

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

Immersion coolers down to -50 °C ❄️

## Supplying cold quickly: LAUDA immersion coolers

LAUDA immersion coolers provide a quick way to extend the temperature range downwards when used 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 – with absolute long-term safety of operation. And they are optimal when it comes to capacity, size of the housing and price, the ETK 50 even has 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
- ❖ Lateral holder for the cooling coil is included
- ❖ Flexible tube connection with special insulation (length 1.5 m)



Technical features		ETK 30	ETK 50
Working temperature range (without external heating)	°C	-40...20	-50...20
Operating temperature range (with external heating)	°C	-40...100	-50...100
Temperature probe		–	Pt 100
Control action		–	2-point action
Temperature stability (at -10 °C)	±K	–	0.5
Cooling output at	kW	0.15	0.25
	20 °C		
	-10 °C	0.13	0.25
	-30 °C	0.04	0.20
	-40 °C	0.01	0.10
	-50 °C	–	0.04
Cooling unit		air-cooled fully hermetic	air-cooled fully hermetic
Cooling coil (Ø x L)	mm	42x124	52x166
Base area (W x D x H)	mm	250x360x285	460x410x270
Weight	kg	17	33
Power consumption	kW	0.2	0.3
Cat. No. 230 V; 50/60 Hz		LFE 002	–
Cat. No. 230 V; 50 Hz		–	LFE 103
Cat. No. 230 V; 60 Hz		–	LFE 203

❄️ Through-flow coolers down to -40 °C

## The perfect addition to a heating thermostat: LAUDA through-flow coolers

- ❖ Air-cooled, fully hermetic and thus absolutely maintenance-free cooling aggregates with heat exchangers in ample dimensions.
- ❖ Heat exchangers are made from stainless steel.
- ❖ All refrigerated parts inside the through-flow cooler are perfectly insulated. Therefore no condensation of water condensation and no corrosion.
- ❖ The through-flow cooler automatically stops running when the connected thermostat of Ultra and Ecoline with control head E 300 is switched off. Thus the through-flow cooler is protected against operation without through-flow and thus against freezing.
- ❖ With proportional cooling: DLK 45 LiBus can be used as add-on cooler for Proline heating thermostats, DLK 45 for heating thermostats with control unit P.

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 sensible. They provide a constant flow and temperature of the cooling water regardless of the variations. Thus it is possible to ensure optimum temperature stability over the entire period and allow reproducible temperature conditions at any time.



Through-flow cooler DLK 10



Technical features		DLK 10	DLK 25	DLK 45	DLK 45 LiBus
Working temperature range	°C	-15...150	-30...150	-40...150	-40...150
Cooling output at	20 °C	0.25	0.33	1.1	1.1
	0 °C	0.20	0.28	0.95	0.95
	-10 °C	0.10	0.25	0.85	0.85
	-20 °C	–	0.22	0.75	0.75
	-30 °C	–	0.20	0.55	0.55
	-40 °C	–	–	0.30	0.30
Heat exchanger connections for heat carrier		M 16x1, nipples Ø13 mm	M 16x1, nipples Ø13 mm	M 16x1, nipples Ø13 mm	M 16x1, nipples Ø13 mm
Special features		Control connection for mains supply		Proportional cooling: Ultras, C/K edition	Proportional cooling: Proline
Overall dimensions (W x Dx H)	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; 50/60 Hz		LFD 010	–	–	–
Cat. No. 230 V; 50 Hz		–	LFD 108	LFD 109	LFD 111
Cat. No. 230 V; 60 Hz		–	LFD 208	LFD 809	LFD 811
Cat. No. 115 V; 60 Hz		LFD 710	LFD 708	–	–

## Economic use of resources: LAUDA circulation heat exchangers

LAUDA UWT circulation heat exchangers are an economical alternative to circulation chillers when central cooler circuits can be used from the building side. This is economically and ecologically practical if heat removal from processes has to be performed either regularly or at a high power, and the removed heat should not enter the ambient air. Regulated circulation heat exchangers – also known as system separators – guarantee the

temperatures, pressures and volume flow rates adapted to the application. The LAUDA UWT take cooling water from an existing primary circulation system and thermostat an internal bath volume in an individually-adjustable manner: this bath volume is then transported to the consumer via a pump in the laboratory circulation system.




UWT 6000

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

### Standard accessories

Hose connections · remote plug for external control

Technical features		UWT 3000	UWT 6000	UWT 10000	UWT 10000
Working temperature range	°C	8...25	8...25	8...25	8...25
Resolution of setting	°C	0.1	0.1	0.1	0.1
Resolution of indication	°C	0.1	0.1	0.1	0.1
Temperature stability	±K	1	1	1	1
Cooling capacity	kW	3	6	10	10
at coolant inlet temperature	°C	9	9	9	9
at coolant pressure loss	bar	0.12	0.05	0.07	0.07
at cooling circuit volume flow	L/min	6	16	20	20
at laboratory circuit inlet temperature	°C	14	14	14	14
at output UWT	L/min	6	6	20	20
Pump pressure max.	bar	1.0	1.0	2.2	5.5
Flow max.	L/min	30	30	33	40
Cooling and lab circuit connections		G 3/4	G 1 1/4	G 1 1/4	G 1 1/4
Filling volume	L	7...12	35...45	35...45	35...45
Overall dimensions (WxDxH)	mm	350x480x410	550x650x480	550x650x480	550x650x520
Weight	kg	34	68	74	77
Power consumption	kW	0.2	0.2	0.5	0.5
Cat. No. 230 V · 50 Hz		LSO 1227	LSO 1228	LSO 1229	LSW 1202

 For optimum thermostating and a long unit life

## Thermostating is simply better with the right heat transfer liquid

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 for the application. 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](http://www.lauda.de).

Thanks to our decades of experience and continual tests we can offer you the best heat transfer liquids for all LAUDA thermostats. Heat transfer liquids are available in three packing units: 5, 10 and 20 litres. 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 below table 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 that has been regarded as the limiting factor.

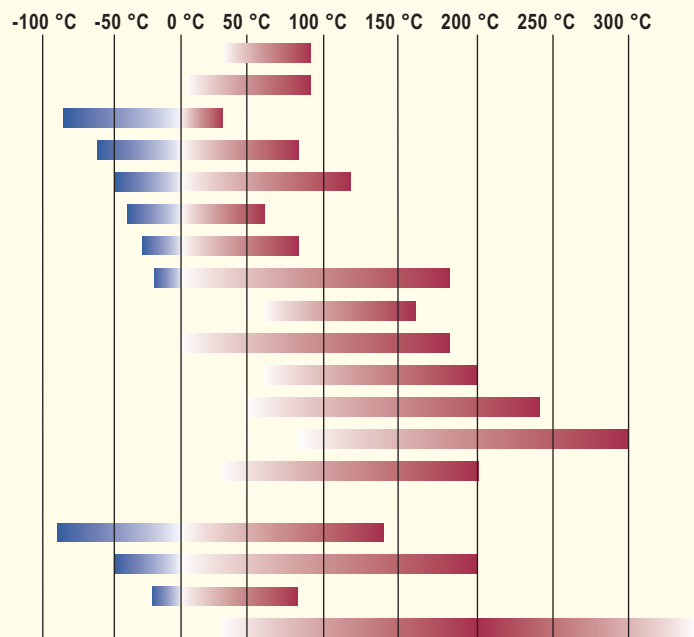
Open/half-open systems				
Designation	Temperature range	5 L	Cat. No.:	
			10 L	20 L
AquaStab	30...90 °C	LZB 123		
Aqua 90	5...90 °C	LZB 120	LZB 220	LZB 320
Kryo 85 (S)	-85...30 °C	LZB 113	LZB 213	LZB 313
Kryo 60 (S)	-60...80 °C	LZB 102	LZB 202	LZB 302
Kryo 51 (S)	-50...120 °C	LZB 121	LZB 221	LZB 321
Kryo 40	-40...60 °C	LZB 119	LZB 219	LZB 319
Kryo 30	-30...90 °C	LZB 109	LZB 209	LZB 309
Kryo 20 (S)	-20...180 °C	LZB 116	LZB 216	LZB 316
Therm 160	60...160 °C	LZB 106	LZB 206	LZB 306
Therm 180 (S)	0...180 °C	LZB 114	LZB 214	LZB 314
Therm 200 (S)	60...200 °C	LZB 117	LZB 217	LZB 317
Therm 240 (S)	50...240 °C	LZB 122	LZB 222	LZB 322
Ultra 300 (S)	80...300 °C	LZB 108	LZB 208	LZB 308
Ultra 350	80...200 °C	LZB 107	LZB 207	LZB 307
Closed systems flooded with cold oil, for example USH 400, Integral XT				
Kryo 85 (S)	-90...140 °C	LZB 113	LZB 213	LZB 313
Kryo 55 (S)	-50...200 °C	LZB 124	LZB 224	LZB 324
Kryo 30	-20...90 °C	LZB 109	LZB 209	LZB 309
Ultra 350	30...350 °C	LZB 107	LZB 207	LZB 307

(S) = Silicone oil



LAUDA bath liquids offer you important advantages:

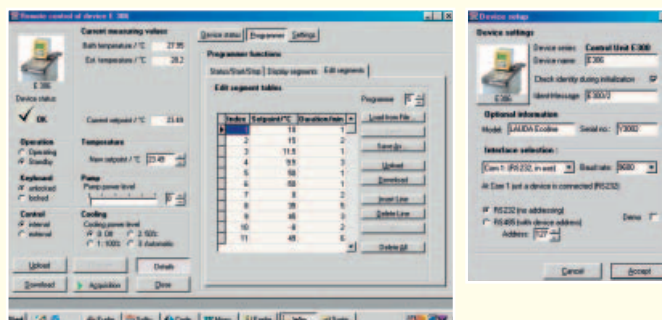
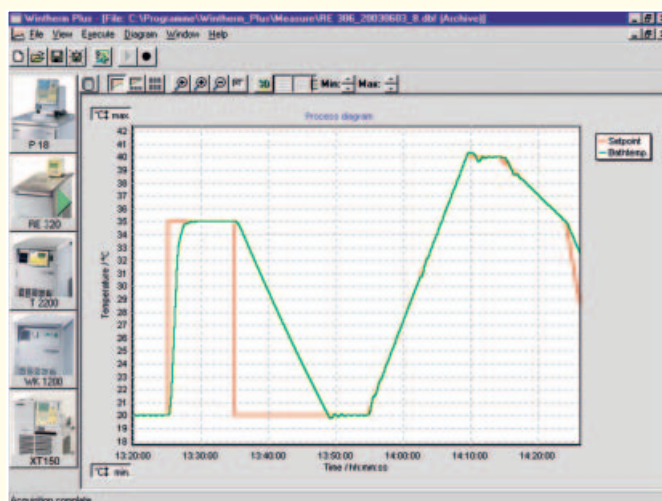
- ❖ Highly accurate thermostating, even at extreme temperatures
- ❖ Durability
- ❖ Simple and safe handling
- ❖ Reliability, suitable for long-term operation
- ❖ Optimal for a long thermostat life
- ❖ Best possible compatibility with the environment
- ❖ Safety data sheets available on request



Request your free copy of the extensive LAUDA heat transfer liquids brochure.

## So that your PC can talk to your thermostat: LAUDA Wintherm Plus

All LAUDA Ecoline Staredition thermostats with control heads E 200 and E 300, all Proline thermostats, all Ultra-thermostats, all circulation chillers WK/WKL with interface and all LAUDA Integral process thermostats can be controlled from any PC using WINDOWS 98 SE and higher with the LAUDA Wintherm Plus software. Prerequisites for the PC: at least 64 MB RAM, serial interface.



### Wintherm Plus features:

- ❖ Transmission of set value and acceptance of bath temperature
- ❖ Acceptance of external temperature values
- ❖ Online display of all values as a graphic with a freely selectable time window to reduce the amount of data or to increase resolution
- ❖ Temperature program editor to create and archive temperature profiles
- ❖ Complete control of all thermostat functions such as control parameters, permissible 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.
- ❖ Every measuring curve can be imported directly as bitmap or metafile into all graphic programs and Microsoft Word.
- ❖ Simultaneous control of up to 64 thermostats possible
- ❖ Up to 8 serial interfaces of the PC can be addressed as RS 232 or RS 485.
- ❖ Automatic recognition of connected thermostats
- ❖ Operating languages: German and English
- ❖ Supported operation systems: Windows 98 SE, Windows ME, Windows XP, Windows 2000, Windows NT

# Technical features according to DIN 12876 standard



Type	Page	Working temperature range °C	Working temperature range with water cooling °C	Operating temperature range °C	Resolution of setting °C	Resolution of indication	Temperature stability ±K	Safety fittings®	Heater power kW	Pump type®	Pump pressure max. bar	Pump suction max. L/min	Pump flow max. L/min	Pump flow max. (pressure) mm	Pump connection thread mm	Ø <sub>e</sub> Nipples
<b>LAUDA Aqualine</b>																
AL 2	9	25...95	–	–	0.1/1	0.1	0.2®	I, NFL	0.5	–	–	–	–	–	–	–
AL 5	9	25...95	–	–	0.1/1	0.1	0.2®	I, NFL	0.5	–	–	–	–	–	–	–
AL 12	9	25...95	–	–	0.1/1	0.1	0.2®	I, NFL	1.0	–	–	–	–	–	–	–
AL 18	9	25...95	–	–	0.1/1	0.1	0.2®	I, NFL	1.2	–	–	–	–	–	–	–
AL 25	9	25...95	–	–	0.1/1	0.1	0.2®	I, NFL	1.2	–	–	–	–	–	–	–
<b>LAUDA Class A</b>																
A 100	13	25...100	20...100	-20...100	0.3	analogue	0.05	I, NFL	1.5	D	0.15	–	14	–	–	–
A 103	14	30...100	20...100	-20...100	0.3	analogue	0.05	I, NFL	1.5	D	0.15	–	8	–	–	13
A 111	14	25...100	20...100	-20...100	0.3	analogue	0.05	I, NFL	1.5	D	0.15	–	8	–	–	13
A 106 T	14	25...100	20...100	-20...100	0.3	analogue	0.05	I, NFL	1.5	D	0.15	–	8	–	–	13
A 112 T	14	25...100	20...100	-20...100	0.3	analogue	0.05	I, NFL	1.5	D	0.15	–	8	–	–	13
A 120 T	14	25...100	20...100	-20...100	0.3	analogue	0.05	I, NFL	1.5	D	0.15	–	8	–	–	13
A 120 S	14	25...100	20...100	-20...100	0.3	analogue	0.05	I, NFL	1.5	D	0.15	–	8	–	–	13
<b>LAUDA Ecoline Staredition</b>																
E 100	22	20...150	20...150	-20...150	0.1	0.1	0.02	III, FL	1.5	V	0.4	–	20	–	–	–
E 200	22	20...200	20...200	-20...200	0.1/0.01	0.05	0.01	III, FL	2.25	V	0.4	–	20	–	–	–
E 300	22	20...200	20...200	-20...200	0.1/0.01	0.05/0.01	0.01	III, FL	2.25	V	0.4	–	20	–	–	–
E 106 T	24	20...100	20...100	-20...100	0.1	0.1	0.02	III, FL	1.5	V	0.4	–	17	–	–	13
E 112 T	24	20...100	20...100	-20...100	0.1	0.1	0.02	III, FL	1.5	V	0.4	–	17	–	–	13
E 115 T	24	20...100	20...100	-20...100	0.1	0.1	0.02	III, FL	1.5	V	0.4	–	17	–	–	13
E 120 T	24	20...100	20...100	-20...100	0.1	0.1	0.02	III, FL	1.5	V	0.4	–	17	–	–	13
E 206 T	25	20...100	20...100	-20...100	0.1/0.01	0.05	0.01	III, FL	2.25	V	0.4	–	17	–	–	13
E 212 T	25	20...100	20...100	-20...100	0.1/0.01	0.05	0.01	III, FL	2.25	V	0.4	–	17	–	–	13
E 215 T	25	20...100	20...100	-20...100	0.1/0.01	0.05	0.01	III, FL	2.25	V	0.4	–	17	–	–	13
E 220 T	25	20...100	20...100	-20...100	0.1/0.01	0.05	0.01	III, FL	2.25	V	0.4	–	17	–	–	13
E 103	26	20...150	20...150	-20...150	0.1	0.1	0.02	III, FL	1.5	V	0.4	–	17	–	–	13
E 111	26	20...150	20...150	-20...150	0.1	0.1	0.02	III, FL	1.5	V	0.4	–	17	–	–	13
E 119	26	20...150	20...150	-20...150	0.1	0.1	0.02	III, FL	1.5	V	0.4	–	17	–	–	13
E 125	26	20...150	20...150	-20...150	0.1	0.1	0.02	III, FL	1.5	V	0.4	–	17	–	–	13
E 140	26	20...150	20...150	-20...150	0.1	0.1	0.02	III, FL	1.5	V	0.4	–	17	–	–	13
E 203	27	20...150	20...150	-20...150	0.1/0.01	0.05	0.01	III, FL	2.25	V	0.4	–	17	–	–	13
E 211	27	20...150	20...150	-20...150	0.1/0.01	0.05	0.01	III, FL	2.25	V	0.4	–	17	–	–	13
E 219	27	20...150	20...150	-20...150	0.1/0.01	0.05	0.01	III, FL	2.25	V	0.4	–	17	–	–	13
E 225	27	20...150	20...150	-20...150	0.1/0.01	0.05	0.01	III, FL	2.25	V	0.4	–	17	–	–	13
E 240	27	20...150	20...150	-20...150	0.1/0.01	0.05	0.01	III, FL	2.25	V	0.4	–	17	–	–	13
E 306	28	20...200	20...200	-20...200	0.1/0.01	0.05/0.01	0.01	III, FL	2.25	V	0.4	–	17	–	M16x1	13
E 312	28	20...200	20...200	-20...200	0.1/0.01	0.05/0.01	0.01	III, FL	2.25	V	0.4	–	17	–	M16x1	13
E 320	28	20...200	20...200	-20...200	0.1/0.01	0.05/0.01	0.01	III, FL	2.25	V	0.4	–	17	–	M16x1	13
E 326	28	20...200	20...200	-20...200	0.1/0.01	0.05/0.01	0.01	III, FL	2.25	V	0.4	–	17	–	M16x1	13
<b>NEW</b> E 340	28	20...200	20...200	-20...200	0.1/0.01	0.05	0.01	III, FL	2.25	V	0.4	–	17	–	M16x1	13

® On pump output step 1

® With external cooling/add-on cooler

® III, FL: for use with flammable and non-flammable liquids; I, NFL: for use with non-flammable liquids

\* Dimensions of the bath opening are measured at the top and are slightly reduced downwards.

Bath volume min.	Bath volume max.	Bath opening (WxD)	Bath depth	Usable depth	Height top of bath	Height gable cover	Dimensions (WxDxH)	Weight	Power supply®	Loading	Cat. No.	Type
L	L	mm	mm	mm	mm	mm	mm	kg	V; Hz	kW		
<b>LAUDA Aqualine</b>												
0.9	1.7	300x151	65	–	–	71	343x186x218	4.5	230; 50/60	0.6	<b>LCB 0723</b>	<b>AL 2</b>
1.0	5.0	300x151	150	–	–	71	343x186x218	5.0	230; 50/60	0.6	<b>LCB 0724</b>	<b>AL 5</b>
2.0	11.7	329x300	150	–	–	108	372x335x218	8.5	230; 50/60	1.1	<b>LCB 0725</b>	<b>AL 12</b>
3.0	18.2	505x300	150	–	–	108	548x335x218	11.5	230; 50/60	1.3	<b>LCB 0726</b>	<b>AL 18</b>
3.0	25.2	505x300	200	–	–	108	548x335x268	13.5	230; 50/60	1.3	<b>LCB 0727</b>	<b>AL 25</b>
<b>LAUDA Class A</b>												
–	50.0	–	min. 160	min. 100	–	–	105x130x300	2.8	230; 50/60	1.6	<b>LCE 0225</b>	<b>A 100</b>
2.5	3.5	135x105*	150	130	178	–	168x271x338	5.8	230; 50/60	1.6	<b>LCB 0703</b>	<b>A 103</b>
9.0	12.0	300x190	150	130	178	–	331x360x349	7.5	230; 50/60	1.6	<b>LCB 0722</b>	<b>A 111</b>
5.0	7.0	130x285*	160	140	170	–	145x435x310	4.3	230; 50/60	1.6	<b>LCM 0095</b>	<b>A 106 T</b>
9.0	13.0	300x175	160	140	208	–	316x330x350	6.9	230; 50/60	1.6	<b>LCD 0270</b>	<b>A 112 T</b>
14.0	20.0	300x350	160	140	208	–	316x506x350	7.9	230; 50/60	1.6	<b>LCD 0271</b>	<b>A 120 T</b>
14.0	20.0	280x270	160	130	210	–	350x540x415	26.0	230; 50/60	1.7	<b>LCS 0081</b>	<b>A 120 S</b>
<b>LAUDA Ecoline Staredition</b>												
–	60.0	–	min. 150	min. 100	–	–	125x133x315	2.9	230; 50/60	1.6	<b>LCE 0221</b>	<b>E 100</b>
–	60.0	–	min. 150	min. 100	–	–	125x133x315	3.1	230; 50/60	2.3	<b>LCE 0222</b>	<b>E 200</b>
–	60.0	–	min. 150	min. 100	–	–	125x133x315	3.2	230; 50/60	2.3	<b>LCE 0223</b>	<b>E 300</b>
5.0	7.0	130x285*	160	140	170	–	145x435x330	4.3	230; 50/60	1.6	<b>LCM 0091</b>	<b>E 106 T</b>
9.0	13.0	300x175	160	140	208	–	316x330x369	7.0	230; 50/60	1.6	<b>LCD 0261</b>	<b>E 112 T</b>
10.0	15.0	275x130	310	290	356	–	428x142x517	6.5	230; 50/60	1.6	<b>LCD 0263</b>	<b>E 115 T</b>
14.0	20.0	300x350	160	140	208	–	316x506x369	8.0	230; 50/60	1.6	<b>LCD 0265</b>	<b>E 120 T</b>
5.0	7.0	130x285*	160	140	170	–	145x435x330	4.5	230; 50/60	2.3	<b>LCM 0092</b>	<b>E 206 T</b>
9.0	13.0	300x175	160	140	208	–	316x330x369	7.0	230; 50/60	2.3	<b>LCD 0262</b>	<b>E 212 T</b>
10.0	15.0	275x130	310	290	356	–	428x142x517	7.0	230; 50/60	2.3	<b>LCD 0264</b>	<b>E 215 T</b>
14.0	20.0	300x350	160	140	208	–	316x506x369	8.4	230; 50/60	2.3	<b>LCD 0266</b>	<b>E 220 T</b>
2.5	3.5	135x105*	150	130	178	–	168x271x349	5.5	230; 50/60	1.6	<b>LCB 0691</b>	<b>E 103</b>
9.0	12.0	300x190*	150	130	178	–	331x360x349	7.6	230; 50/60	1.6	<b>LCB 0693</b>	<b>E 111</b>
12.0	18.0	300x365*	150	130	178	–	331x536x349	9.5	230; 50/60	1.6	<b>LCB 0695</b>	<b>E 119</b>
19.0	25.0	300x365*	200	180	228	–	331x536x399	10.0	230; 50/60	1.6	<b>LCB 0697</b>	<b>E 125</b>
30.0	40.0	300x613	200	180	260	–	350x803x421	21.0	230; 50/60	1.6	<b>LCB 0706</b>	<b>E 140</b>
2.5	3.5	135x105*	150	130	178	–	168x271x349	5.7	230; 50/60	2.3	<b>LCB 0692</b>	<b>E 203</b>
9.0	12.0	300x190*	150	130	178	–	331x360x349	7.8	230; 50/60	2.3	<b>LCB 0694</b>	<b>E 211</b>
12.0	18.0	300x365*	150	130	178	–	331x536x349	9.0	230; 50/60	2.3	<b>LCB 0696</b>	<b>E 219</b>
19.0	25.0	300x365*	200	180	228	–	331x536x399	10.2	230; 50/60	2.3	<b>LCB 0698</b>	<b>E 225</b>
30.0	40.0	300x613	200	180	260	–	350x803x421	21.0	230; 50/60	2.3	<b>LCB 0707</b>	<b>E 240</b>
3.5	5.5	150x130	160	140	203	–	200x310x364	8.8	230; 50/60	2.3	<b>LCB 0699</b>	<b>E 306</b>
8.0	13.0	300x175	160	140	203	–	350x355x364	12.2	230; 50/60	2.3	<b>LCB 0700</b>	<b>E 312</b>
13.0	20.0	300x350	160	140	203	–	350x530x364	15.0	230; 50/60	2.3	<b>LCB 0701</b>	<b>E 320</b>
19.0	26.0	300x350	200	180	243	–	350x530x404	16.0	230; 50/60	2.3	<b>LCB 0702</b>	<b>E 326</b>
30.0	40.0	300x613	200	180	260	–	350x803x421	21.0	230; 50/60	2.3	<b>LCB 0732</b>	<b>E 340</b>

® D: pressure pump; V: Vario pump, pressure pump with 5 selectable output steps

® Other voltages on request

® At 37 °C

# Technical features according to DIN 12876 standard



**NEW**  
**NEW**  
**NEW**  
**NEW**

Type	Page	Working temperature range <sup>®</sup> °C	Working temperature range with water cooling °C	Operating temperature range <sup>®</sup> °C	Resolution of setting °C	Resolution of indication	Temperature stability ±K	Safety fittings <sup>®</sup>	Heater power kW	Pump type <sup>®</sup> bar	Pump pressure max. bar	Pump suction max. L/min	Pump flow max. (pressure) L/min	Pump flow max. (suction) mm	Pump connection thread mm	Ø <sub>e</sub> Nipples
<b>LAUDA Proline</b>																
P 5	40	35...300	20...300	-30...300	0.1/0.01	0.01	0.01	III, FL	3.5	VF	0.7	0.4	25	23	M16x1	13
P 8	40	35...300	20...300	-30...300	0.1/0.01	0.01	0.01	III, FL	3.5	VF	0.7	0.4	25	23	M16x1	13
P 12	40	30...300	20...300	-30...300	0.1/0.01	0.01	0.01	III, FL	3.5	VFP	1.1	-	32	-	M16x1	13
P 18	40	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	M16x1	13
P 26	41	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	M16x1	13
P 40	41	30...300**	20...300	-30...300**	0.01	0.1/0.01	0.01	III, FL	3.5	VF	0.7	0.4	25	23	M16x1	13
P 50	41	30...300**	20...300	-30...300**	0.01	0.1/0.01	0.01	III, FL	3.5	VF	0.7	0.4	25	23	M16x1	13
P 5 C	42	35...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	M16x1	13
P 8 C	42	35...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	M16x1	13
P 12 C	42	30...300	20...300	-30...300	0.01	0.1/0.01/0.001	0.01	III, FL	3.5	VFP	1.1	-	32	-	M16x1	13
P 18 C	42	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	M16x1	13
P 26 C	43	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	M16x1	13
P 40 C	43	30...300**	20...300	-30...300**	0.01	0.1/0.01	0.01	III, FL	3.5	VF	0.7	0.4	25	23	M16x1	13
P 50 C	43	30...300**	20...300	-30...300**	0.01	0.1/0.01	0.01	III, FL	3.5	VF	0.7	0.4	25	23	M16x1	13
PV 15	44	30...230	20...230	0...230	0.1/0.01	0.01	0.01	III, FL	3.5	VFP	0.8	-	25	-	M16x1	13
PV 24	44	30...230	20...230	0...230	0.1/0.01	0.01	0.01	III, FL	3.5	VFP	0.8	-	25	-	M16x1	13
PV 36	44	30...230	20...230	0...230	0.1/0.01	0.01	0.01	III, FL	3.5	VFP	0.8	-	25	-	M16x1	13
PV 15 C	44	30...230	20...230	0...230	0.01	0.1/0.01/0.001	0.01	III, FL	3.5	VFP	0.8	-	25	-	M16x1	13
PV 24 C	44	30...230	20...230	0...230	0.01	0.1/0.01/0.001	0.01	III, FL	3.5	VFP	0.8	-	25	-	M16x1	13
PV 36 C	44	30...230	20...230	0...230	0.01	0.1/0.01/0.001	0.01	III, FL	3.5	VFP	0.8	-	25	-	M16x1	13
PVL 15	44	30...100	20...100	-60...100	0.1/0.01	0.01	0.01	III, FL	3.5	VFP	0.8	-	25	-	M16x1	13
PVL 24	44	30...100	20...100	-60...100	0.1/0.01	0.01	0.01	III, FL	3.5	VFP	0.8	-	25	-	M16x1	13
PVL 15 C	44	30...100	20...100	-60...100	0.01	0.1/0.01/0.001	0.01	III, FL	3.5	VFP	0.8	-	25	-	M16x1	13
PVL 24 C	44	30...100	20...100	-60...100	0.01	0.1/0.01/0.001	0.01	III, FL	3.5	VFP	0.8	-	25	-	M16x1	13
PB	45	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	M16x1	13
PB C	45	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	M16x1	13
PBD	45	30...300	20...300	-30...300	0.1/0.01	0.01	0.01	III, FL	3.5	VFP	1.1	-	32	-	M16x1	13
PBD C	45	30...300	20...300	-30...300	0.01	0.1/0.01/0.001	0.01	III, FL	3.5	VFP	1.1	-	32	-	M16x1	13

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

\*\* Max. temperature only with bath cover

<b>LAUDA Ultra</b>																
UB 20	56	45...300	20...300	-60...300	0.01	0.01/0.001	0.01	III, FL	3.0	D	0.50	-	22	-	M16x1	13
UB 20-D	56	50...300	20...300	-60...300	0.01	0.01/0.001	0.01	III, FL	3.0	Du	0.50	0.33	20	15	M16x1	13
UB 30	56	40...300	20...300	-60...300	0.01	0.01/0.001	0.01	III, FL	3.0	D	0.30	-	15	-	M16x1	13
UB 40	56	35...300	20...300	-60...300	0.01	0.01/0.001	0.01	III, FL	3.0	D	0.30	-	15	-	M16x1	13
UB 25	56	40...200	20...300*	-60...300*	0.01	0.01/0.001	0.02	III, FL	3.0	D	0.40	-	18	-	M16x1	13
UB 50	56	35...200	20...300*	-60...300*	0.01	0.01/0.001	0.02	III, FL	3.0	D	0.30	-	15	-	M16x1	13
USH 400	57	80...400	20...400**	0...400	0.01	0.01/0.001	0.02...0.1	III, FL	3.0	D	0.80	-	22	-	M16x1	13
USH 400/6	57	80...400	20...400**	0...400	0.01	0.01/0.001	0.02...0.2	III, FL	5.6	D	0.80	-	22	-	M16x1	13

\* Max. temperature only with bath cover

\*\* With controlled cooling MVH

RE 212 J*	68	-30...200	-	-	0.1/0.01	0.05	0.01	III, FL	2.25	V	0.40	-	17	-	M16x1	13
RE 312 J*	68	-30...200	-	-	0.1/0.01	0.05/0.01	0.01	III, FL	2.25	V	0.40	-	17	-	M16x1	13
PJ 12	68	30...300	20...300	0...300	0.1/0.01	0.01	0.01	III, FL	3.5	VFP	0.8	-	25	-	M16x1	13
PJ 12 C	68	30...300	20...300	0...300	0.01	0.1/0.01/0.001	0.01	III, FL	3.5	VFP	0.8	-	25	-	M16x1	13
PJL 12	68	30...200	20...200	-40...200	0.1/0.01	0.01	0.01	III, FL	3.5	VFP	0.8	-	25	-	M16x1	13
PJL 12 C	68	30...200	20...200	-40...200	0.01	0.1/0.01/0.001	0.01	III, FL	3.5	VFP	0.8	-	25	-	M16x1	13
UB 20 J	69	45...300	20...300	-30...300	0.01	0.01/0.001	0.005...0.01	III, FL	3.0	D	0.30	-	15	-	M16x1	13
UB 30 J	69	45...300	20...300	-30...300	0.01	0.01/0.001	0.005...0.01	III, FL	3.0	D	0.30	-	15	-	M16x1	13
UB 40 J	69	45...300	20...300	-30...300	0.01	0.01/0.001	0.005...0.01	III, FL	3.0	D	0.30	-	15	-	M16x1	13
UB 65 J	69	80...300	20...300	-30...300	0.01	0.01/0.001	0.005...0.01	III, FL	3.0	D	0.30	-	15	-	M16x1	13
UB 20 JL	69	45...200	20...200	-40...200	0.01	0.01/0.001	0.005...0.01	III, FL	3.0	D	0.30	-	15	-	M16x1	13
UB 30 JL	69	45...200	20...200	-40...200	0.01	0.01/0.001	0.005...0.01	III, FL	3.0	D	0.30	-	15	-	M16x1	13
UB 40 JL	69	45...200	20...200	-35...200	0.01	0.01/0.001	0.005...0.01	III, FL	3.0	D	0.30	-	15	-	M16x1	13
UB 20 F	69	35...200	20...200	0...200	0.01	0.01/0.001	0.005	III, FL	1.2	D	0.20	-	12	-	M16x1	13

\* Cooling output RE 212 and RE 312 300 Watt at 20 °C, further details see page 104

® On pump output step 1

® With external cooling/add-on cooler

® 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		Height gable cover		Dimensions (WxDxH)		Weight		Power supply®		Loading		Cat. No.		Type				
L	L	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	kg	V; Hz	kW												
<b>LAUDA Proline</b>																												
3.5	5.5	150x50	200	180	254	–	200x260x454	12.0	230; 50/60	3.6	<b>LCB 0708</b>	<b>P 5</b>																
5.5	8.0	150x150	200	180	254	–	200x360x454	14.0	230; 50/60	3.6	<b>LCB 0710</b>	<b>P 8</b>																
6.5	13.5	150x150	320	300	374	–	220x360x574	16.0	230; 50/60	3.6	<b>LCB 0716</b>	<b>P 12</b>																
12.5	19.0	300x200	200	180	254	–	370x410x454	19.0	230; 50/60	3.6	<b>LCB 0712</b>	<b>P 18</b>																
18.0	27.0	300x350	200	180	254	–	370x560x454	24.0	230; 50/60	3.6	<b>LCB 0714</b>	<b>P 26</b>																
30.0	37.0	250x250	450	430	510	–	320x545x710	24.0	230; 50/60	3.6	<b>LCB 0728</b>	<b>P 40</b>																
35.0	53.0	300x750	200	180	260	–	1025x350x454	24.0	230; 50/60	3.6	<b>LCB 0730</b>	<b>P 50</b>																
3.5	5.5	150x50	200	180	254	–	200x260x454 <sup>®</sup>	12.0	230; 50/60	3.6	<b>LCB 0709</b>	<b>P 5 C</b>																
5.5	8.0	150x150	200	180	254	–	200x360x454 <sup>®</sup>	14.0	230; 50/60	3.6	<b>LCB 0711</b>	<b>P 8 C</b>																
6.5	13.5	150x150	320	300	374	–	220x360x574 <sup>®</sup>	16.0	230; 50/60	3.6	<b>LCB 0717</b>	<b>P 12 C</b>																
12.5	19.0	300x200	200	180	254	–	370x410x454 <sup>®</sup>	19.0	230; 50/60	3.6	<b>LCB 0713</b>	<b>P 18 C</b>																
18.0	27.0	300x350	200	180	254	–	370x560x454 <sup>®</sup>	24.0	230; 50/60	3.6	<b>LCB 0715</b>	<b>P 26 C</b>																
30.0	37.0	250x250	450	430	510	–	320x545x710 <sup>®</sup>	24.0	230; 50/60	3.6	<b>LCB 0729</b>	<b>P 40 C</b>																
35.0	53.0	300x750	200	180	260	–	1025x350x454 <sup>®</sup>	24.0	230; 50/60	3.6	<b>LCB 0731</b>	<b>P 50 C</b>																
11.0	15.0	230x135	320	285	390	149x230	506x282x590	26.0	230; 50/60	3.6	<b>LCD 0276</b>	<b>PV 15</b>																
19.0	24.0	405x135	320	285	390	326x230	740x282x590	36.0	230; 50/60	3.6	<b>LCD 0278</b>	<b>PV 24</b>																
28.0	36.0	585x135	320	285	390	506x230	1040x282x590	44.0	230; 50/60	3.6	<b>LCD 0280</b>	<b>PV 36</b>																
11.0	15.0	230x135	320	285	390	149x230	506x282x590 <sup>®</sup>	26.0	230; 50/60	3.6	<b>LCD 0277</b>	<b>PV 15 C</b>																
19.0	24.0	405x135	320	285	390	326x230	740x282x590 <sup>®</sup>	36.0	230; 50/60	3.6	<b>LCD 0279</b>	<b>PV 24 C</b>																
28.0	36.0	585x135	320	285	390	506x230	1040x282x590 <sup>®</sup>	44.0	230; 50/60	3.6	<b>LCD 0281</b>	<b>PV 36 C</b>																
11.0	15.0	230x135	320	285	390	149x230	506x282x590	28.0	230; 50/60	3.6	<b>LCD 0282</b>	<b>PVL 15</b>																
19.0	24.0	405x135	320	285	390	326x230	740x282x590	39.0	230; 50/60	3.6	<b>LCD 0284</b>	<b>PVL 24</b>																
11.0	15.0	230x135	320	285	390	149x230	506x282x590 <sup>®</sup>	28.0	230; 50/60	3.6	<b>LCD 0283</b>	<b>PVL 15 C</b>																
19.0	24.0	405x135	320	285	390	326x230	740x282x590 <sup>®</sup>	39.0	230; 50/60	3.6	<b>LCD 0285</b>	<b>PVL 24 C</b>																
–	80.0	*	min. 200	–	–	–	– x185x400	8.0	230; 50/60	3.6	<b>LCG 0090</b>	<b>PB</b>																
–	80.0	*	min. 200	–	–	–	– x185x520 <sup>®</sup>	8.0	230; 50/60	3.6	<b>LCG 0091</b>	<b>PB C</b>																
–	80.0	*	min. 320	–	–	–	– x185x400	8.0	230; 50/60	3.6	<b>LCG 0092</b>	<b>PBD</b>																
–	80.0	*	min. 320	–	–	–	– x185x520 <sup>®</sup>	8.0	230; 50/60	3.6	<b>LCG 0093</b>	<b>PBD C</b>																
<b>LAUDA Ultra</b>																												
13.0	18.0	250x265	195	175	265	–	300x450x465	27.0	230; 50	3.2	<b>LTB 130</b>	<b>UB 20</b>																
13.0	18.0	250x265	195	175	265	–	300x450x465	27.0	230; 50	3.2	<b>LTB 131</b>	<b>UB 20-D</b>																
17.5	30.0	250x265	320	300	390	–	300x450x590	33.0	230; 50	3.2	<b>LTB 134</b>	<b>UB 30</b>																
27.0	40.0	250x265	450	430	520	–	300x450x720	39.0	230; 50	3.2	<b>LTB 135</b>	<b>UB 40</b>																
19.0	26.0	250x455	195	175	265	–	640x300x465	31.0	230; 50	3.2	<b>LTB 132</b>	<b>UB 25</b>																
33.0	46.0	250x905	195	175	265	–	300x1090x465	41.0	230; 50	3.2	<b>LTB 133</b>	<b>UB 50</b>																
–	1.9	–	–	–	–	–	Ø 180x540	21.5	230; 50	3.2	<b>LTH 109</b>	<b>USH 400</b>																
–	1.9	–	–	–	–	–	Ø 180x540	24.5	400; 3~N/PE; 50 5.8	5.8	<b>LTH 211</b>	<b>USH 400/6</b>																
9.0	12.0	Ø 150	200	180	441	–	250x400x602	30.0	230; 50	2.3	<b>LCK 1879</b>	<b>RE 212 J</b>																
9.0	12.0	Ø 150	200	180	441	–	250x400x602	30.0	230; 50	2.3	<b>LCK 1880</b>	<b>RE 312 J</b>																
8.5	13.5	Ø 120	320	300	374	–	220x360x574	17.0	230; 50/60	3.6	<b>LCB 0720</b>	<b>PJ 12</b>																
8.5	13.5	Ø 120	320	300	374	–	220x360x574 <sup>®</sup>	17.0	230; 50/60	3.6	<b>LCB 0721</b>	<b>PJ 12 C</b>																
8.5	13.5	Ø 120	320	300	374	–	220x360x574	17.0	230; 50/60	3.6	<b>LCB 0718</b>	<b>PJL 12</b>																
8.5	13.5	Ø 120	320	300	374	–	220x360x574 <sup>®</sup>	17.0	230; 50/60	3.6	<b>LCB 0719</b>	<b>PJL 12 C</b>																
15.0	18.0	Ø 195	195	175	265	–	300x450x465	27.0	230; 50	3.2	<b>LTB 136</b>	<b>UB 20 J</b>																
22.5	30.0	Ø 195	320	300	390	–	300x450x590	33.0	230; 50	3.2	<b>LTB 137</b>	<b>UB 30 J</b>																
32.5	40.0	Ø 195	450	430	520	–	300x450x720	39.0	230; 50	3.2	<b>LTB 138</b>	<b>UB 40 J</b>																
48.0	54.0	Ø 215	690	650	755	–	320x485x955	60.0	230; 50	3.2	<b>LTB 142</b>	<b>UB 65 J</b>																
15.0	18.0	Ø 195	195	175	265	–	300x450x465	27.0	230; 50	3.2	<b>LTB 143</b>	<b>UB 20 JL</b>																
22.5	30.0	Ø 195	320	300	390	–	300x450x590	33.0	230; 50	3.2	<b>LTB 144</b>	<b>UB 30 JL</b>																
32.5	40.0	Ø 195	450	430	520	–	300x450x720	39.0	230; 50	3.2	<b>LTB 145</b>	<b>UB 40 JL</b>																
15.0	18.0	Ø 195	195	175	265	–	300x450x465	27.0	230; 50	1.4	<b>LTB 139</b>	<b>UB 20 F</b>																

® D: pressure pump; Du: Duplex pump, pressure/suction pump; 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 voltage on request

# Technical features according to DIN 12876 standard



Type	Page	Working temperature range <sup>®</sup> (equal to ACC-range)		Resolution of setting	Resolution of indication	Temperature stability	Safety fittings <sup>®</sup>	Heater power	Effective cooling output <sup>®</sup> (measured with ethanol, 20 °C ambient temperature)												
		°C	°C						°C	±K	KW	20 °C	0 °C	-20 °C	-30 °C	-40 °C	-45 °C	-50 °C	-55 °C	-60 °C	-70 °C
<b>LAUDA Class A</b>																					
RA 104	15	-10...100	0.3	±0.5	0.05	I, NFL	1.5	1.5	0.18	0.12	0.05 <sup>®</sup>	-	-	-	-	-	-	-	-	-	-
RA 106	15	-20...100	0.3	±0.5	0.05	I, NFL	1.5	1.5	0.20	0.15	0.05	-	-	-	-	-	-	-	-	-	-
RA 120	15	-20...100	0.3	±0.5	0.05	I, NFL	1.5	1.5	0.35	0.25	0.10	-	-	-	-	-	-	-	-	-	-
<b>LAUDA Ecoline Staredition</b>																					
RE 104	29	-10...150	0.1	0.1	0.02	III, FL	1.5	1.5	0.18	0.12	0.05 <sup>®</sup>	-	-	-	-	-	-	-	-	-	-
RE 105	29	-40...150	0.1	0.1	0.04	III, FL	1.5	1.5	0.50	0.42	0.27	0.14	0.04	-	-	-	-	-	-	-	-
RE 106	29	-20...150	0.1	0.1	0.02	III, FL	1.5	1.5	0.20	0.15	0.05	-	-	-	-	-	-	-	-	-	-
RE 107	29	-35...150	0.1	0.1	0.04	III, FL	1.5	1.5	0.30	0.22	0.10	0.06	-	-	-	-	-	-	-	-	-
RE 110	29	-40...150	0.1	0.1	0.04	III, FL	1.5	1.5	0.50	0.42	0.27	0.14	0.04	-	-	-	-	-	-	-	-
RE 112	29	-30...150	0.1	0.1	0.04	III, FL	1.5	1.5	0.30	0.23	0.13	0.04	-	-	-	-	-	-	-	-	-
RE 120	29	-30...150	0.1	0.1	0.04	III, FL	1.5	1.5	0.35	0.25	0.10	0.04	-	-	-	-	-	-	-	-	-
RE 204	30	-10...200	0.1/0.01	0.05	0.01	III, FL	2.25	2.25	0.18	0.12	0.05 <sup>®</sup>	-	-	-	-	-	-	-	-	-	-
RE 205	30	-40...200	0.1/0.01	0.05	0.02	III, FL	2.25	2.25	0.50	0.42	0.27	0.14	0.04	-	-	-	-	-	-	-	-
RE 206	30	-20...200	0.1/0.01	0.05	0.01	III, FL	2.25	2.25	0.20	0.15	0.05	-	-	-	-	-	-	-	-	-	-
RE 207	30	-35...200	0.1/0.01	0.05	0.02	III, FL	2.25	2.25	0.30	0.22	0.10	0.06	-	-	-	-	-	-	-	-	-
RE 210	30	-40...200	0.1/0.01	0.05	0.02	III, FL	2.25	2.25	0.50	0.42	0.27	0.14	0.04	-	-	-	-	-	-	-	-
RE 212	30	-30...200	0.1/0.01	0.05	0.02	III, FL	2.25	2.25	0.30	0.23	0.13	0.04	-	-	-	-	-	-	-	-	-
RE 220	30	-30...200	0.1/0.01	0.05	0.02	III, FL	2.25	2.25	0.35	0.25	0.10	0.04	-	-	-	-	-	-	-	-	-
RE 304	31	-10...200	0.1/0.01	0.05/0.01	0.02	III, FL	2.25	2.25	0.18	0.12	0.05 <sup>®</sup>	-	-	-	-	-	-	-	-	-	-
RE 305	31	-40...200	0.1/0.01	0.05/0.01	0.02	III, FL	2.25	2.25	0.50	0.42	0.27	0.14	0.04	-	-	-	-	-	-	-	-
RE 306	31	-20...200	0.1/0.01	0.05/0.01	0.01	III, FL	2.25	2.25	0.20	0.15	0.05	-	-	-	-	-	-	-	-	-	-
RE 307	31	-35...200	0.1/0.01	0.05/0.01	0.02	III, FL	2.25	2.25	0.30	0.22	0.10	0.06	0.03 <sup>®</sup>	-	-	-	-	-	-	-	-
RE 310	31	-40...200	0.1/0.01	0.05/0.01	0.02	III, FL	2.25	2.25	0.50	0.42	0.27	0.14	0.04	-	-	-	-	-	-	-	-
RE 312	31	-30...200	0.1/0.01	0.05/0.01	0.02	III, FL	2.25	2.25	0.30	0.23	0.13	0.04	-	-	-	-	-	-	-	-	-
RE 320	31	-30...200	0.1/0.01	0.05/0.01	0.02	III, FL	2.25	2.25	0.35	0.25	0.10	0.04	-	-	-	-	-	-	-	-	-

Type	Page	Working temperature range <sup>®</sup> (equal to ACC-range)		Resolution of setting	Resolution of indication	Temperature stability	Safety fittings <sup>®</sup>	Heater power	150 °C (thermal oil)	Effective cooling output <sup>®</sup> (measured with ethanol, 20 °C ambient temperature)											
		°C	°C							°C	±K	KW	KW	20 °C	0 °C	-20 °C	-30 °C	-40 °C	-45 °C	-50 °C	-55 °C
<b>LAUDA Proline</b>																					
RP 845	46	-45...200	0.1/0.01	0.01	0.01	III, FL	3.5	3.5	1.0	0.80	0.70	0.36	0.22	0.11	0.05	-	-	-	-	-	-
RP 855	46	-55...200	0.1/0.01	0.01	0.01	III, FL	3.5	3.5	1.7	1.60	1.10	0.60	0.38	0.21	0.15	0.10	0.04	-	-	-	-
RP 870	46	-70...200	0.1/0.01	0.01	0.02	III, FL	3.5	3.5	0.5	0.38	0.36	0.33	0.30	0.25	-	0.25	-	0.20	0.10	-	-
RP 890	46	-90...200	0.1/0.01	0.01	0.02	III, FL	3.5	3.5	0.5	1.10	1.00	0.90	0.83	0.75	0.58	0.42	0.24	0.13	0.04	-	-
RP 1290	47	-88...200	0.1/0.01	0.01	0.02	III, FL	3.5	3.5	0.5	1.10	1.00	0.90	0.83	0.75	0.58	0.42	0.24	0.13	0.04	-	-
RP 1840	47	-40...200	0.1/0.01	0.01	0.01	III, FL	3.5	3.5	1.0	0.90	0.70	0.35	0.20	0.09	-	-	-	-	-	-	-
RP 1845	47	-50...200	0.1/0.01	0.01	0.01	III, FL	3.5	3.5	1.7	1.60	1.10	0.55	0.32	0.18	0.10	0.045	-	-	-	-	-
RP 3530	47	-35...200	0.1/0.01	0.01	0.02	III, FL	3.5	3.5	1.0	0.90	0.70	0.30	0.15	-	-	-	-	-	-	-	-
RP 845 C	48	-45...200	0.01	0.1/0.01/0.001	0.01	III, FL	3.5	3.5	1.0	0.80	0.70	0.36	0.22	0.11	0.05	-	-	-	-	-	-
RP 855 C	48	-55...200	0.01	0.1/0.01/0.001	0.01	III, FL	3.5	3.5	1.7	1.60	1.10	0.60	0.38	0.21	0.15	0.10	0.04	-	-	-	-
RP 870 C	48	-70...200	0.01	0.1/0.01/0.001	0.02	III, FL	3.5	3.5	0.5	0.38	0.36	0.33	0.30	0.25	0.25	0.20	0.10	-	-	-	-
RP 890 C	48	-90...200	0.01	0.1/0.01/0.001	0.02	III, FL	3.5	3.5	0.5	1.10	1.00	0.90	0.83	0.75	0.58	0.42	0.24	0.13	0.04	-	-
RP 1290 C	49	-88...200	0.01	0.1/0.01/0.001	0.02	III, FL	3.5	3.5	0.5	1.10	1.00	0.90	0.83	0.75	0.58	0.42	0.24	0.13	0.04	-	-
RP 1840 C	49	-40...200	0.01	0.1/0.01/0.001	0.01	III, FL	3.5	3.5	1.0	0.90	0.70	0.35	0.20	0.09	-	-	-	-	-	-	-
RP 1845 C	49	-50...200	0.01	0.1/0.01/0.001	0.01	III, FL	3.5	3.5	1.7	1.60	1.10	0.55	0.32	0.18	0.10	0.045	-	-	-	-	-
RP 3530 C	49	-35...200	0.01	0.1/0.01/0.001	0.02	III, FL	3.5	3.5	1.0	0.90	0.70	0.30	0.15	-	-	-	-	-	-	-	-
NEW RP 4090 C	50	-90...200	0.01	0.1/0.01/0.001	0.05	III, FL	3.5	3.5	2.4	2.50	2.50	2.45	2.10	1.90	1.60	1.40	-	1.20	0.95	0.55	0.15
NEW RP 4090 CW	50	-90...200	0.01	0.1/0.01/0.001	0.05	III, FL	3.5	3.5	3.0	3.10	3.10	2.85	2.75	2.40	2.20	2.00	-	1.65	1.05	0.55	0.15

<sup>®</sup> On pump output step 3

<sup>®</sup> III, FL: for use with flammable and non-flammable liquids

<sup>®</sup> Cooling output at -10 °C

<sup>®</sup> Cooling output at -35 °C

	Pump type®	Pump pressure max.	Pump suction max.	Pump flow max. (pressure)	Pump flow max. (suction)	Pump connection thread	Ø <sub>e</sub> 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		
<b>LAUDA Class A</b>																			
D	0.15	8	-	-	-	8	3.0	4.5	130x105	160	140	363	180x320x524	19.0	230; 50/ 60	1.7	LCK 0904	<b>RA 104</b>	
D	0.15	8	-	-	-	8	4.0	6.0	150x130	160	140	396	200x400x557	23.5	230; 50/ 60	1.8	LCK 0905	<b>RA 106</b>	
D	0.15	8	-	-	-	8	14.0	20.0	300x350	160	140	441	350x530x602	40.0	230; 50	2.0	LCK 1906	<b>RA 120</b>	

<b>LAUDA Ecoline Staredition</b>																			
V	0.4	-	17	-	-	13	3.0	4.5	130x105	160	140	363	180x320x524	19.0	230; 50/60	1.7	LCK 0861	<b>RE 104</b>	
V	0.4	-	17	-	-	13	3.0*	4.5*	200x200*	40*	20*	441	280x400x602	30.0	230; 50	1.7	LCK 1903	<b>RE 105</b>	
V	0.4	-	17	-	-	13	4.0	6.0	150x130	160	140	396	200x400x557	23.5	230; 50/60	1.8	LCK 0864	<b>RE 106</b>	
V	0.4	-	17	-	-	13	4.0	6.0	150x130	160	140	396	200x400x557	24.5	230; 50	1.9	LCK 1867	<b>RE 107</b>	
V	0.4	-	17	-	-	13	7.0	9.5	200x200	160	140	441	280x400x602	30.0	230; 50	2.1	LCK 1882	<b>RE 110</b>	
V	0.4	-	17	-	-	13	9.0	12.0	200x200	200	180	441	250x400x602	28.0	230; 50	1.9	LCK 1870	<b>RE 112</b>	
V	0.4	-	17	-	-	13	14.0	20.0	300x350	160	140	441	350x530x602	40.0	230; 50	2.0	LCK 1873	<b>RE 120</b>	
V	0.4	-	17	-	-	13	3.0	4.5	130x105	160	140	363	180x320x524	19.0	230; 50/60	2.3	LCK 0862	<b>RE 204</b>	
V	0.4	-	17	-	-	13	3.0*	4.5*	200x200*	40*	20*	441	280x400x602	30.0	230;50	2.3	LCK 1901	<b>RE 205</b>	
V	0.4	-	17	-	-	13	4.0	6.0	150x130	160	140	396	200x400x557	24.0	230; 50/60	2.3	LCK 0865	<b>RE 206</b>	
V	0.4	-	17	-	-	13	4.0	6.0	150x130	160	140	396	200x400x557	25.0	230; 50	2.3	LCK 1868	<b>RE 207</b>	
V	0.4	-	17	-	-	13	7.0	9.5	200x200	160	140	441	280x400x602	30.0	230; 50	2.3	LCK 1883	<b>RE 210</b>	
V	0.4	-	17	-	-	13	9.0	12.0	200x200	200	180	441	250x400x602	28.0	230; 50	2.3	LCK 1871	<b>RE 212</b>	
V	0.4	-	17	-	-	13	14.0	20.0	300x350	160	140	441	350x530x602	41.5	230; 50	2.3	LCK 1874	<b>RE 220</b>	
V	0.4	-	17	-	M16x1	13	3.0	4.5	130x105	160	140	363	180x320x524	19.0	230;50/60	2.3	LCK 0863	<b>RE 304</b>	
V	0.4	-	17	-	M16x1	13	3.0*	4.5*	200x200*	40*	20*	441	280x400x602	30.0	230;50	2.3	LCK 1902	<b>RE 305</b>	
V	0.4	-	17	-	M16x1	13	4.0	6.0	150x130	160	140	396	200x400x557	24.0	230; 50/60	2.3	LCK 0866	<b>RE 306</b>	
V	0.4	-	17	-	M16x1	13	4.0	6.0	150x130	160	140	396	200x400x557	25.2	230; 50	2.3	LCK 1869	<b>RE 307</b>	
V	0.4	-	17	-	M16x1	13	7.0	9.5	200x200	160	140	441	280x400x602	30.0	230; 50	2.3	LCK 1884	<b>RE 310</b>	
V	0.4	-	17	-	M16x1	13	9.0	12.0	200x200	200	180	441	250x400x602	30.0	230; 50	2.3	LCK 1872	<b>RE 312</b>	
V	0.4	-	17	-	M16x1	13	14.0	20.0	300x350	160	140	441	350x530x602	41.5	230; 50	2.3	LCK 1875	<b>RE 320</b>	

<b>LAUDA Proline</b>																			
VF	0.7	0.4	25	23	M16x1	13	5.5	8.0	150x150	200	180	488	285x430x688	41.0	230; 50	3.6	LCK 1885	<b>RP 845</b>	
VF	0.7	0.4	25	23	M16x1	13	5.5	8.0	150x150	200	180	570	400x540x770	60.0	230; 50	3.6	LCK 1893	<b>RP 855</b>	
VF	0.7	0.4	25	23	M16x1	13	5.5	8.0	150x150	200	180	535	375x540x735	68.0	230; 50	3.6	LCK 1895	<b>RP 870</b>	
VF	0.7	0.4	25	23	M16x1	13	7.5	8.5	150x150	200	180	535	495x615x735	100.0	230; 50	3.6	LCK 1897	<b>RP 890</b>	
VF	0.7	0.4	25	23	M16x1	13	15.0	17.5	300x150	200	180	535	495x615x735	100.0	230; 50	3.6	LCK 1899	<b>RP 1290</b>	
VF	0.7	0.4	25	23	M16x1	13	12.5	19.0	300x200	200	180	488	375x465x688	46.0	230; 50	3.6	LCK 1887	<b>RP 1840</b>	
VF	0.7	0.4	25	23	M16x1	13	12.5	19.0	300x200	200	180	570	400x540x770	61.0	230; 50	3.6	LCK 1891	<b>RP 1845</b>	
VF	0.7	0.4	25	23	M16x1	13	23.0	35.0	300x350	250	230	540	375x615x740	51.0	230; 50	3.6	LCK 1889	<b>RP 3530</b>	
VF	0.7	0.4	25	23	M16x1	13	5.5	8.0	150x150	200	180	488	285x430x688*	41.0	230; 50	3.6	LCK 1886	<b>RP 845 C</b>	
VF	0.7	0.4	25	23	M16x1	13	5.5	8.0	150x150	200	180	570	400x540x770*	60.0	230; 50	3.6	LCK 1894	<b>RP 855 C</b>	
VF	0.7	0.4	25	23	M16x1	13	5.5	8.0	150x150	200	180	535	375x540x735*	68.0	230; 50	3.6	LCK 1896	<b>RP 870 C</b>	
VF	0.7	0.4	25	23	M16x1	13	7.5	8.5	150x150	200	180	535	495x615x735*	100.0	230; 50	3.6	LCK 1898	<b>RP 890 C</b>	
VF	0.7	0.4	25	23	M16x1	13	15.0	17.5	300x150	200	180	535	495x615x735*	100.0	230; 50	3.6	LCK 1900	<b>RP 1290 C</b>	
VF	0.7	0.4	25	23	M16x1	13	12.5	19.0	300x200	200	180	488	375x465x688*	46.0	230; 50	3.6	LCK 1888	<b>RP 1840 C</b>	
VF	0.7	0.4	25	23	M16x1	13	12.5	19.0	300x200	200	180	570	400x540x770*	61.0	230; 50	3.6	LCK 1892	<b>RP 1845 C</b>	
VF	0.7	0.4	25	23	M16x1	13	23.0	35.0	300x350	250	230	540	375x615x740*	51.0	230; 50	3.6	LCK 1890	<b>RP 3530 C</b>	
V	0.5	0.4	19	-	M16x1	13	32.0	44.0	350x350	250	250	9050	600x700x1100*	155.0	400; 3~N/PE; 50 5,0	LUK	<b>247</b>	<b>RP 4090 C</b>	
V	0.5	0.4	19	-	M16x1	13	32.0	44.0	350x350	250	250	9050	600x700x1100*	155.0	400; 3~N/PE; 50 5,0	LUK	<b>248</b>	<b>RP 4090 CW</b>	

\* Other voltages on request

\* With console Command: 56 mm higher

\* Only suitable for external application

\* D: pressure pump; V: Vario pump, pressure pump with 5 selectable output steps for Ecoline and 4 selectable output steps for Proline Kryomats; VF: Varioflex pump, pressure/suction pump with 8 selectable output steps

# Technical features according to DIN 12876 standard



Type	Page	Working temperature range <sup>®</sup> (equal to ACC-range)		Resolution of setting	Resolution of indication	Temperature stability	Safety fittings <sup>®</sup>	Heater power	Effective cooling output (measured with ethanol, 20 °C ambient temperature)									
		°C	°C						°C	±K	kW	kW	kW	kW	kW	kW	kW	kW
<b>LAUDA Ultra</b>																		
RUK 50	60	-50...100	0.01	0.01	0.02...0.05	III, FL		2.00	2.50	2.20	1.40	1.00	0.40	0.15	-	-	-	-
RUK 50-D	60	-50...100	0.01	0.01	0.02...0.05	III, FL		2.00	2.50	2.20	1.40	1.00	0.40	0.15	-	-	-	-
RUK 50 W	60	-50...100	0.01	0.01	0.02...0.05	III, FL		2.00	3.00	2.50	1.40	1.00	0.40	0.15	-	-	-	-
RUK 50 W-D	60	-50...100	0.01	0.01	0.02...0.05	III, FL		2.00	3.00	2.50	1.40	1.00	0.40	0.15	-	-	-	-
RUK 50-P	61	-40...100	0.01	0.01	0.02...0.05	III, FL		2.00	2.30	2.00	1.20	0.80	0.20	-	-	-	-	-
RUK 50 W-P	61	-40...100	0.01	0.01	0.02...0.05	III, FL		2.00	2.80	2.30	1.20	0.80	0.20	-	-	-	-	-
RUK 40 S	61	-40...100	0.01	0.01	0.1...0.5	III, FL		2.00	4.80	3.90	2.00	1.40	0.70	-	-	-	-	-
RUK 40 SW	61	-40...100	0.01	0.01	0.1...0.5	III, FL		2.00	6.00	4.80	2.40	1.70	0.80	-	-	-	-	-
RUL 80	62	-80...100	0.01	0.01	0.02...0.05	III, FL		1.20	1.00	0.80	0.60	0.55	0.50	0.45	0.40	0.30	0.10	-
RUL 80-D	62	-80...100	0.01	0.01	0.02...0.05	III, FL		1.20	1.00	0.80	0.60	0.55	0.50	0.45	0.40	0.30	0.10	-
RUL 90	62	-90...100	0.01	0.01	0.02...0.05	III, FL		1.20	1.20	1.15	1.00	0.95	0.90	0.80	0.60	0.30	0.25	-
RUL 90-D	62	-90...100	0.01	0.01	0.02...0.05	III, FL		1.20	1.20	1.15	1.00	0.95	0.90	0.80	0.60	0.30	0.25	-
RUK 90	63	-90...100	0.01	0.01	0.02...0.05	III, FL		2.00	1.70	1.40	1.20	1.15	1.10	1.00	0.80	0.50	0.25	0.06
RUK 90-D	63	-90...100	0.01	0.01	0.02...0.05	III, FL		2.00	1.70	1.40	1.20	1.15	1.10	1.00	0.80	0.50	0.25	0.06
RUK 90 W	63	-90...100	0.01	0.01	0.02...0.05	III, FL		2.00	2.00	1.60	1.40	1.30	1.20	1.10	0.90	0.50	0.25	0.06
RUK 90 W-D	63	-90...100	0.01	0.01	0.02...0.05	III, FL		2.00	2.00	1.60	1.40	1.30	1.20	1.10	0.90	0.50	0.25	0.06
RUK 90-P	63	-80...100	0.01	0.01	0.02...0.05	III, FL		2.00	1.50	1.20	1.00	0.95	0.90	0.80	0.60	0.30	0.10	-
RUK 90 W-P	63	-80...100	0.01	0.01	0.02...0.05	III, FL		2.00	1.80	1.40	1.20	1.10	1.00	0.90	0.70	0.30	0.10	-
RUK 90 S	63	-90...100	0.01	0.01	0.1...0.5	III, FL		2.00	4.00	3.60	3.20	3.00	2.80	2.40	2.00	1.30	0.70	0.20
RUK 90 SW	63	-90...100	0.01	0.01	0.1...0.5	III, FL		2.00	4.00	3.60	3.20	3.00	2.80	2.40	2.00	1.30	0.70	0.20

Type	Page	Working temperature range <sup>®</sup> (equal to ACC-range)		Ambient temperature range	Resolution of setting	Resolution of indication	Control	Temperature stability	Heater power	Effective cooling output (measured with ethanol, 20 °C ambient temperature)									
		°C	°C							°C	°C	±K	kW	kW	kW	kW	kW	kW	kW
<b>LAUDA Integral T</b>																			
T 1200	76	-25...120 <sup>®</sup>	5...40	0.1	0.05			0.2	2.25	1.20	1.00	0.90	0.80	0.70	0.60	0.40	0.18	0.10	-
T 1200 W	76	-25...120 <sup>®</sup>	5...40	0.1	0.05			0.2	2.25	1.60	1.30	1.20	1.10	0.85	0.70	0.45	0.25	0.10	-
T 2200	76	-25...120 <sup>®</sup>	5...40	0.1	0.05			0.2	2.25	2.20	1.80	1.60	1.40	1.20	1.00	0.80	0.60	0.35	-
T 2200 W	76	-25...120 <sup>®</sup>	5...40	0.1	0.05			0.2	2.25	2.70	2.30	2.10	1.90	1.70	1.40	1.00	0.68	0.42	-
T 4600	77	-30...120 <sup>®</sup>	5...40	0.1	0.05	Proportional cooling with automatic refrigeration		0.2	6	4.60	3.70	3.20	2.80	2.30	1.90	1.30	1.00	0.50	0.20
T 4600 W	77	-30...120 <sup>®</sup>	5...40	0.1	0.05	Proportional cooling with automatic refrigeration		0.2	6	5.50	4.50	4.00	3.40	2.90	2.30	1.70	1.10	0.65	0.30
T 7000	77	-30...120 <sup>®</sup>	5...40	0.1	0.05			0.3	6	7.00	6.00	5.50	5.00	4.00	3.00	2.40	1.70	1.00	0.50
T 7000 W	77	-30...120 <sup>®</sup>	5...40	0.1	0.05			0.3	6	8.50	7.00	6.30	5.50	4.70	3.90	3.00	2.00	1.30	0.60
T 10000	77	-30...120 <sup>®</sup>	5...40	0.1	0.05			0.3	9	10.00	9.00	8.20	7.30	6.20	5.10	4.10	3.00	2.20	1.20
T 10000 W	77	-30...120 <sup>®</sup>	5...40	0.1	0.05			0.3	9	13.00	11.00	9.90	8.70	7.40	6.00	4.90	3.70	2.60	1.50

Type	Page	Working temperature range <sup>®</sup> (equal to ACC-range)		Ambient temperature range	Resolution of setting	Compressor cooling	Temperature stability	Heater power	Effective cooling output (measured with pump step 4 at 20 °C ambient temperature/ 15 °C water temperature and 3 bar water pressure)														
		°C	°C						°C	±K	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW
<b>LAUDA Integral XT</b>																							
XT 150	80	-45...200	5...40	0.01	Air	0.05	3.5	-	1.50 <sup>®</sup>	1.50 <sup>®</sup>	1.50 <sup>®</sup>	1.30 <sup>®</sup>	1.10 <sup>®</sup>	1.00 <sup>®</sup>	0.62 <sup>®</sup>	0.28 <sup>®</sup>	0.06 <sup>®</sup>	-	-	-	-	-	
XT 750	80	-50...200	5...40	0.01	Air	0.05	5.3	-	7.00	7.00	6.70	6.10	4.80	3.40	2.20	1.25	0.60 <sup>®</sup>	0.30 <sup>®</sup>	-	-	-	-	-
XT 750 H	80	-50...300	5...40	0.01	Air	0.05	5.3	5.5	7.00	7.00	6.70	6.10	4.80	3.40	2.20	1.25	0.60 <sup>®</sup>	0.30 <sup>®</sup>	-	-	-	-	-
XT 250 W	81	-45...200	5...40	0.01	Water	0.05	3.5	-	2.10 <sup>®</sup>	2.10 <sup>®</sup>	2.10 <sup>®</sup>	1.80 <sup>®</sup>	1.30 <sup>®</sup>	1.00 <sup>®</sup>	0.62 <sup>®</sup>	0.28 <sup>®</sup>	0.06 <sup>®</sup>	-	-	-	-	-	
XT 350 W	81	-50...200	5...40	0.01	Water	0.10	3.5	-	3.10	3.10	3.10	3.10	3.10	2.00	1.20	0.70	0.25 <sup>®</sup>	0.02	-	-	-	-	-
XT 350 HW	81	-50...300	5...40	0.01	Water	0.10	3.5	12	12.00	6.00	3.10	2.90	2.50	1.30	1.20	0.70	0.25 <sup>®</sup>	0.02 <sup>®</sup>	-	-	-	-	-
XT 950 W	82	-50...200	5...40	0.01	Water	0.10	5.3	-	9.00	9.00	9.00	7.50	6.60	4.60	3.00	1.70	0.90 <sup>®</sup>	0.35 <sup>®</sup>	-	-	-	-	-
XT 1850 W	82	-50...200	5...40	0.01	Water	0.30	10.4	-	18.50	18.50	18.50	12.50	10.30	7.70	5.90	3.80	2.20 <sup>®</sup>	1.20 <sup>®</sup>	-	-	-	-	-
XT 1590 W	82	-90...200	5...40	0.01	Water	0.30	5.3	-	15.00	15.00	15.00	13.00	10.50	9.20	8.50	8.50	7.00	5.30	3.70	1.80	0.90 <sup>®</sup>	0.35 <sup>®</sup>	

NEW

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106 <sup>®</sup> III, FL: for use with flammable and non-flammable liquids <sup>®</sup> D: pressure pump; Du: Duplex pump, pressure/suction pump <sup>®</sup> Optional up to 150 °C <sup>®</sup> On pump output step 2

	Pump type®	Pump pressure max.	Pump suction max.	Pump flow max. (pressure)	Pump flow max. (suction)	Pump connection thread	Øe Nipples	Bath volume max.	Bath opening (W x D)	Bath depth	Usable depth	Height top of bath	Dimensions (W x D x H)	Weight	Power supply®	Loading	Cat. No.	Type
	bar	bar	L/min	L/min	mm	mm	L	mm	mm	mm	mm	mm	mm	kg	V; Hz	kW		
																		LAUDA Ultra
D	0.50	–	22	–	M16x1	13	27	282x257	220	180	900	550x735x1220	175	400; 3~/N/PE; 50	3.9	LUK 201	RUK 50	
Du	0.50	0.33	20	15	M16x1	13	27	282x257	220	180	900	550x735x1220	175	400; 3~/N/PE; 50	3.9	LUK 202	RUK 50-D	
D	0.50	–	22	–	M16x1	13	27	282x257	220	180	900	550x735x1220	175	400; 3~/N/PE; 50	3.7	LUK 203	RUK 50 W	
Du	0.50	0.33	20	15	M16x1	13	27	282x257	220	180	900	550x735x1220	175	400; 3~/N/PE; 50	3.7	LUK 204	RUK 50 W-D	
D	0.80	–	50	–	M19x1.5	15	27	282x257	220	180	900	550x735x1250	175	400; 3~/N/PE; 50	4.1	LUK 231	RUK 50-P	
D	0.80	–	50	–	M19x1.5	15	27	282x257	220	180	900	550x735x1250	175	400; 3~/N/PE; 50	3.9	LUK 227	RUK 50 W-P	
D	0.80	–	50	–	M19x1.5	15	27	282x257	220	180	900	1000x735x1250	260	400; 3~/N/PE; 50	6.1	LUK 209	RUK 40 S	
D	0.80	–	50	–	M19x1.5	15	27	282x257	220	180	900	1000x735x1250	260	400; 3~/N/PE; 50	5.7	LUK 210	RUK 40 SW	
D	0.50	–	22	–	M16x1	13	14	250x175	180	140	900	550x735x1220	185	230; 50	3.2	LUK 117	RUL 80	
Du	0.50	0.33	20	15	M16x1	13	14	250x175	180	140	900	550x735x1220	185	230; 50	3.2	LUK 118	RUL 80-D	
D	0.50	–	22	–	M16x1	13	18	250x175	220	180	900	550x735x1250	195	230; 50	3.2	LUK 137	RUL 90	
Du	0.50	0.33	20	15	M16x1	13	18	250x175	220	180	900	550x735x1250	195	230; 50	3.2	LUK 138	RUL 90-D	
D	0.50	–	22	–	M16x1	13	27	282x257	220	180	900	1000x735x1220	295	400; 3~/N/PE; 50	5.3	LUK 205	RUK 90	
Du	0.50	0.33	20	15	M16x1	13	27	282x257	220	180	900	1000x735x1220	295	400; 3~/N/PE; 50	5.3	LUK 206	RUK 90-D	
D	0.50	–	22	–	M16x1	13	27	282x257	220	180	900	1000x735x1220	300	400; 3~/N/PE; 50	5.1	LUK 207	RUK 90 W	
Du	0.50	0.33	20	15	M16x1	13	27	282x257	220	180	900	1000x735x1220	300	400; 3~/N/PE; 50	5.1	LUK 208	RUK 90 W-D	
D	0.80	–	50	–	M19x1.5	15	27	282x257	220	180	900	1000x735x1250	300	400; 3~/N/PE; 50	5.5	LUK 229	RUK 90-P	
D	0.80	–	50	–	M19x1.5	15	27	282x257	220	180	900	1000x735x1250	300	400; 3~/N/PE; 50	5.3	LUK 230	RUK 90 W-P	
D	0.80	–	50	–	M19x1.5	15	27	282x257	220	180	1060	1300x735x1410	440	400; 3~/N/PE; 50	9.1	LUK 211	RUK 90 S	
D	0.80	–	50	–	M19x1.5	15	27	282x257	220	180	1060	1300x735x1410	440	400; 3~/N/PE; 50	8.7	LUK 212	RUK 90 SW	

	Pump pressure max.	Pump flow max. (pressure)	Pump connection thread	For tubing	Filling volume	Dimensions (W x D x H)	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 <sup>3/4</sup> /(15)	3/4"	3...7	450x550x790		IP 32	60			77	2.7	230; 50	LWP 101	T 1200
3.2	40	G <sup>3/4</sup> /(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 <sup>3/4</sup> /(15)	3/4"	3...7	450x550x790		IP 32	60			89	3.1	230; 50	LWP 103	T 2200
3.2	40	G <sup>3/4</sup> /(15)	3/4"	3...7	450x550x790		IP 32	58			94	3.1	230; 50	LWP 104	T 2200 W
3.2	40	G <sup>3/4</sup> /(15)	3/4"	6...18	550x650x970		IP 32	63			123	8.5	400; 3~/N/PE; 50	LWP 205	T 4600
3.2	40	G <sup>3/4</sup> /(15)	3/4"	6...18	550x650x970	Digital/Bypass	IP 32	61			128	8.3	400; 3~/N/PE; 50	LWP 206	T 4600 W
6.0	60	G <sup>1 1/4</sup> /(20)	1"	8...20	850x670x970		IP 32	65		Level indication, additional pump for internal circulation	175	11.5	400; 3~/N/PE; 50	LWP 207	T 7000
6.0	60	G <sup>1 1/4</sup> /(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 <sup>1 1/4</sup> /(20)	1"	8...20	1050x770x1120		IP 32	69			235	16.0	400; 3~/N/PE; 50	LWP 209	T 10000
6.0	60	G <sup>1 1/4</sup> /(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. (pressure)	Pump connection thread	Filling volume min.	Filling volume expansion vessel	Dimensions (W x D x H)	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		155	7.80	400; 3~/PE; 50	LWP 520	XT 750
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)	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		150	3.68	230; 50	LWP 117	XT 350 W
2.9	45	M30 x 1.5 (DN 20)	5.3	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		160	7.80	400; 3~/PE; 50	LWP 521	XT 950 W
5.8	90	M38 x 1.5 (DN 25)	9.0	17.4	700x550x1600	digital	IP21C	Level indication		250	15.40	400; 3~/PE; 50	LWP 532	XT 1850 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 542	XT 1590 W

® Other voltages on request

# Technical features according to DIN 12876 standard



Type	Page	Working temperature range <sup>®</sup> (equal to ACC-range)		Ambient temperature range	Resolution of setting	Resolution of indication	Control	cooling output (measured with ethanol, 20 °C ambient temperature)										Heater power
		°C	°C					°C	°C	±K	20 °C	10 °C	5 °C	0 °C	-5 °C	-10 °C	-15 °C	
<b>LAUDA WK Class</b>																		
WK 300	88	0...40	5...35	0.1/1	0.1			0.5	0.31	0.25	0.21	0.17	-	-	-	-	-	-
WK 500	88	0...40	5...40	0.1	0.1			0.5	0.50	0.30	0.18	0.05	-	-	-	-	-	-
WK 502	88	0...40	5...40	0.1	0.1			0.5	0.60	0.50	0.40	0.30	-	-	-	-	-	-
WK 1200	89	0...40	5...40	0.1	0.1			0.5	1.20	0.90	0.60	0.28	-	-	-	-	-	-
WK 1200 W	89	0...40	5...40	0.1	0.1			0.5	1.50	1.10	0.80	0.32	-	-	-	-	-	-
WK 1400	89	0...40	5...40	0.1	0.1		Compressor on/off	0.5	1.40	1.10	0.80	0.50	-	-	-	-	-	-
WK 1400 W	89	0...40	5...40	0.1	0.1		Compressor on/off	0.5	1.70	1.30	1.00	0.70	-	-	-	-	-	-
WK 2200	89	0...40	5...40	0.1	0.1			1	2.20	1.60	1.20	0.80	-	-	-	-	-	-
WK 2200 W	89	0...40	5...40	0.1	0.1			1	2.60	1.90	1.50	1.00	-	-	-	-	-	-
WK 2400	89	0...40	5...40	0.1	0.1			1	2.40	1.80	1.40	1.00	-	-	-	-	-	-
WK 2400 W	89	0...40	5...40	0.1	0.1			1	2.80	2.10	1.70	1.20	-	-	-	-	-	-
WK 3200	90	0...40	5...40	0.1	0.1			1	3.50	3.00	2.30	1.20	-	-	-	-	-	-
WK 3200 W	90	0...40	5...40	0.1	0.1			1	4.00	3.50	2.60	1.50	-	-	-	-	-	-
WK 4600	90	0...40	5...40	0.1	0.1			0.5	4.60	3.40	2.30	1.20	-	-	-	-	-	-
WK 4600 W	90	0...40	5...40	0.1	0.1		Solenoid valve counter acting	0.5	5.30	4.00	2.60	1.50	-	-	-	-	-	-
WK 7000	90	0...40	5...40	0.1	0.1			0.5	7.00	6.00	5.50	5.00	-	-	-	-	-	-
WK 7000 W	90	0...40	5...40	0.1	0.1			0.5	8.50	7.00	6.30	5.50	-	-	-	-	-	-
WK 10000	90	0...40	5...40	0.1	0.1			0.5	10.00	9.00	8.20	7.30	-	-	-	-	-	-
WK 10000 W	90	0...40	5...40	0.1	0.1			0.5	13.00	11.00	9.90	8.70	-	-	-	-	-	-
WKL 230	91	-10...40	5...35	0.1/1	0.1/1*			0.5	0.23	0.19	0.18	0.16	0.13	0.10	-	-	-	-
WKL 600	91	-25...40	5...40	0.1/1	0.1/1*			1	0.65	0.55	0.49	0.43	0.38	0.33	-	0.20	0.12	-
WKL 603	91	-20...40	5...40	0.1/1	0.1/1*			1	0.52	0.42	0.37	0.30	0.25	0.20	0.13	0.07	-	-
WKL 900	91	-20...40	5...40	0.1/1	0.1/1*			1	0.95	0.84	0.74	0.64	0.52	0.40	0.28	0.15	-	-
WKL 903	91	-15...40	5...40	0.1/1	0.1/1*		Compressor on/off	1	0.80	0.70	0.60	0.50	0.38	0.26	0.13	-	-	-
WKL 1000	91	-10...40	5...40	0.1/1	0.1/1*			0.5	1.00	0.80	0.66	0.51	0.38	0.24	-	-	-	-
WKL 1200	92	-10...40	5...40	0.1/1	0.1/1*			0.5	1.20	1.00	0.90	0.80	0.70	0.60	0.40**	0.18**	0.10**	-
WKL 1200 W	92	-10...40	5...40	0.1/1	0.1/1*			0.5	1.60	1.30	1.20	1.10	0.85	0.70	0.45**	0.25**	0.10**	-
WKL 2200	92	-10...40	5...40	0.1/1	0.1/1*			1	2.20	1.80	1.60	1.40	1.20	1.00	0.80**	0.60**	0.35**	-
WKL 2200 W	92	-10...40	5...40	0.1/1	0.1/1*			1	2.70	2.30	2.10	1.90	1.70	1.40	1.00**	0.68**	0.42**	-
WKL 3200	92	-10...40	5...40	0.1/1	0.1/1*			1	3.50	2.80	2.40	2.00	1.70	1.30	1.00**	0.60**	0.30**	-
WKL 3200 W	92	-10...40	5...40	0.1/1	0.1/1*			1	4.20	3.30	2.90	2.20	1.80	1.40	1.10**	0.70**	0.40**	-
WKL 4600	92	-10...40	5...40	0.1/1	0.1/1*			0.5	4.60	3.70	3.20	2.40	1.90	1.50	1.10**	0.70**	0.40**	-
WKL 4600 W	92	-10...40	5...40	0.1/1	0.1/1*			0.5	5.30	4.20	3.60	2.80	2.20	1.70	1.20**	0.80**	0.50**	-
WKL 7000	93	-30...40	5...40	0.1/1	0.1/1*		Solenoid valve counter acting	0.5	7.00	6.00	5.50	5.00	4.00	3.00	2.40	1.70	1.00	0.50
WKL 7000 W	93	-30...40	5...40	0.1/1	0.1/1*			0.5	8.50	7.00	6.30	5.50	4.70	3.90	3.00	2.00	1.30	0.60
WKL 10000	93	-30...40	5...40	0.1/1	0.1/1*			0.5	10.00	9.00	8.20	7.30	6.20	5.10	4.10	3.00	2.20	1.20
WKL 10000 W	93	-30...40	5...40	0.1/1	0.1/1*			0.5	13.00	11.00	9.90	8.70	7.40	6.00	4.90	3.70	2.60	1.50

® Other voltages on request

\* Resolution below -9,9 °C

\*\* Cooling output at optionally enlarged temperature range down to -25 °C

Pump pressure max.	Pump flow max. (pressure)	Pump connection thread (inner diameter in mm)	For tubings	Filling volume	Dimensions (W x D x H)	Pressure measurement parameter	Protection level	Noise level	Additional features	Weight	Loading	Power supply®	Cat. No.	Type
bar	L/min	mm i. d.		L	mm			dB(A)		kg	kW	V; Hz		
<b>LAUDA WK Class</b>														
0.15	8	Ø 10 mm	8...9 mm	4...6	200x350x500	No	IP 32	47		24	0.35	230; 50	<b>LWM 117</b>	<b>WK 300</b>
1.0	30	M16x1/(10)	1/2"	8...12	350x480x595	No	IP 32	50		46	0.47	230; 50	<b>LWG 132</b>	<b>WK 500</b>
2.2	33	M16x1/(10)	1/2"	8...12	350x480x715	No	IP 32	55		50	0.9	230; 50	<b>LWG 140</b>	<b>WK 502</b>
3.2	40	G3/4/(15)	3/4"	16...23	450x550x790		IP 32	59		75	1.2	230; 50	<b>LWG 133</b>	<b>WK 1200</b>
3.2	40	G3/4/(15)	3/4"	16...23	450x550x790		IP 32	57		75	1.2	230; 50	<b>LWG 161</b>	<b>WK 1200 W</b>
1.0	30	G3/4/(15)	3/4"	16...23	450x550x790		IP 32	56		69	1.0	230; 50	<b>LWG 137</b>	<b>WK 1400</b>
1.0	30	G3/4/(15)	3/4"	16...23	450x550x790		IP 32	54	Level indication	69	1.0	230; 50	<b>LWG 162</b>	<b>WK 1400 W</b>
3.2	40	G3/4/(15)	3/4"	16...23	450x550x790		IP 32	59		87	1.6	230; 50	<b>LWG 134</b>	<b>WK 2200</b>
3.2	40	G3/4/(15)	3/4"	16...23	450x550x790		IP 32	57		87	1.6	230; 50	<b>LWG 163</b>	<b>WK 2200 W</b>
1.0	30	G3/4/(15)	3/4"	16...23	450x550x790		IP 32	57		81	1.4	230; 50	<b>LWG 138</b>	<b>WK 2400</b>
1.0	30	G3/4/(15)	3/4"	16...23	450x550x790	Analogue/ Bypass	IP 32	55		81	1.4	230; 50	<b>LWG 164</b>	<b>WK 2400 W</b>
3.2	40	G3/4/(15)	3/4"	32...45	550x650x970		IP 32	62		120	2.0	400; 3~/N/PE; 50	<b>LWG 235</b>	<b>WK 3200</b>
3.2	40	G3/4/(15)	3/4"	32...45	550x650x970		IP 32	62		120	2.0	400; 3~/N/PE; 50	<b>LWG 265</b>	<b>WK 3200 W</b>
3.2	40	G3/4/(15)	3/4"	32...45	550x650x970		IP 32	63		123	2.5	400; 3~/N/PE; 50	<b>LWG 236</b>	<b>WK 4600</b>
3.2	40	G3/4/(15)	3/4"	32...45	550x650x970		IP 32	63		128	2.3	400; 3~/N/PE; 50	<b>LWG 258</b>	<b>WK 4600 W</b>
3.2	40	G3/4/(15)	3/4"	32...45	850x670x970		IP 32	65	Level indication, additional pump for internal circulation	172	5.0	400; 3~/N/PE; 50	<b>LWG 245</b>	<b>WK 7000</b>
3.2	40	G3/4/(15)	3/4"	32...45	850x670x970		IP 32	63		177	4.7	400; 3~/N/PE; 50	<b>LWG 247</b>	<b>WK 7000 W</b>
3.2	40	G3/4/(15)	3/4"	32...45	1050x770x1120		IP 32	69		233	6.5	400; 3~/N/PE; 50	<b>LWG 249</b>	<b>WK 10000</b>
3.2	40	G3/4/(15)	3/4"	32...45	850x670x970		IP 32	67		240	6.0	400; 3~/N/PE; 50	<b>LWG 251</b>	<b>WK 10000 W</b>
0.15	8	Ø 10mm	8...9 mm	4...6	200x350x500	No	IP 32	47		24	0.3	230; 50/60	<b>LWM 016</b>	<b>WKL 230</b>
1.0	30	M16x1/(10)	1/2"	8...12	350x480x595	No	IP 32	53		46	0.7	230; 50	<b>LWG 141</b>	<b>WKL 600</b>
3.2	33	M16x1/(10)	1/2"	8...12	350x480x715	No	IP 32	57		50	0.9	230; 50	<b>LWG 142</b>	<b>WKL 603</b>
1.0	30	M16x1/(10)	1/2"	8...12	350x480x595	No	IP 32	54		46	0.8	230; 50	<b>LWG 159</b>	<b>WKL 900</b>
3.2	33	M16x1/(10)	1/2"	8...12	350x480x715	No	IP 32	57		50	1.0	230; 50	<b>LWG 160</b>	<b>WKL 903</b>
1.0	30	M16x1/(10)	1/2"	8...12	350x480x595	No	IP 32	50	Level indication	46	1.1	230; 50	<b>LWG 173</b>	<b>WKL 1000</b>
3.2	40	G3/4/(15)	3/4"	16...23	450x550x790		IP 32	60		75	1.6	230; 50	<b>LWG 153</b>	<b>WKL 1200</b>
3.2	40	G3/4/(15)	3/4"	16...23	450x550x790		IP 32	58		75	1.6	230; 50	<b>LWG 166</b>	<b>WKL 1200 W</b>
3.2	40	G3/4/(15)	3/4"	16...23	450x550x790		IP 32	60		69	2.2	230; 50	<b>LWG 154</b>	<b>WKL 2200</b>
3.2	40	G3/4/(15)	3/4"	16...23	450x550x790		IP 32	58		69	2.2	230; 50	<b>LWG 167</b>	<b>WKL 2200 W</b>
3.2	40	G3/4/(15)	3/4"	32...45	550x650x970		IP 32	62		120	2.8	400; 3~/N/PE; 50	<b>LWG 255</b>	<b>WKL 3200</b>
3.2	40	G3/4/(15)	3/4"	32...45	550x650x970	Analogue/ Bypass	IP 32	62		120	2.8	400; 3~/N/PE; 50	<b>LWG 268</b>	<b>WKL 3200 W</b>
3.2	40	G3/4/(15)	3/4"	32...45	550x650x970		IP 32	63		123	3.5	400; 3~/N/PE; 50	<b>LWG 256</b>	<b>WKL 4600</b>
3.2	40	G3/4/(15)	3/4"	32...45	550x650x970		IP 32	61		130	3.3	400; 3~/N/PE; 50	<b>LWG 257</b>	<b>WKL 4600 W</b>
6.0	60	G11/4/(20)	1"	32...45	850x670x970		IP 32	65	Level indication, additional pump for internal circulation	175	5.5	400; 3~/N/PE; 50	<b>LWG 246</b>	<b>WKL 7000</b>
6.0	60	G11/4/(20)	1"	32...45	850x670x970		IP 32	63		180	5.2	400; 3~/N/PE; 50	<b>LWG 248</b>	<b>WKL 7000 W</b>
6.0	60	G11/4/(20)	1"	32...45	1050x770x1120		IP 32	69		235	7.0	400; 3~/N/PE; 50	<b>LWG 250</b>	<b>WKL 10000</b>
6.0	60	G11/4/(20)	1"	32...45	850x670x970		IP 32	67		242	6.5	400; 3~/N/PE; 50	<b>LWG 252</b>	<b>WKL 10000 W</b>

**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 console for use as a 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 in the thermostat. Depending on the operating temperature, insulation losses and exothermia, the bath temperature can be considerably above or below the set value.

**Cooling capacity adjustment automatic (E 200, E 300)**

The control recognises whether the corresponding cooling capacity can be switched to a lower cooling capacity setting. In addition to saving energy, this also saves wear and tear on the compressor, reduces the amount of heat emitted into the environment, and provides better temperature stability. The automatic cooling capacity adjustment also switches the cooling unit off completely should no cooling be required for a longer period of time.

**PowerAdapt System (Proline)**

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 heating 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 (cryomats, process thermostats)**

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

**SelfCheck Assistant (Proline, Integral XT)**

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

**SmartCool System (Proline)**

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

**Types of device****Bath thermostat**

This 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.

**Bath/circulation thermostat**

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

**Through-flow cooler**

This 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).

**Clear-view thermostat**

This is a bath thermostat with transparent front and back to enable viewing of an object to be thermostated, usually a viscosimeter. Bath thermostats with transparent plastic baths are known as thermostats with transparent bath.

**Immersion thermostat**

This 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**

This is an add-on cooler which is connected by means of a flexible tube to a cooling coil for immersion in any baths.

**Calibration thermostat**

This 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.

**Cooling thermostat**

This is a thermostat whose working temperature range is below the ambient temperature and which does not have any heating.

**Process thermostats (Integral T, Integral XT)**

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

**Kryomat**

This is a floor-mounted heating and cooling thermostat in three different levels with various cooling and pumping capacities.

**Ultra thermostats**

These are heating thermostats used as bath/circulation thermostats or as pure circulation thermostats with spatially-separated bath part and control unit. This enables remote control and reading.

**Circulation chiller (also circulating chiller)**

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

**Circulation heat exchanger**

This is an add-on cooler which, via a heat exchanger, uses an existing primary cooling circuit to cool various external systems.

**Circulation thermostat**

This is a thermostat without freely-accessible bath, through which the bath liquid is conveyed through an open or closed external circuit.

**Heating thermostat**

This is a thermostat whose working temperature range is above the ambient temperature and which has heating.

**Heating and cooling thermostat**

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

**Water bath**

This 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 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**

This 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 cannot cause any harm at all to the ozone layer (ODP = Ozone Depletion Potential).

**Cooling capacity**

This is the effective capacity available in a cooling thermostat or circulation chiller. Losses via the circulating pump and invasive heat have already been deducted.

**LAUDA Pumps****Pressure pump**

This is used for the circulation of the bath liquid in a closed external circuit and for mixing the liquid in the bath.

**Duplex pump (Ultra)**

This is a pressure/suction pump with integrated constant level device in the thermostat to be connected to open and closed circuits.

**Varioflex pump (Proline)**

This is a pressure/suction pump with 8 different pumping 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 as a high-power model as a pure pressure pump for devices with higher baths. The patented low-level protection (DGM) is an additional safety advantage.

**Vario pump (Ecoline, Integral XT)**

This 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.

**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.

**Display resolution**

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

**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. This is different to all LAUDA heating thermostats with the Vario or Varioflex pump, which can work at output step 1 directly from ambient temperature without water cooling in the event of an uncovered bath.

**Bath opening**

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

**Bath depth**

This is the overall dimension from the upper edge to the bottom of the bath.

**Bath volume (also filling volume)**

This 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.

**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.

**Intrinsic temperature**

This is the operating temperature of a heating thermostat attained when the thermostat is switched off. It depends on the pumping capacity, the bath liquid used and the isolation of the thermostats. The working temperature range only starts approx. 3 °C above the intrinsic temperature.

**Resolution setting**

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

**Discharge pressure**

This is the over-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 in dependency 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 in dependency upon the flow rate.

**Flow rate**

This 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 back pressure zero. The diagrams illustrate the discharge pressure in dependency 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 is controlled if required.

**Standards**

The safety regulations for electric laboratory equipment are stipulated in the European standards EN 61010-1 and EN 61010-2-10. 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 are applied.

**Usable depth**

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

**Profibus**

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

**Sound pressure level**

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

**Interface, analogue**

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

**Interface, digital**

This 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 can be connected.

**International protection, IP**

As per EN 60529. The first figure indicates the protection against contact and foreign bodies, whereas the second figure indicates protection against water. For example, IP 32: 3 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 drip 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.

**Safety classes**

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 over-temperature 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.

**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 within 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.

**Ambient temperature range**

This is the permissible temperature range of the environment in which the device works properly. It is 5...35 °C for all LAUDA devices contained within this catalogue with the exception of the Integral and the WK devices, where the latter is raised to 40 °C. This is particularly important with respect to industrial applications.