

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 $\pm 0.01^\circ\text{C}$
- 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 maximum pressure 1000 mbar maximum flow 9 L/min			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.
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 HOSE200 High temperature hose kit: -50°C to 200°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)

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	W	30	40	-
Power output to liquid @ 20°C	W	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	LT ecocool™ 200	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 LT ecocool™ 200	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 LT ecocool™ 200	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
	Replacement plastic pump inlet/outlet connector. Fits tubing 9mm inner dia. Temp range -50°C to 200°C. P-M6
	Replacement plastic pump inlet/outlet connector. Fits tubing 15mm inner dia. Temp range -50°C to 200°C. P-M11
	Metal pump inlet/outlet connector, dual seal super rapid 4mm. Fits semi rigid tubing 4mm outer dia. Temp range -20°C to 100°C. M-SR4
	Metal pump inlet/outlet connector, dual seal super rapid 6mm. Fits semi rigid tubing 6mm outer dia. Temp range -20°C to 100°C. M-SR6
	Metal pump inlet/outlet connector, dual seal super rapid 8mm. Fits semi rigid tubing 8mm outer dia. Temp range -20°C to 100°C. M-SR8
	Metal pump inlet/outlet connector, hose barb 7mm. Fits flexible tubing 7mm inner dia. Temp range -40°C to 120°C. M-HB7
	Metal pump inlet/outlet connector, hose barb 9mm. Fits flexible tubing 9mm inner dia. Temp range -40°C to 120°C. M-HB9
	Metal pump inlet/outlet connector, hose barb 12mm. Fits flexible tubing 12mm inner dia. Temp range -40°C to 120°C. M-HB12
	Metal pump inlet/outlet plate, 1/4 " BSP/G1/4 female. Temp range -50°C to 200°C. M-UC
	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. HOSE100
	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. HOSE200