

FUTURE INTEGRATED

The new Integral process thermostats
LAUDA Integral

TOTALLY INTEGRAL



Renowned quality

The Integral product line has proven itself in a wide variety of industries and applications for more than 20 years. Now we are taking process thermostats into the digital age – innovative, modern and with a large number of new functions.



Maximum connectivity

Fit for the future and ready for LAUDA.LIVE: Integral thermostats can be flexibly integrated in various communication scenarios thanks to the integrated web server, monitoring and control via PC or mobile devices and the modular interface concept.



Compliant with the F-Gas Regulation

All Integral process thermostats of the new generation comply with the European F-Gas Regulation and are therefore ideally equipped for future use.



Powerful and dynamic

Our Integral process thermostats perform impressively in all applications with a cooling capacity of up to 28 kW, a heating output of up to 24 kW, a working temperature range from -90 to 320 °C and a flow rate up to 44 % higher than previous models.



User-friendly operation

Softkey control directly on the device, remote control via touch display or mobile devices mean that it has never been easier to control your temperature control applications according to your requirements. The new Integral devices determine the optimum control parameters for the application at the touch of a button, and the temperature control liquid can be selected to ensure safe and optimum use of the liquid. The high-precision flow control unit extends your options and ensures absolute control over your test and production processes.



Integrated bypass

More flexibility for your temperature control tasks. The standard integrated bypass allows pressure and flow optimization, thereby facilitating variable adaptation to a wide range of applications.

Areas of application by industry

AEROSPACE INDUSTRY

Cyclic temperature simulations are an important part of functional and material testing in the aerospace industry. This ensures trouble-free use of the components, even under extremely fluctuating external conditions.

Typical fields of application

- Simulation of space conditions
- Life cycle testing of components and materials
- Functional testing of electronic units



AUTOMOTIVE INDUSTRY

The simulation of extreme environmental conditions across a wide range of different temperatures is an important part of material testing in the automotive industry. All components of an automobile are exposed to extreme temperature fluctuations, in order to ensure error-free and safe operation in subsequent use – an important contribution to the quality and safety of vehicles.

Typical fields of application

- Accelerated service life tests in the development of batteries and electronic components
- End-of-line testing of components in e-mobility
- Test benches for electric motors
- Endurance test in fuel cell technology



CHEMICAL AND PHARMACEUTICAL INDUSTRY

Temperature control is an essential part of the process in the chemical and pharmaceutical industries chain for the development and manufacture of safe and high-quality reaction products. LAUDA products ensure precise temperature control from the development stage in the laboratory to the initial production in the pilot plant and scale-up in serial production.

Typical fields of application

- Control of microreaction syntheses
- Dynamic temperature control of batch reactions
- Cryogenic processing of organometallic couplings



BIOTECHNOLOGY

Reliable temperature control is essential in biotechnology when it comes to the quality of the research and production results. Small temperature windows must be complied with, in order to avoid denaturing or freezing damage to the products.

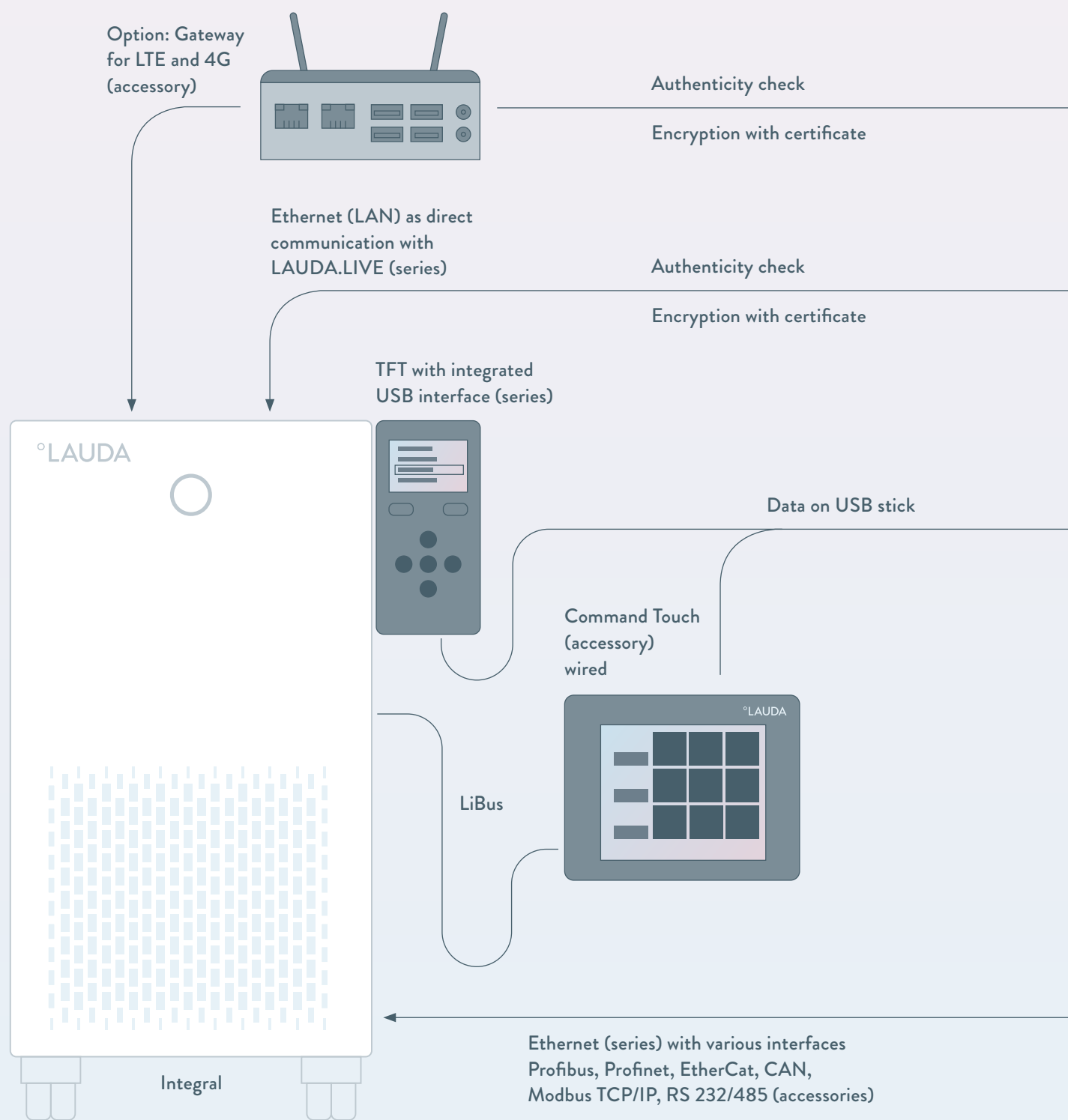
Typical fields of application

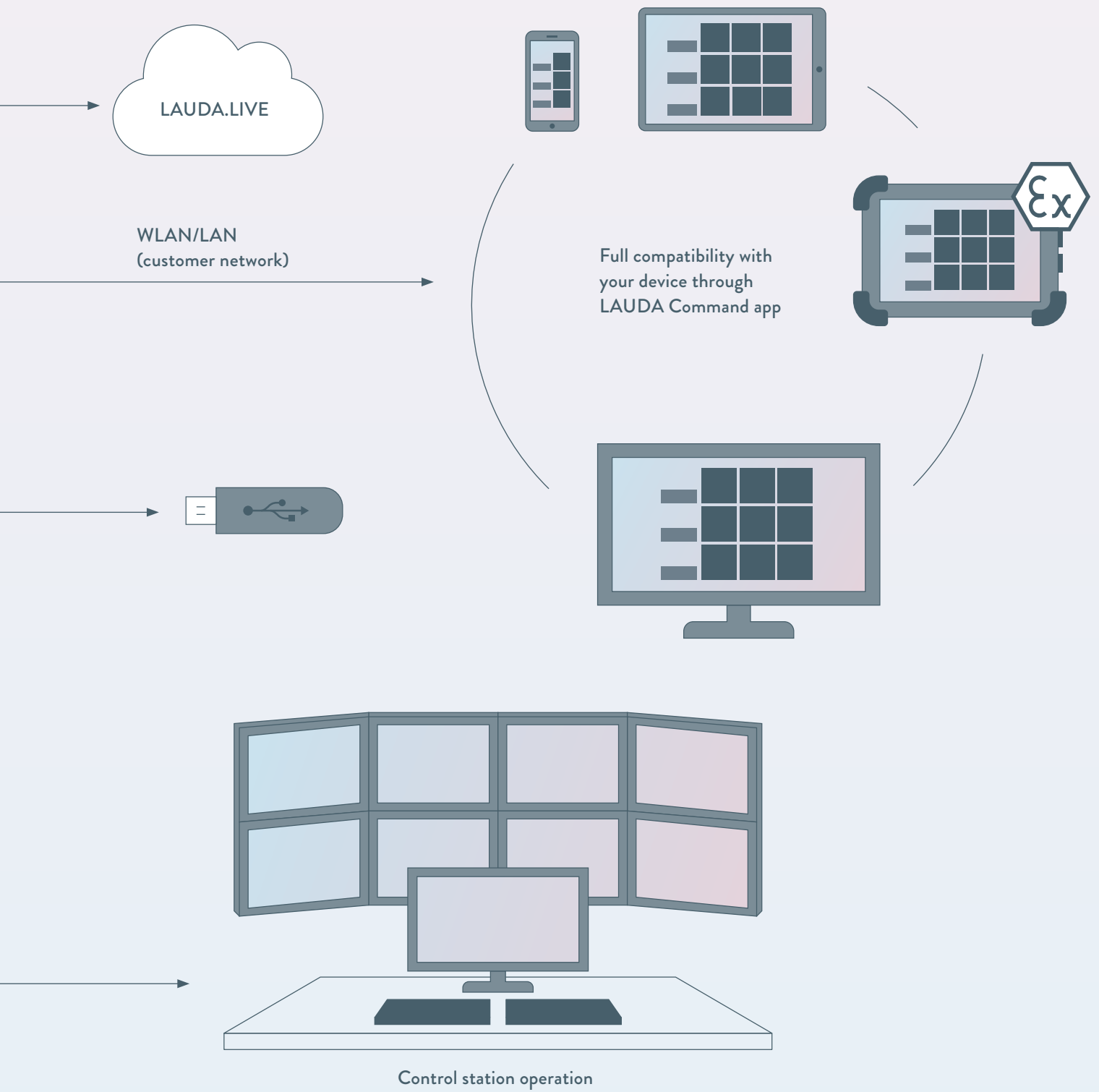
- Constant temperature control of single-use bioreactors
- Quenching of reaction processes
- Control of scale-up processes
- Temperature control of buffer and nutrient solutions



Connectivity

Flexible and secure communication and data exchange





Connectivity

Smart and user-friendly operating concept



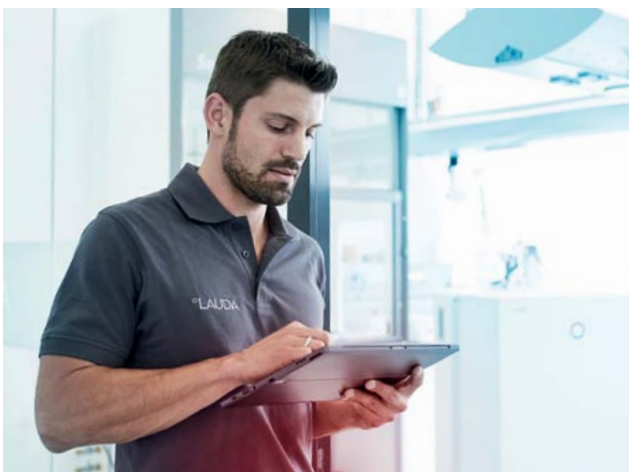
Operation directly on the device

All models of the Integral series are equipped with a modern, multi-colored TFT display. Control your temperature control processes intuitively using tactile, robust operating elements, ergonomically positioned at eye level or on the top of the smallest housing.



Operation via Command Touch remote control

The Command Touch control is available as an accessory and has a 5.7 inch capacitive TFT display with chemically hardened special glass. The Command Touch allows you to control your processes from up to 50 m away with a LiBus cable connection. The integrated user management enables the prescribed access management in validated process sequences.



Operation via desktop and mobile devices

You can simply integrate Integral process thermostats into your company network and access them via app or web browser by means of a smartphone, tablet or desktop PC. The installation site and operation are coupled and enables access from any location. Safety-relevant settings cannot be changed, in order to protect your application.



Automatic self-adaptation

If desired, the self-adaptation feature of the Integral determines the ideal control parameters for the individual application. This eliminates the effort required for manual optimization of the control system, especially for thermally complex applications.



Simple liquids management

Information on LAUDA heat transfer liquids is stored in the integrated heat transfer liquid database. Customer-specific liquids can be added as an option. Relevant data for temperature and safety limits is therefore immediately available for filling or changing of the liquid.



Clearly structured cockpits

Whether a permanently installed TFT display, Command Touch or via LAUDA.LIVE on mobile devices, all the displays offer clearly arranged screens, in order to provide a quick overview of the current temperature control process, as well as to set safety and application limit values and control parameters – they can even be customized according to your requirements.



Efficient SmartCool system

Intelligent refrigeration technology from LAUDA: The electronically controlled regulation of the cooling capacity ensures efficient, dynamic temperature control by adjusting the cooling capacity as the need arises. You can manually adjust the SmartCool refrigeration system to suit your own requirements.



Practical user management

The Command Touch remote control unit allows you to flexibly create users and manage their access rights at individual level – right down to individual functions and menus. The password-protected access management makes your application tamper-proof by means of defined read and write permissions.



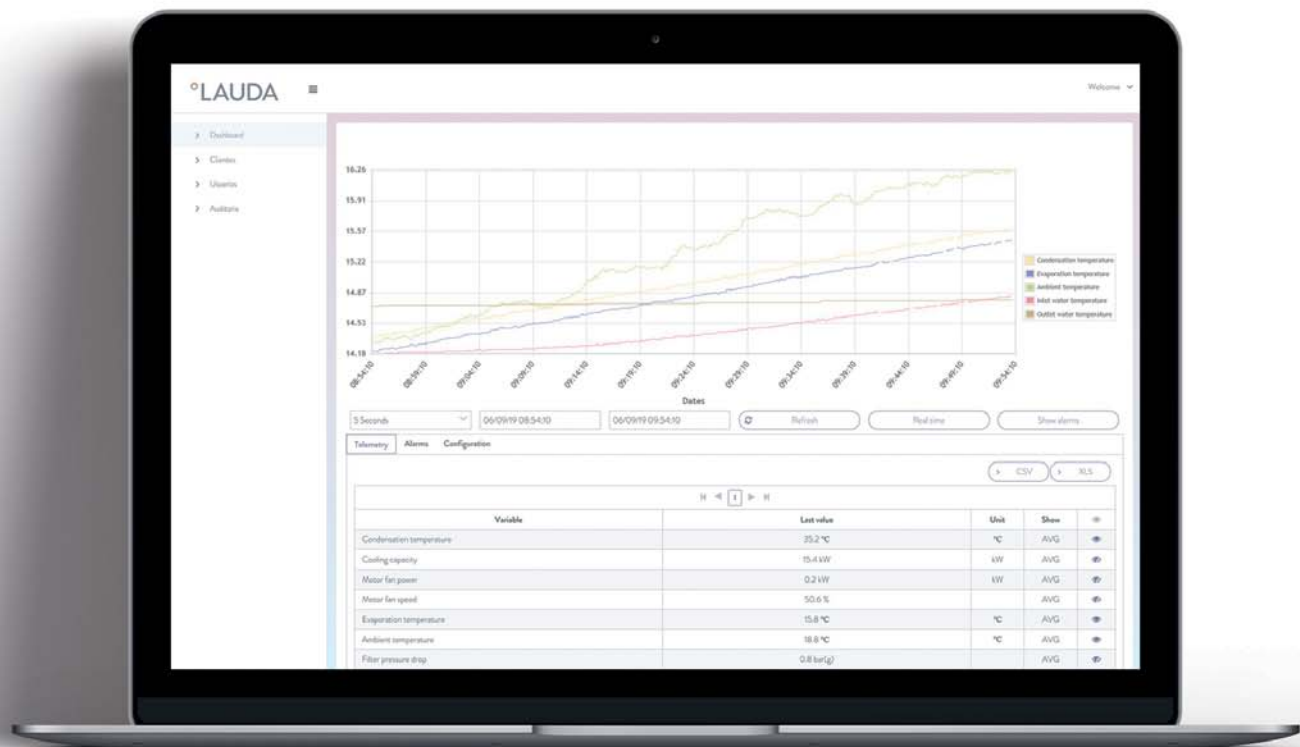
High-precision flow control

LAUDA offers a flow control unit for the new Integral XT and P models which ensures the defined setting and reproducibility of volume flow-dependent test and production processes.

Connectivity

The future: LAUDA.LIVE

With the new Integral series generation, LAUDA is continuing to advance the development of process thermostats and taking the new models into the digital age. With future-oriented connectivity, seamless integration into existing processes and the possibilities of LAUDA.LIVE, LAUDA is offering a digital solution that will make your applications safer and more efficient. LAUDA.LIVE and its application areas are constantly being further developed in order to realize the vision of digitalizing temperature control technology.

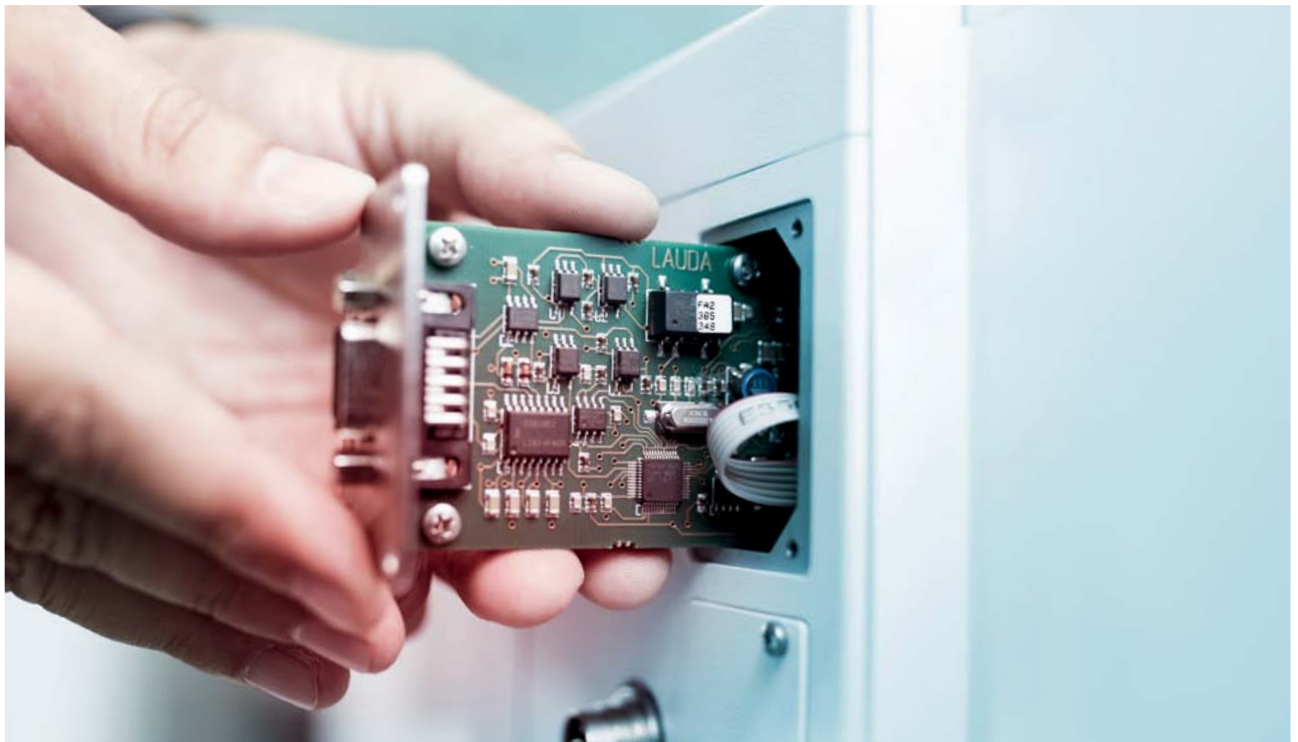


Benefits of LAUDA.LIVE

- Faster service, lower costs: Remote service for the localization of defective components
- Higher reliability and availability: Indicative failure prognosis for early spare parts procurement
- Location-independent control of machine performance and device status
- Efficient system use and fast reaction in the event of a malfunction thanks to a configurable alarm on a tablet or Smartphone
- Secure storage and immediate availability of data such as characteristics, measurement values and machine parameterization
- Continuous updates for maximum performance, more efficiency and extended functions

Interfaces – prepared for everything

The new Integral process thermostats enable maximum networking of user processes, thanks to their modular and future-proof interface concept. The devices feature interfaces such as Ethernet, USB, external Pt100 and malfunction contact as standard. Further interfaces and communication protocols can easily be added via additional modules. A second external Pt100 is also possible. This allows Integral thermostats to be flexibly integrated in various communication scenarios.



LRZ 912
Analog module



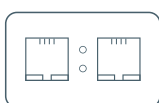
LRZ 913
RS 232/485
interface



LRZ 914
Contact module with a single
input and a single output
(NAMUR)



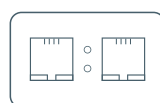
LRZ 915
Contact module with
3 inputs and outputs



LRZ 923
EtherCAT module
with RJ45 connection



LRZ 925
External Pt100/LiBus
module, large cover



LRZ 932
Advanced Profinet module,
LiBus with RJ45 connection

LAUDA Integral T / XT / P in comparison

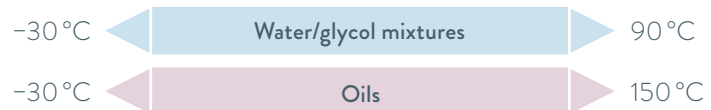
Ideal for your applications, fit for the future

LAUDA INTEGRAL T



LAUDA Integral T process thermostats are optimally suited to the effective monitoring of external temperature control processes in temperatures ranging from -30 to 150 °C. Integral T process thermostats enable fast temperature changes thanks to tailored heating outputs and cooling capacities with small internal volumes.

The open hydraulic system means that the device vents quickly without any impairment of function, and is thus ideal for temperature controlling processes with frequent changes of consumer or user.



LAUDA INTEGRAL XT



LAUDA Integral XT process thermostats operate according to the flow principle with a cold oil overlay which enables the utilization of temperature control media over a significantly larger temperature range—optimal for dynamic temperature control tasks.

The electronically controlled, magnetically coupled pump can set the flow rate optimally both for the requirements of pressure-sensitive consumers and for applications with high hydraulic resistance.

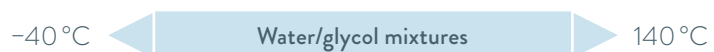


LAUDA INTEGRAL P



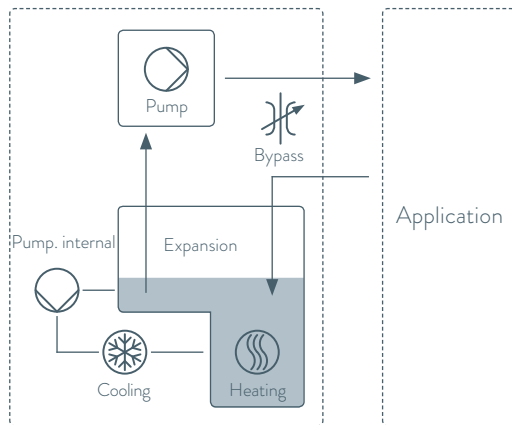
The new **LAUDA Integral P** process thermostats function according to the flow principle, with a pressure overlay of up to 4 bar. This allows non-flammable water/glycol mixtures to be used in a temperature range of -40 to 140 °C.

Thanks to the electronically controlled, magnetically coupled pump, optimized flow rates can be set for different applications.



Hydraulic design

Compact, open bath system (for example, Integral T)



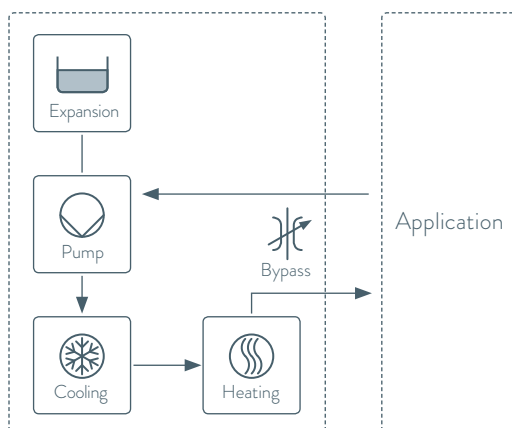
Equipment

- Compact open bath system
- Powerful immersion pressure pump
- Adjustable bypass for pressure limitation
- Independent internal circulation

The benefits

- Fast aeration and outgassing
- High output and working pressures
- Preventive protection for pressure-sensitive consumers
- Heating and cooling functions work independently of the flow rate for the application. The flow can be interrupted, e.g. when changing applications

Cold-oil-overlaid flow system (for example, Integral XT)



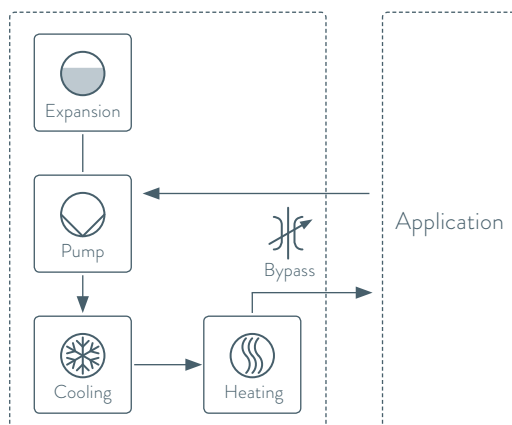
Equipment

- Flow system with a low active volume
- Hydraulic system with a cold oil blanket
- Powerful magnetically coupled Vario pump
- Adjustable bypass for internal flow control

The benefits

- Fast cooling and heating cycles
- Larger temperature range and longer service life of the temperature control media
- Preventive protection for pressure-sensitive consumers provided by an eight-stage Vario pump
- Optimum performance of the XT even at extremely high pressure drops with low flow rates

Pressure-overlaid flow system (for example, Integral P)



Equipment

- Flow system with a low active volume
- Hydraulic system with pressure overlay
- Powerful, magnetically-coupled pump
- Adjustable bypass for internal flow control
- Venturi element for vacuum filling

The benefits

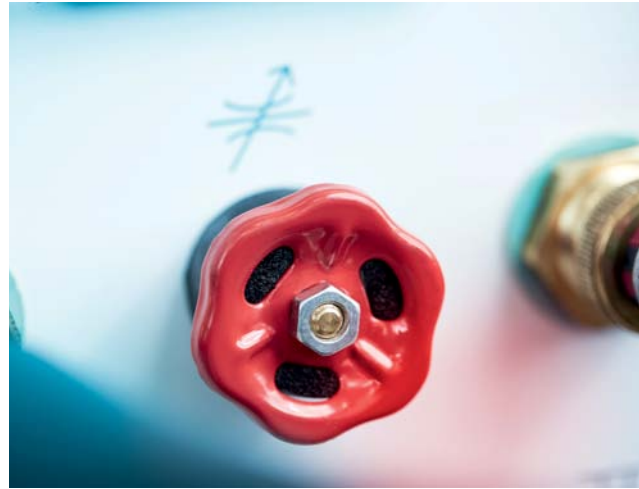
- Quick heating and cooling cycles
- Expanded temperature range for water/glycol applications
- Demand-based flow rates in the application
- Optimal performance of the Integral P even with a high pressure drop in the application
- Simple handling of the consumer's heat transfer liquid

LAUDA Integral T / XT / P in comparison

Optimized pump performance and an integrated bypass

LAUDA INTEGRAL T

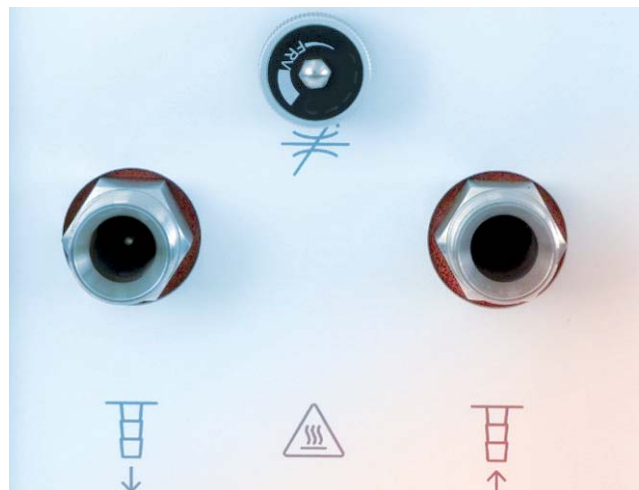
The bypass in the Integral T reduces the linear pump characteristics when it opens. Pressure-sensitive applications can therefore be protected by reducing the discharge pressure. The digital pressure indication in the Integral T display facilitates manual adjustment of the discharge pressure by means of a bypass.



Integrated adjustable bypass

LAUDA INTEGRAL XT / INTEGRAL P

The bypass in the Integral XT and the Integral P is used to increase the internal volume flow and ensures faster and more dynamic heating and cooling performance, especially in applications with a high pressure drop. In the case of pressure-sensitive consumers, the required pressure limitation of the temperature control medium supply can be ensured with the aid of the digitally adjustable flow pressure control.

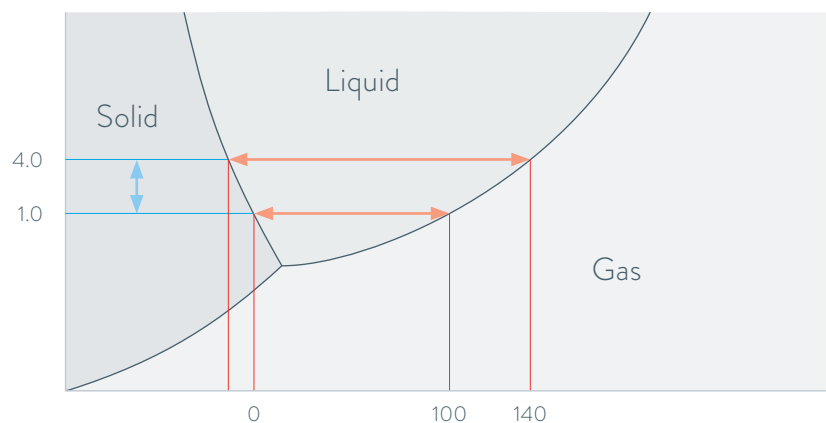


Integrated bypass with fine adjustment

LAUDA INTEGRAL P

Phase diagram of water: At higher pressures, the temperature range of the liquid state is significantly larger. As a result, the Integral P can use water/glycol mixtures as a temperature control medium at temperatures of up to 140 °C.

Pressure [bar]

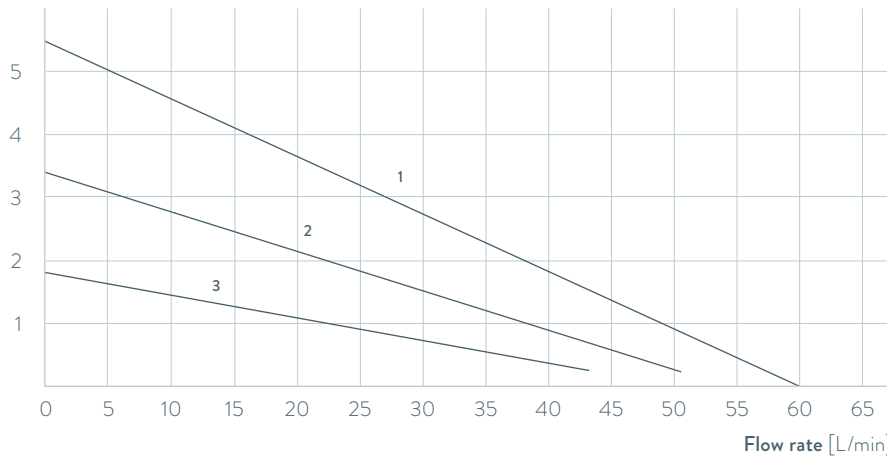


Temperature [°C]

Pump characteristics

PUMP CHARACTERISTICS (example for Integral T; for details, see page 24)

Discharge pressure [bar]

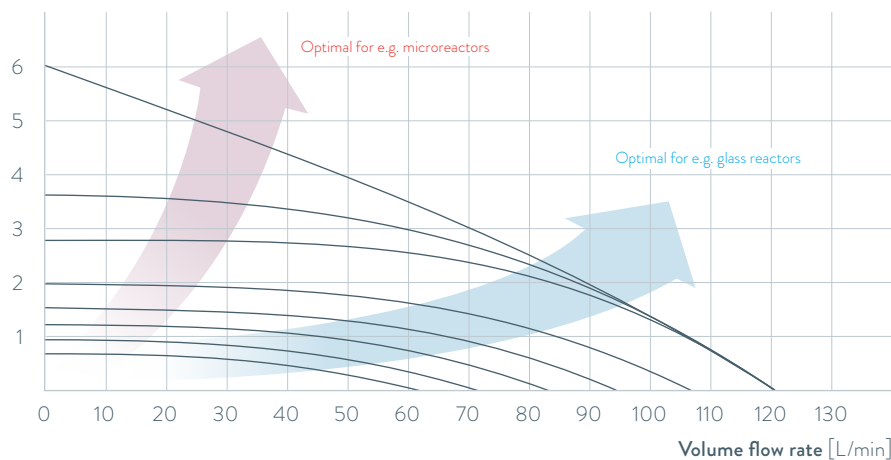


The robust and powerful immersion pressure pump ensures reliable, leak-free and safe operation. The independent internal circulation of the heat transfer liquid ensures maximum heating and cooling capacity.

- 1 Bypass closed
- 2 Bypass slightly open
- 3 Bypass open wider

PUMP CHARACTERISTICS with an extended integrated range of operation and application range (example for Integral XT / P; for details, see page 24)

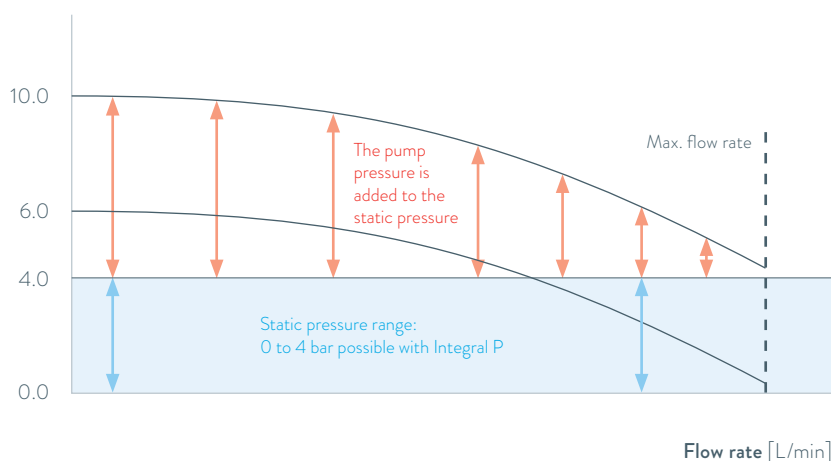
Pressure [bar]



The Integral XT and P use an eight-stage, robust and sealed magnetically coupled Vario pump with selectable characteristics to ensure a reliable supply to the application, even with high flow resistance. The menu-driven selection of the pump level enables optimum thermal connection of the application with the required discharge pressure and volume flow rate.

PUMP CHARACTERISTICS AND PRESSURE OVERLAY (example for Integral P)

Pressure [bar]



On the Integral P, the system pressure can be controlled with a combination of static pressure and pump pressure.

LAUDA Integral

The new generation



Width 1100 mm
Depth 895 mm
Height 1865 mm



Width 760 mm
Depth 650 mm
Height 1605 mm



Width 560 mm
Depth 550 mm
Height 1325 mm



Width 430 mm
Depth 550 mm
Height 760 mm

Modular structure, impressive design

LAUDA Integral devices are available in four different housing sizes and with a cooling capacity of 1.4 to 28 kW*.

Whereas the operating unit for the smallest housing is mounted on the top of the device for the best ergonomic advantage, it is comfortably positioned at eye level on the right hand side of the device on the larger housings.

The electrical and hydraulic connections are located on the right hand side for all devices. Optimum accessibility and visibility are therefore always guaranteed. The uniform operating philosophy and the modern newly developed device design can be consistently found in all variants of the Integral product line.

						Cooling of the refrigerating machine	Heating output	Max. cooling capacity	Dimensions in mm (W x D x H)	Power supply	Part Number
Device type	Temperature range										
Variant T		-100 °C	0 °C			300 °C					
IN 130 T	-30 to 120 °C					Air	2.7 kW	1.40 kW	430 × 550 × 760	230 V; 50 Hz	L002663
IN 230 T	-30 to 120 °C					Air	2.7 kW	2.20 kW	430 × 550 × 760	230 V; 50 Hz	L002664
IN 230 TW	-30 to 120 °C					Water	2.7 kW	2.30 kW	430 × 550 × 760	230 V; 50 Hz	L002665
IN 530 T	-30 to 120 °C					Air	8.0 kW	5.00 kW	560 × 550 × 1325	400 V; 3/PE; 50 Hz & 460 V; 3/PE; 60 Hz	L002666
IN 530 TW	-30 to 120 °C					Water	8.0 kW	6.00 kW	560 × 550 × 1325	400 V; 3/PE; 50 Hz & 460 V; 3/PE; 60 Hz	L002667
IN 1030 T	-30 to 150 °C					Air	8.0 kW	11.00 kW	760 × 650 × 1605	400 V; 3/PE; 50 Hz & 460 V; 3/PE; 60 Hz	L002668
IN 1330 TW	-30 to 150 °C					Water	16.0 kW	13.00 kW	760 × 650 × 1605	400 V; 3/PE; 50 Hz & 460 V; 3/PE; 60 Hz	L002669
IN 1830 TW	-30 to 150 °C					Water	16.0 kW	19.00 kW	760 × 650 × 1605	400 V; 3/PE; 50 Hz & 460 V; 3/PE; 60 Hz	L003274
Variant XT											
IN 150 XT	-45 to 220 °C					Air	3.5 kW	1.50 kW	430 × 550 × 760	230 V; 50 Hz	L002673
IN 250 XTW	-50 to 220 °C					Water	3.5 kW	2.10 kW	430 × 550 × 760	230 V; 50 Hz	L002674
IN 550 XT	-50 to 220 °C					Air	8.0 kW	5.00 kW	560 × 550 × 1325	400 V; 3/PE; 50 Hz & 460 V; 3/PE; 60 Hz	L002675
IN 550 XTW	-50 to 220 °C					Water	8.0 kW	5.80 kW	560 × 550 × 1325	400 V; 3/PE; 50 Hz & 460 V; 3/PE; 60 Hz	L002676
IN 750 XT	-45 to 220 °C					Air	8.0 kW	7.00 kW	560 × 550 × 1325	400 V; 3/PE; 50 Hz & 460 V; 3/PE; 60 Hz	L002677
IN 950 XTW	-50 to 220 °C					Water	8.0 kW	9.50 kW	560 × 550 × 1325	400 V; 3/PE; 50 Hz & 460 V; 3/PE; 60 Hz	L002678
IN 1850 XTW	-50 to 220 °C					Water	16.0 kW	20.00 kW	760 × 650 × 1605	400 V; 3/PE; 50 Hz & 460 V; 3/PE; 60 Hz	L002680
IN 2560 XTW	-60 to 220 °C					Water	24.0 kW	25.00 kW	1100 × 895 × 1865	400 V; 3/PE; 50 Hz & 460 V; 3/PE; 60 Hz	L002681
IN 280 XT	-80 to 220 °C					Air	4.0 kW	1.60 kW	560 × 550 × 1325	400 V; 3/PE; 50 Hz & 460 V; 3/PE; 60 Hz	L002684
IN 280 XTW	-80 to 220 °C					Water	4.0 kW	1.70 kW	560 × 550 × 1325	400 V; 3/PE; 50 Hz & 460 V; 3/PE; 60 Hz	L002685
IN 590 XTW	-90 to 220 °C					Water	8.0 kW	4.50 kW	760 × 650 × 1605	400 V; 3/PE; 50 Hz & 460 V; 3/PE; 60 Hz	L002687
IN 1590 XTW	-90 to 220 °C					Water	12.0 kW	18.50 kW	760 × 650 × 1605	400 V; 3/PE; 50 Hz & 460 V; 3/PE; 60 Hz	L002689
IN 4 XTW	25 to 320 °C					Water	3.5 kW	17.00 kW	430 × 550 × 760	230 V; 50 Hz	L002682
IN 8 XTW	25 to 320 °C					Water	8.0 kW	17.00 kW	430 × 550 × 760	400 V; 3/PE; 50 Hz & 460 V; 3/PE; 60 Hz	L002683
Variant P											
IN 2050 PW	-40 to 140 °C					Water	16.0 kW	20.00 kW	1100 × 895 × 1865	400 V; 3/PE; 50 Hz & 460 V; 3/PE; 60 Hz	L003214
IN 2560 PW	-40 to 140 °C					Water	24.0 kW	25.00 kW	1100 × 895 × 1865	400 V; 3/PE; 50 Hz & 460 V; 3/PE; 60 Hz	L003308

Water-cooled devices are labeled with "W" in the type designation.

* 25 kW at 50 Hz, 28 kW at 60 Hz power supply

LAUDA Integral

Heat transfer liquids

Reliable temperature control at extreme temperatures, with long-term operational stability for a long service life of the thermostat.

Selecting the right heat transfer liquid is of critical importance for safe and reliable operation. Thanks to our decades of experience, we can offer you an extensive range of suitable temperature control liquid for large temperature ranges and reliable heat transfer. The menu-driven heat transfer liquid management of the Integral process thermostats guarantees safe and optimum use of the selected liquid.

Type	Open / half-open systems (Integral T) °C							Closed systems with a cold oil blanket (Integral XT) °C							Part Number 5 L / 10 L / 20 L
	-100 °C	-50 °C	0 °C	100 °C	200 °C	300 °C		-100 °C	-50 °C	0 °C	100 °C	200 °C	300 °C		
Kryo 95 Silicone oil								-95 °C					160 °C		LZB 130 / LZB 230 / LZB 330
Kryo 70 Silicone oil								-70 °C					220 °C		LZB 127 / LZB 227 / LZB 327
Kryo 65 Oil, silicone-free								-65 °C					140 °C		LZB 118 / LZB 218 / LZB 318
Kryo 60 Silicone oil		-60 °C					60 °C								LZB 102 / LZB 202 / LZB 302
Kryo 51 Silicone oil		-50 °C					120 °C								LZB 121 / LZB 221 / LZB 321
Kryo 30 Water / Glycol			-30 °C				90 °C			-30 °C			90 °C		LZB 109 / LZB 209 / LZB 309
Kryo 20 Silicone oil			-20 °C				170 °C								LZB 116 / LZB 216 / LZB 316
Therm 180 Silicone oil			0 °C				180 °C								LZB 114 / LZB 214 / LZB 314
Therm 250 Silicone oil				50 °C			250 °C								LZB 122 / LZB 222 / LZB 322
Ultra 350 Oil, silicone-free				30 °C			200 °C			30 °C			350 °C		LZB 107 / LZB 207 / LZB 307

Note: The Integral P may only be operated with non-combustible media (Kryo 30).
The temperature range of the Kryo 30 is extended from -40 to 140 °C.

LAUDA Accessories

Individual solutions down to the last detail

Optimized to your requirements

The operation of constant temperature equipment requires the use of important accessory components. The Integral can be easily integrated in the application with the appropriate adapters, various tubing connectors, distributors and interface modules.

LAUDA's extensive accessory range offers you ideal add-ons for your complete solution which have proven themselves thousands of times – everything from a single source.



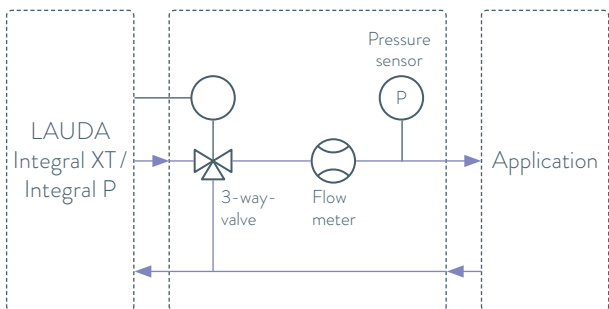
LAUDA Accessories

Flow control MID 80

LAUDA offers the optional MID 80 flow control unit for the new Integral XT and P models, which is indispensable for high reproducibility, especially when creating volume flow-dependent test processes.

The MID 80 flow control unit guarantees a defined flow rate to the consumer. The intelligent control system allows the defined flow rate to be kept constant, even if the viscosity, temperature and specimen change.

Thanks to the integrated pressure sensor, the flow rate can be optimized or limited as required on the application side, independently of the pressure in the Integral.



Flow control range:	0.2 ... 70 L/min
Measuring accuracy:	± 0.3 % of the measurement value
Control accuracy:	± 0.2 L/min

Part Number	Designation	Description
L003217	LAUDA MID 80 flow controller LiBus, compatible with Integral XT and Integral P	Permissible temperature control media: Water/glycol mixtures Working temperature range: -40 ... 140 °C Flow control range: 0.2 ... 70 L/min Flow control accuracy (20 °C; 20 L/min; 1 bar): 0.2 ± L/min
LSOZ0015	Hose set M38 × 1.5 l to M30 × 1.5 l	Two-piece, 1.9 m long / 19 mm insulation
LSOZ0033	Hose set M38 × 1.5 at both ends	Two-piece, 1.9 m long / 19 mm insulation



Part Number	Description	Length (cm)	di (mm)	da (mm)	Temp. range °C	Insulation	
Metal hoses							
LZM 091	Metal hose M30 × 1.5 I - M30 × 1.5 I	100	20	76	-100 ... 350	Multi-layered insulation	
LZM 092	Metal hose M30 × 1.5 I - M30 × 1.5 I	200	20	76	-100 ... 350	Multi-layered insulation	
LZM 093	Metal hose M30 × 1.5 I - M30 × 1.5 I	300	20	76	-100 ... 350	Multi-layered insulation	
LZM 087	Metal hose M30 × 1.5 I - M30 × 1.5 I	100	20	76	-90 ... 150	Single-layered insulation	
LZM 088	Metal hose M30 × 1.5 I - M30 × 1.5 I	200	20	76	-90 ... 150	Single-layered insulation	
LZM 089	Metal hose M30 × 1.5 I - M30 × 1.5 I	300	20	76	-90 ... 150	Single-layered insulation	
LZM 094	Metal hose M38 × 1.5 I - M38 × 1.5 I	100	25	78	-100 ... 350	Multi-layered insulation	
LZM 095	Metal hose M38 × 1.5 I - M38 × 1.5 I	200	25	78	-100 ... 350	Multi-layered insulation	
LZM 096	Metal hose M38 × 1.5 I - M38 × 1.5 I	300	25	78	-100 ... 350	Multi-layered insulation	
LZM 075	Metal hose G¾" I - G¾" I	100	20	51	-50 ... 150	Single-layered insulation	
LZM 076	Metal hose G¾" I - G¾" I	200	20	51	-50 ... 150	Single-layered insulation	

Part Number	Designation	Description / Connection	
Adapter M30 × 1.5 Stainless steel			
HKA 161 (Fig.) left	Nipple	½" nipple with ball bush	
HKA 162 (Fig.) right	Nipple	¾" nipple with ball bush	
EOV 196 (Fig.) left	Screw cap	M30 × 1,5 I	
HKA 152 (Fig.) right	Adapter	M30 × 1.5 A - M16 × 1 I	
HKA 170 (Fig.) left	Adapter	M30 × 1.5 I - G¾" A	
HKA 172 (Fig.) right	Adapter	M30 × 1,5 I - NPT¾" A	
HKA 156 (Fig.) left	Flange adapter	M30 × 1.5 A - Flange DN25 × 33.7 mm	
HKA 153 (Fig.) right	Elbow coupling	M30 × 1.5 I - M30 × 1.5 A	
EOV 208 (Fig.) left	Double nipple	2 × M30 × 1.5 A - M30 × 1.5 A	
UD 660 (Fig.) right	Reducer	M30 × 1.5 I - M16 × 1 A	
HKN 232 (Fig.) left	Threaded connection for welding on	M30 × 1.5 A - ID=22.3 / AD=26.9 mm	
EOV 194 (Fig.) right	Screw-in stud	M30 × 1.5 A - G¾" A	
EOV 206 (Fig.) left	Screw-in stud	M30 × 1.5 A - G1" A	
EOV 207 (Fig.) right	Screw-in stud	M30 × 1.5 A - NPT¾" A	
EOV 204 (Fig.) left	Ball bush	ID=22.2 / AD=24 mm	
HKN 248 (Fig.) right	Threaded connection	M30 × 1.5 A - ID=10.2 / AD=12.7 mm	

Adapter M38 × 1.5 Stainless steel			
HKA 168 (Fig.) left	Nipple	1" nipple with ball bush	
EOV 197 (Fig.) right	Screw cap	M38 × 1,5 I	
UD 663 (Fig.) left	Reducer	M38 × 1.5 I - M30 × 1.5 A	
EOV 195 (Fig.) right	Screw-in stud	M38 × 1.5 - G1"	
EOV 223 (Fig.) left	Screw-in stud	M38 × 1.5 - G1¼"	
EOV 224 (Fig.) right	Screw-in stud	M38 × 1.5 - NPT1"	
HKA 198 (Fig.) left	Flange adapter	M38 × 1.5 A - Flange DN25 × 33.7 mm	
HKA 165 (Fig.) right	Elbow coupling	M38 × 1.5 I - M38 × 1.5 A	

Ball cocks			
LWZ 073	Ball cock -30 ... 180 °C	M30 × 1.5 I - M30 × 1.5 A	
LWZ 074	Ball cock -30 ... 180 °C	M38 × 1.5 I - M38 × 1.5 A	
LWZ 134	Ball cock -20 ... 150 °C	G¾" I - G¾" A	

Further information available at www.lauda.de/en/accessories

LAUDA Integral

Technical data acc. to DIN 12876

Device type	Working temperature range °C	Temperature stability ±K	Cooling of the refrigerating machine	Max. heating output kW	Cooling capacity (50 Hz) kW													
					200 °C	100 °C	20 °C	10 °C	0 °C	-10 °C	-20 °C	-30 °C	-40 °C	-50 °C	-60 °C	-70 °C	-80 °C	-90 °C
LAUDA Integral T																		
IN 130 T	-30 ... 120	0.05	Air	2.7	-	1.40	1.40	1.35	1.20	0.80	0.40	0.10	-	-	-	-	-	-
IN 230 T	-30 ... 120	0.05	Air	2.7	-	2.20	2.20	1.90	1.50	1.00	0.60	0.15	-	-	-	-	-	-
IN 230 TW	-30 ... 120	0.05	Water	2.7	-	2.30	2.30	2.30	1.90	1.30	0.75	0.35	-	-	-	-	-	-
IN 530 T	-30 ... 120	0.05	Air	8.0	-	5.00	5.00	4.50	3.80	2.60	1.50	0.60	-	-	-	-	-	-
IN 530 TW	-30 ... 120	0.05	Water	8.0	-	6.00	6.00	5.50	4.50	3.00	1.60	0.70	-	-	-	-	-	-
IN 1030 T	-30 ... 150	0.10	Air	8.0	-	11.0	11.0	9.50	7.10	4.90	3.00	1.60	-	-	-	-	-	-
IN 1330 TW	-30 ... 150	0.10	Water	16.0	-	13.0	13.0	10.0	7.60	5.40	3.40	1.70	-	-	-	-	-	-
IN 1830 TW	-30 ... 150	0.10	Water	16.0	-	19.0	19.0	15.0	11.5	7.50	5.00	2.70	-	-	-	-	-	-
LAUDA Integral XT																		
IN 150 XT	-45 ... 220	0.05	Air	3.5	1.50 ³	1.50 ³	1.50 ³	1.50 ³	1.30 ³	1.00 ³	0.70 ²	0.30 ²	0.06 ²	-	-	-	-	-
IN 250 XTW	-45 ... 220	0.05	Water	3.5	2.20 ³	2.20 ³	2.10 ³	2.00 ³	1.80 ³	1.40 ³	1.00 ²	0.55 ²	0.20 ²	-	-	-	-	-
IN 550 XT	-50 ... 220	0.05	Air	8.0	5.00 ³	5.00 ³	5.00 ³	4.80 ³	4.60 ³	3.30 ³	2.30 ²	1.20 ²	0.50 ²	0.10 ¹	-	-	-	-
IN 550 XTW	-50 ... 220	0.05	Water	8.0	5.80 ³	5.80 ³	5.80 ³	5.80 ³	5.40 ³	4.00 ³	2.60 ²	1.45 ²	0.55 ²	0.12 ¹	-	-	-	-
IN 750 XT	-45 ... 220	0.05	Air	8.0	7.00 ³	7.00 ³	7.00 ³	7.00 ³	5.40 ³	3.60 ³	2.60 ²	1.60 ²	0.80 ²	-	-	-	-	-
IN 950 XTW	-50 ... 220	0.05	Water	8.0	9.50 ³	9.50 ³	9.50 ³	8.50 ³	6.20 ³	4.30 ³	3.00 ²	1.70 ²	0.90 ²	0.35 ¹	-	-	-	-
IN 1850 XTW	-50 ... 220	0.05	Water	16.0	20.0 ³	20.0 ³	20.0 ³	15.0 ³	11.5 ³	8.50 ³	6.10 ²	3.60 ²	1.90 ²	1.10 ¹	-	-	-	-
IN 2560 XTW	-60 ... 220	0.10	Water	24.0	25.0 ³	25.0 ³	25.0 ³	24.5 ³	22.5 ³	22.0 ³	18.5 ²	12.5 ³	8.70 ²	5.00 ²	3.00 ²	-	-	-
IN 280 XT	-80 ... 220	0.05	Air	4.0	1.60 ³	1.60 ³	1.60 ³	1.55 ³	1.50 ³	1.50 ³	1.70 ²	1.70 ²	1.65 ²	1.40 ²	0.85 ²	0.35 ²	0.15 ¹	-
IN 280 XTW	-80 ... 220	0.05	Water	4.0	1.70 ³	1.70 ³	1.70 ³	1.65 ³	1.60 ³	1.60 ³	1.80 ²	1.80 ²	1.80 ²	1.50 ²	0.90 ²	0.45 ²	0.18 ¹	-
IN 590 XTW	-90 ... 220	0.05	Water	8.0	4.50 ³	4.50 ³	4.50 ³	4.50 ³	4.50 ³	4.40 ³	4.60 ²	4.60 ²	4.50 ²	4.20 ²	2.70 ²	1.40 ²	0.60 ²	0.20 ¹
IN 1590 XTW	-90 ... 220	0.05	Water	12.0	18.5 ³	18.5 ³	18.5 ³	15.0 ³	11.5 ³	8.70 ³	8.50 ²	8.50 ²	7.50 ²	6.00 ²	4.00 ²	2.20 ²	0.90 ²	0.35 ¹
IN 4 XTW*	25 ... 320	0.10	Water	3.5	17.0 ³	10.0 ³	-	-	-	-	-	-	-	-	-	-	-	-
IN 8 XTW*	25 ... 320	0.10	Water	8.0	17.0 ³	10.0 ³	-	-	-	-	-	-	-	-	-	-	-	-
LAUDA Integral P																		
IN 2050 PW	-40 ... 140	0.05	Water	16.0	-	20.0 ³	20.0 ³	15.0 ³	10.8 ³	7.80 ³	4.80 ²	3.00 ²	1.60 ²	-	-	-	-	-
IN 2560 PW	-40 ... 140	0.10	Water	24.0	-	25.0 ³	25.0 ³	25.0 ³	24.5 ³	24.0 ³	17.7 ³	11.0 ³	7.50 ³	-	-	-	-	-

* Cooling water supply must be provided for operation.

¹ Pump level 2 ² Pump level 4 ³ Pump level 8

Max. discharge pressure (50 Hz) bar	Max. flow rate Pressure (50 Hz) L/min	Pump connection thread mm	Min. filling volume L	Filling volume L	Dimensions (W x D x H) mm	Protection level	Noise level dB(A)	Weight kg	Max. power consumption kW		Mains voltage V; Hz	Part Number	Device type
3.5	40	G 3/4	3.6	8.7	430×550×760	IP 21	61	79.0	3.7		230 V; 50 Hz	L002663	IN 130 T
3.5	40	G 3/4	3.6	8.7	430×550×760	IP 21	63	84.0	3.7		230 V; 50 Hz	L002664	IN 230 T
3.5	40	G 3/4	3.6	8.7	430×550×760	IP 21	60	85.0	3.7		230 V; 50 Hz	L002665	IN 230 TW
3.5	40	G 3/4	7.2	20.5	560×550×1325	IP 21	66	148.5	11.0	400 V; 3/PE; 50 Hz & 460 V; 3/PE; 60 Hz		L002666	IN 530 T
3.5	40	G 3/4	7.2	20.5	560×550×1325	IP 21	62	149.5	11.0	400 V; 3/PE; 50 Hz & 460 V; 3/PE; 60 Hz		L002667	IN 530 TW
5.5	60	M38×1.5	9.7	25.5	760×650×1605	IP 21	70	222.5	11.0	400 V; 3/PE; 50 Hz & 460 V; 3/PE; 60 Hz		L002668	IN 1030 T
5.5	60	M38×1.5	9.7	25.5	760×650×1605	IP 21	62	225.0	18.0	400 V; 3/PE; 50 Hz & 460 V; 3/PE; 60 Hz		L002669	IN 1330 TW
5.5	60	M38×1.5	9.7	25.5	760×650×1605	IP 21	67	231.0	18.0	400 V; 3/PE; 50 Hz & 460 V; 3/PE; 60 Hz		L003274	IN 1830 TW
3.1	65	M30×1.5	2.5	8.7	430×550×760	IP 21	60	102.5	3.7		230 V; 50 Hz	L002673	IN 150 XT
3.1	65	M30×1.5	2.5	8.7	430×550×760	IP 21	57	105.5	3.7		230 V; 50 Hz	L002674	IN 250 XTW
3.1	65	M30×1.5	4.8	17.2	560×550×1325	IP 21	65	176.5	10.5	400 V; 3/PE; 50 Hz & 460 V; 3/PE; 60 Hz		L002675	IN 550 XT
3.1	65	M30×1.5	4.8	17.2	560×550×1325	IP 21	64	176.5	10.5	400 V; 3/PE; 50 Hz & 460 V; 3/PE; 60 Hz		L002676	IN 550 XTW
3.1	65	M30×1.5	4.8	17.2	560×550×1325	IP 21	68	175.5	11.0	400 V; 3/PE; 50 Hz & 460 V; 3/PE; 60 Hz		L002677	IN 750 XT
3.1	65	M30×1.5	4.8	17.2	560×550×1325	IP 21	69	176.0	11.0	400 V; 3/PE; 50 Hz & 460 V; 3/PE; 60 Hz		L002678	IN 950 XTW
6.0	120	M38×1.5	8.0	28.6	760×650×1605	IP 21	62	287.5	18.0	400 V; 3/PE; 50 Hz & 460 V; 3/PE; 60 Hz		L002680	IN 1850 XTW
6.0	100	M38×1.5	12.6	34.4	1100×895×1865	IP 21	74	615.0	37.0	400 V; 3/PE; 50 Hz & 460 V; 3/PE; 60 Hz		L002681	IN 2560 XTW
3.1	65	M30×1.5	4.8	17.2	560×550×1325	IP 21	63	198.0	9.0	400 V; 3/PE; 50 Hz & 460 V; 3/PE; 60 Hz		L002684	IN 280 XT
3.1	65	M30×1.5	4.8	17.2	560×550×1325	IP 21	62	194.5	9.0	400 V; 3/PE; 50 Hz & 460 V; 3/PE; 60 Hz		L002685	IN 280 XTW
3.1	65	M30×1.5	8.0	28.6	760×650×1605	IP 21	64	279.0	11.0	400 V; 3/PE; 50 Hz & 460 V; 3/PE; 60 Hz		L002687	IN 590 XTW
3.1	65	M38×1.5	10.0	30.6	760×650×1605	IP 21	65	356.0	19.0	400 V; 3/PE; 50 Hz & 460 V; 3/PE; 60 Hz		L002689	IN 1590 XTW
3.1	60	M30×1.5	3.3	9.5	430×550×760	IP 21	52	78.0	3.7		230 V; 50 Hz	L002682	IN 4 XTW
3.1	60	M30×1.5	3.6	9.8	430×550×760	IP 21	52	85.0	9.0	400 V; 3/PE; 50 Hz & 460 V; 3/PE; 60 Hz		L002683	IN 8 XTW
6.0	120	M38×1.5	11.1	36.3	1100×895×1865	IP 21	58	382.0	18.0	400 V; 3/PE; 50 Hz & 460 V; 3/PE; 60 Hz		L003214	IN 2050 PW
6.0	100	M38×1.5	12.1	48.1	1100×895×1865	IP 21	74	647.0	37.0	400 V; 3/PE; 50 Hz & 460 V; 3/PE; 60 Hz		L003308	IN 2560 PW

LAUDA Integral

Technical data NRTL according to UL and CSA

Device type	Working temperature range °C	Temperature stability ±K	Cooling of the refrigerating machine	Max. heating output kW	Cooling capacity (60 Hz) kW													
					200 °C	100 °C	20 °C	10 °C	0 °C	-10 °C	-20 °C	-30 °C	-40 °C	-50 °C	-60 °C	-70 °C	-80 °C	-90 °C
LAUDA Integral T																		
IN 130 T	-30 ... 120	0.05	Air	2.7	-	1.40	1.40	1.35	1.20	0.80	0.40	0.10	-	-	-	-	-	-
IN 230 T	-30 ... 120	0.05	Air	2.7	-	2.20	2.20	1.90	1.50	1.00	0.60	0.15	-	-	-	-	-	-
IN 230 TW	-30 ... 120	0.05	Water	2.7	-	2.30	2.30	2.30	1.90	1.30	0.75	0.35	-	-	-	-	-	-
IN 530 T	-30 ... 120	0.05	Air	8.0	-	5.00	5.00	4.50	3.80	2.60	1.50	0.60	-	-	-	-	-	-
IN 530 TW	-30 ... 120	0.05	Water	8.0	-	6.00	6.00	5.50	4.50	3.00	1.60	0.70	-	-	-	-	-	-
IN 1030 T	-30 ... 150	0.10	Air	8.0	-	11.0	11.0	9.50	7.10	4.90	3.00	1.60	-	-	-	-	-	-
IN 1330 TW	-30 ... 150	0.10	Water	16.0	-	13.0	13.0	10.0	7.60	5.40	3.40	1.70	-	-	-	-	-	-
IN 1830 TW	-30 ... 150	0.10	Water	16.0	-	19.0	19.0	15.0	11.5	7.50	5.00	2.70	-	-	-	-	-	-
LAUDA Integral XT																		
IN 150 XT	-45 ... 220	0.05	Air	3.3	1.50 ³	1.50 ³	1.50 ³	1.50 ³	1.30 ³	1.00 ³	0.70 ²	0.30 ²	0.06 ²	-	-	-	-	-
IN 250 XTW	-45 ... 220	0.05	Water	3.4	2.20 ³	2.20 ³	2.10 ³	2.00 ³	1.80 ³	1.40 ³	1.00 ²	0.55 ²	0.20 ²	-	-	-	-	-
IN 550 XT	-50 ... 220	0.05	Air	8.0	5.00 ³	5.00 ³	5.00 ³	4.80 ³	4.60 ³	3.30 ³	2.30 ²	1.20 ²	0.50 ²	0.10 ¹	-	-	-	-
IN 550 XTW	-50 ... 220	0.05	Water	8.0	5.80 ³	5.80 ³	5.80 ³	5.80 ³	5.40 ³	4.00 ³	2.60 ²	1.45 ²	0.55 ²	0.12 ¹	-	-	-	-
IN 750 XT	-45 ... 220	0.05	Air	8.0	7.00 ³	7.00 ³	7.00 ³	7.00 ³	5.40 ³	3.60 ³	2.60 ²	1.60 ²	0.80 ²	-	-	-	-	-
IN 950 XTW	-50 ... 220	0.05	Water	8.0	9.50 ³	9.50 ³	9.50 ³	8.50 ³	6.20 ³	4.30 ³	3.00 ²	1.70 ²	0.90 ²	0.35 ¹	-	-	-	-
IN 1850 XTW	-50 ... 220	0.05	Water	16.0	20.0 ³	20.0 ³	20.0 ³	15.0 ³	11.5 ³	8.50 ³	6.10 ²	3.60 ²	1.90 ²	1.10 ¹	-	-	-	-
IN 2560 XTW*	-60 ... 220	0.10	Water	24.0	28.0 ³	28.0 ³	28.0 ³	27.5 ³	25.5 ³	25.0 ³	21.1 ²	14.9 ³	9.50 ²	5.40 ²	3.30 ²	-	-	-
IN 280 XT	-80 ... 220	0.05	Air	4.0	1.60 ³	1.60 ³	1.60 ³	1.55 ³	1.50 ³	1.50 ³	1.70 ²	1.70 ²	1.65 ²	1.40 ²	0.85 ²	0.35 ²	0.15 ¹	-
IN 280 XTW	-80 ... 220	0.05	Water	4.0	1.70 ³	1.70 ³	1.70 ³	1.65 ³	1.60 ³	1.60 ³	1.80 ²	1.80 ²	1.80 ²	1.50 ²	0.90 ²	0.45 ²	0.18 ¹	-
IN 590 XTW	-90 ... 220	0.05	Water	8.0	4.50 ³	4.50 ³	4.50 ³	4.45 ³	4.40 ³	4.40 ³	4.60 ²	4.60 ²	4.50 ²	4.20 ²	2.70 ²	1.40 ²	0.60 ²	0.20 ¹
IN 1590 XTW	-90 ... 220	0.05	Water	12.0	18.5 ³	18.5 ³	18.5 ³	16.0 ³	12.2 ³	9.00 ³	9.00 ²	9.00 ²	8.50 ²	7.00 ²	5.20 ²	3.40 ²	1.50 ²	0.50 ¹
IN 4 XTW* **	25 ... 320	0.10	Water	3.3	17.0 ³	10.0 ³	-	-	-	-	-	-	-	-	-	-	-	-
IN 8 XTW* **	25 ... 320	0.10	Water	8.0	17.0 ³	10.0 ³	-	-	-	-	-	-	-	-	-	-	-	-
LAUDA Integral P																		
IN 2050 PW*	-40 ... 140	0.05	Water	16.0	-	20.0 ³	20.0 ³	15.0 ³	10.8 ³	7.80 ³	4.80 ²	3.00 ²	1.60 ²	-	-	-	-	-
IN 2560 PW*	-40 ... 140	0.10	Water	24.0	-	28.0 ³	28.0 ³	28.0 ³	27.5 ³	27.0 ³	19.0 ³	12.0 ³	7.70 ³	-	-	-	-	-

* NRTL certification in progress

** Cooling water supply must be provided for operation.

¹ Pump level 2 ² Pump level 4 ³ Pump level 8

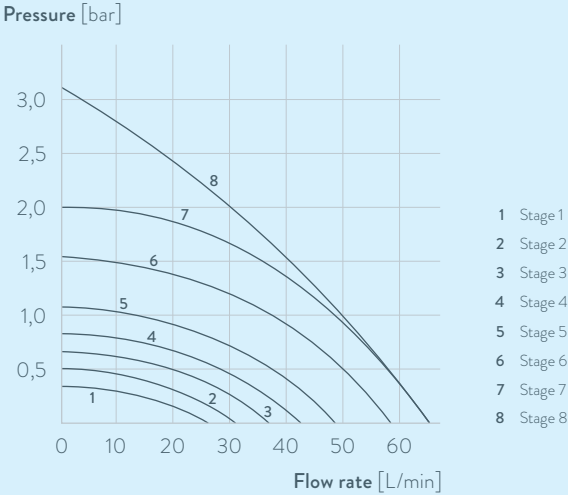
Max. pump pressure (60 Hz) bar	Max. flow rate Pressure (60 Hz) L/min	Pump connection thread mm	Min. filling volume L	Filling volume L	Dimensions (W x D x H) mm	Protection level	Noise level dB(A)	Weight kg	Max. power consumption kW		Mains voltage V; Hz	Part Number	Device type
4.5	45	G 3/4	3.6	8.7	430×550×760	IP 21	61	85.0	3.5		208 - 220 V; 60 Hz	L002788	IN 130 T
4.5	45	G 3/4	3.6	8.7	430×550×760	IP 21	63	85.0	3.5		208 - 220 V; 60 Hz	L002791	IN 230 T
4.5	45	G 3/4	3.6	8.7	430×550×760	IP 21	60	86.0	3.5		208 - 220 V; 60 Hz	L002792	IN 230 TW
4.6	65	G 3/4	7.2	20.5	560×550×1325	IP 21	66	150.0	11.0	400 V; 3/PE; 50 Hz & 460 V; 3/PE; 60 Hz		L002883	IN 530 T
4.6	65	G 3/4	7.2	20.5	560×550×1325	IP 21	62	149.5	11.0	400 V; 3/PE; 50 Hz & 460 V; 3/PE; 60 Hz		L002884	IN 530 TW
7.0	70	M38×1.5	9.7	25.5	760×650×1605	IP 21	70	219.0	11.0	400 V; 3/PE; 50 Hz & 460 V; 3/PE; 60 Hz		L002885	IN 1030 T
7.0	70	M38×1.5	9.7	25.5	760×650×1605	IP 21	62	224.0	18.0	400 V; 3/PE; 50 Hz & 460 V; 3/PE; 60 Hz		L002886	IN 1330 TW
7.0	70	M38×1.5	9.7	25.5	760×650×1605	IP 21	67	231.0	18.0	400 V; 3/PE; 50 Hz & 460 V; 3/PE; 60 Hz		L003274	IN 1830 TW
3.1	65	M30×1.5	2.5	8.7	430×550×760	IP 21	60	107.0	3.5		208 - 220 V; 60 Hz	L002794	IN 150 XT
3.1	65	M30×1.5	2.5	8.7	430×550×760	IP 21	57	105.5	3.5		208 - 220 V; 60 Hz	L002796	IN 250 XTW
3.1	65	M30×1.5	4.8	17.2	560×550×1325	IP 21	65	179.0	10.5	400 V; 3/PE; 50 Hz & 460 V; 3/PE; 60 Hz		L002887	IN 550 XT
3.1	65	M30×1.5	4.8	17.2	560×550×1325	IP 21	64	176.5	10.5	400 V; 3/PE; 50 Hz & 460 V; 3/PE; 60 Hz		L002888	IN 550 XTW
3.1	65	M30×1.5	4.8	17.2	560×550×1325	IP 21	68	176.0	11.0	400 V; 3/PE; 50 Hz & 460 V; 3/PE; 60 Hz		L002889	IN 750 XT
3.1	65	M30×1.5	4.8	17.2	560×550×1325	IP 21	69	181.0	11.0	400 V; 3/PE; 50 Hz & 460 V; 3/PE; 60 Hz		L002890	IN 950 XTW
6.0	120	M38×1.5	8.0	28.6	760×650×1605	IP 21	62	287.5	18.0	400 V; 3/PE; 50 Hz & 460 V; 3/PE; 60 Hz		L002895	IN 1850 XTW
6.0	100	M38×1.5	12.6	34.4	1100×895×1865	IP 21	74	615.0	37.0	400 V; 3/PE; 50 Hz & 460 V; 3/PE; 60 Hz		L002681	IN 2560 XTW
3.1	65	M30×1.5	4.8	17.2	560×550×1325	IP 21	63	198.0	9.0	400 V; 3/PE; 50 Hz & 460 V; 3/PE; 60 Hz		L002892	IN 280 XT
3.1	65	M30×1.5	4.8	17.2	560×550×1325	IP 21	62	194.5	9.0	400 V; 3/PE; 50 Hz & 460 V; 3/PE; 60 Hz		L002893	IN 280 XTW
3.1	65	M30×1.5	8.0	28.6	760×650×1605	IP 21	64	277.5	11.0	400 V; 3/PE; 50 Hz & 460 V; 3/PE; 60 Hz		L002897	IN 590 XTW
3.1	65	M38×1.5	10.0	30.6	760×650×1605	IP 21	65	366.0	19.0	400 V; 3/PE; 50 Hz & 460 V; 3/PE; 60 Hz		L002898	IN 1590 XTW
3.1	60	M30×1.5	3.3	9.5	430×550×760	IP 21	52	78.0	3.5		208 - 220 V; 60 Hz	L002800	IN 4 XTW
3.1	60	M30×1.5	3.6	9.8	430×550×760	IP 21	52	85.0	9.0	400 V; 3/PE; 50 Hz & 460 V; 3/PE; 60 Hz		L002891	IN 8 XTW
6.0	120	M38×1.5	11.1	36.3	1100×895×1865	IP 21	58	382.0	18.0	400 V; 3/PE; 50 Hz & 460 V; 3/PE; 60 Hz		L003319	IN 2050 PW
6.0	100	M38×1.5	12.1	48.1	1100×895×1865	IP 21	74	647.0	37.0	400 V; 3/PE; 50 Hz & 460 V; 3/PE; 60 Hz		L003308	IN 2560 PW

LAUDA Integral T, XT and P

Further characteristics

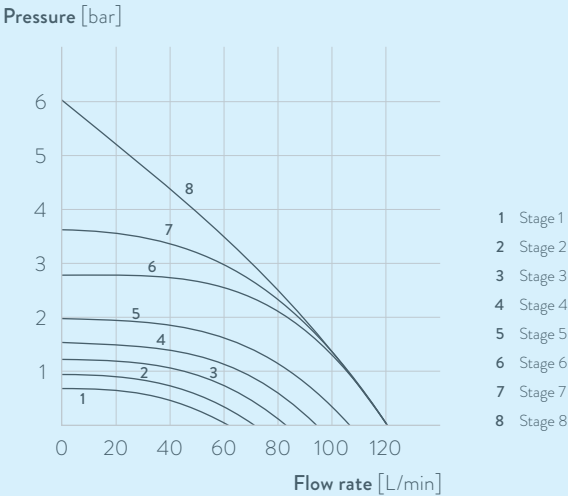
LAUDA Integral IN 150 XT, 250 XTW, 280 XT, 280 XTW, 590 XT, 590 XTW, 550 XT, 550 XTW, 750 XT, 950 XTW, 1350 XTW, 1590 XTW

PUMP CHARACTERISTICS Liquid: Water



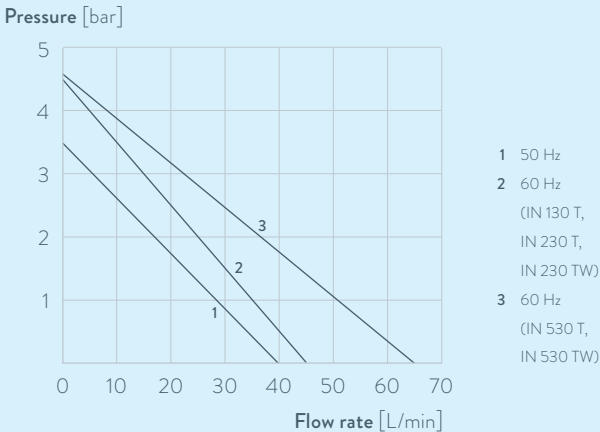
LAUDA Integral IN 1850 XTW, IN 2050 PW

PUMP CHARACTERISTICS Liquid: Water



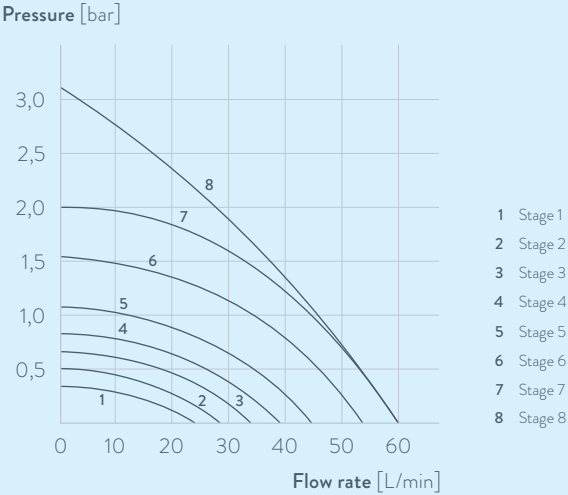
LAUDA Integral IN 130 T, IN 230 T, IN 230 TW, IN 530 T, IN 530 TW

PUMP CHARACTERISTICS Liquid: Water



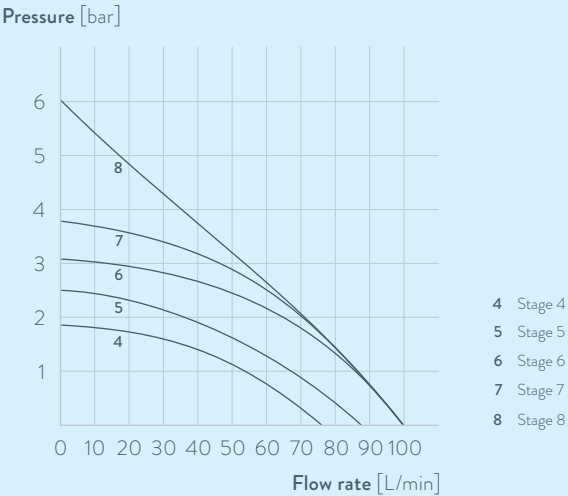
LAUDA Integral IN 4 XTW, IN 8 XTW

PUMP CHARACTERISTICS Liquid: Water



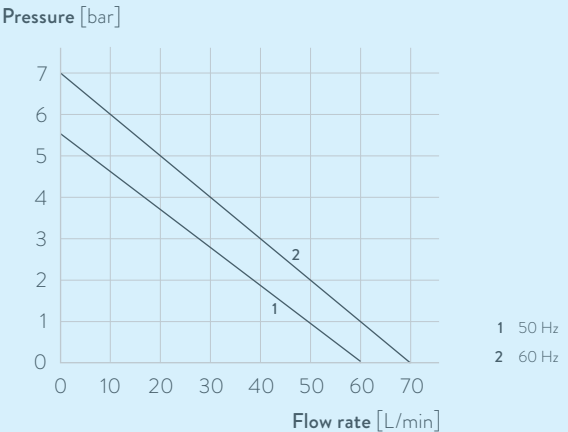
LAUDA Integral IN 2560 XTW / PW

PUMP CHARACTERISTICS Liquid: Water



LAUDA Integral IN 1030 T, IN 1330 TW, IN 1830 TW

PUMP CHARACTERISTICS Liquid: Water



Operating element	Command Touch	Integral T	Integral XT	Integral P
Display	TFT	TFT	TFT	TFT
Display size	5.7"; 640 x 480	3.5"; 320 x 240	3.5"; 320 x 240	3.5"; 320 x 240
Mode of operation	Multi-touch	Cursor softkey	Cursor softkey	Cursor softkey
Operating languages	8	6	6	6
Operation removable / extension up to	✓ / 50 m	- / -	- / -	- / -
User management Standard	Operator / Viewer	Operator / Viewer	Operator / Viewer	Operator / Viewer
User management Extended	Admin / 19 User	- / -	- / -	- / -
Data logging, export to USB stick	✓	✓	✓	✓
Level indicator (digital)	✓	✓	✓	✓
Standby timer	✓	✓	✓	✓
Safe mode	✓	✓	✓	✓
Pump pressure display (digital)	✓	✓	✓	✓
Flow pressure control	-	-	✓	✓
1-point calibration internal / external	✓	✓	✓	✓
2-point calibration internal	✓	✓	✓	✓
Graphic temperature profile display	✓	✓	✓	✓
Hydraulic plan	✓	-	-	-
Customizable display	✓	-	-	-
Self-adaptation controller	✓	✓	✓	✓
Programmer programs / segments per program	100 / 250	5 / 146	5 / 146	5 / 146
Programmer, tolerance range function	✓	✓	✓	✓
Ramp function	✓	-	-	-
Date / time	✓	✓	✓	✓
Timer function	✓	✓	✓	✓
Weekly timer	✓	✓	✓	✓
Countdown function	✓	-	-	-
Time absolute or relative	✓	-	-	-
Drain tap	✓	✓	✓	✓

