.5	3.7	LWP 548	2.65	3.2	LWP 848	3.2	3.5
208-220 V; 3/PE; 60 Hz			200 V; 3/PE; 50/60 Hz			400 V; 3/PE; 50 Hz			
LAUDA Integral XT – three phase									
XT 8 H	LWP 349	8.0	8.8	LWP 449	8.0	8.7	LWP 549	8.0	8.8
XT 8 HW	LWP 350	8.0	8.8	LWP 450	8.0	8.7	LWP 550	8.0	8.8

400 V; 3/PE; 50 Hz			440-480 V; 3/PE; 60 Hz			400 V; 3/PE; 50 Hz & 440-480 V; 3/PE; 60 Hz			
LAUDA Kryoheater Selecta - three phase									
KHS 3560	LWP 556	18	29.5	LWP 656	18	30.1	LWP 756	18	30.1
KHS 2190	LWP 557	18	32.8	LWP 657	18	33.8	LWP 757	18	33.8

Type	Cat. No.	Loading kW	Cat. No.	Loading kW	Cat. No.	Loading kW	Cat. No.	Loading kW
230 V; 50 Hz		220 V; 60 Hz		115 V; 60 Hz		100 V; 50/60 Hz		
LAUDA Microcool – single phase								
MC 250	LWM 118	0.23	LWM 218	0.23	LWM 418	0.23	LWM 618	0.23
MC 350	LWM 119	0.50	LWM 219	0.50	LWM 419	0.50	LWM 619	0.50
MC 600	LWM 120	0.70	LWM 220	0.70	LWM 420	0.75	LWM 620	0.75
MC 1200	LWM 121	1.15	LWM 221	1.15	LWM 421	1.10	LWM 621	1.10
MC 1200 W	LWM 122	1.15	LWM 222	1.15	LWM 422	1.10	LWM 622	1.10

Type	Cat. No.	Loading kW	Heater power kW	Loading with heater kW*	Cat. No.	Loading kW	Heater power kW	Loading with heater kW*	Cat. No.	Loading kW	Heater power kW	Loading with heater kW*
230 V; 50 Hz				220 V; 60 Hz				115 V; 60 Hz				
LAUDA Variocool – single phase												
VC 600	LWG 175	0.7	1.5	2.2	LWG 275	0.7	1.35	2.0	LWG 475	0.8	1.15	1.3
VC 1200	LWG 176	1.1	1.5/2.25	2.6/3.3	-	-	-	-	-	-	-	-
VC 1200 W	LWG 182	1.1	1.5/2.25	2.6/3.3	-	-	-	-	-	-	-	-
VC 2000	LWG 177	1.6	1.5/2.25	2.6/3.3	-	-	-	-	-	-	-	-
VC 2000 W	LWG 183	1.6	1.5/2.25	2.6/3.3	-	-	-	-	-	-	-	-
VC 3000	LWG 178	1.8	1.5	2.6	-	-	-	-	-	-	-	-
VC 3000 W	LWG 184	1.8	1.5	2.6	-	-	-	-	-	-	-	-

200 V; 50/60 Hz				100 V; 50/60 Hz				208-220 V; 60 Hz				
LAUDA Variocool – single phase												
VC 600	-	-	-	-	LWG 675	0.7	1.0	1.1	-	-	-	-
VC 1200	LWG 576	1.3	1.1/1.7	2.3/2.9	-	-	-	-	LWG 876	1.4	1.2-1.35	2.4/3.1
VC 1200 W	LWG 582	1.3	1.1/1.7	2.3/2.9	-	-	-	-	LWG 882	1.4	1.2-1.35	2.4/3.1
VC 2000	LWG 577	2.0	1.1/1.7	2.3/2.9	-	-	-	-	LWG 877	2.2	1.2-1.35	2.5/3.2
VC 2000 W	LWG 583	2.0	1.1/1.7	2.3/2.9	-	-	-	-	LWG 883	2.2	1.2-1.35	2.5/3.2
VC 3000	LWG 578	2.2	1.1	2.6	-	-	-	-	LWG 878	2.3	1.2-1.35	2.8
VC 3000 W	LWG 584	2.2	1.1	2.6	-	-	-	-	LWG 884	2.3	1.2-1.35	2.8

* With strongest optional pump

Type	Cat. No.	Loading kW	Heater power kW	Loading with heater kW*	Cat. No.	Loading kW	Heater power kW	Loading with heater kW*	Cat. No.	Loading kW	Heater power kW	Loading with heater kW*
400 V; 3/N/PE; 50 Hz					208-220 V; 3/PE; 60 Hz				200 V; 3/PE; 50/60 Hz			
LAUDA Variocool – three phase												
VC 5000	LWG 279	3.3	4.5	7.8	LWG 379	3.6	3.65-4.1	4.5	LWG 479	3.5	3.4	4.3
VC 5000 W	LWG 285	3.3	4.5	7.8	LWG 385	3.6	3.65-4.1	4.5	LWG 485	3.5	3.4	4.3
VC 7000	LWG 280	4.3	4.5	8.8	LWG 380	4.6	3.65-4.1	5.7	LWG 480	4.5	3.4	5.4
VC 7000 W	LWG 286	4.3	4.5	8.8	LWG 386	4.6	3.65-4.1	5.7	LWG 486	4.5	3.4	5.4
VC 10000	LWG 281	5.4	7.5	11.1	LWG 381	5.9	6.1-6.9	7.7	LWG 481	5.7	5.7	7.6
VC 10000 W	LWG 287	5.4	7.5	11.1	LWG 387	5.9	6.1-6.9	7.7	LWG 487	5.7	5.7	7.6

* With strongest optional pump

Type	Cat. No.	Loading kW	Cat. No.	Loading kW
230 V; 50 Hz		230 V; 60 Hz		
LAUDA Ultracool – single phase				
UC 2	E6002411	1.4	E6002431	1.4
UC 3	E6003411	1.5	E6003431	1.5
UC 4	E6004411	1.8	E6004431	1.8

400 V; 3/PE; 50 Hz			460 V; 3/PE; 60 Hz		
LAUDA Ultracool – three phase					
UC-0060 SP	E6006323	3.8	E6006341	5.0	
UC-0080 SP	E6008323	4.1	E6008341	4.9	
UC-0100 SP	E6010323	4.6	E6010341	5.8	
UC-0140 SP	E6014323	5.6	E6014341	7.0	
UC-0180 SP	E6018323	6.6	E6018341	8.3	
UC-0240 SP	E6024323	8.0	E6024341	10.5	
UC-0300 SP	E6030323	9.4	E6030341	12.5	
UC-0400 SP	E6040323	11.4	E6040341	15.0	
UC-0500 SP	E6050323	13.6	E6050341	18.3	
UC-0650 SP	E6065323	18.5	E6065341	25.7	
UC-0800 SP	E6080223	27.5	E6080241	35.4	
UC-1000 SP	E6100221	32.4	E6100241	42.1	
UC-1350 SP	E6135221	43.8	E6135241	55.3	
UC-1700 SP	E6170221	54.9	E6170241	70.2	
UC-2400 SP	E6240221	71.4	E6240241	96.1	

LAUDA Power supply variants



Power supply variants

Type	Cat. No.	Loading kW	Cat. No.	Loading kW	Cat. No.	Loading kW	Cat. No.	Loading kW	
230 V; 50/60 Hz			100 V; 50 Hz/115 V; 60 Hz			230 V; 50 Hz		230 V; 60 Hz	
LAUDA Immersion coolers – single phase									
ETK 30	LFE 002	0.2	LFE 702	0.2	–	–	–	–	
ETK 50	–	–	–	–	LFE 103	0.3	LFE 203	0.3	
230 V; 50/60 Hz			100 V; 50 Hz/115 V; 60 Hz			230 V; 50 Hz		208-230 V; 60 Hz	
LAUDA Through-flow coolers – single phase									
DKL 10	LFD 010	0.2	LFD 710	0.2	–	–	–	–	
DKL 25	–	–	LFD 708	0.2	LFD 108	0.5	–	–	
DKL 45	–	–	–	–	LFD 109	0.9	LFD 809	0.9	
DKL 45 LiBus	–	–	–	–	LFD 111	0.9	LFD 811	0.9	

Device functions

EasyUse operation (Proline)

Drain taps, castors and handles for increased mobility, double pump connections for the parallel connection of two external systems, switching of the circulation (bypass), removable Command remote control, and quick change of the required interfaces.

External control

The temperature of the thermostat is controlled via a temperature probe connected to the external system. The set value is compared with the actual value in the external system and readjusted within the thermostat. Depending on the operating temperature, insulation losses and exothermia, the bath temperature can be considerably above or below the set value. External control ensures that the bath temperature and application temperature are constant.

Hybrid cooling

The heat of the refrigerating machine is discharged by a combined air and water cooling system. The user can cool using either air or water at any time. If the user opens the cooling water supply to the device while the device is operating, the system switches automatically from air cooling to water cooling. If the cooling water system does not discharge enough heat energy, the device switches on air cooling automatically as a supporting measure.

PowerAdapt System

The maximum possible heating capacity is used as far as is permitted by the net. Advantage: up to 3.5 kW heating capacity even with cooling thermostats, shorter heating times and no overloading of the net. The patented LAUDA heater control minimises the loading effects on the laboratory's voltage network. Moreover, the maximum power consumption can be reduced to 10 A as required.

Proportional cooling

The cooling output is quasi-proportionally set according to the controller signal. This produces savings of around 75 percent compared to standard cooling that uses cooling and counter-cooling. The automatic cooling output adjustment also switches the cooling unit off completely should no cooling be required for a longer period of time.

SelfCheck Assistant

The SelfCheck Assistant checks all parameters before the actual start of operations and the switch-off methods of the heater control in particular. The system registers not only alarm or error messages on the display; it also points out scheduled maintenance tasks such as cleaning of the cooling grid.

SmartCool System

A special form of proportional cooling combined with a regulated ventilator.

Types of device

Bath/circulation thermostat

Is a bath thermostat with a circulating pump for closed or open external circuits.

Bath thermostat

Is a thermostat which is equipped with a bath capable of holding the object to be thermostated. The built-in circulation pump is used to mix the bath liquid, but can also be used to convey the liquid through a closed external circuit, e.g. the connection of through-flow coolers, if required.

Calibration thermostat

Is a bath thermostat with especially high temperature stability and especially consistent spatial temperature distribution. It is used mainly for the calibration and adjustment of test pieces in the bath.

Circulation chiller (also circulating chiller)

Are special cooling thermostats designed as circulation thermostats without a freely-accessible bath. Thanks to their construction, they are independent devices which are frequently used as a replacement for the cooling with mains water.

Circulation heat exchanger

Is a through-flow cooler which, via a heat exchanger, uses an existing primary cooling circuit to cool various external systems.

Circulation thermostat

Is a thermostat through which the bath liquid is conveyed through an open or closed external circuit.

Clear-view thermostat

Is a bath thermostat with transparent front and back to enable viewing of an object to be thermostated, usually a viscometer. Bath thermostats with transparent polycarbonate baths are known as thermostats with transparent bath.

Cooling thermostat

Is a thermostat whose working temperature range is below the ambient temperature.

Heating and cooling thermostat

Is a thermostat whose working temperature range is above and below the ambient temperature and which can both heat and cool.

Heating thermostat

Is a thermostat whose working temperature range is above the ambient temperature and which can only heat.

Immersion thermostat

Is a thermostat which can be combined with any bath. It is attached to the side of the bath or on a stand by means of a screw clamp.

Immersion cooler

Is an add-on cooler which is connected by means of a flexible tube to a cooling coil for immersion in any bath or vessel.

Kryomat

Is a floor-mounted heating and cooling thermostat in three different levels with various cooling and pump capacities.

Process thermostats (Integral T, Integral XT)

Are circulation thermostats used as heating and cooling thermostats with high cooling, heating and pump capacities. Small volumes of liquid enable quick cooling-down and heating speeds: they are ideal for process technology applications.

LAUDA Glossary

Types of device

Through-flow cooler

Is an add-on cooler which can be interconnected in an external circuit and which extends the function of a heating thermostat to that of a heating and cooling thermostat. It replaces water cooling or can be used to achieve lower temperatures (down to -40 °C with the DLK 45/DLK 45 LiBus).

Water bath

Is a heating bath which does not have a pump for active mixing purposes and which is only equipped for use with water.

Refrigeration technology

Cooling output

Is the effective output available in a cooling thermostat or circulation chiller. Losses caused by the circulating pump and invasive heat have already been deducted. The cooling output for the process circulation chillers LAUDA Ultracool are indicated without auxiliary units.

Cooling cascades

If temperatures below -50 °C are to be produced with compressor cooling units, two-stage cooling units connected in cascades are required to bridge the difference between the cold side (evaporation pressure) and warm side (condensation pressure, e.g. ambient temperature). The high-pressure stage bridges the temperature difference from approx. ambient temperature to -40 °C, for example. The low-temperature stage provides the final temperature of -90 °C, for example.

Refrigerant

Is used in the circuit of the cooling unit and extracts the heat of the thermostating liquid when the compressed gas expands and evaporates in the evaporator. LAUDA only uses refrigerants with ODP = 0 which do not destroy the ozone layer (ODP = ozone depleting potential). In several LAUDA thermostats natural refrigerants are used. Natural refrigerants are naturally occurring, non-synthetic substances. In addition to a ODP of zero they also have a very low GWP (global warming potential).

Pumps

Pressure pump

Is used for the circulation of the bath liquid in a closed external circuit and for mixing the liquid within the bath.

Vario pump (ECO, PRO, Integral XT)

Is a pressure pump which can be set to various output stages with regard to flow rate and flow pressure. This enables the optimum adaptation to the corresponding application.

Varioflex pump (Proline, PRO)

Is a pressure/suction pump with 8 different pump capacity settings to be connected to open and closed circuits. Its low energy input makes working at the lowest temperatures possible. The Varioflex pump is available in a high-power model as a pure pressure pump for devices with deeper baths. The patented low-level protection (DGM) is an additional safety advantage.

Technical data of LAUDA devices

ACC range (Active Cooling Control): according to DIN 12876

This is the working temperature range during operation with an active cooling unit. The working temperature range is equal to the ACC range in all LAUDA devices.

Ambient temperature range

This is the permissible temperature range of the environment in which the device works properly. It is 5...40 °C for all LAUDA devices contained within this brochure. This is particularly important with respect to industrial applications.

Bath depth

Is the overall dimension from the upper edge to the bottom of the bath.

Bath opening

Is the usable surface available for direct thermostating, as a rule over the entire usable depth.

Bath volume (also filling volume)

Is the volume of the bath liquid that is required for the appropriate operation of the thermostat in the bath. The required minimum volume and the permitted maximum volume are usually given. The difference is the expansion volume, which must absorb the heat expansion of the bath liquid. The expansion volume is especially large with process thermostats.

Discharge pressure

Is the pressure of the circulation pump of a thermostat directly at the pressure nozzle, measured with water. In the tables, the maximum discharge pressure is given at flow rate zero. The diagrams illustrate the discharge pressure is dependent upon the flow rate.

Discharge suction

This is the suction of the circulation pump (Varioflex or Duplex pump) directly at the suction nozzle, measured with water. In the tables, the maximum suction is given at flow rate zero. The diagrams illustrate the discharge suction is dependent upon the flow rate.

Display resolution

Is given with regard to the digital temperature display of the actual value, and displays the temperature difference between two subsequent numbers.

Flow rate

Is the volume of liquid conveyed per time unit by the circulation pump, measured with water. In the tables, the maximum flow rate is given at counter pressure zero. The diagrams illustrate the discharge pressure is dependent upon the flow rate.

Heating capacity

This is the maximum electrical capacity of the installed heater at the given nominal voltage. The heating capacity of LAUDA thermostats may be controlled if required.

Interface, analogue

Is used to input the set value of the temperature/to output temperature values or other values in analogue form, usually as a reference signal with voltage (0...10 V) or current (0/4...20 mA). Relevant LAUDA interfaces are adjustable and scalable.

Interface, digital

Is used to exchange digital data, mainly set and actual temperature values. The RS 232 interface is of a serial type and allows a point-to-point connection. This means that only two participants can communicate at a time with each other via the interface. The RS 485 interface is an addressable interface to which up to 32 participants with their own address may be connected.

International protection, IP

As per EN 60529. The first digit indicates the protection against contact and foreign objects, whereas the second digit indicates protection against water. For example, IP 32 stands for protection against contact with dangerous parts located inside with a tool of greater than/equal to 2.5 mm diameter and up to 100 mm in length. 2 stands for protection against dripping water at angles of 15°. The assessment is carried out as per EN 61010-1. The LAUDA range only provides IP information for process thermostats and circulation chillers.

Intrinsic temperature

Is the operating temperature of a heating thermostat attained when the thermostat is switched off. It depends on the pump capacity, the heat transfer liquid used and the insulation of the thermostats. The working temperature range only starts approx. 3 °C above the intrinsic temperature.

Operating temperature range

This is the temperature range defined by the lowest and highest permissible operating temperature. As a rule, this is only given for heating thermostats whose working temperature range can be extended to lower temperatures by means of auxiliary equipment.

Profibus

Is a bus system with a high signal transfer rate for connecting up to 256 devices and is used mainly in the chemical industry.

Resolution setting

Is the difference between two consecutive set values of a digital set value setting.

Safety class

It is possible to use non-flammable or flammable bath liquids in thermostats. The relevant safety-related requirements are stipulated in DIN EN 61010-2-010. According to DIN 12876-1, we make a distinction between class I with the distinction NFL (non-flammable) with built-in overtemperature protection exclusively for non-flammable liquids, and class III with the distinction FL (flammable) with adjustable overtemperature protection and low level protection for flammable liquids.

Sound pressure level

Is measured according to the guidelines given in DIN EN ISO 11200 and the basic standards contained therein.

Standard

The safety regulations for electric laboratory equipment are stipulated in the European standards EN 61010-1 and EN 61010-2-010. The terms and the stipulation of the characteristic data are described in DIN 12876. EMC requirements are stipulated in EN 61356. Depending on the device, further standards may be applied. Deviations are indicated.

Temperature stability

This is half of the temperature difference between the highest and the lowest temperatures which are measured at a specific set value after attaining a stable value for 30 minutes in a thermostat. The details are provided at 70 °C (using water) for a heating thermostat and at -10 °C (using ethanol) for a cooling thermostat.

Usable depth

Is the maximum liquid depth available in the bath thermostat for direct thermostating.

Working temperature range

This is the temperature range which can be attained at an ambient temperature of 20 °C by the thermostat alone and with the exclusive use of electrical energy and without any other aid. The working temperature range of a heating thermostat begins above the ambient temperature and ends at the upper limit of the operating temperature.

Temperature solutions:

Thermostats · Circulation chillers · Water baths

Process cooling systems · Heat transfer systems · Secondary circuit systems



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