



INDUSTRIAL TEMPERATURE CONTROL UNITS

Pharma/Biopharma manufacturing
GMP & GAMP 5 Capable

°FAHRENHEIT. °CELSIUS. °LAUDA.

FIELD OF APPLICATION

Temperature control of Single-Use Mixers (SUMs) and bioreactors, up to 30,000 L capacity

Device overview – TR Unit

Powerful temperature control unit, for the highly accurate control of pharma/biopharma processes, without the need to employ refrigeration technology.

- Heating using steam, using robust shell and tube heat exchanger
- Cooling via direct injection coupling, using existing primary energies for high thermal efficiency
- Product temperature control to within ± 0.1 K
- Operation up to 120 °C, for sterilisation of bioreactors
- OPC Unified Architecture (OPC UA) communication interface to client DCS
- Powerful condensate return pump (6 m + lift)
- Compact design to minimise footprint
- Robust stainless steel frame and outer panelling
- Full function Factory Acceptance Test (FAT) prior to delivery, with unit certified leak-free over full working range
- Fully insulated and ready to use day-one

-20 °C

120 °C

All components are manufactured, tested and certified to the following design standards:

- 2014/68/EU (Pressure Equipment Directive)
- AD2000 (Merkblätter Pressure Equipment)
- 2006/42/EC (Machinery Directive)
- 2014/35/EU (Low Voltage Directive)
- 2014/30/EU (EMC Directive)
- DIN EN 60204-1 (Safety and electrical equipment of machinery)



Technical data

Device type	Working temperature range °C	Temperature stability ±K	Heater power max. kW	Cooling output at 20 °C kW	Nominal flow rate L/min	Protection level	Power consumption kW	Current consumption A	Dimensions (W x D x H) mm	Weight (empty) kg	Part number
TR Unit											
TR250HKi	-20...120	0.1	30	50	67	IP 54	3.4	5.4	1,000×1,800×2,170	800	LSI 100723
TR400HKi	-20...120	0.1	200	250	333	IP 54	6.2	9.9	1,000×1,800×2,170	1,000	LSI 100724
TR600HKi	-20...120	0.1	250	250	500	IP 54	8.4	13.5	1,000×1,800×2,170	1,200	LSI 100725

More powerful units can be provided on request and additional options can be selected, such as:

- Electrical heating in lieu of steam
- Incorporation of client-specific components
- GAMP 5/21CFR Part 11 (Audit Trail) compliance module
- US version
- Additional communication protocols



