# LAUDA Proline Edition X

Heating and cooling thermostats with temperatures from -90 up to 300 °C for professional use in research, application engineering and production











Application examples

- Temperature control for chemical synthesis
- Tests on electronic components at different temperatures
- Temperature control of measuring structures in process technology
- Heating and cooling of glass reactors

### Intuitive operation, powerful, broad temperature range

For ten successful years now, the name **LAUDA Proline** has stood for uncompromisingly reliable temperature control, intuitive operator guidance and great flexibility in research, application technology and production. On this occasion, the much lauded heating and cooling thermostats for the ranges from -90 to 300 °C are now available as the **Proline Edition X** with extras as standard. This includes the newly designed Command remote control unit, which allows convenient operation at distances of up to 50 meters. Furthermore, all of the thermostats come equipped with the LAUDA Wintherm Plus software. Using this software, the equipment can be controlled efficiently and conveniently by computer. The LAUDA Proline Edition X is also available with an extended warranty of 36 months.

# Your advantages at a glance

+	The Proline advantages	Your benefits
	<ul> <li>Removable Command remote control with graphic LCD</li> <li>RS-232/485 interface integrated</li> <li>Adaptive control on cooling thermostats</li> </ul>	<ul> <li>Easy and intuitive operation, quick setting changes</li> <li>No additional costs for integration into processes</li> <li>Saves time-consuming calculation of control parameters</li> </ul>
	• Software LAUDA Wintherm plus included as standard	<ul> <li>Control of thermostats and data recording via PC</li> </ul>
	<ul> <li>Patented SmartCool system</li> <li>PowerAdapt system for adjustment of the power consumption</li> </ul>	<ul> <li>Up to 75 percent energy saving with digital cooling management</li> <li>Use of the maximum available output from the power supply system</li> </ul>
	<ul> <li>Two insert ports can be combined with eight different interface modules</li> <li>Easy distribution of the pump flow by means of bypass valve</li> <li>Pump connections on the side and rear</li> </ul>	<ul> <li>High level of flexibility for the user allowing for broad range of system integration</li> <li>Simultaneous connection of two external applications</li> <li>Flexible connection of external appli- cations from different sides</li> </ul>
	<ul> <li>High-performance pressure-suction pump (Varioflex pump) with eight pump levels</li> <li>Up to 3.5 kW (230 V) heating power – even on all cooling thermostats via SmartCool system</li> </ul>	<ul> <li>Suitable for internal and external applications</li> <li>Adaptation of the pump power to the respective application</li> <li>Rapid heating achieved</li> </ul>

# LAUDA Proline Edition X

### Proline Edition X Heating thermostats up to 19 liters

The Proline Edition X heating thermostats impress through numerous functions. Alongside a graphic LCD display, which enables current values to be displayed up to 0.001 °C resolution, an easily editable and convenient programmer with storage possibilities is available. The standard RS 232/485 interface enables communication with a computer. Work flexibly with Command: The Command remote control can be quickly and easily detached from the thermostat.



Heating thermostat P 18 C



All technical data on page 84 and following Other power supply variants on page 95

Pump characteristics Heat transfer liquid: Water



Heating curves Heat transfer liquid: Ultra 300, bath closed



Temperature range 30...300 °C

Included accessories

Bath cover  $\cdot 2$  nipples and 4 closing plugs for pump connections  $\cdot 2$  nipples for cooling coil  $\cdot$  software Wintherm Plus

#### Additional accessories

Constant level device (for P 8 C) · automatic filling device · through-flow cooler · reverse flow protection · tubes · solenoid valve for cooling water control · high-temperature cooler (water) · Interface modules: analog, RS 232/485, contact, Profibus, Ethernet, EtherCAT module

~ chnical features		P 5 C	P 8 C	P 12 C	P 18 C
Working temperature range*	°C	35300	35300	30300	30300
Temperature stability	±Κ	0.01	0.01	0.01	0.01
Heater power 115 V/208-220 V	kW	1.8/3.5	1.8/3.5	1.8/3.5	1.8/3.5
Pump pressure max.	bar	0.7	0.7	1.1**	0.7
Pump suction max.	bar	0.4	0.4	-	0.4
Pump flow (pressure) max.	L/min	25	25	32**	25
Pump flow (suction) max.	L/min	23	23	-	23
Bath volume	L	3.55.5	5.58	6.513.5	12.519
Bath opening/Bath depth	mm	150x50/200	150x150/200	150x150/320	300x200/200
Cat. No. 230 V; 50/60 Hz		LCBA 0007	LCBA 0008	LCBA 0011***	LCB 0009

### Proline Edition X Heating thermostats up to 53 liters

The P 26 C, P 40 C and P 50 C heating thermostats have large baths. The intuitive operation guidance system allows complex thermostating functions, particularly those with internal thermostating processes, and the ability to edit programs rapidly. A circulation chamber on the P 40 and P 50 ensures good mixing in the bath and thus guarantees good temperature homogeneity.



Heating thermostat P 40 C





Temperature range 30...300 °C

#### Included accessories

Bath cover (only P 26 C)  $\cdot$  2 nipples and 4 closing plugs for pump connections  $\cdot$  2 nipples for cooling coil  $\cdot$  software Wintherm Plus

#### Additional accessories

Automatic filling device · bath cover · through-flow cooler · reverse flow protection · tubes · solenoid valve for cooling water control · high-temperature cooler (water) · rising platform · Interface modules: analog, RS 232/485, contact, Profibus, Ethernet, EtherCAT module

All technical data on page 84 and following Other power supply variants on page 95

Technical features		P 26 C	P 40 C	P 50 C
Working temperature range*	°C	30300	30300**	30300**
Temperature stability	±Κ	0.01	0.01	0.01
Heater power	kW	3.5	3.5	3.5
Pump pressure max.	bar	0.7	0.7	0.7
Pump suction max.	bar	0.4	0.4	0.4
Pump flow (pressure) max.	L/min	25	25	25
Pump flow (suction) max.	L/min	23	23	23
Bath volume	L	1827	3037	3553
Bath opening/Bath depth	mm	300x350/200	250x270/450	750x300/200
Cat. No. 230 V; 50/60 Hz		LCBA 0010	LCBA 0012	LCBA 0013

\* Working temperature range with water cooling 20...300 °C \*\* Max. temperature achieved only with closed bath cover

# LAUDA Proline Edition X

### Proline Edition X Cooling thermostats up to 8 liters

The SmartCool system - an energy-saving, digital cooling management system - ensures that every temperature is run with the correct cooling capacity. It increases or reduces the cooling according to application requirements. The advantages are particularly effective for programmer operation and temperature ramping.

The Proline Edition X cooling thermostats have a convincing extended range of functions. At 20 °C, RP 855 C has a particularly high cooling capacity of 1.6 kW. RP 890 C and RP 1290 C are designed for especially low temperatures. They differ in terms of bath volume and have an electrical-heated bath cover set as a standard feature.



Cooling thermostat RP 845 C



**Temperature range** -90...200 °C

\*

Included accessories

Bath cover · 2 nipples and 4 closing plugs for pump connections · electrical-heated bath cover set for RP 890 C · software Wintherm Plus

#### Additional accessories

Constant level device for RP 845 C und RP 855 C · reverse flow protection · automatic filling device · tubes · electricalheated bath cover set for RP 855 C and RP 870 C (only ex works) · Interface modules: analog, RS 232/485, contact, Profibus, Ethernet, EtherCAT module · set of castors (RP 855 C to RP 890 C)

LCKA 1014



LCKA 1012

LCKA 1013

LCKA 1008

\* Working temperature range is equal to ACC range

Cat. No. 230 V; 50 Hz

Heating curves Heat transfer liquid: Ultra 300, bath closed

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① RP 855 C

RP 845 C

RP 870 C

RP 890 C

② RP 1290 C

③ RP 1840 C

④ RP 3530 C

RP 1845 C

### Proline Edition X Cooling thermostats up to 35 liters

# Thanks to their various capacity ranges and filling volumes, the Proline Edition X cooling thermostats skilfully adapt to your requirements. The RP 1845 C works at a temperature range between -50 and 200 °C and, at 20 °C, has a cooling capacity of 1.6 kW. The RP 3530 C has a particularly large bath for internal sample thermostating. The RP 1290 C comes with an integrated electrical-heated bath cover set as standard.



\*

Bath temperature

1 23

°C

200

150

100

5(

\* Working temperature range is equal to ACC range

# LAUDA Proline

### Proline Viscothermostats

LAUDA viscothermostats 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.



Viscothermostat PV 24 C

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All technical data on page 84 and following Other power supply variants on page 95

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  $\cdot$  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	30230	30230	30230	30100	30100
Operating temperature range	°C	0*230	0*230	0*230	-60**100	-60**100
Temperature stability	±Κ	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	1115	1924	2836	1115	1924
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

### 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 84 and following Other power supply variants on page 95





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  $\,\cdot\,$  telescopic rods

Additional accessories

Automatic filling device · water bath

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

Technical features		РВ/РВ С	PBD/PBD C
Working temperature range	°C	30300	30300
Operating temperature range	C°	-30*300	-30*300
Temperature stability	±К	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 310550
Bath depth min.	mm	200	320
Cat. No. Master 230 V; 50/60 Hz		LCG 0090	LCG 0092
Cat. No. Command 230 V; 50/60 Hz		LCG 0091	LCG 0093
* Only achievable with LAUDA through-flow cooler			

# **LAUDA Proline Kryomats**

Extra powerful cooling thermostats for bath applications from -90 up to 200 °C LAUDA Proline Kryomats



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

Application examples Constant temperatures • Notch bending test

Changing temperatures
Determination of pour point
Brookfield test of lubricants
Test of slide bearings

Drop test

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

# Your advantages at a glance

+	The Proline Kryomats advantages	Your benefits
	<ul> <li>Removable Command remote control with graphic LCD</li> <li>Automatic adjustment of the control parameters via integrated software for adaptive control</li> </ul>	<ul> <li>Easy and intuitive operation. Quick setting changes</li> <li>Saves time-consuming calculation of control parameters</li> </ul>
	<ul> <li>Offset control head</li> <li>Integrated bath edge and bath bridge heating</li> <li>Use of innovative cooling technology</li> </ul>	<ul> <li>Allows installation of optional supplementary pumps for external applications</li> <li>Avoids condensation and ice build-up</li> <li>High cooling capacity and low operating temperatures with very small footprint</li> </ul>
	<ul> <li>Updated, adjustable pump nozzle</li> </ul>	<ul> <li>Optimum circulation and temperature distribution throughout the entire bath</li> </ul>
	<ul> <li>Spacious baths with large bath openings</li> <li>Thread sleeves as standard on the edge of the bath</li> </ul>	<ul> <li>Accomodates various sample shapes and sizes with efficient flow</li> <li>Allow for the fixing of testing equipment without further conversion measures</li> </ul>
	<ul><li>Intelligent cooling fan control</li><li>Optimised cooling airflow</li><li>Internal release valve</li></ul>	<ul> <li>Optimum heat discharge while reducing noise emission</li> <li>Bath drain at front of unit</li> <li>No protruding release valve</li> </ul>

# **LAUDA Proline Kryomats**

### **Proline Kryomats** Air-cooled cooling thermostats

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



Cooling curves Heat transfer liquid: Ethanol, bath closed Bath temperature 20 0 ① RP 3050 C 2 RP 4050 C -20 3 RP 3090 C ④ RP 4090 C -40 2 -60 1 4 -80 -100 0 10 20 30 40 50 60 70 80 90 100 min Cooling time

**Temperature range** -90...200 °C

\*

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

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

Options Booster pumps

All technical data on page 88 Other power supply variants or	and following n page 97				
Technical features		RP 3050 C	RP 4050 C	RP 3090 C	RP 4090 C
Working temperature range*	°C	-50200	-50200	-90200	-90200
Temperature stability	±Κ	0.05	0.05	0.05	0.05
Heater power	kW	3.5	3.5	3.5	3.5
Cooling output at 20 °C	kW	5.0	5.0	3.0	3.0
Pump pressure max.	bar	0.5	0.5	0.5	0.5
Pump flow (pressure) max.	L/min	19	19	19	19
Bath volume	L	2331	3244	2331	3244
Bath opening/depth	mm	350x200/250	350x350/250	350x200/250	350x350/250
Cat. No. 400 V; 3/N/PE; 50 Hz		LUK 239	LUK 241	LUK 245	LUK 247

\* Working temperature range is equal to ACC range

Cooling curves Heat transfer liquid: Ethanol, bath closed

### Proline Kryomats Water-cooled cooling thermostats

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



Cooling thermostat RP 4090 CW



RP 3050 CW
 RP 4050 CW
 RP 3090 CW
 RP 4090 CW

Applications Advantages Devices Accessories

Temperature range -90...200 °C

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#### Included accessories

Bath cover  $\cdot\,4$  closing plugs for pump connections  $\,\cdot\,G$   $^{3/_{4}"}$  lock-nut with  $^{1/_{2}"}$  hose clip  $\,\cdot\,2$  connectors 13 mm

#### Additional accessories

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

Options Booster pumps

				-	
All technical data on page 88 a Other power supply variants on	nd following page 97				
Technical features		RP 3050 CW	RP 4050 CW	RP 3090 CW	RP 4090 CW
Working temperature range*	°C	-50200	-50200	-90200	-90200
Temperature stability	±К	0.05	0.05	0.05	0.05
Heater power	kW	3.5	3.5	3.5	3.5
Cooling output at 20 °C	kW	6.0	6.0	4.0	4.0
Pump pressure max.	bar	0.5	0.5	0.5	0.5
Pump flow (pressure) max.	L/min	19	19	19	19
Bath volume	L	2331	3244	2331	3244
Bath opening/depth	mm	350x200/250	350x350/250	350x200/250	350x350/250
Cat. No. 400 V; 3/N/PE; 50 Hz		LUK 240	LUK 242	LUK 246	LUK 248

\* Working temperature range is equal to ACC range

# LAUDA Proline

# Proline accessories (excerpt)

Shut down valve/Reverse flow protection Reverse flow protection when thermostating external systems, to avoid over-flow when pump stops, for retrofitting with LiBus. Temperature range -40...140 °C

Cat. No.	Description
LCZ 9673	Shut down valve reverse flow protection with LiBus
Suitable for	All Proline devices

#### Solenoid valve

Water-conscious cooling on heating thermostats for cooling water control. Controlled cooling operation for exothermal reactions or controlled cooling with programmer. Up to 155  $^{\circ}$ C bath temperature.

Cat. No.	Description	Temperature range
LCZ 9662	Solenoid valve with LiBus-connector	-10155 °C
Suitable for	All heating and clear-view thermostats	

### Baskets

For notch bending test

Cat. No.	Suitable for
LCZ 0658	RP 870, RP 890
LCZ 0694	RP 1290

### **Constant level device**

Necessary for the constant liquid level when thermostating open external baths. Connection set: for wall thickness of bath vessel between 0 to 30 mm, with opening for thermometers 4 mm or 1.9 mm Ø and clamping gland HX 077 and HX 078.

Cat. No.	Description	Suitable for
LCZ 0660	Level controller, mechanical	P 8, RP 845 RP 855*, RP 870*
LCZ 0679	Connection set for external inlet and outlet	LCZ 0660
* Not with option bat	h cover including bath edge heating (LCZ 9670)	

### Automatic filling device

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

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

Controlled high-temperature chiller HTC with LiBus For controlled cooling of thermostats in the operating temperature range up to 300 °C without formation of vapors, to be connected to external water cooling source.

Cat. No.	Description
LCZ 9663	Controlled high-temperature chiller HTC



LCZ 9673



LCZ 9662



LCZ 0694







LCZ 9661

## Proline Kryomats accessories (excerpt)

### Interface modules

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

Cat. No.	Description
LRZ 912	Analog module, 2 x In, 2 x Out, 0(4)20 mA or 010 V
LRZ 913	RS 232/485 interface, electrically isolated, 9-pin SUB-D socket
LRZ 914	Contact module NAMUR, 1 x In, 1 x Out, NE 28, 2 DIN socket
LRZ 915	Contact module SUB-D, 3 x In, 3 x Out, 15-pin SUB-D
LRZ 917	Profibus module, electrically isolated, 9-pin SUB-D socket
LRZ 921	Ethernet module
LRZ 922	EtherCAT module with M8 connection
LRZ 923	EtherCAT module with RJ45 connection

Suitable hoses/tubing for heat transfer liquids and cooling water Available upon request.

### Booster pumps (only ex works)

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

Cat. No.	Temperature range	Pressure max.	Pump flow max.
LWZ 080	-100150 °C	0.9 bar	90 L/min
LWZ 086	-40150 °C	3.2 bar	40 L/min
(0 = outer thread)			

### **Baskets**

For notch bending test

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

### Pour point determination

Bath cover accomodates up to 16 metal beakers

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



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





LRZ 912 LRZ 913 LRZ 914 LRZ 915 LRZ 917



LRZ 921 LRZ 922 LRZ 923



LZM 081

**RKJ 031** 



LWZ 080



LUZ 008



UP 065