

Calibration and adjustment with LAUDA calibration thermostats at temperatures from **-40 up to 300 °C**

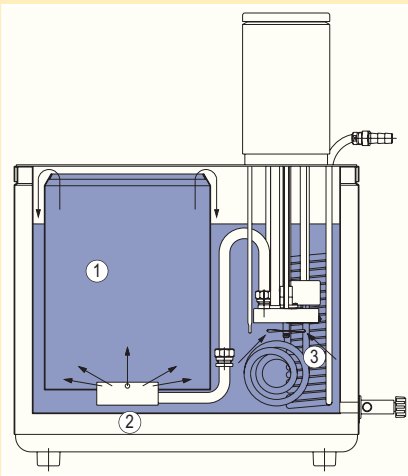


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## Safe calibration whatever the requirement



Calibration of thermometers



- ① Height-adjustable usable space
- ② Distributor
- ③ Pre-chamber



Quality assurance during sensor production

Their utmost temperature stability and uniformity in the test room make LAUDA calibration thermostats the perfect devices for calibration purposes. Liquid thermostats are superior to incubators and metal block thermostats, since heat transfer in the bath liquid is 40 to 60 times better than in the air. LAUDA calibration thermostats are used for the adjusting of temperature probes, such as sensor coupling for heat quantity counters. Ultra calibration thermostats belong to the basic equipment used by accredited testing labs (DKD).

**Fields of application:** industrial production, testing institutes

### High level – always

A special technical feature of all LAUDA calibration thermostats is the so-called overflow principle of the two chambers. The two-chamber principle of a separate pre-chamber and usable space achieves excellent temperature uniformity. The pump conveys the bath liquid centrally to the usable space. The level overflow ensures the constant level in the testing chamber. The usable space is height adjustable and, hence, the liquid level can be varied. This means that the most various of test objects can be immersed and calibrated in accordance with the relevant standards.

### Precision in variants

LAUDA calibration thermostats are available in various types: the Ecoline Staredition, the Proline and Ultra, each boasting the special features of the appropriate range of devices. They have different sizes, bath openings and usable depths, for example. Upon request, LAUDA calibration thermostats can bear a factory calibration certificate according to the standard including traceability to normals of the utmost precision.

LAUDA calibration thermostats are the first choice when it comes to temperature reliability and utmost reliability for calibration and adjustment. With the Ecoline Staredition, Proline and Ultra

and Ultra product ranges, LAUDA offers you high-performance complete solutions for individual wishes – and a range of suitable accessories.

## The most accurate devices in their field: Ecoline Staredition, Proline and Ultra from LAUDA

### LAUDA Ecoline Staredition: economical calibration down to -30 °C.

The calibration thermostats of the LAUDA Ecoline Staredition are amazing instruments at a small price. A temperature range from -30 up to 200 °C with  $\pm 0.01$  K stability. Comfort and safety features are exemplary. The two models differ in their control heads.



#### Available in two versions:

- ❖ The RE 212 J (E 200) has a large display, programmer (20 segments) and interfaces.
- ❖ The RE 312 (E 300) offers a back-lit display, programmer, 5 programs/max. 150 segments), external control via further temperature probes and the LAUDA Wintherm Plus software.

### LAUDA Proline: combines precision with high functionality

The calibration thermostats which make up the LAUDA Proline range are particularly suitable for the calibration and adjustment of thermometers and temperature sensors. The temperature range extends from -40 up to 300 °C, with a stability of  $\pm 0.01$  K.



#### Available in two versions:

- ❖ The Proline Master range for standard applications can be optionally extended by means of interface/communication modules.
- ❖ The Proline Command range for extensive programming functions (5 programs/max. 150 segments) with graphic display and comfortable remote control

### LAUDA Ultra: the range designed for the highest demands

The special feature of the LAUDA Ultra calibration thermostats is their excellent temperature stability of  $\pm 0.005$  K. The temperature range extends up to 300 °C. The control unit of the heating thermostats is functionally separate from the bath – ensuring maximum process safety. Combined with the LAUDA through-flow cooler, temperatures down to -40 °C can be reached.

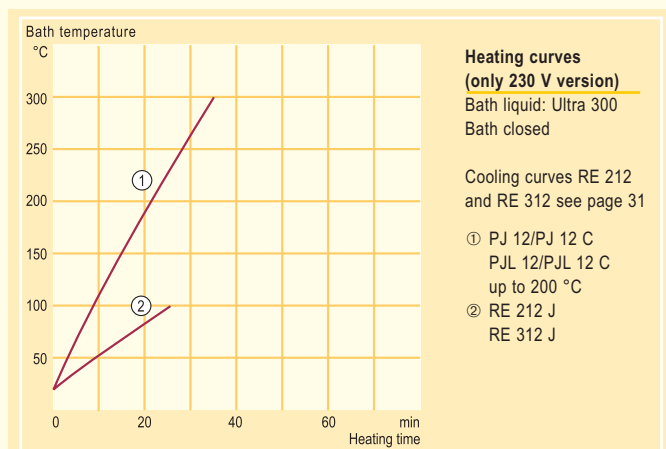


#### The control unit P offers:

- ❖ Extensive program functions (99 segments)
- ❖ Two additional connections for temperature probes for external control

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## Calibrate the way you want to: LAUDA Ecoline Staredition or LAUDA Proline



Calibration thermostats of the LAUDA Ecoline Staredition range offer you temperature stabilities up to  $\pm 0.01$  K at temperatures of down to -30 °C. The RE 212 J model with its two-line display, digital interface and basic programmer is convincing. The even more comfortable RE 312 J has external temperature probes and the PC software LAUDA Wintherm Plus. In the heating range the compact Proline PJ 12/PJ 12 C models reach maximum temperatures of up to 300 °C. The PJL 12/PJL 12 C have been designed especially for operation with the LAUDA DLK 45 through-flow cooler and reach temperatures of down to -40 °C.

### Standard accessories

Nipples · screw caps · pump link  
(only RE 212 J and RE 312 J)

### Recommended accessories

Cover plate · calibration racks  
For further accessories please request  
the comprehensive LAUDA accessories brochure.



Ecoline Staredition RE 312 J



Proline PJ 12 C

Technical features		RE 212 J	RE 312 J
Working temperature range*	°C	-30...200	-30...200
Temperature stability	$\pm$ K	0.01	0.01
Resolution of indication	°C	0.05	0.05/0.01
Heater power 230 V/115 V	kW	2.25/1.3	2.25/1.3
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		<b>LCK 1879</b>	<b>LCK 1880</b>
Cat. No. 230 V; 60 Hz		–	<b>LCK 2880</b>
Cat. No. 115 V; 60 Hz		–	<b>LCK 4880</b>

Technical features		PJ 12	PJ 12 C	PJL 12	PJL 12 C
Working temperature range	°C	30...300	30...300	30...200	30...200
Operating temperature range	°C	0...300	0...300	-40**...200	-40**...200
Temperature stability	$\pm$ K	0.01	0.01	0.01	0.01
Resolution of indication	°C	0.01	0.1/0.01/0.001	0.01	0.1/0.01/0.001
Heater power 230 V/115 V	kW	3.5/1.7	3.5/1.7	3.5/1.7	3.5/1.7
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		<b>LCB 0720</b>	<b>LCB 0721</b>	<b>LCB 0718</b>	<b>LCB 0719</b>
Cat. No. 115 V; 60 Hz		<b>LCB 4720</b>	<b>LCB 4721</b>	<b>LCB 4718</b>	<b>LCB 4719</b>

\* Working temperature range is equal to the ACC range.

\*\*At -40 °C in conjunction with LAUDA through-flow cooler.

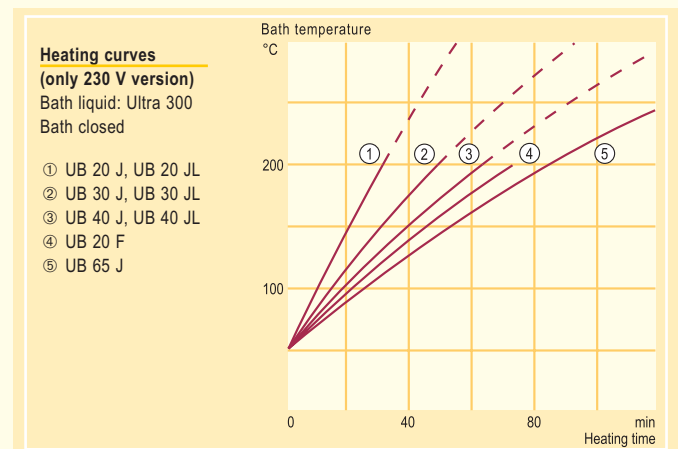
Ultra calibration thermostats offer excellent temperature stability and distribution values over a wide temperature range in the test chamber. The overflow principle ensures constant immersion depths here as well. The height of the liquid's surface can be changed to adjust completely immersed thermometers or

other test objects. The UB 20 F has been designed especially for the adjustment of medical thermometers. Thanks to its special insulation, the UB-JL range can be used with the LAUDA DLK 45 through-flow cooler down to -40 °C.

## Ultra stability for calibrating: UB and UB-J



Ultra UB 30 J



### Standard accessories

Nipples · screw caps

### Recommended accessories

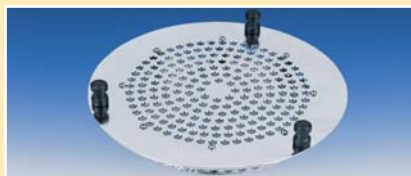
Cover plate · calibration racks  
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Technical features		UB 20 J	UB 30 J	UB 40 J	UB 65 J**
Working temperature range	°C	45...300	45...300	45...300	80...300
Temperature stability	±K	0.005...0.01	0.005...0.01	0.005...0.01	0.005...0.01
Resolution of indication	°C	0.01/0.001	0.01/0.001	0.01/0.001	0.01/0.001
Heater power	kW	3.0	3.0	3.0	3.0
Pump flow max.	bar	0.30	0.30	0.30	0.30
Pump flow (pressure) max.	L/min	15	15	15	15
Bath volume	L	15...18	22.5...30	32.5...40	48...54
Bath opening/depth	mm	Ø 195/195	Ø 195/320	Ø 195/450	Ø 215/690
Usable depth	mm	175	300	430	650
Cat. No.	230 V; 50 Hz	LTB 136	LTB 137	LTB 138	LTB 142
Cat. No.	230 V; 60 Hz	LTB 236	LTB 237	LTB 238	LTB 242

Technical features		UB 20 F	UB 20 JL	UB 30 JL	UB 40 JL
Working temperature range	°C	35...200	45...200	45...200	45...200
Operating temperature range	°C	0...200	-40*...200	-40*...200	-35*...200
Temperature stability	±K	0.005	0.005...0.01	0.005...0.01	0.005...0.01
Resolution of indication	°C	0.01/0.001	0.01/0.001	0.01/0.001	0.01/0.001
Heater power	kW	1.2	3.0	3.0	3.0
Pump flow max.	bar	0.20	0.30	0.30	0.30
Pump flow (pressure) max.	L/min	12	15	15	15
Bath volume	L	15...18	15...18	22.5...30	32.5...40
Bath opening/depth	mm	Ø 195/195	Ø 195/195	Ø 195/320	Ø 195/450
Usable depth	mm	175	175	300	430
Cat. No.	230 V; 50 Hz	LTB 139	LTB 143	LTB 144	LTB 145
Cat. No.	230 V; 60 Hz	LTB 239	LTB 243	LTB 244	LTB 245

\* At -40 or -35 °C in conjunction with LAUDA through-flow cooler DLK 45. \*\* 80 °C only with water, otherwise cooling is needed

This page offers you a selection of important accessories for the **LAUDA Calibration thermostats**. Please see the LAUDA accessories brochure for further accessories.



**Calibration rack**



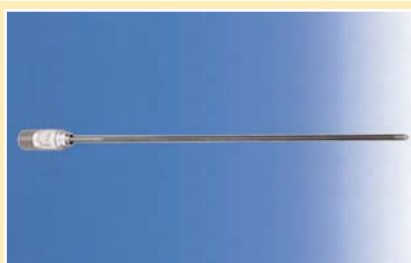
**Rotoracks**

To take thermometers or temperature probes for calibration purposes, all racks made of stainless steel, rotating and height adjustable



**Bath cover**

Stainless steel



**Platinum resistance thermometers**

For use on Pt 100 inputs, stainless steel version to EN 60751 (for connecting cables except for Pt 100-94), with Lemo connection socket, accuracy class A



**LAUDA Digital thermometers**

**DigiCal DCM 2:** mobile, battery-operated handheld device also suitable for use in the field

**DigiCal DCS 2:** stationary table-top device with permanently connected first probe particularly suited to the calibrating laboratory

Cat.-No.:	Qty. objects	Ø mm	suitable for
<b>UG 092</b>	180	6,5	UB 20 F, UB 20 J

Cat.-No.:	Qty. objects	Ø mm	height adjustable	suitable for
<b>UG 092</b>	12	12	✓	PJ 12 (C), PJJ 12 (C)
<b>UG 093</b>	20	10	✓	UB 20 F, UB 20 J
<b>UG 099</b>	20	10	✓	UB 30 J
<b>UG 100</b>	20	10	✓	UB 40 J
<b>UG 110</b>	18	11	✓	RE 212 J, RE 312 J
<b>UG 111</b>	20	10	✓	RE 212 J, RE 312 J
<b>UG 112</b>	15	12	✓	PJ 12 (C), PJJ 12 (C)

Cat.-No.:	Designation	suitable for
<b>LTZ 032</b>	Bath cover, circular with handle	UB 20 F, J, UB 30 J, UB 40 J UB 65 J

Cat.-No.:	Designation	Temp. range	Half-value period s	Ø mm	Length/mm
<b>ETP 009</b>	Pt 100-70	-200...300 °C,	1	4	250
<b>ETP 011</b>	Pt 100-72	-200...500 °C	7	4	250
<b>ETP 050</b>	Pt 100-90	-100...300 °C	1.5	4	80
<b>ETP 012</b>	Pt 100-80	-200...300 °C	1	1.9	150
<b>ETP 059</b>	Pt 100-94*	-100...200 °C	1.5	4	250

\* With attached Silicone cable (2 m long) and Lemo plug, for use on all units with Lemo socket.

Technical features	DigiCal DCM 2	DigiCal DCS 2
Measuring range	°C	-200...450
Resolution	°C	-200...200: 0.01 > 200: 0.1
Temperature probe	Pt 100 Kl. B1/3 DIN sheath resistance probe in 4-conductor	
Digital output as standard	RS 232, electrically isolated, on 8-pole DIN socket	RS 232, electrically isolated, with 9-pole Sub D socket on the rear
Analogue output as standard	–	Both channels separately at 12 bits scalable at 0-1 V at Ø 4 mm banana plug on the rear of the device
Power supply	battery operation with 9 V block for 20 h operating time, plug or battery as optional accessories	plug for 230 V Optional: universal power supply 90-260 V
Dimensions WxHxD	mm 85x200x40	200x80x200
Weight	g 300	950
Measurement channels	1 <sup>st</sup> channel included in the delivery 2 <sup>nd</sup> channel optional, also with pluggable probe	1 <sup>st</sup> channel permanently connected via terminal strip 2 <sup>nd</sup> channel optional with pluggable probe
Cat. No.	<b>LMD 917</b>	<b>LMD 018</b> (230 V; 50/60 Hz) <b>LMD 818</b> (90-260 V; 50/60 Hz)

**Request your free copy of the comprehensive LAUDA accessories brochure.**