

Refrigerated/heated circulating baths » Optima™ refrigerated heated baths and circulator range

Optima™ refrigerated baths and circulator range

A collection of high performance refrigeration units which can be combined with any of 4 Optima™ heated circulators to deliver outstanding temperature performance for routine and sophisticated applications requiring accurate temperature control in the range of -47°C to 100°C. Grant also offer the LTC4 (TX150-R4) which is available as a kit with the heated circulator, refrigeration unit and insulated tubing* to form a ready to use system.




- **Choice of two base refrigeration units and four heated circulators, temperature range -47°C to 100°C (model dependent)**
- **Stability of up to ±0.01°C**
- **3 years warranty, 4 years with the LTC4**
- **No spill valved front drain**
- **Safe - water freeze protection thermostat and 27 bar high pressure switch**
- **3 preset programs**



* Temperature range of hosing supplied: -40°C to 100°C (can be cut to length as required).

Grant R series refrigeration units – models and specifications





● = standard

| | | | R4 | R5 | LTC4 |
|--|----------|---|---|--|---|
| | | |  |  |  |
| | | | h: 550mm d: 515mm w: 393mm weight: 40.6kg | h: 610mm d: 590mm w: 414mm weight: 48.3kg | h: 755mm d: 515mm w: 390mm weight: 42.9kg |
| Temperature range with T100 heating circulator | °C | | 0 - 100 | 0 - 100 | - |
| Temperature range with TC120 heating circulator | °C | | -20 to 100 | -20 to 100 | - |
| Temperature range with TX150 heating circulator | °C | | -30 to 100 | -47 to 100 | -30 to 100 |
| Temperature range with TXF200 heating circulator | °C | | -30 to 100 | -47 to 100 | - |
| Refrigerant | | | R134a | R404a | R134a |
| Capacity | L | | 20 | 12 | 20 |
| Cooling power | @ 20°C | W | 900 | 1100 | 900 |
| | @ 0°C | W | 500 | 1050 | 500 |
| | @ -10°C | W | 300 | 800 | 300 |
| | @ -20°C | W | 180 | 580 | 180 |
| | @ -30°C | W | 40 | 370 | 40 |
| | @ -40°C | W | - | 130 | - |
| | @ -47°C | W | - | 25 | - |
| Electrical power (maximum) | 120/230V | W | 780 (60 Hz)/850 (50 Hz) | - /1400 (50 Hz) | 2280 (60 Hz)/2850 (50 Hz) |
| Relay control* | | | ● | ● | ● |
| Working Area (d x w) | mm | | 230 x 305 | 260 x 115 | 230 x 305 |
| Min/max liquid depths | mm | | 85/140 | 125/180 | 85/140 |

* Relay output to enable control of refrigeration system or external device.

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Grant Optima™ heated circulators







| | | | General purpose digital | | Advanced digital | |
|--|------------------|-----|---|---|---|---|
| | | | T100 | TC120 | TX150 | TXF200 |
| | | |  |  |  |  |
| | | | h: 333mm d: 172mm w: 120mm weight: 2.1kg | h: 333mm d: 172mm w: 141mm weight: 2.3kg | h: 342mm d: 172mm w: 141mm weight: 2.6kg | h: 342mm d: 172mm w: 141mm weight: 2.6kg |
| Stability (DIN 12876) | water @ 10°C | ±°C | 0.1 | 0.1 | 0.1 | 0.1 |
| Setting resolution | | °C | 0.1 | 0.1 | 0.1 (0.01 with Labwise) | |
| Programs | | | - | - | 1 x 30 segments Labwise™ required | 10 x 100 segments |
| Safety | Over temperature | | fixed | adjustable cut-out | | |
| Alarms (can be configured to switch a relay) | | | - | high (no relay) | high and low | high and low |
| Language capability | | | - | - | EN, FR, DE, IT, ES | EN, FR, DE, IT, ES |
| Height above tank rim | | mm | 200 | 200 | 200 | 200 |
| Depth below tank rim | | mm | 135 | 135 | 135 | 135 |
| Display | | | 4 digit LED | | Full colour QVGA TFT | |
| Timer | | | - | 1 min to 99 hrs, 59 mins | | |
| Calibration points | | | 2 | | 5 | |
| Communication interface | | | - | | USB, RS232, Temperature probe | |
| Heater power | W 120/230V | | 1440/1290 | | 1445/1840 | |
| Electrical power (50-60 Hz) | W 120/230V | | 1500/1400 | | 500/2000 | |

Grant Optima™ Heated circulator pumps (integral)




| | | | | | | |
|------------------|-----------|-------|---|----------------------------------|-----|---------------------------|
| Maximum pressure | water | mbar | - | 210 | 310 | 530 |
| Maximum flow | water | L/min | - | 16 | 18 | 22 (adjustable flow rate) |
| Pump connector | 6mm bore | | - | fits 9 mm inner diameter tubing | | |
| Pump connector | 11mm bore | | - | fits 15 mm inner diameter tubing | | |

Refrigerated / heating circulating baths » Options and accessories

Options and accessories

| | | | | | |
|--|-----------|--|---|--|---|
| Labwise™ PC software (optional) | | | |  |  |
| Allows two-way communication for status display, programming and data capture (see page 3.1. for more information). USB cable provided | | | - | | |
| External probes | | | | | |
| TXPEP plastic probe | | | - | • | • |
| TXSEP stainless steel probe | | | - | • | • |
| Vertical turbine pumps (optional) - when pump is fitted, available working area is reduced. | | | | | |
| Low noise, compact design. Supplied with pipe connections and special lid for fitting to tank, pipe bore 12.7 mm. | | | | | Required only where application demands a higher pressure than that delivered by the internal pump to maintain flow. |
| VTP1 | | |  | | Note: The optional VTP pumps will transfer additional heat to the baths and reduce the net cooling power of the refrigeration unit. when ordering a VTP pump, please specify which refrigeration base unit it is to be used with. |
| maximum pressure | 1000 mbar | | | | |
| maximum flow | 9 L/min | | | | |
| VTP2 | | |  | | |
| maximum pressure | 1650 mbar | | | | |
| maximum flow | 12 L/min | | | | |
| Heat exchange coil | | | | | |
| CW5 Other sizes of heat exchange coil can be made to your specification, contact us for further information | | |  | | Temperature range: 2°C above the temperature of the coolant Coil Øxl (mm): 77x55 Pipe bore inlet/outlet (mm): 7 |
| Hose Kits | | | | | |
| HOSE100 General purpose hose kit: -40°C to 100°C | | |  | | Hose kit 2 x 2m, assembled with Optima™ pump outlet plate and simple hose clips, no tools required (can be cut to length as required) |
| HOSE200 High temperature hose kit: -50°C to 200°C | | | | | |







High pressure pumps (optional)

| | | | VTP pumps | | Heat exchange coil |
|-------------------------------|--------------|-------|---|--|---|
| | | | VTP1 | VTP2 | CW5 |
| | | |  |  |  |
| Maximum pressure | water | mbar | 1000 | 1650 | - |
| Maximum flow | water | L/min | 9 | 12 | - |
| Pipe bore | inlet/outlet | mm | 12.7 | 12.7 | 7 |
| Electrical connection | | | 10 amp IEC | 10 amp IEC | - |
| Power consumption | | | 30 | 40 | - |
| Power output to liquid @ 20°C | | | 15 | 22 | - |
| Safety | | | thermal fuse | thermal fuse | - |
| Temperature range | °C | | - | - | 2°C above coolant temperature |
| Coil Øxl | mm | | - | - | 77 x 55 |

Options and accessories

Options and accessories

● = compatible

| | LT ecocool™ 100 | LT ecocool™ 150 | T100-R4/R5 | TC120-R4/R5 | TX150-R4/R5 | TXF200-R4/ R5 | LTC4 |
|--|----------------------------|----------------------------|--|--|--|--|------------------------|
| Labwise™ software (see section 3 for further information)  | - | ● | - | - | ● | ● | ● |
| Temperature probes, 3m cable | | | | | | | |
| TXPEP plastic probe | - | - | - | - | ● | ● | ● |
| TXSEP stainless steel probe | - | - | - | - | ● | ● | ● |
| PEP plastic probe | - | ● | - | - | - | - | - |
| SEP stainless steel probe | - | ● | - | - | - | - | - |
| VTP1-LT maximum pressure 1000 mbar maximum flow 9 L/min  | ● | ● | - | - | - | - | - |
| VTP2-LT maximum pressure 1650 mbar maximum flow 12 L/min  | ● | ● | - | - | - | - | - |
| VTP1-PLR4/VTP1-PLR5 maximum pressure 1000 mbar maximum flow 9 L/min  | - | - | ● | ● | ● | ● | ● |
| VTP2-PLR4/VTP2-PLR5 maximum pressure 1650 mbar maximum flow 12 L/min  | - | - | ● | ● | ● | ● | ● |
| CW5 heat exchange coil  | ● | ● | ● | ● | ● | ● | ● |
| IQOQ documentation | IQOQ LT ecocool™ 100 | IQOQ LT ecocool™ 150 | IQOQ T100 + IQOQ R4 IQOQ T100 + IQOQ R5 | IQOQ TC120 + IQOQ R4 IQOQ TC120 + IQOQ R5 | IQOQ TX150 + IQOQ R4 IQOQ TX150 + IQOQ R5 | IQOQ TXF200 + IQOQ R4 IQOQ TXF200 + IQOQ R5 | IQOQ LTC4 |
| PQ documentation | PQ LT ecocool™ 100 | PQ LT ecocool™ 150 | PQ T100 + IQOQ R4 PQ T100 + IQOQ R5 | PQ TC120 + IQOQ R4 PQ TC120 + IQOQ R5 | PQ TX150 + IQOQ R4 PQ TX150 + IQOQ R5 | PQ TXF200 + IQOQ R4 PQ TXF200 + IQOQ R5 | PQ LTC4 + IQOQ LTC4 |
| Extended warranty 1 year EWC1 | ● | ● | ● | ● | ● | ● | ● |
| Extended warranty 2 years EWC2 | - | - | ● | ● | ● | ● | - |

Options and accessories

| Pump connectors (optional) | Part number |
|---|----------------|
|  <p>Replacement plastic pump inlet/outlet connector. Fits tubing 9mm inner dia. Temp range -50°C to 200°C.</p> | P-M6 |
|  <p>Replacement plastic pump inlet/outlet connector. Fits tubing 15mm inner dia. Temp range -50°C to 200°C.</p> | P-M11 |
|  <p>Metal pump inlet/outlet connector, dual seal super rapid 4mm. Fits semi rigid tubing 4mm outer dia. Temp range -20°C to 100°C.</p> | M-SR4 |
|  <p>Metal pump inlet/outlet connector, dual seal super rapid 6mm. Fits semi rigid tubing 6mm outer dia. Temp range -20°C to 100°C.</p> | M-SR6 |
|  <p>Metal pump inlet/outlet connector, dual seal super rapid 8mm. Fits semi rigid tubing 8mm outer dia. Temp range -20°C to 100°C.</p> | M-SR8 |
|  <p>Metal pump inlet/outlet connector, hose barb 7mm. Fits flexible tubing 7mm inner dia. Temp range -40°C to 120°C.</p> | M-HB7 |
|  <p>Metal pump inlet/outlet connector, hose barb 9mm. Fits flexible tubing 9mm inner dia. Temp range -40°C to 120°C.</p> | M-HB9 |
|  <p>Metal pump inlet/outlet connector, hose barb 12mm. Fits flexible tubing 12mm inner dia. Temp range -40°C to 120°C.</p> | M-HB12 |
|  <p>Metal pump inlet/outlet plate, 1/4 " BSP/G1/4 female. Temp range -50°C to 200°C.</p> | M-UC |
|  <p>General purpose hose kit, includes 2 x 2m general purpose insulated hosing -40 to 100°C, assembled with LT ecocool™/Optima™ pump outlet plate and simple hose clips, no tools required. Can be cut to length. 10mm ID, 14mm OD.</p> | HOSE100 |
|  <p>High temperature hose kit, includes 2 x 2m high temperature insulated hosing -50 to 200°C, assembled with LT ecocool™/Optima™ pump outlet plate and simple hose clips, no tools required. Can be cut to length. 8mm ID, 11mm OD.</p> | HOSE200 |