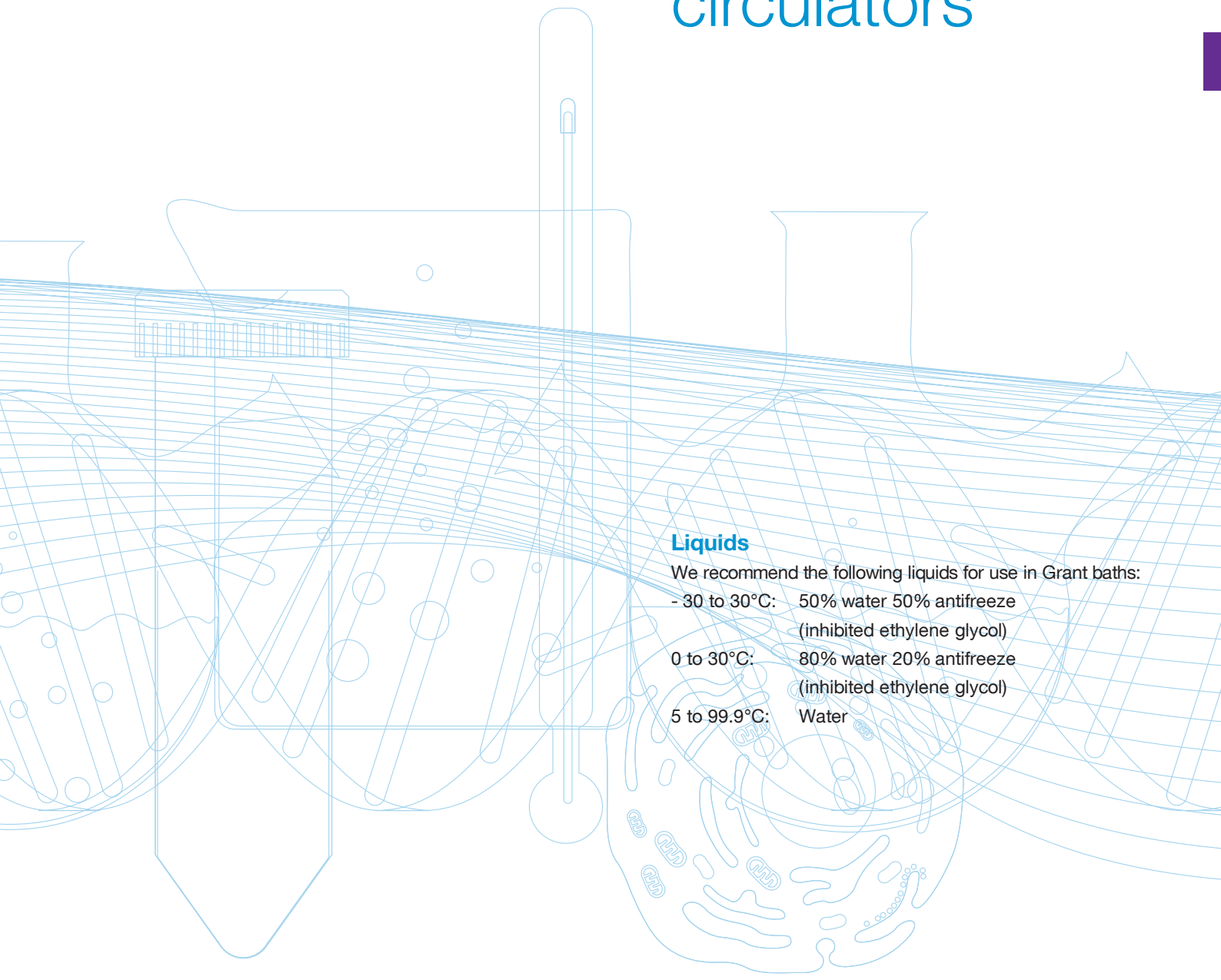
6 Stirred thermostatic baths and circulators



Liquids

We recommend the following liquids for use in Grant baths:

- 30 to 30°C:	50% water 50% antifreeze (inhibited ethylene glycol)
0 to 30°C:	80% water 20% antifreeze (inhibited ethylene glycol)
5 to 99.9°C:	Water

Stirred thermostatic baths and circulators

A cost-effective range of multi-purpose systems combining Grant's legendary quality and reliability. Precise temperature control for a wide range of laboratory applications.

- **Accurate and safe temperature control** – for samples and users
- **Intuitive programming and thoughtful design features** – makes working with Grant stirred baths and circulators easy
- **Robust, durable construction** – for longevity, reliability and long-term low cost of ownership
- **A complete range** – 32 models to cover basic through to sophisticated needs, each model represents excellent value for money

Applications

Grant stirred baths and circulators provide a source of precision heating and cooling for many routine and sensitive analytical procedures including sample incubation, calibration and quality control testing. All models from the TC120 upwards are suitable for use as both open and closed loop circulators (i.e. remote vessel open or closed).

For more powerful heating requirements, i.e. above 200°C, contact Grant for advice.

Model selection (operating temperature)

Any of the four Grant Optima™ digital thermostats can be combined with any of eight Grant tanks (five stainless steel and three plastic) to provide a choice of 32 models. The colour-coded summary table on p. 6.6 shows you the temperature range of each combination.

The following pages showcase examples of popular combinations for different requirements.

For more details of Grant Optima™ thermostats see, p. 6.6.

showcase 1 – **entry level** example

Model T100-ST12* range 0 to 100°C, stability ± 0.05°C

Well specified entry-level model with digital thermostatic control unit and stainless steel tank for straightforward laboratory applications requiring high precision temperature control.

- **Optima™ digital thermostat (T100) for precise temperature control**
- **Cooling/heating range 0 to 100°C****
- **Stability ± 0.05°C**
- **Easy to use rotary dial and two function keys for quick temperature setting and menu navigation**
- **Excellent temperature stability and uniformity**
- **3 programmable temperature presets**

T100-ST12 model shown

Visual alarm and countdown timer – alerts you when your attention is required

Simple-to-use rotor plus two function keys for quick temperature setting and menu navigation

User calibration facility for optimum accuracy at the required operating temperature

Comprehensive range of options and accessories for a wide range of applications

Robust construction, corrosion resistant materials, stainless steel tank – durable in demanding environments

Raised feet for carrying / repositioning and retort stand access

Optional insulated gabled hinged lid designed to improve energy efficiency and prevent evaporation

Clear 4 digit display – easy to read from a distance for instant reassurance

3 programmable temperature presets for convenience

Dual-position bridge plate – ensures visibility/ accessibility of the thermostat whilst optimising bench space

Drain tap allows easy emptying

Low liquid protection and over-temperatures cut-out

Choice of **120 V and 230 V models**

* see summary table on pp. 6.6–6.7 for accessories and for other models utilising the T100 thermostat
** operation below ambient temperature requires accessory cooling

showcase 2 – **mid range** example

Model TC120-ST12* range 0 to 120°C, stability ± 0.05°C

Versatile mid-range model with digital thermostatic control unit and stainless steel tank and a comprehensive specification to suit most applications for high precision temperature control.

- **Optima™ digital thermostat (TC120) for precise temperature control**
- **Integral pump for external fluid circulation**
- **Cooling/heating range 0 to 120°C****
- **Stability ± 0.05°C**
- **3 programmable temperature presets**
- **Easy to use rotary dial and two function keys**

TC120-ST12 model shown

Visual alarm and countdown timer – alerts you when your attention is required

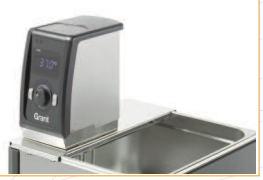
Simple-to-use rotor plus two function keys for quick temperature setting and menu navigation

Convenient **timer function** for reaction timing

User calibration facility for optimum accuracy at the required operating temperature

Powerful integral pump – allows temperature-controlled fluid to be circulated to external devices (16L/min, 210mbar)

Dual-position bridge plate – ensures visibility/ accessibility of the thermostat whilst optimising bench space



Clear 4 digit display – easy to read from a distance for instant reassurance

Operating setpoint plus **3 adjustable preset temperatures** for convenience

Robust construction, corrosion resistant materials, stainless steel tank – durable in demanding environments

Excellent temperature stability and uniformity ensured by stirred circulation in the bath

Liquid protection and adjustable over-temperature cut-out

Drain tap allows easy emptying

Choice of **120 V and 230 V models**

Optional insulated gabled hinged lid designed to improve energy efficiency and prevent evaporation

* see summary table on pp. 6.6–6.7 for accessories and for other models utilising the TC120 thermostat
** operation below ambient temperature requires accessory cooling

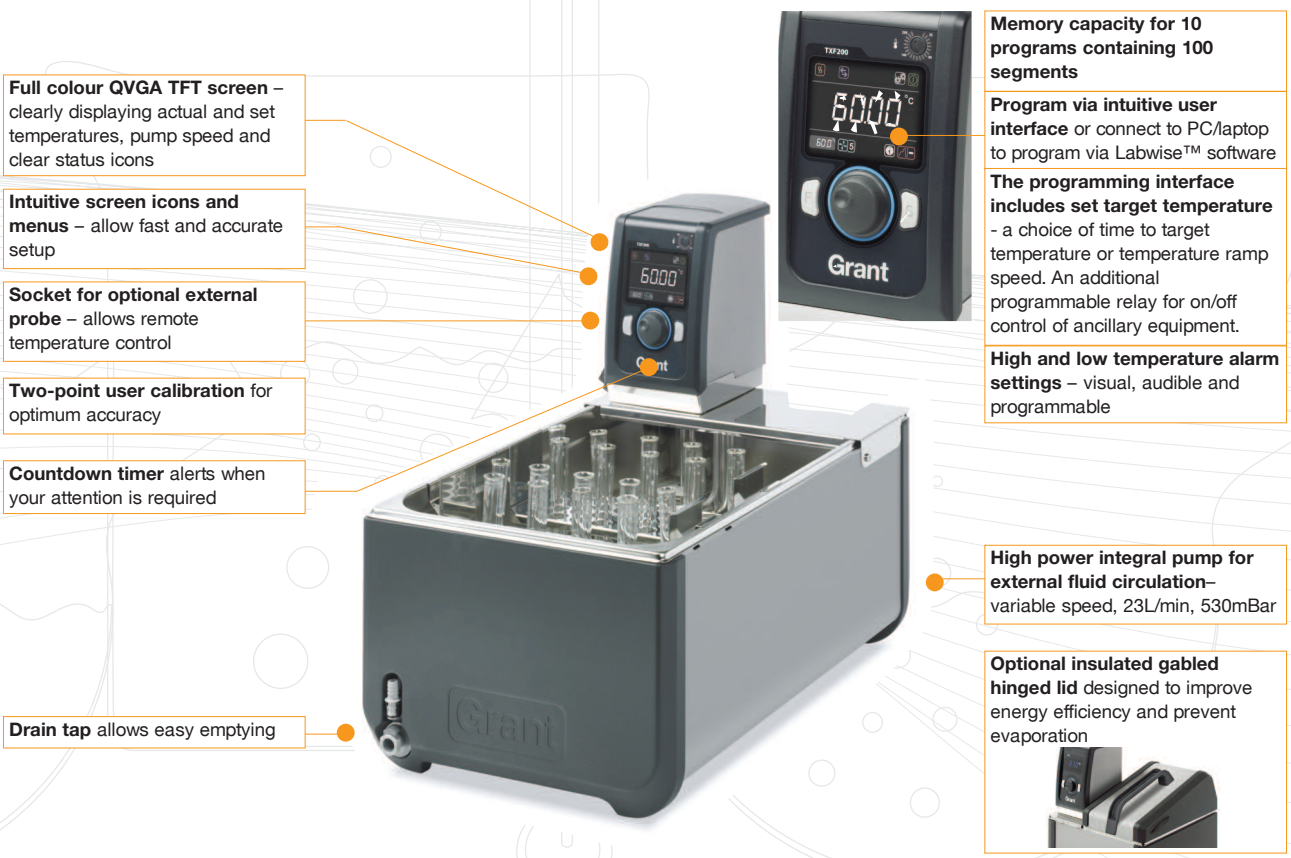
showcase 3 – **high specification** example

Model TXF200-ST26* range -15 to 200°C, stability ± 0.01°C

High specification model with high performance digital thermostat and stainless steel tank for sophisticated applications requiring complex programming and/or ultra precise temperature control.

- **Optima™ high performance digital thermostat (TXF200) for ultra precise temperature control**
- **Stability ± 0.01°C**
- **Cooling/heating range -15 to 200°C****
- **Full colour QVGA TFT screen**
- **Easy to program via interface or remote via PC or Laptop using Labwise™ software**
- **Key functions easily accessed via home screen icons**

TXF200-ST26 model shown



* see summary table on p. 6.6–6.7 for accessories and other models utilising the Grant high performance digital control units
** operation below ambient temperature requires accessory cooling

showcase 4 – **budget** example

Model T100-P12* range ambient + 5 to 99°C, stability ± 0.05°C

Economy model with digital thermostatic control unit and plastic tank for straightforward applications requiring accurate temperature control.

- **Optima™ digital thermostat (T100) for accurate temperature control**
- **Cooling/heating range ambient + 5 to 99°C**
- **Stability ± 0.05°C**
- **3 programmable temperature pre sets**
- **Low liquid protection and over-temperature cut-out**

T100-P12 model shown

Visual alarm – alerts you when your attention is required

Simple-to-use rotor dial and two function keys for quick temperature setting and menu navigation

Optional removable flat lid to minimise evaporation of fluid and avoid contamination of samples

Choice of **120 V and 230 V models**

Low liquid protection and over temperature cut-out

Operating setpoint plus **3 adjustable preset temperatures** for convenience

Wide range of optional accessories for different applications

Robust plastic construction, double-walled for rigidity, easy to clean

* see summary table on p. 6.6 for accessories and for other models utilising T100 control units and/or plastic tanks

Stirred thermostatic baths and circulators – models, options and accessories

Any of the four Grant Optima™ digital thermostats can be combined with any of the Grant stainless steel and plastic tanks. The colour-coded summary table shows you the temperature range of each combination. For more details of Grant Optima™ thermostats see, p. 6.8

Effective operating temperature range† (tank + thermostat)

- ambient +15 to 99°C
- ambient + 5 to 99°C
- 0 to 100°C
- 0 to 120°C
- 0 to 150°C
- 0 to 200°C
- -15 to 120°C
- -15 to 150°C
- -15 to 200°C

† operation at or below ambient temperatures requires accessory cooling

Key to symbols

- display
- timer
- pump
- offset adjustment
- program storage
- fixed over temperature cutout
- relay
- audible alarm
- menu system
- USB
- adjustable overtemperature cutout
- visual alarm
- 2 point recalibration
- external probe
- programmable

Thermostatic control units

	General purpose digital		Advanced digital	
	T100	TC120	TX150	TXF200
	 h: 335mm d: 172 mm w: 120 mm	 h: 335 mm d: 172 mm w: 120 mm	 h: 345 mm d: 172 mm w: 120 mm	 h: 345 mm d: 172 mm w: 120 mm

Tanks

Capacity (L) Outer tank dimensions	• Working area (l x w) • Min/max liquid depths • Inner tank dimensions (l x w x h) • Overall dimensions incl. controller (l x w x h)				
		System designation (tank + control unit)			
ST5 – 5 L stainless steel  h: 200 mm l: 330 mm w: 180 mm	• 150 x 150 mm • 85/140 mm • 300 x 150 x 150 mm • 330 x 180 x 395 mm	T100–ST5	TC120–ST5	TX150–ST5	TXF200–ST5
ST12 – 12 L stainless steel  h: 200 mm l: 360 mm w: 330 mm	• 205 x 300 mm • 85/140 mm • 325 x 300 x 150 mm • 360 x 330 x 395 mm	T100–ST12 (showcased on page 6.2)	TC120–ST12 (showcased on page 6.3)	TX150–ST12	TXF200–ST12
ST18 – 18 L stainless steel  h: 200 mm l: 540 mm w: 330 mm	• 385 x 300 mm • 75/130** mm • 505 x 300 x 150 mm • 540 x 330 x 395 mm	T100–ST18	TC120–ST18	TX150–ST18	TXF200–ST18
ST26 – 26 L stainless steel  h: 255 mm l: 540 mm w: 330 mm	• 385 x 300 mm • 125/180** mm • 505 x 300 x 200 mm • 540 x 330 x 405 mm	T100–ST26	TC120–ST26	TX150–ST26	TXF200–ST26 (showcased on page 6.4)
ST38 – 38 L stainless steel  h: 255 mm l: 730 mm w: 330 mm	• 575 x 300 mm • 125/180** mm • 690 x 300 x 200 mm • 730 x 333 x 450 mm	T100–ST38	TC120–ST38	TX150–ST38	TXF200–ST38
P5 – 5 L plastic  h: 180 mm l: 240 mm w: 330 mm	• 120 x 150 mm • 85/140 mm • 240 x 160 x 150 mm • 390 x 200 x 380 mm	T100–P5	TC120–P5	TX150–P5	TXF200–P5
P12 – 12 L plastic  h: 180 mm l: 415 mm w: 350 mm	• 210 x 280 mm • 85/140 mm • 325 x 280 x 150 mm • 415 x 350 x 380 mm	T100-P12 (showcased on page 6.5)	TC120–P12	TX150–P12	TXF200–P12
P18 – 18 L plastic  h: 180 mm l : 600 mm w: 365 mm	• 280 x 325 mm • 85/140 mm • 510 x 290 x 150 mm • 600 x 350 x 380 mm	T100–P18	TC120–P18	TX150–P18	TXF200–P18

Options and accessories

Labwise™ PC software (optional)				
Allows two-way communication for status display, programming and data capture (see p. 16.1 for more information) USB cable provided	–	–		
External probes (optional) for monitoring and controlling temperature of remote loads				
TXPEP flexible plastic probe, 3 m cable	–	–	●	●
TXSEP stainless steel probe, 3 m cable	–	–	●	●
Remote switching device (optional)				
For switching appliances on and off (up to max. 8 Amps)	–	–	1	1
Vertical turbine pumps (optional)*				
Low noise, compact design. Supplied with pipe connections and special lid for fitting to tank, pipe bore 12.7 mm **VTP 1** max. pressure 1000 mbar max. flow 9 L/min **VTP 2** max. pressure 1650 mbar max. flow 12 L/min		Required only where application demands a higher pressure than that delivered by the internal pump to maintain flow		

* when pump is fitted, available working area is reduced ** maximum depth can be increased by 10 mm, by removing the circulation tray in 18, 26, 38 litre baths, with slight loss of performance

Glossary (see also options and accessories section)

2 point calibration	Provides calibration across wide temperature range with high and low reference points, used to re-set calibration of instrument.
Offset adjustment	Allows accurate temperature control where the monitored temperature is different from the target temperature, often used in conjunction with an external probe
Pump	Enables fluid to be circulated externally instead of within the bath. Typically to provide temperature control to a remote instrument (tubing and connectors not supplied)

Accessories

Lids* to help reduce evaporation/heat loss and avoid sample contamination	**Polypropylene spheres*** (no. of packs required) 300 spheres in one pack	**Rack systems†** to optimise use of available bath capacity (no. of racks accommodated)	**Raised shelves** to allow shallow vessels to be accommodated	**Accessory cooling systems**** to allow systems to operate at or below room temperature by means of a cooling coil dipped into the bath; designed for minimal impact on working area		
				Refrigerated immersion coolers Consist of a cooling coil connected to a refrigeration unit by a flexible pipe. Extract heat continuously, with the bath control unit controlling temperature		**Heat exchange coil** Designed to be attached to a supply of cooling tap water or a refrigerated circulator
				C1G (0 to 40°C***)	**C2G** (- 15 to 40°C***)	**CW5** (2°C above coolant temperature)
STL5 flat stainless steel	**1 x PS20**	**1 x QR**	–		–	
STL12 gabled, hinged (removable) stainless steel	**1 x PS20**	**2 x VR**	**RS14**		–	
STL26 gabled, hinged (removable) stainless steel	**2 x PS20**	**4 x VR**	**RS22**		–	
STL26 gabled, hinged (removable) stainless steel	**2 x PS20**	**4 x VR**	**RS28**			
STL38 gabled, hinged (removable) stainless steel	**3 x PS20**	**6 x VR**	**RS28** or **RS38**			
PL5 flat, stainless steel	**1 x PS20**	**1 x QR**	–	–	–	–
PL12 curved plastic	**1 x PS20**	**2 x VR**	**RS14**	–	–	–
PL18 curved plastic	**2 x PS20**	**4 x VR**	**RS22**	–	–	–

* Between operating temperatures 60°C and 100°C and below room temperature a lid or layers of polypropylene spheres should be used. Above 60°C a lid must be used

** The cooling coil can be continuously immersed in liquids up to 100°C with the cooler switched off, and may be used to cool liquid down from 100°C, but it is not designed for continuous operation above 40°C.

***Minimum operating temperature without accessory cooling is room temperature + 5°C (room temperature + 15°C for P5 tanks).

† Rack capacity (no. of test tubes per rack)

VR racks	Tube size	Capacity
VR-13	Ø 10-13 mm	65
VR-19	Ø 16-19 mm	36
VR-24	Ø 24 mm	23
VR-30	Ø 30 mm	14
VR-SE	0.5 ml	102
VR-LE	1.5 ml	75

QR racks	Tube size	Capacity
QR-13	Ø 10-13 mm	30
QR-19	Ø 16-19 mm	16
QR-24	Ø 24 mm	10
QR-30	Ø 30 mm	5
QR-SE	0.5 ml	44
QR-LE	1.5 ml	35

Stirred thermostatic baths and circulators – technical specifications

Grant Optima™ thermostats

● = standard			General purpose digital		Advanced digital	
			T100	TC120	TX150	TXF200
						
Stability (DIN 12876)@ 70°C		°C	± 0.05	± 0.05	± 0.01	± 0.01
Uniformity (DIN 12876)@ 70°C		°C	± 0.1	± 0.1	± 0.05	± 0.05
Setting resolution		°C	0.1	0.1	0.1 (0.01 with Labwise)	
Display			4 digit LED		full colour QVGA TFT	
Timer function			–	1 to 9999 mins	1 min to 99 hrs 59 mins	
No. of pre-set temperatures			3	3	3	3
Recalibration points			2	2	2	2
Offset adjustment			–	–	●	●
Socket for external probe (TXPEP, TXSEP)			–	–	●	●
Communications interface			–	–	USB	USB
Programmable			–	–	remote via PC 1 program / 30 segments	direct via user interface or remote via PC/laptop 10 programs / 100 segments
Relays			–	–	1	1
Safety	overtemperature		fixed	adjustable cut-out		
	fluid level – float		●	●	●	●
Alarms (can be configured to switch a relay)			–	●	high and low	high and low
Heater power	230 V	kW	1.3	1.3	1.9	1.9
	120 V	kW	1.4	1.4	1.4	1.4
Electrical power	230 V	kW	1.4 (50-60 Hz)	1.4 (50 Hz)	2.0 (50 Hz)	2.0 (50-60 Hz)
	120 V	kW	1.5 (50-60 Hz)	1.5 (60 Hz)	1.5 (60 Hz)	1.5 (50-60 Hz)
Height above tank rim		mm	200	200	200	200
Depth below tank rim		mm	135	135	135	135

Grant Optima™ thermostat pumps (integral)

Maximum pressure	water	mbar		210	310	530
Maximum flow	water	L/min		16	18	23 (adjustable flow rate)
Pipe bore	inlet/outlet	mm		6, 11	6, 11	6, 11

Grant immersion thermostats are suitable for use with Grant stainless steel and plastic tanks. With the addition of a clamp (T clamp) they can also be attached to any vertical sided tank with a maximum wall thickness of 35 mm for rectangular tanks, 30mm for circular tanks (300 mm diameter), and a capacity of up to 50 litres. Minimum and maximum temperatures achievable are dependent upon the tank insulation and minimum operating temperature depends on the accessory cooling device.

High pressure pumps (optional)

			VTP pumps	
			VTP1	VTP2
				
Maximum pressure	water	mbar	1000	1650
Maximum flow	water	L/min	9	12
Pipe bore	inlet/outlet	mm	12.7	12.7
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

Grant accessory cooling systems

			Refrigerated immersion coolers		Heat exchange coil
			C1G	C2G	CW5
					
Cooling power	@ 20°C	W	350	400	–
	@ 0°C	W	110	320	–
	@ - 10°C	W	–	170	–
Overall consumption		VA	300	500	–
Dimensions	d/w/h	mm	460/305/225		–
Flexible pipe	I	mm	925	925	–
Coil	Ø /l	mm	77/55	77/55	77/55
Pipe bore inlet/outlet		mm	–	–	7
Electrical supply			120 V (60 Hz) or 230 V (50Hz)		–

* The VTP optional pumps will transfer additional heat to the baths, so the minimum temperature achievable with or without accessory cooling will be increased.
Note: when ordering a VTP pump, please specify which Grant tank it is to be used with.

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Use the above details to contact us if this literature doesn't answer all your questions.

Pricing on any accessories shown can be found by keying the part number into the search box on our website.

The specifications listed in this brochure are subject to change by the manufacturer and therefore cannot be guaranteed to be correct. If there are aspects of the specification that must be guaranteed, please provide these to our sales team so that details can be confirmed.