

NEW LAUDA PRO

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



Application examples


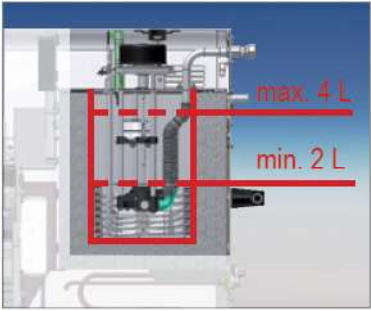
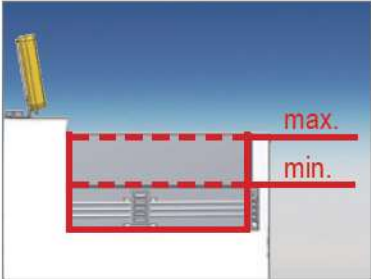


- Functional testing of electronic components
- Material testing of metal and plastic samples
- Sensor calibration
- Thermal control of chemical and biological reactions
- Precise temperature control for crystallization processes
- Temperature control of measuring and test rigs, heat exchangers and distillation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

Flexible operation, outstanding performance data

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

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

Your advantages at a glance

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

Flexible operation

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

Remote control unit Base



Remote control unit Command Touch



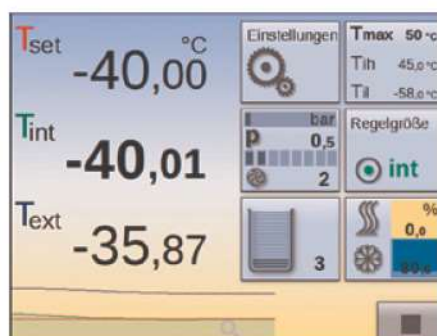
Remote control unit Base

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

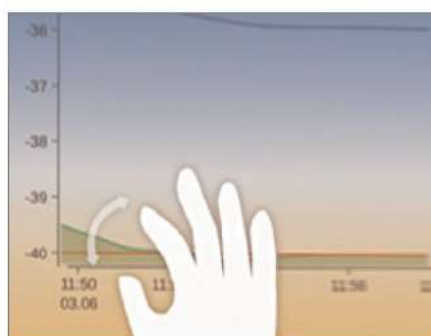


Remote control unit Command Touch

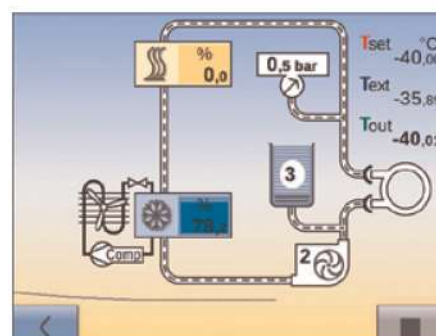
- Large color touch screen (5.7")
- Multi-touch operation using freely-configurable tiles – can be operated wearing gloves
- Zoomable graphic view
- Programmer with 100 programs, each with 50 segments
- Weekly timer and count-down function
- Ramp function
- Data logging, export to USB stick
- Individual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



Freely-configurable tile sequences



Zoomable graphic view



Hydraulic circuit diagram with direct operating facility

PRO Heating bath thermostats

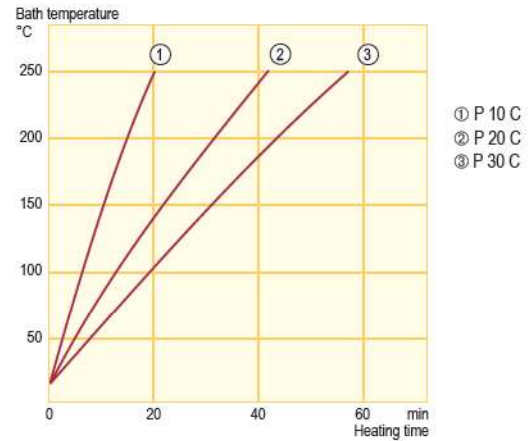
The PRO heating bath thermostats P 10, P 20 and P 30 work up to a maximum temperature of 250 °C. The thermostats, having volumes of 10, 20 and 30 liters, are optimized for internal bath applications and offer excellent temperature stability. The removable operating unit, including mount, allows considerable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



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



Heating curves Heat transfer liquid: Ultra 300, bath closed



Temperature range
30...250 °C

Included as standard
USB, Ethernet interface, Pt100 connection socket

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



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

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

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

LAUDA PRO

PRO Cooling bath thermostats

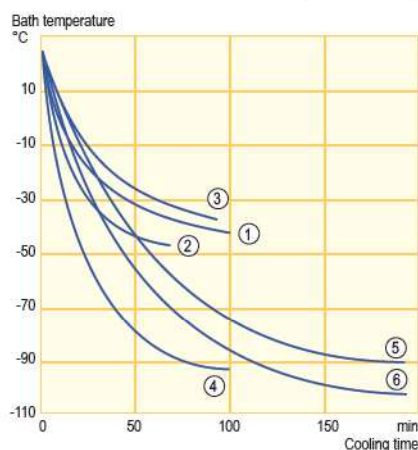
The PRO cooling bath thermostats for internal bath applications offer a working temperature range from -100 up to 200 °C. A multi-stage adjustable pump ensures good mixing of the bath. With their bath sizes from 10 to 30 liters and cooling outputs from 0.4 to 1.5 kW, the cooling thermostats are suitable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



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



Cooling curves Heat transfer liquid: Ethanol, bath closed



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

Temperature range

-100...200 °C

Included as standard

USB, Ethernet interface, Pt100 connection socket

Accessories included

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



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

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

* Working temperature range is equal to ACC range

PRO

Heating circulation thermostats

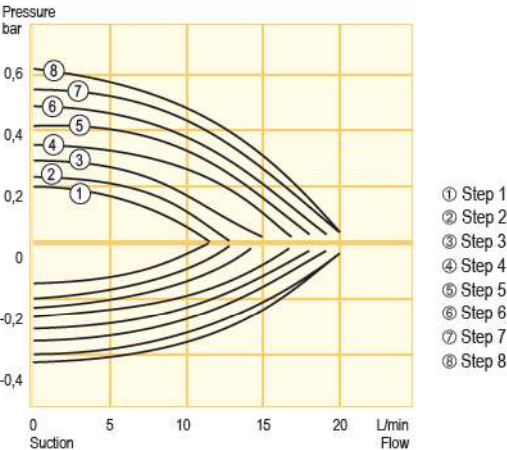
The PRO heating circulation thermostats are designed for external applications up to 250 °C. The low filling volume permits rapid heating in the external applications. The compact construction permits space-saving installation of the thermostats. An integrated cooling coil, fitted as standard, provides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



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



Pump characteristics Heat transfer liquid: Water



Temperature range
80...250 °C

Included as standard
USB, Ethernet interface, Pt100 connection socket

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



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

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

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

LAUDA PRO

PRO Cooling circulation thermostats

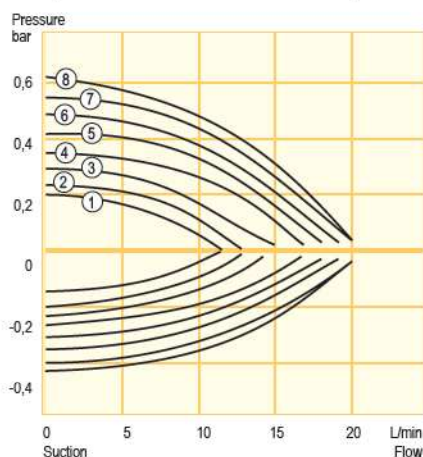
The PRO cooling circulation thermostats are ideal for external applications where rapid temperature changes are required. The cooling output of 0.6 and 0.8 kW, combined with a very small filling volume permit these rapid temperature changes. The thermostats have a working temperature range of -45 up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



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

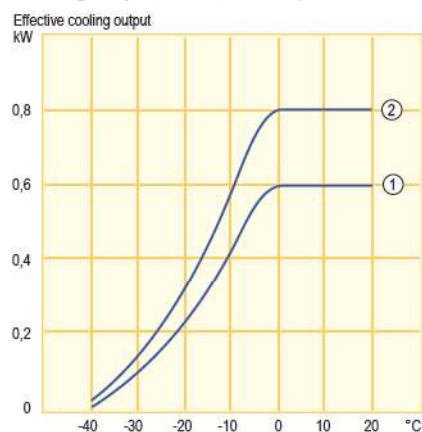


Pump characteristics Heat transfer liquid: Water



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

Cooling output Heat transfer liquid: Ethanol



- ① PR 240 E(C)
- ② PR 245 E(C)

Temperature range

-45...200 °C

Included as standard

USB, Ethernet interface, Pt100 connection socket

Accessories included

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



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

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

* Working temperature range is equal to ACC range

PRO accessories (excerpt)

Interface modules

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



LRZ 912 LRZ 913 LRZ 914 LRZ 915 LRZ 917



LRZ 922



LRZ 923



LCZ 9727

Polymer tubing

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

d_i = internal diameter ; d_e = external diameter



LZS 007

Metal hoses with cold insulation

For connections with thread M16 x 1

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

d_i = internal diameter ; d_e = external diameter



LZM 052/LZM 053/LZM 054/LZM 055



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

LAUDA Proline Kryomats

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



Application examples

Constant temperatures

- Notch bending test
- Drop test

Changing temperatures

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

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

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

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

Your advantages at a glance



The Proline Kryomats advantages

Your benefits



- Removable Command remote control with graphic LCD
- Automatic adjustment of the control parameters via integrated software for adaptive control
- Easy and intuitive operation. Quick setting changes
- Saves time-consuming calculation of control parameters



- Offset control head
- Integrated bath edge and bath bridge heating
- Use of innovative cooling technology
- Allows installation of optional supplementary pumps for external applications
- Avoids condensation and ice build-up
- High cooling capacity and low operating temperatures with very small footprint



- Adjustable pump nozzle
- Optimum circulation and temperature distribution throughout the entire bath



- Spacious baths with large bath openings
- Thread sleeves as standard on the edge of the bath
- Accommodates various sample shapes and sizes with efficient flow
- Allow for the fixing of testing equipment without further conversion measures



- Intelligent cooling fan control
- Optimised cooling airflow
- Internal release valve
- Optimum heat discharge while reducing noise emission
- Bath drain at front of unit
- No protruding release valve

LAUDA Proline Kryomats

Proline Kryomats Air-cooled cooling thermostats

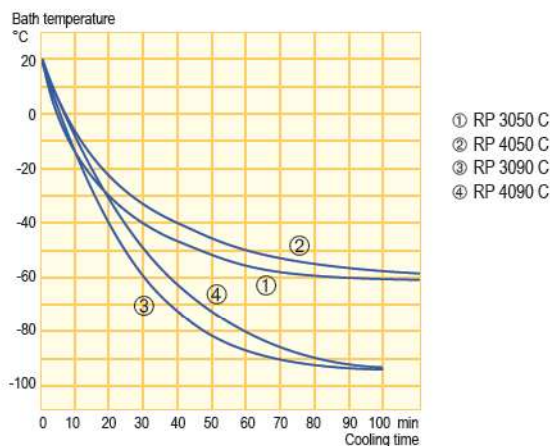
The air-cooled Proline Kryomats have a working temperature range from -50 and -90 up to 200 °C. The models are available with bath volumes of 30 and 40 liters. The Proline SmartCool system, with its energy-saving digital cooling management, ensures that the cooling output is run in accordance with the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



Cooling thermostat RP 4050 C



Cooling curves Heat transfer liquid: Ethanol, bath closed



Temperature range
-90...200 °C

Included accessories

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

Additional accessories

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

Options

Booster pumps



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



1180 mm



1160 mm



1160 mm



1160 mm

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

* Working temperature range is equal to ACC range

Proline Kryomats Water-cooled cooling thermostats

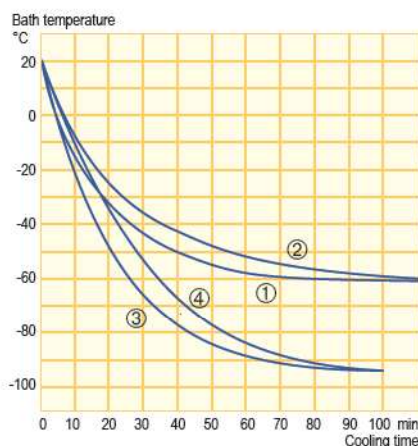
In the case of the water-cooled Proline Kryomats, the process heat is dissipated with the use of facility cooling water. This largely prevents unnecessary heating of the surrounding environment. As a result of this type of cooling, even higher cooling capacities are achieved than with the air-cooled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



Cooling thermostat RP 4090 CW



Cooling curves Heat transfer liquid: Ethanol, bath closed



Temperature range
-90...200 °C

Included accessories

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

Additional accessories

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

Options

Booster pumps



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



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

Proline Kryomats accessories (excerpt)

Interface modules

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

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



LRZ 912 LRZ 913 LRZ 914 LRZ 915 LRZ 917



LRZ 921 LRZ 922 LRZ 923



LCZ 9727

Booster pumps (only ex works)

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

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



LWZ 080

Baskets

For notch bending test

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



LUZ 008

Proline Kryomats accessories (excerpt)

Pour point determination

Bath cover accommodates up to 16 metal beakers

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



UP 065

Automatic filling device

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

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



LCZ 9661

Cooling water tubes

Not suitable for Ultra 350 and mineral oil

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

d_i = internal diameter ; d_e = external diameter



RKJ 031

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