The right temperature worldwide

LAUDA

Chapter Special devices

LAUDA – the big one

Thermostats, Circulation chillers, Water baths

Overall Brochure 2016/2017

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 of 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.

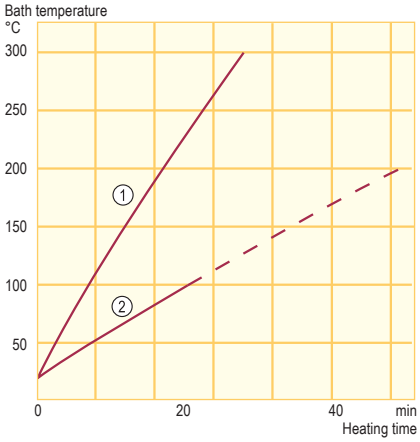
Calibration thermostats Ecoline Staredition and Proline

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 PJL 12/PJL 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...300 °C

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

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...200	-30...200
Temperature stability	±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	Ø 150/180	Ø 150/180
Cat. No. 230 V; 50 Hz		LCK 1879	LCK 1880

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	±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	Ø 120/320	Ø 120/320	Ø 120/320	Ø 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

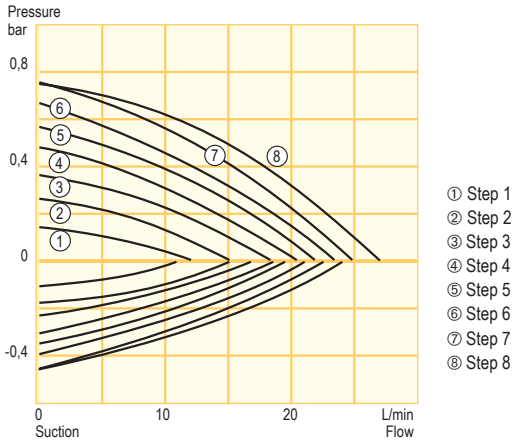
Proline
Bridge thermostats

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.

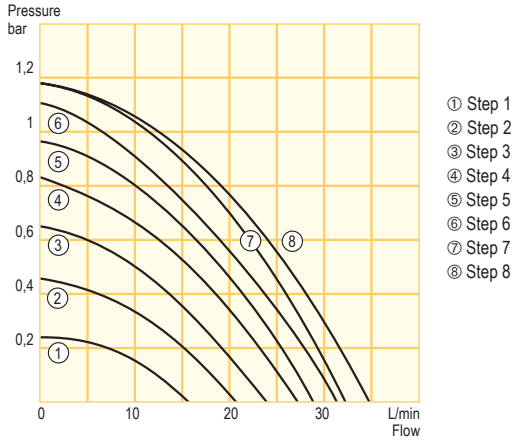
Bridge thermostat PBD C
– Bath not included in scope of delivery –

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



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



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

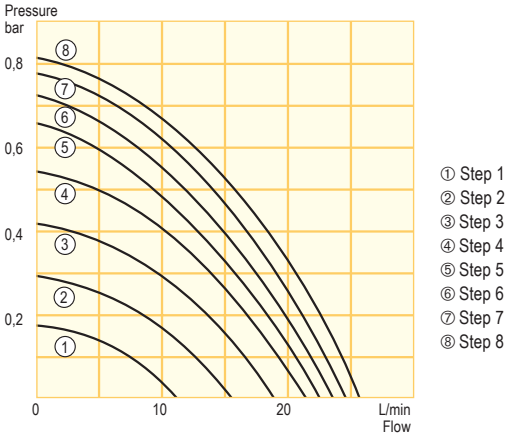
Proline
Clear-view thermostats

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.

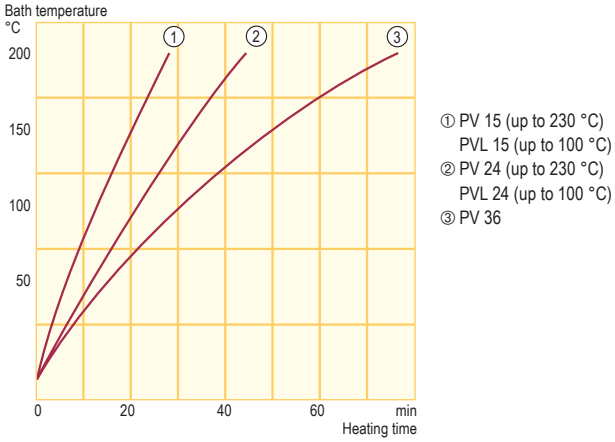
Clear-view thermostats PV 24 C

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

Pump characteristics Heat transfer liquid: Water



Heating curves Heat transfer liquid: Therm 240, bath closed



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	0.25
	-10 °C	kW	0.13	0.25
	-30 °C	kW	0.04	0.20
	-40 °C	kW	0.01	0.10
	-50 °C	kW	–	0.04
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)

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 recommandable. 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

Temperature solutions:

Thermostats · Circulation chillers · Water baths
Process cooling systems · Heat transfer systems · Secondary circuit systems

LAUDA DR. R. WOBSER GMBH & CO. KG
Headquarters
Pfarrstraße 41/43
97922 Lauda-Königshofen
Germany
Phone: +49 (0)9343 503-0
E-mail: info@lauda.de

LAUDA-Noah, LP
308 Digital Drive
Morgan Hill, CA 95037
USA
Tel.: +1 360 993 1395
E-mail: info@lauda-noah.com

LAUDA Technology Ltd.
4200 Waterside
Solihull Parkway
Birmingham Business Park
B37 7YN Birmingham
Great Britain
Phone: +44 121 717 4789
E-mail: info@lauda-technology.co.uk

LAUDA China Co. Ltd. Shanghai
2nd floor, Building 6
No. 201 MinYi Road
SongJiang District
201612 Shanghai
China
Phone: +86 21 64401098
E-mail: info@lauda.cn

LAUDA-Brinkmann, LP
1819 Underwood Boulevard
08075 Delran, NJ
USA
Phone: +1 856 7647300
E-mail: info@lauda-brinkmann.com

LAUDA América Latina Tecnologia Ltda.
Av. Paulista, 726 – 17° andar – Cj. 1707
01310-910 – São Paulo – SP
Brazil
Phone: +55 11 3192-3904
E-mail: info@lauda.net.br

LAUDA France S.A.R.L.
Parc Technologique de Paris Nord II
Bâtiment G
69, rue de la Belle Etoile
BP 81050 Roissy en France
95933 Roissy Charles de Gaulle Cedex
France
Phone: +33 1 48638009
E-mail: info@lauda.fr

Office Beijing
15/F, Office Building A,
Parkview Green,
9 Dongdaqiao Road,
Chaoyang District
100020 Beijing
China
Phone: +86 10 57306210
E-mail: info@lauda.cn

LAUDA-Brinkmann, LP
308 Digital Drive
Morgan Hill, CA 95037
USA
Phone: +1 856 7647300
E-mail: info@lauda-brinkmann.com

LAUDA Ultracool S.L.
C/ Colom, 606
08228 Terrassa (Barcelona)
Spain
Phone: +34 93 7854866
E-mail: info@lauda-ultracool.com

LAUDA Italia S.r.l.
Strada 6 – Palazzo A – Scala 13
20090 Assago Milanofiori (MI)
Italy
Phone: +39 02 9079194
E-mail: info@lauda-italia.it

LAUDA Singapore Pte. Ltd.
25 International Business Park
#04-103M German Centre
Singapore 609916
Phone: +65 6563 0241
E-mail: info@lauda.sg

LAUDA-Noah, LP
2501 SE Columbia Way, Suite 140
Vancouver, WA 98661
USA
Tel.: +1 360 993 1395
E-Mail: info@lauda-noah.com

LAUDA IBÉRICA SOLUCIONES TÉCNICAS, S.L.
C/ Colom, 606
08228 Terrassa (Barcelona)
Spain
Phone: +34 93 7854866
E-mail: info@lauda-iberica.es

OOO „LAUDA Wostok“
Malaja Pirogowskaja Str. 5
119435 Moscow
Russia
Phone: +7 495 9376562
E-mail: info@lauda.ru

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LAUDA DR. R. WOBSER GMBH & CO. KG
Pfarrstraße 41/43 · 97922 Lauda-Königshofen · Germany
Phone: +49 (0)9343 503-0 · Fax: +49 (0)9343 503-222
E-mail: info@lauda.de · Internet: www.lauda.de