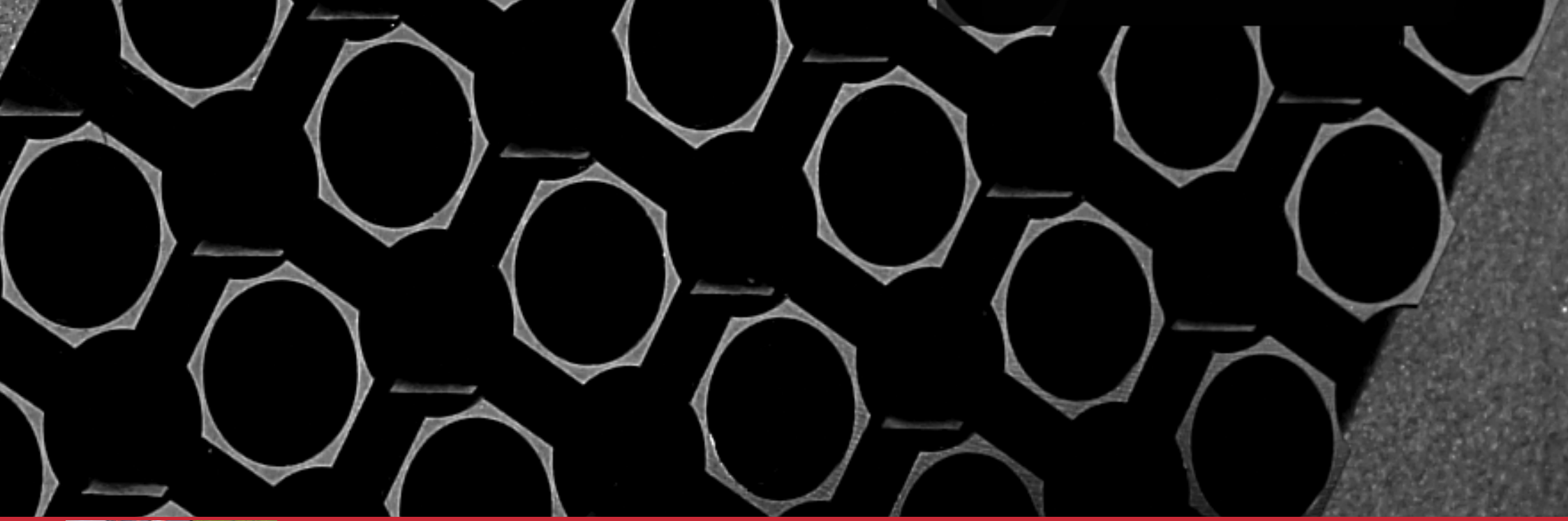
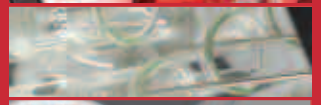


Thermal Cyclers

Hybridisation Incubators

Sample Cooling

Dri-Block® Heaters



Sample Concentrators

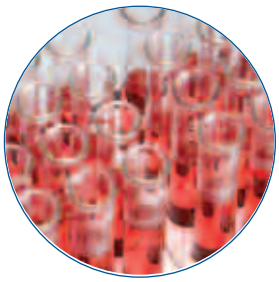
Gelation Timers

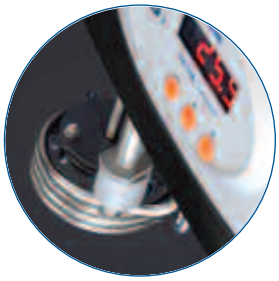
Baths and Thermoregulators

Biological Stirrers

TECHNE

Equipment for the Life Sciences





Contents

Welcome to the 4th edition of the Techne® life sciences equipment catalogue.

Techne® is a long established name and world leader in the manufacture of temperature control and science equipment essential for the life sciences, research, clinical and general laboratory applications.

In this edition we are proud to introduce three new products:

- The new TC-3000X and TC-3000G personal thermal cycler; Increased sample capacity in both models to accommodate 48 x 0.2ml tubes with the TC-3000G providing the world's smallest gradient cycler.
- The new N°ICE electronic ice bucket.
- We have also included the Gelation Timer. This instrument is used to measure the transition from liquid to solid during polymerisation.

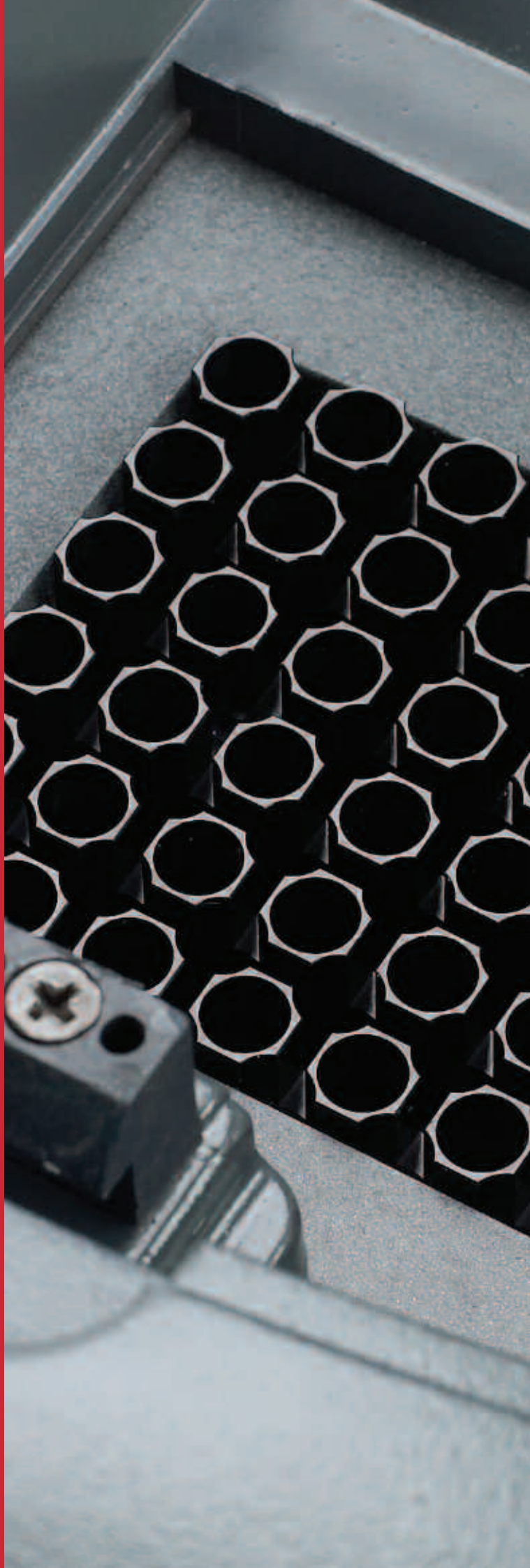
We hope the improved clarity of the layout makes choosing the correct product easier than ever before. The catalogue includes many useful facts and figures related to the use of the products.

Techne® products are manufactured in an ISO9001:2008 environment in our ultra modern facility in Stone, Staffordshire. Every step from new product development to after sales service follows documented and traceable procedures. The result is a high standard of service and quality-focused culture committed to total customer satisfaction.

All electrical products produced by Techne® conform to the latest safety directives including the European CE requirements. For total compliance, all products are tested and approved by a fully accredited external test house. We are compliant with the Waste Electrical and Electronic Equipment directive, WEEE and the Restriction of the use of Certain Hazardous Substances, RoHS as introduced in 2006.

All the products featured in this catalogue are available through a wide range of national and international distributors. Technical and application advice is available from qualified scientists and electrical engineers based at Stone.

For your local distributor details and up-to-date product information please visit our Techne® website at www.techne.com. Here you will also find software downloads, as well as information on news and events, exhibitions and seminars, frequently asked questions, and much more. The Techne® brand is committed to providing the very best life science and temperature control equipment as well as the highest level of service, before, during and after the sale.



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One of the largest broad based manufacturers of labroatory products worldwide, Bibby Scientific Ltd provides internationally recognised brands with reputations for product quality and high performance. These famous brands are now brought together in a single package to offer an excellent level of quality, service and support.

We manufacture one of the largest ranges of benchtop equipment available under three famous brand names.

stuart®

The extensive Stuart® range includes blood tube rotators, colony counters, hotplates, hybridisation ovens, rockers, shakers, stirrers and water purification systems.

TECHNE

Techne® is a world leader in the manufacture of temperature control equipment, including water baths, Dri-Block® heaters, and molecular biology products such as hybridisation incubators and thermal cyclers.

JENWAY

Jenway® makes a wide range of scientific instruments including UV/Vis spectrophotometers, flame photometers, colorimeters, portable and laboratory meters for the measurement of dissolved oxygen, pH, conductivity and specific ions.

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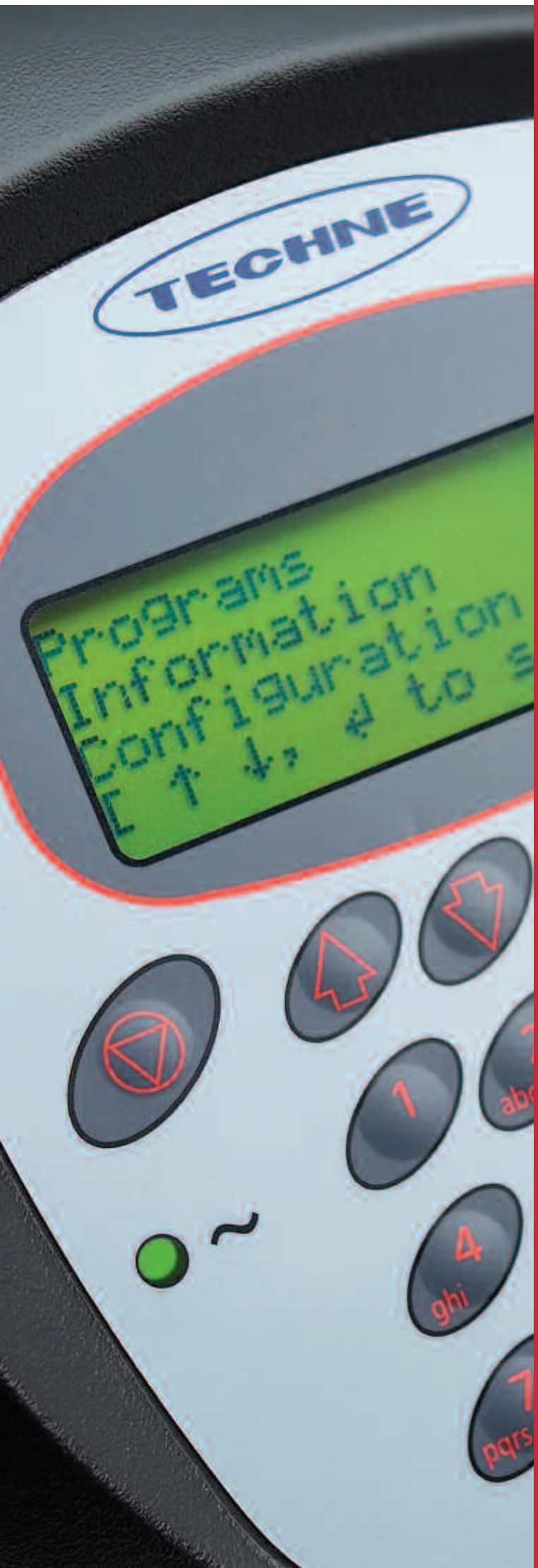


TECHNE

Thermal Cyclers

Techne offers five thermal cycler models, one to fit every users needs. Quality manufacturing, competitive prices and an industry leading 4 year or 80,000 cycle warranty make the Techne series the obvious choice. All models feature Peltier technology, easily interchangeable blocks, intuitive user interfaces and networkable to a PC for ease of control and programming. Compact, robust and versatile, the range includes models to suit every application and budget.

Purchase of this instrument conveys a limited non-transferable immunity from suit for the purchaser's own internal research and development and applied fields other than human in vitro diagnostics under non-real-time thermal cycler patents of Applied Biosystems LLC.

Thermal Cycler, TC-3000

The TC-3000 thermal cycler is unrivalled as the most reliable, low cost personal cycler. Designed with research and teaching laboratories in mind, the TC-3000 offers the ultimate in low cost solutions where ease of use is high on the priority list.

TC-3000

Space saving small footprint

One of the world's best selling personal thermal cyclers, the TC-3000 is even economical on space.

Rapid heating rate

Utilising the latest Peltier technology the TC-3000 can heat at 3.6°C/sec and cool at 2.0°C/sec.

Heated lid

The adjustable heated lid (100°C to 115°C), designed to reduce the risk of sample evaporation, can be enabled or disabled. The heated lid only comes on if the block is set above 35°C.

Fast-track programming

Modern intuitive programming and ready-to-go templates means creating even the most complicated protocols is simple.

PC control & networking

The TC-3000 can be linked together with any other Techne cyclers; up to 32 cyclers can be networked to one computer.

Additional benefits

- Temperature range 4°C to 99°C
- Block uniformity of ±0.1°C at 50°C, ensuring optimal reproducibility
- Password protection: protect your program against unwanted modifications
- Portable dual voltage: has a variable voltage selector

ALL BLOCKS WITH EXTENDED WARRANTY
4 years or 80,000 cycles*
*See local distributor for details and conditions.

Technical Specification

	TC-3000
Block formats	
0.5ml capacity	20
0.2ml capacity	25
Block **Temperature**	
Maximum ramp rate	3.6°C/sec
Block uniformity at 50°C	±0.1°C
Temperature range	4°C to 99°C
Peltier element/block	4
Heated Lid	
Selectable heatd lid temperature	100°C to 115°C
Heated lid enable/disable	Yes
Programming	
No. of programs	80
Programming display	4-line alphanumeric
Auto restart on power failure	Yes
Dimensions L x W x H	330 x 170 x 190mm
Voltage	230/115V, 50-60Hz
Power	230W
Shipping Weight	8kg

Licensed for PCR

Ordering Information

Product Code	Description
FTC3/02	TC-3000 thermal cycler for 25 x 0.2ml microtubes, 115V/230V
FTC3/05	TC-3000 thermal cycler for 20 x 0.5ml microtubes, 115V/230V
FTC3/02/B	TC-3000 block for 25 x 0.2ml microtubes
FTC3/05/B	TC-3000 block for 20 x 0.5ml microtubes

TC-3000X

TC-3000X

Thermal Cycler, TC-3000X

The new TC-3000X personal cycler is based on the unrivalled and reliable TC-3000. The new model is ideal for those laboratories that need just that little bit more, with its expanded sample capacity to accommodate 48 x 0.2ml tubes or for covenience, a 48-well plate.

Increased sample capacity

The footprint remains the same, only 561cm^2 but the capacity increases to 48 x 0.2ml or 30 x 0.5ml tubes.

Adjustable heated lid

The heated lid can now be adjusted for use with all PCR tubes, strip tubes or 48-well plates sealed with sealing mats.

Rapid heating rate

Utilising the latest Peltier technology the TC-3000X has a heating ramp rate of 3.3°C/sec and a 2.0°C/sec cooling rate.

Fast-track programming

Modern intuitive programming and ready-to-go templates means creating even the most complicated protocols is simple.

PC control & networking

The TC-3000X can be linked together with other Techne cyclers; up to 32 cyclers can be networked to one computer.

Technical Specification

	TC-3000X
Block formats	
0.5ml capacity	48
0.2ml capacity	30
Block Temperature	
Maximum ramp rate	3.3°C/sec
Block uniformity at 50°C	±0.2°C
Temperature range	4°C to 99°C
Peltier element/block	6
Heated Lid	
Selectable heatd lid temperature	100°C to 115°C
Heated lid enable/disable	Yes
Programming	
No. of programs	80
Programming display	4-line alphanumeric
Auto restart on power failure	Yes
Dimensions L x W x H	330 x 170 x 190mm
Voltage	90-260V, 50-60Hz
Power	230W
Shipping Weight	6kg

Ordering Information

Product Code	Description
FTC3X/02	TC-3000X thermal cycler for 48 x 0.2ml microtubes, 100V/115V/230V
FTC3X/05	TC-3000X thermal cycler for 30 x 0.5ml microtubes, 100V/115V/230V
FTC3X/02/B	TC-3000X block for 48 x 0.2ml microtubes
FTC3X/05/B	TC-3000X block for 30 x 0.5ml microtubes

Thermal Cycler, TC-3000G

The world's smallest gradient cycler, the TC-3000G will hold half a 96-well plate, in a horizontal format so that it offers 8 columns for annealing temperature optimisation and 6 rows for optimising reagents such as $MgCl_2$ and primer concentrations. Annealing temperatures can be optimised over a 15°C gradient between the temperatures of 20 and 80°C.

All the features of the TC-3000 and TC-3000X plus...

Gradient block

A gradient of up to 15°C between the temperatures of 20 and 80°C can be set, allowing any protocol to be optimised within a single experiement.

New software

Enables a gradient to be added to any temperature step of the program.

Gradient calculator

The gradient calculator function displays the temperature for each of the 8 columns, ensuring easy replication of thermal conditions.

TC-3000G

Licensed for PCR

Technical Specification

	TC-3000G
Block formats	
0.5ml capacity	48
0.2ml capacity	30
Block Temperature	
Gradient range	20°C to 80°C
Maximum gradient	15°C
Maximum ramp rate	3.3°C/sec
Block uniformity at 50°C	±0.2°C
Temperature range	4°C to 99°C
Peltier element/block	6
Heated Lid	
Selectable heatd lid temperature	100°C to 115°C
Heated lid enable/disable	Yes
Programming	
No. of programs	80
Programming display	4-line alphanumeric
Auto restart on power failure	Yes
Dimensions L x W x H	330 x 170 x 190
Voltage	90-260 V, 50-60Hz
Power	230W
Shipping Weight	6kg

Ordering Information

Product Code	Description
FTC3G/02	TC-3000G gradient thermal cycler for 48 x 0.2ml microtubes, 100V/115V/230V
FTC3G/05	TC-3000G gradient thermal cycler for 30 x 0.5ml microtubes, 100V/115V/230V
FTC3G/02/B	TC-3000G gradient block for 48 x 0.2ml microtubes
FTC3G/05/B	TC-3000G gradient block for 30 x 0.5ml microtubes

Thermal Cycler, TC-4000

The TC-4000 is one of the most affordable full sized thermal cyclers in the market, flexible for all your protocols and easy on your budget.

High performance

High performance, high sample throughput model for maximum flexibility and economy and ideal for a larger number of parallel samples.

Versatile block format

The truly user-friendly fully interchangeable block system allows blocks to be exchanged in a matter of seconds without the need for any tools (60 x 0.5ml, 96 x 0.2ml, 96-well fully skirted plates, 384-well or flat plate for *In-situ*).

Flexible heated lid

Defined pressure, programmable heated lid (100°C to 115°C) to accommodate a variety of consumables. The heated lid only comes on if the block is set above 35°C.

Intuitive programming

4-line display with intuitive, simple-to-use software with alphanumeric programming, password protection, simple copy/edit functions and much more.

- Temperature range 4°C to 99°C
- Excellent heating rate of 2.6°C/sec and block uniformity of ±0.3°C at 50°C ensures high reproducibility
- 8 peltiers; using the innovative Quad Circuit Technology, the TC-4000 ensures unsurpassed control accuracy and temperature uniformity
- The TC-4000 can be connected to a PC along with other Techne cyclers for high throughput applications using Gensoft software

ALL BLOCKS WITH EXTENDED WARRANTY
4 years or 80,000 cycles*
*See local distributor for details and conditions.

TC-4000

TC-4000

Technical Specification

	TC-4000
Block formats	
0.5ml capacity	60
0.2ml capacity	96
384-well	Yes
In-situ	Yes
Block Temperature	
Maximum ramp rate	2.6°C/sec
Block uniformity at 50°C	<±0.3°C
Temperature range	4°C to 99°C
Heated Lid	
Selectable heated lid temperature	100°C to 115°C
Heated lid enable/disable	Yes
Over-temperature cut-out	Yes
Programming	
Number of programs	80
Password protection	Yes
Programming display	4-line alphanumeric
Auto restart on power failure	Yes
Dimensions L x W x H (mm)	420 x 220 x 260
Voltage	230/115V, 50-60Hz
Power	620W
Shipping Weight	13kg

Ordering Information

Product Code	Description
FTC4/05	TC-4000 thermal cycler for 60 x 0.5ml microtubes, 115V/230V
FTC4/H02	TC-4000 thermal cycler for 96 x 0.2ml microtubes or 96-well plates, 115V/230V
FTC4/F02	TC-4000 thermal cycler for 96 x 0.2ml microtubes or 96-well fully-skirted plates, 115V/230V
FTC4/384	TC-4000 thermal cycler for 384-well plates, 115V/230V
FTC4/FLAT	TC-4000 thermal cycler with flat plate for *In-situ*, 115V/230V
FTC41B5D	TC-4000 block for 60 x 0.5ml microtubes
FTC41BHD	TC-4000 block for 96 x 0.2ml microtubes or 96-well plates
FTC41BFD	TC-4000 block for 96 x 0.2ml microtubes or 96-well fully skirted plate
FTC4B384	TC-4000 block for 384-well plates
FTC41BID	TC-4000 block with flat plate for *In-situ*

Thermal Cycler, TC-5000

The TC-5000 gradient thermal cycler enables you to optimise your experiments at the "touch of a screen", with the same mechanical features as the TC-4000.

Proven track record

Over 20 years experience in thermal cycler design ensures that the Techne TC-5000 encompasses reliability with all the specifications required for advanced protocols.

Graphical display

The 'real-time' graphical display shows the sample temperature profile while the program is running, including the upper and lower limits of the gradient. This pictorial, real-time representation means instant visualisation of your experiment's status.

Touchscreen

The TC-5000 incorporates a unique user-friendly programming interface provided by a 115 x 90mm touch-sensitive screen.

Excellent heating rate

A maximum heating rate of 3.0°C/sec and block uniformity of ±0.3°C at 50°C with or without a gradient...no compromise!

Wide linear gradient

The most linear 96-well gradient cycler on the market, with an amazing range of 30°C, allowing annealing temperatures to be optimised in a single experiment.

Gradient calculator

The gradient calculator function displays the temperature of each column of tubes. This ensures replication of the experimental conditions.

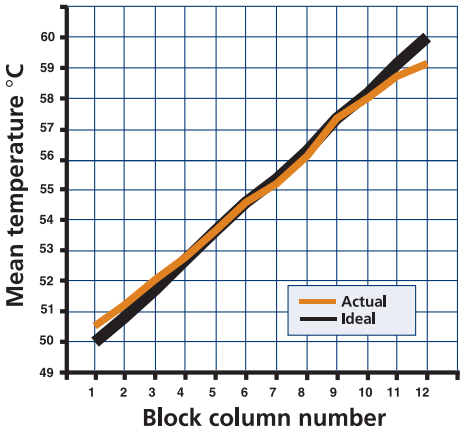
- Gradient range 20°C to 70°C, maximum 30°C
- Quad Circuit Technology: Each block consists of 8 Peltier units, controlled by 4 independent temperature thermistors (control sensors) distributed evenly across the block. This ensures that the TC-5000 exhibits the most accurately controlled linear gradient available
- Versatile block format: The truly user-friendly interchangeable block system allows blocks to be changed in a matter of seconds without the need for any tools (60 x 0.5ml, 96 x 0.2 ml, 96 x 0.2 ml for fully skirted plates, 384-well, or flat plate for *In-situ*)
- Decremental/incremental time and temperature
- Defined pressure, programmable heated lid
- PC control via Gensoft software with free upgrades available from www.techne.com. The TC-5000 is networkable and can be linked to a single PC together with other thermal cyclers in the Techne® range.

TC-5000

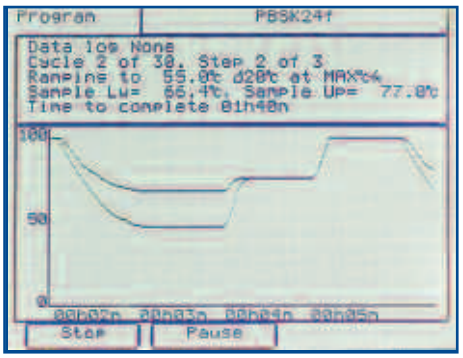
ALL BLOCKS WITH EXTENDED WARRANTY
4 years or 80,000 cycles*
*See local distributor for details and conditions.

TC-5000

TC-5000 cycler linearity



TC-5000 Gradient



TC-5000 Screen

The graph on the right shows the linearity of a 0.2ml **TC-5000** cycler block in relation to the ideal linearity. Due to quad circuit technology, the Techne® block exhibits an almost perfect linearity with deviations occuring only at block edges where the laws of thermodynamics prevent a perfect linearity from existing.

Technical Specification

Model	TC-5000
Block formats	
0.5ml capacity	60
0.2ml capacity	96
384-well	Yes
In-situ	Yes
Block Temperature	
Temperature range	4°C to 99°C
Gradient range	20°C to 70°C
Maximum gradient[1]	30°C (16°C for 384 block)
Maximum ramp rate[2]	3.0°C/sec
Block uniformity at 50°C	<±0.3°C
Heated Lid	
Selectable heated lid temperature	100°C to 115°C
Heated lid enable/disable	Yes
Over-temperature cut-out	Yes
Heated lid only comes on if the block is set above 35°C	
Programming	
Number of programs[3]	50
Programming	Touchscreen
Graphical display	Real-Time Graph
Maximum hold time	99 hrs
Minimum hold time	1 sec
Auto restart on power failure	Yes
Dimensions L x W x H	420 x 220 x 260mm
Voltage	230/115V, 50-60Hz
Power	620W
Shipping Weight	14kg

Ordering Information

Product Code	Description
FTC5/05	TC-5000 Gradient thermal cycler for 60 x 0.5ml microtubes, 115V/230V
FTC5/H02	TC-5000 Gradient thermal cycler for 96 x 0.2ml microtubes or 96-well plates, 115V/230V
FTC5/F02	TC-5000 Gradient thermal cycler for 96 x 0.2ml microtubes or 96-well fully skirted plates, 115V/230V
FTC5/384	TC-5000 Gradient thermal cycler for 384-well plates, 115V/230V
FTC5/FLAT	TC-5000 Gradient thermal cycler for *In-situ* (non-gradient), 115V/230V
FTC51B5D	TC-5000 Gradient block for 60 x 0.5ml microtubes
FTC51BHD	TC-5000 Gradient block for 96 x 0.2ml microtubes or 96-well plates
FTC51BFD	TC-5000 Gradient block for 96 x 0.2ml microtubes or 96-well fully-skirted plates
FTC5B384	TC-5000 Gradient block for 384-well plates
FTC51BID	TC-5000 Flat plate block for *In-situ* (non-gradient)

Licensed for PCR

[1] Unavailable for *In-situ* block
[2] Given are typical values of a standard 0.2ml block, in an ambient temperature of 20°C.
[3] Actual numbers are dependent on complexity of the programs.

All Techne® cyclers have a full 4-year warranty with blocks having a 4-year or 80,000 cycle warranty – whichever comes first.

PCR Consumables

Tubes & Plates

Techne offers individual tubes, strip tubes and various multi-well PCR plates from 24 to 384-wells: coupled with the various sealing options the range now covers all sample formats required in the laboratory.

- Precision moulded: Made from virgin polypropylene, they are precisely moulded to achieve good thermal contact with the block
- Ultra-thin walls: Thin walls help to accelerate heat transfer from the thermal block to the sample, enabling shorter cycles and reduced run times
- Certified: RNase, DNase and human DNA-free ensuring no contaminants arising from the tubes will affect your experiments
- Various sample formats: Individual 0.2ml or 0.5ml microtubes, strip tubes; with or without caps and 24, 48, 96 and 384-well plates

Tubes

Individual microtubes are available for use with all Techne thermal cyclers: 0.2ml thin-walled microtubes with domed caps or 0.5ml with flat caps. The lids are designed to both open easily without the use of tools and form an effective seal when closed to avoid sample evaporation.

For use with all 96-well and 48-well thermal cyclers, strips of 0.2ml tubes make setting up samples easier and faster. They are available in 5 formats:

Part Code	Description	Max. Fill Volume	Additional Caps Required*
FSTRIP1	8 low-profile clear tubes per strip	150µl	F8CAP1
FSTRIP2	8 clear tubes per strip	200µl	F8CAP2 or F8CAP3
FSTRIP3	8 clear tubes per strip with 8 individually attached caps	200µl	-
FSTRIP4	8 clear tubes per strip with attached hinged strip of 8 caps	200µl	-
FMITUBC	8 clear tubes per strip	250µl	FMICAPC

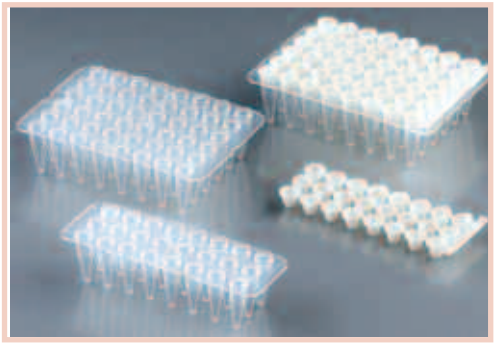
Ordering Information

Product Code	Description
FTUB02TW	0.2ml microtubes with domed caps (1000 tubes per pack)
FTUB05TW	0.5ml microtubes with flat caps (1000 tubes per pack)
FSTRIP1	Strips of 8 low-profile tubes (120 strips per pack)
FSTRIP2	Strips of 0.2ml tubes which can be used with domed or flat cap strips (125 strips per pack)*
FSTRIP3	Strips of 0.2ml tubes with each tube having an individual flat cap (120 strips per pack)
FSTRIP4	Strips of 0.2ml tubes with attached, hinged strip of 8 domed caps (125 strips per pack)
FMITUBC	Strips of 8 x 0.2ml microtube strips (250 strips per pack)
F8CAP1	Strips of 8 flat optically clear caps (120 strips per pack)
F8CAP2	Strips of 8 domed caps for use with FSTRIP2 (125 strips per pack)
F8CAP3	Strips of 8 flat caps for use with FSTRIP2 (125 strips per pack)
FMICAPC	8 x 0.2ml domed microtube caps for use with FMITUBC (250 strips per pack)

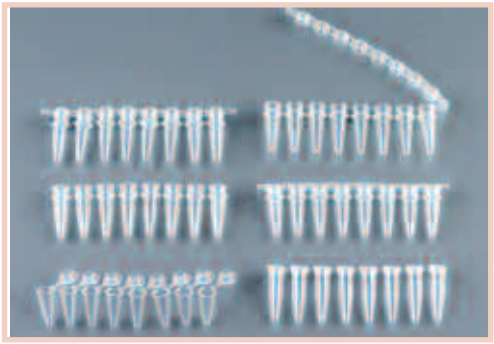
*Cap strips must be ordered separately

Tubes

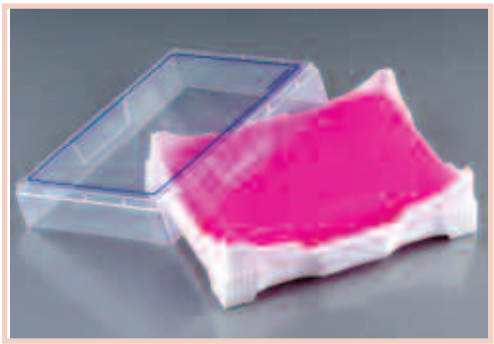
Strip Tubes



24 and 48-Well Plates



Strip Tubes



Mini Cooler

Thermal Cycler Accessories

Multi-Well Plates

Multi-Well Plates

Several plate formats are available for use with Techne's 48-well, 96-well and 384-well thermal cyclers. Along with the various plate formats numerous sealing options are available, such as the re-usable silicone mats which are fully autoclavable and re-used up to 50 times. Heat sealing foil and film for quick and effective plate sealing can be utilised and of course various caps can be used with the 96-well plates.

Part Code	No. of Samples	Description	Max. Fill Volume	Sealing Method**
F24PLNS	24	24-well PCR plates	200 µl	F24MAT
F48PLNS	48	48-well PCR plates	200 µl	F48MAT
F96PLFS	96	Low profile 96-well PCR plates, skirted***	200 µl	FHSEAL, FHSFILM, FMICAPC, F8CAP1
F96PLHS	96	96-well PCR plates, half skirted	300 µl	FHSEAL, FHSFILM, FMICAPC, F8CAP1
F96PLNS	96	Low profile 96-well PCR plates, non-skirted***	200 µl	FHSEAL, FHSFILM, FMICAPC, F8CAP1
F96T02	96	96-well PCR plates, non-skirted	300 µl	FHSEAL, FHSFILM, FMICAPC, F8CAP1
FMIP384	384	384-well skirted microplates	40 µl	FHSEAL, FHSFILM

** Must be ordered separately
*** Also available in black or white, see ordering information below

Ordering Information

Product Code	Description
F24PLNS	24-well PCR plates (pack of 40 plates)
F48PLNS	48-well PCR plates (pack of 20 plates)
F96PLFS	Low profile clear 96-well PCR plates, skirted (pack of 25 plates)
F96PLFSB	Low profile black 96-well PCR plates, skirted (pack of 25 plates)
F96PLFSW	Low profile white 96-well PCR plates, skirted (pack of 25 plates)
F96PLHS	96-well PCR plates, half skirted (pack of 25 plates)
F96PLNS	Low profile clear 96-well PCR plates, non-skirted (pack of 25 plates)
F96PLNSB	Low profile black 96-well PCR plates, non-skirted (pack of 25 plates)
F96PLNSW	Low profile white 96-well PCR plates, non-skirted (pack of 25 plates)
F96T02	96-well PCR plates, non-skirted (pack of 25 plates)
FMIP384	384-well PCR microplates (pack of 50 plates)
F24MAT	24-well sealing mat
F48MAT	48-well sealing mat
FHSEAL	Heat seal foils (pack of 100)
FHSFILM	Optical heat seal films (pack of 100)

Heat Sealer

PCR Accessories

Heat Sealer

The heat sealer allows 96 or 384-well plates to be sealed in seconds with heat sealing foil or clear film. The foil or film is welded to the raised plastic rim of the plates ensuring no sample evaporation can occur. Simply load the plate, place the film on the plate and depress the heated element.

Mini Cooler

The Mini Cooler protects sensitive samples and PCR reagents during sample set-up prior to thermal cycling. The Mini Cooler is stored in the freezer overnight and as it freezes turns purple in colour. When out on the bench, the cooler can then be used to maintain samples at 4°C for approximately 3 hours. As the cooler and hence the samples warm up, the colour changes from purple back to pink; this occurs at 7°C and provides an early warning signal to the user.

Ordering Information

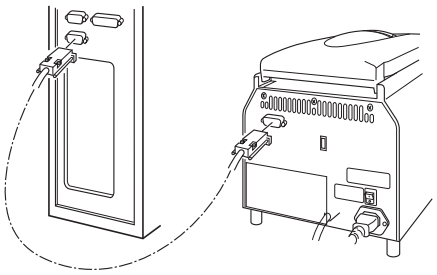
Product Code	Description
FHSEALSD	Heat sealer, 230V
FHSPA96	Heat seal plate adaptor for 96-well format
FHSPA384	Heat seal plate adaptor for 384-well format
FCOOL	Mini cooler, suitable for all 0.2ml tubes, strip tubes and 24, 48 and 96-well plates

Gensoft Cycler PC Control

The user-friendly PC control software.

Gensoft PC software provides the ability to connect up to 32 Techne® thermal cyclers to one PC, eliminating the need to program each thermal cycler or remember stored program names. Any of the Techne thermal cyclers can be connected to each other.

- Create and store programs: the intuitive screen layout means creating and storing programs could not be simpler
- Up to 32 cyclers: programs can be sent to one or multiple units at the same time
- Status screen: the PC status screen shows the position within a given protocol, time to complete and real temperature countdown for each cycler connected
- High-throughput screening made simpler



Connecting one unit to the computer using an RS232 cable

Ordering Information

TC-3000, TC-4000 and TC-5000 PC Connections

To connect ANY single thermal cycler to a PC:

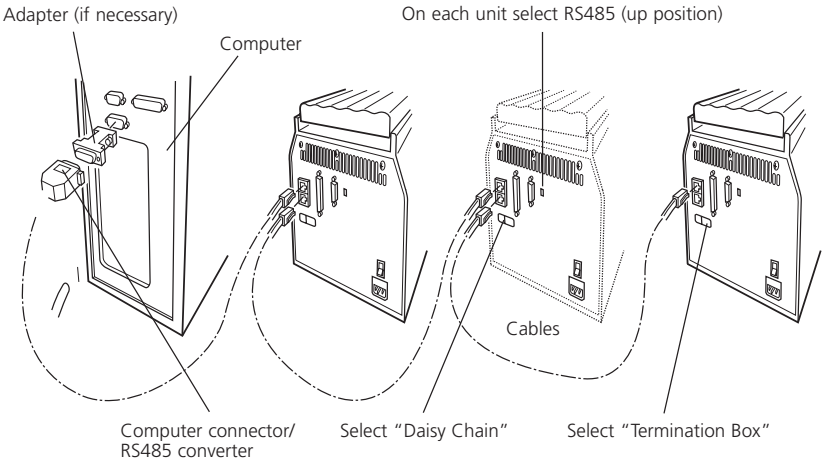
FGEN232	RS232 cable and Gensoft software

To connect TC-3000's and/or TC-4000's to a PC, a single powerpack and cable set for the required number of cyclers is required. The power pack includes the PC connector, power pack, terminator box and cable to connect the PC to the first cycler.

FGEN485D	230V Power pack UK and Gensoft software
FGENFOUR	Four cycler cable set (4 connectors + 3 cables)
FGENTEN	Ten cycler cable set (10 connectors + 9 cables)
FGENONE	One cycler cable extension set (1 connector + 1 cable)

If a TC-5000 or TC-512 is also being connected the power pack is NOT required and the TC-5000 PC connection option should be followed

FTGEN485	PC 485 converter and cable
6103557	Single cycler cable for connecting 2 cyclers together
6205046	USB Cable



Connecting multiple units to a computer

Hybridisation Incubators

The Techne name has long been associated with quality incubators for hybridisation, as flexibility of sample formats coupled with accurate temperature and speed control are key to producing quality results each and every time. Versatile tube formats, allowing small probe volumes to be used and the ability to perform various applications simultaneously are common to both models.

Hybridisation Incubators

The flexibility you need with the quality you expect from an established world leader in temperature control instrumentation. Ideal for blotting techniques in which RNA and DNA or protein are immobilised onto nylon or nitrocellulose filters.

Hybrigene HB-3D

- Temperature range from 10°C above ambient to 80°C
- Can hold up to 16 mini or 4 large glass tubes
- Flexibility at an affordable price, offering excellent temperature accuracy and uniformity
- The Hybrigene is a compact, stackable alternative to the Hybridiser HB-1D - for when space is important
- Stack up to 3 ovens, saving on valuable laboratory space

Hybrigene

Hybridiser HB-1D

- The famous Hybridiser HB-1D is compact, easy to use and provides complete protection from hybridisation hazards
- A temperature range of 10°C above ambient to 100°C
- High capacity which can hold up to 24 mini tubes or 6 unique large tubes
- Hybridisations can be performed with a minimal volume of 5ml of probe
- Adjustable feet to enable accurate leveling
- Unique double-glazed glass door; quiet and safe, providing durable protection

HB-1D

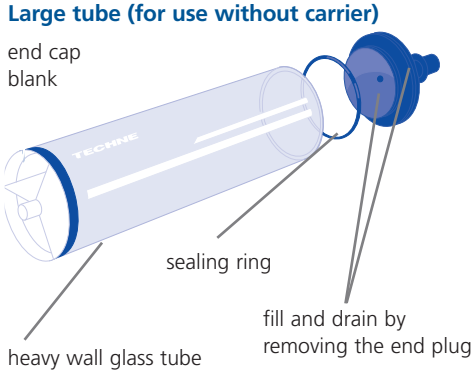
Technical Specification

	Hybrigene HB-3D	Hybridiser HB-1D
Maximum glass tube capacity	16 mini tubes	24 mini tubes
Maximum temperature	80°C	100°C
Minimum temperature	10°C above ambient	10°C above ambient
Adjustable rotation speed	0, 5 to 20 rpm	0, 5 to 20 rpm
Adjustable rocking platform	5-20 or 15-60 opm	5-20 or 15-60 opm
Stability in chamber	<1.0°C	<1.0°C
Stability in tubes	<±0.1°C	<±0.1°C
Uniformity in chamber	<±1.5°C	<±1.5°C
Uniformity in tube	<±0.5°C	<±1.0°C
Temp. set point resolution	0.1°C	0.1°C
Absolute accuracy	<±0.3°C	<±0.3°C
Dimensions L x W x H (mm)	355 x 383 x 432	285 x 385 x 555
Voltage	230V, 50-60Hz	230V, 50-60Hz
Power	750W	750W
Shipping Weight	21kg	24 kg

Ordering Information

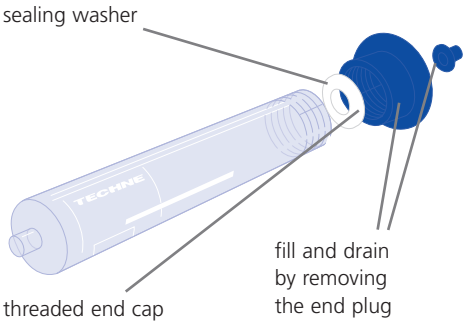
Product Code	Description
FHB4DD	Hybrigene HB-3D hybridisation incubator, 230V (no tubes supplied please order separately)
FHB4DDT	Hybrigene HB-3D hybridisation incubator, 230V (including 4 large hybridisation tubes FHB16)
FHB1DE	Hybridiser HB-1D hybridisation incubator, 230V (no tubes supplied please order separately)
FHB1DG	Hybridiser HB-1D hybridisation incubator, 230V (including 3 large hybridisation tubes FHB12)

Large tube (for use without carrier)



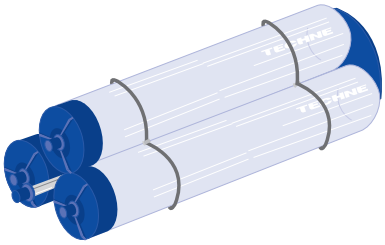
FHB12 (HB-1D only)
FHB16 (Hybrigene only)

Small tube (for use without carrier)



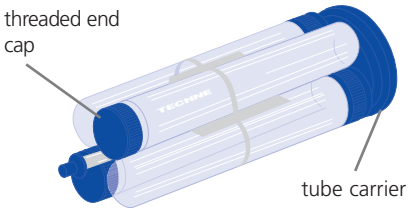
FHB32 (HB-1D only)
FHB36 (Hybrigene only)

Small tube assembly (Hybrigene only)



Tubes FHB71
Holder FHB70

Mini tube assembly



Tubes FHB41
Holder FHB43 (HB-1D only)
Holder FHB61 (Hybrigene only)

Hybridisation Accessories

Versatile multiple tube formats; mix and match sizes within an instrument to cater for different throughputs, users and applications.

- Tubes and other accessories can be accommodated at the same time for multiple uses
- Low probe volume, even with large glass tubes. Rotation and design ensure volumes as low as 5ml can be used and recovered
- Unique "slot-in" tubes; with tube rotation speed of 0 to 20 rpm; controllable to suit your application
- Tube holders; each holds up to 16 x 15ml or 8 x 50ml tubes
- Radioactive safe; protective casing and non-drip tube design minimises risk to the user.
- Selectable speed rocking platform; (0 to 60 opm) to cater for membrane-bound and slide-bound hybridisations
- Adjustable feet; for levelling on uneven surfaces
- Static shelf; where heating without movement is required
- Drip tray; removable for easy cleaning

Tubes

Glass hybridisation tubes reduce volumes, simplify washing and improve signals!

- 3 sizes available: small, mini and unique large tubes
- Durable: thick borosilicate glass
- Easy pour: non drip, safe and convenient
- Sealing ring: 'O' ring-sealed end caps ensure no leakage!
- Escape thread on screw cap: easy opening with no vacuum problems
- Tube assemblies: adaptors to hold multiple small glass tubes for increased capacity

Glassware

Ordering Information

HB1D	Hybrigene	Description
FHB12	FHB16	Large (80mm) glass tube with end caps
FHB32	FHB36	Small (44mm) glass tube with screw cap
	FHB71	Small (44mm) glass tube with screw cap end plug not included (for use with FHB70)
	FHB70	Multi tube holder for small tubes (holds 3 tubes)
	FHB72	FHB70 multi tube holder and 3 x FHB71 small glass tubes with screw caps
FHB41	FHB41	Mini (32mm) glass tubes with screw caps (pack of 4)
F15ML1TH	F15ML4TH	Tube carrier with clips to hold 16 x 15ml tubes
F50ML1TH	F50ML4TH	Tube carrier with clips to hold 8 x 50ml tubes

Incubator Accessories

Tube holders

Tube holders with clips, available to carry 16 x 15ml or 8 x 50ml tubes. Ideal for higher throughput of smaller samples.

Selectable speed rocking platform

It sits neatly in the base of the unit while still allowing a number of hybridisation tubes to be placed above. Made from stainless steel, the rocking platform enables membranes to be processed using a wave motion. Speed range of 0 to 60 oscillations per minute.

Static shelf

Up to 2 (Hybrigene HB-3D) or 3 (Hybridiser HB-1D) static stainless steel mesh shelves can be placed into the tube locators allowing the unit to be used as a simple non-motion incubator. Each shelf can hold up to 4kg.

Membrane separators

Strong, re-usable porous mesh sheets for placing between membranes. Ensures even hybridisation when processing multiple hybridisation membranes in one tube. Available in packs of 5 (20 x 20cm).

Hybridisation tube rack

Useful storage facility for tubes during membrane loading or when not in use. Carries up to 3 large and 3 small tubes.

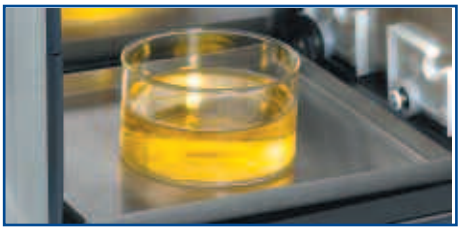
Ordering Information

Product Code	Description
FHB1/PLAT	Rocking platform (HB-1D only) 0-60opm
FHB4/PLAT	Rocking platform (HB-3D only) 0-60 opm
FHBSH1	Stainless steel mesh shelf (HB-1D only)
FHB4SH1	Stainless steel mesh shelf (HB-3D only)
FMEM2020	Membrane separators 20 x 20cm (pack of 5)
FHTRACK	HTH-1 tube rack holder (holds 3 large and 3 small tubes)
FHB4WALL	Hybrigene HB-3D incubator wall fixing kit
FHB4DKIT	Complete kit for stacking 3 Hybrigene HB-3D units
FHB4DSTK	Hybrigene HB-3D incubator stacking kit (secures two units together)

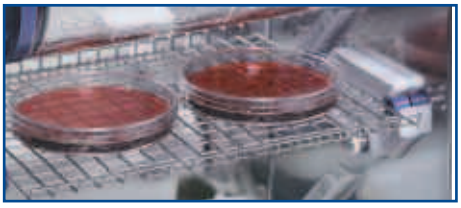
Holder F15ML1TH (HB-1D only)
Holder F15ML4TH (Hybrigene only)

(Please note: tubes are not supplied)

FHTRACK (tube rack)



Adjustable speed rocking platform



Static shelf

Sample Cooling

Techne has a long established history in temperature control products, both heating and refrigeration and so are pleased to introduce two new products for Life Scientists. Both the N° ICE and BL°CKICE can cool samples down to 0°C, with the N° ICE being able to accommodate any sample vessel due to the clever bead technology. The BL°CKICE holds two of the Dri-Block® insert blocks and has additional timer and alarm features.

Sample Cooling

N° ICE

The new N° ICE is ideal for incubating any number or size of samples at sub-ambient temperatures for long periods of time. Instead of the normal situation in the laboratory with tubes floating in melting wet ice, the ceramic-coated beads maintain the temperature and support the sample vessels for as long as necessary. The beads are chemically resistant and if required can be autoclaved at 134°C. As a time saving option, the bucket of beads can be incubated in the fridge overnight and simply inserted into the unit as and when required.

- Ideal for maintaining reagents at 4°C for the whole working laboratory day
- Temperature range of 0 to 40°C
- Temperature displayed in °C or °F
- Autoclavable ceramic-coated beads

N° ICE

Technical Specification

Temperature range	0.0 to 40.0°C
Temperature accuracy	±1°C
Temperature units	°C or °F
Cooling technology	Peltier
Temperature display resolution	0.1°C
Temperature display	Orange LED, 5 digits
Power supply	90 to 260V, 50/60Hz
Dimensions L x W x H (mm)	190 x 240 x 225
Shipping Weight*	4.5kg

BL°CKICE

The new Techne cooling block, the BL°CKICE is ideal for incubating samples at sub-ambient temperatures. Holding two standard aluminium blocks from the Dri-Block® range the BL°CKICE offers fast cool down times to ensure the unit is quickly available for use. The integrated timer allows up to 9 days to be programmed, which is more than enough for laboratory applications and the timer will not start until a stable temperature has been reached.

- Temperature range of 0 to 40°C
- Count up and count down timer
- Temperature displayed in °C or °F
- Buzzer indicates reaching the set temperature and the end of the elapsed time
- Holds 2 aluminium insert blocks

BL°CKICE

Technical Specification

Temperature range	0.0 to 40.0°C
Temperature accuracy	±1°C
Temperature units	°C or °F
Maximum variation between identical blocks at °C	±0.2°C
Temperature display resolution	0.1°C
Cooling technology	Peltier
Cool down time to 4°C	30 minutes
Display	Orange LED, 5 digits
Power supply	90 to 260V, 50/60Hz
Dimensions L x W x H (mm)	190 x 240 x 225
Shipping Weight**	3.0kg

*Unit supplied complete with bucket and beads
**Unit supplied without block inserts, must be ordered separately

Ordering Information

Part Code	Description
FNOICE	N° ICE complete with bucket and beads, 0 to 40°C
FICEBUCKET	N° ICE spare bucket
FTCOOLBE	N° ICE replacement ceramic beads
FBLOCKICE	BL°CKICE, 0 to 40°C, requires 2 block inserts

Dri-Block® Heaters

Techne® Dri-Block® heaters are the economical answer to every laboratory's need for a compact constant temperature heater suitable for test tubes, cuvettes, micro-centrifuge tubes, 96 well plates and other small containers. Dri-Blocks are particularly suitable for microbiology and clinical laboratories for incubation, boiling, inactivation, wet washing, sample concentration, enzyme analysis and other general uses. They are also used for a variety of industrial applications. The heat transfer medium is an aluminum alloy block with machined cavities to accept test tubes or sample containers.

Dri-Block® Heaters

Techne's Dri-block® heaters provide a safe, dry, constant temperature source in the laboratory. The units are particularly suitable for microbiology and clinical laboratories for incubation, boiling, inactivation, wet ashing, sample concentration, enzyme analysis and many other clinical and industrial purposes.

- Very accurate temperature control
- Analogue or digital control
- Choice of 2, 3 or 4 block format
- Wide range of interchangeable aluminium blocks
- Blocks available as accessories for all applications - tubes, vials and microplates
- Block extraction tool is supplied, allowing blocks to be removed easily
- 3-year warranty as standard

DB-2A

DB-2A

- Small, light and compact footprint, economical price
- Can hold up to 2 aluminium insert blocks or one 96-well plate block
- Analogue: temperature setting is by a calibrated dial
- Temperature range from ambient to 100°C or 200°C
- Fast heat-up rate from 30°C to 100°C in just 12 minutes
- Temperature stability at 40°C: ± 0.05°C

DB-2D

DB-2D & DB-2DH

- Bright orange LED digital display for fast and accurate setting of temperature
- RS232 connection available for PC control
- Can hold up to 2 aluminium insert blocks or one 96-well plate block
  Temperature range from ambient to 100°C
- Fast heat-up rate: 30°C to 100°C in just 12 minutes
- Temperature stability at 40°C: ± 0.05°C

Technical Specification

	DB-2A	DB-2D	DB-2DH
Temperature range	Ambient to 100°C	Ambient to 100°C	Ambient to 200°C
Temperature stability @ 40°C	±0.05°C	±0.05°C	±0.1°C
@ 100°C	±0.1°C	±0.15°C	±0.15°C
Temperature setting	Rotary knob	Push Button	Push Button
Temperature display	-	Orange LED	Orange LED
Temperature scale graduation	2°C	No graduation	No graduation
Maximum temperature variation between identical blocks @ 40°C	0.2°C	0.2°C	0.2°C
Set point accuracy	±2°C	±1°C	±1°C
Maximum number of blocks	2	2	2
Heat up time, @ 30-37°C	8 minutes	8 minutes	11 minutes
@ 30-56°C	9 minutes	9 minutes	15 minutes
@ 30-Max.	12 minutes	12 minutes	25 minutes
RS232 option available	No	Yes	Yes
Heater power	300W	300W	300W
Dimensions L x W x H (mm)	202 x 260 x 105	202 x 260 x 105	202 x 260 x 105
Voltage	230V, 50-60 Hz	230V, 50-60 Hz	230V, 50-60 Hz
Shipping Weight	4 kg	5 kg	5 kg

Ordering Information

Product Code	Description
FDB02AD	DB-2A ambient to 100°C, requires 2 insert blocks
FDB02DD	DB-2D ambient to 100°C, requires 2 insert blocks
FDB02HDD	DB-2DH ambient to 200°C, requires 2 insert blocks
FDB02DDR	DB-2D + RS232 ambient to 100°C, requires 2 insert blocks

DB-3

DB-3

- The DB-3 is designed to hold up to 3 aluminium insert blocks or one 96-well plate block
- Analogue: temperature setting is by a calibrated dial
- Temperature range from ambient to 100°C
- Fast heat-up rate: 30°C to 100°C in just 18 minutes
- Temperature stability at 40°C: ± 0.05°C

DB-3A

- Temperature range from ambient to 200°C for higher temperature applications
- Can hold up to 3 aluminium insert blocks or one 96-well plate block
- Analogue: temperature setting is by a calibrated dial
- Powerful heater for fast heat-up rate: 30°C to 200°C in just 30 minutes
- Temperature stability at 40°C: ± 0.1°C

Technical Specification

		DB-3	DB-3A
Temperature range		Ambient to 100°C	Ambient to 200°C
Temperature stability @ 40°C		±0.05°C	±0.01°C
	@ 100°C	±0.1°C	±0.15°C
Temperature setting		Rotary knob	Rotary knob
Temperature scale graduation		2°C	2°C
Maximum temperature variation between identical blocks @ 40°C		0.2°C	0.2°C
Set point accuracy		±2°C	±2°C
Maximum number of blocks		3	3
Heat up time	30-37°C	8 minutes	8 minutes
	30-56°C	12 minutes	12 minutes
	30-Max.	18 minutes	30 minutes
RS232 option available		No	No
Heater power		450W	450W
Dimensions L x W x H (mm)		279 x 260 x 105	279 x 260 x 105
Voltage		230V, 50-60Hz	230V, 50-60Hz
Shipping Weight		6kg	6kg

DB-3A

Ordering Information

Product Code	Description
FDB03OD	DB-3 ambient to 100°C, requires 3 insert blocks
FDB03AD	DB-3A ambient to 200°C, requires 3 insert blocks

Dri-Block® heaters

DB-3D & DB-3DL

- Can hold up to 3 aluminium insert blocks or one 96-well plate block
- Bright orange LED digital display for fast and accurate setting of temperature
- DB-3DL temperature range from ambient to 100°C and DB-3D up to 200°C
- Powerful heater for fast heat-up rate: 30°C to 200°C in just 25 minutes
- Interchangeable insert blocks to accommodate a variety of tubes
- Temperature stability at 40°C: ± 0.1°C

DB-3DL

DB-3D

Technical Specification

	DB-3D	DB-3DL
Temperature range	Ambient to 200°C	Ambient to 100°C
Temperature stability @ 40°C	±0.1°C	±0.1°C
@ 100°C	±0.15°C	±0.15°C
Temperature setting	Push Button	Push Button
Temperature display	Orange LED	Orange LED
Temperature scale graduation	No graduation	No graduation
Maximum temperature variation between identical blocks @ 40°C	0.2°C	0.2°C
Set point accuracy	±1°C	±1°C
Maximum number of blocks	3	3
Heat up time 30-37°C	11 minutes	8 minutes
30-56°C	15 minutes	9 minutes
30-Max.	25 minutes	12 minutes
RS232 option available	Yes	No
Heater power	450W	450W
Dimensions L x W x H (mm)	279 x 260 x 105	279 x 260 x 105
Voltage	230V, 50-60Hz	230V, 50-60Hz
Shipping Weight	6kg	6kg

Ordering Information

Product Code	Description
FDB03LDD	DB-3DL ambient to 100°C, requires 3 insert blocks
FDB03DD	DB-3D ambient to 200°C, requires 3 insert blocks
FDB03DDR	DB-3D + RS232 ambient to 200°C, requires 3 insert blocks

DB-4D

- Can hold up to 4 aluminium insert blocks or two 96-well plate blocks
- Bright orange LED digital display for fast and accurate setting of temperature
- Temperature range from ambient to 100°C
- Powerful heater for fast heat-up rate: 30°C to 100°C in just 15 minutes
- Interchangeable insert blocks to accommodate a variety of tubes
- Temperature stability at 40°C: ±0.1°C

DB-4D

Technical Specifications

	DB-4D
Temperature range	Ambient to 100°C
Temperature stability @ 40°C	±0.1°C
Temperature setting	Push button
Temperature display	Orange LED, 4 digits
Uniformity within block @ 40°C	0.1°C
Uniformity within block @ 100°C	0.1°C
Set point accuracy	±1°C
Maximum number of blocks	4
Heat up time, minutes 30-37°C	13
30-56°C	11
30-Max.	15
Heater power	600W
Dimensions L x W x H (mm)	356 x 260 x 105
Voltage	230V, 50-60Hz
Shipping Weight	7kg

Ordering Information

Product Code	Description
FDB04DD	DB-4D ambient to 100°C, requires 4 insert blocks
FDB04DDR	DB-4D + RS232 ambient to 100°C, requires 4 insert blocks

DB-2TC

DB-2TC, Twin Control

A new Dri-Block® heater with an innovative design accommodating two blocks with independent digital temperature controls. Each block can be set at different temperatures - ideal for multiple users or for applications where samples have to be transferred between two temperatures very quickly.

The compact, robust design also allows the unit to be placed in fume cabinets where corrosive/toxic chemicals are used.

Operating over the temperature range of ambient to 100°C the unit has an impressive heat up rate and highly accurate thermal control with temperature stability of ±0.1°C.

- Ideal for multiple users or applications
- Two blocks with independent temperature controls
- Can hold up to 2 aluminium insert blocks
- 4-digit setting with bright orange LED digital displays for fast and
- accurate setting of temperature
- Powerful heater for fast heat-up rate: 30°C to 100°C in just 19 minutes
- Temperature range from ambient to 100°C
- Temperature stability at 40°C: ±0.1°C

Technical Specification

		DB-2TC
Temperature range		Ambient to 100°C
Temperature stability @ 40°C		±0.1°C
Temperature setting		Push button
Temperature display		Orange LED, 4 digits
Uniformity within block at 40°C		±0.1°C
Uniformity within block at 100°C		±0.1°C
Display resolution		0.1°C
Set point accuracy		±1°C
Maximum number of blocks		2
Heat up time, minutes	30-37°C	6 minutes
	30-56°C	14 minutes
	30-Max.	19 minutes
Dimensions L x W x H (mm)		279 x 260 x 105
Voltage		230V, 50-60 Hz
Power		2 x 150W
Shipping Weight		5kg

Ordering Information

Product Code	Description
FDB02DDTC	DB-2TC ambient to 100°C, requires 2 insert blocks

Accessories, Interchangeable Blocks

For use with Techne® block heaters. Manufactured from anodised aluminium and all with a separate hole to accommodate a thermometer if desired. All blocks have dimensions (d x w x h) 95 x 76 x 51 mm and can be used in any combination (except 96-well blocks).

Aluminium Insert Blocks

Product Code	Tube Size (diam)	Number of Holes	Size d x w x h (mm)
F3501	Plain Block	None	95 x 76 x 51
F3502	6mm	30	95 x 76 x 51
F3503	10mm	20	95 x 76 x 51
F3504	12mm	20	95 x 76 x 51
F3505	13mm	20	95 x 76 x 51
F3506	15mm	12	95 x 76 x 51
F3507	16mm	12	95 x 76 x 51
F3508	19mm	8	95 x 76 x 51
F3509	25mm	6	95 x 76 x 51
F3510	10mm cuvettes	2 channels	95 x 76 x 51
F3512	Plain block	thermometer hole only	95 x 225 x 51
F4460	Plain block	thermometer hole only	95 x 76 x 51
F4461	7 and 9 mm	20/10	95 x 76 x 51
F4462	24mm	6	95 x 76 x 51
F4463	26mm	6	95 x 76 x 51
F4464	microcentrifuge 1.5ml tubes	20	95 x 76 x 51
F4465	0.5ml microtubes	30	95 x 76 x 51
F4466	Plastic spacer	None	95 x 37 x 51
F4467	Hi-Temp 96 block	96	95 x 151 x 61
F4468	Falcon round bottom plate block	96	95 x 151 x 61
F4469	Falcon flat bottom plate block	96	95 x 151 x 61
F4470	microcentrifuge 2.0ml tubes	20	95 x 76 x 51
F4471	0.2ml microtubes	72	95 x 76 x 51
F4473	Block for 96 x 0.2ml microtubes	96	95 x 151 x 61
F4474	1.0ml Porvair Plate	96	95 x 151 x 48
F4476	Block for Gelation Timer	1 sample cup	95 x 76 x 51

Aluminium Blocks

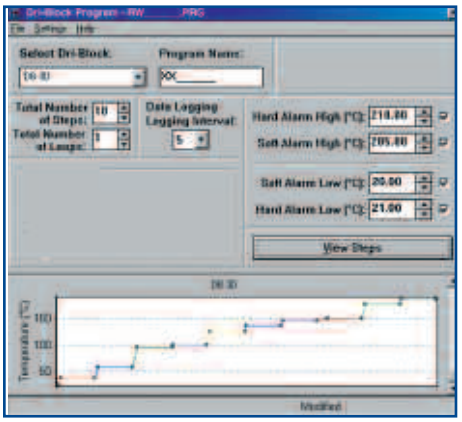
DBsoft Software DB-2D/3D/4D

DBsoft has been designed for use with Dri-Block® models DB-2D, DB-3D and DB-4D with the RS232 option. DBsoft is a Windows® based program that connects via an RS232 connection to your computer.

Programs can be created, saved and loaded at any time as well as running in real time mode. Definable parameters include time, temperature and ramp rates. Temperatures within the range of ambient to 200°C can be programmed.

DBsoft enables you to:

- Create, open, save and print programs
- Open, save, print and view logged data as a line graph
- Open, print and view logged data in a text format
- Create calibration certificates
- Run a program in real-time mode
- Send programs to the Dri-Block®
- Retrieve programs and test results from the Dri-Block®
- Erase test results
- Password protect programs



DBsoft

Ordering Information

Product Code	Description
FDBSOFT	DBsoft software for DB-2D/3D/4D

Sample Concentrators

The Techne® Sample Concentrator accelerates the concentration of large numbers of samples in a matter of minutes whereas traditional techniques may take several hours.

The Sample Concentrator consists of a fully adjustable gas reservoir which mounts over a precision controlled DB-3 series Dri-Block® heater enabling samples to be heated quickly and efficiently to the required temperature to assist evaporation.

Page 24 - Sample Concentrators

Sample Concentrator

The Techne® Sample Concentrator accelerates the concentration of large numbers of samples in a matter of minutes, where traditional methods can take hours. It is ideal for the life science researcher and chemist alike designed for applications such as sample preparation, drug screening, hormone assays, chromatographic analysis and scintillation counting.

Unique gas chamber

Evaporation is increased by passing an inert gas over the surface of the sample to remove any evaporated solvent molecules, maintaining the concentration gradient. The gas travels through the unique patented gas chamber to the samples via the needles. The needles are inserted into a silicone matrix and can be spaced to fit varying combinations of tubes from 26mm tubes to 0.2ml microcentrifuge tubes.

Compact

The unit is light and compact enough for convenient use in a fume cupboard when toxic solvents are being evaporated.

Needles

The needles are made from high quality stainless steel and are specially designed for use with the Techne® Sample Concentrator. When corrosive solutions are being used, PTFE coated needles are available.

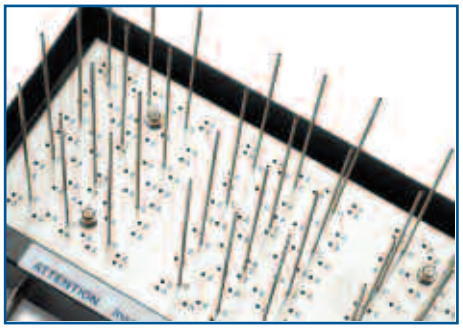
Fully adjustable

The Sample Concentrator's gas reservoir is mounted on a fully adjustable stand for accurate height control.

Technical Specification

Maximum gas pressure	Must not exceed 2 psi
Maximum vertical travel	320mm
Maximum gas usage	15 litres / minute
Gas	Any inert gas (often Nitrogen)
Gas intake nozzle diameter	6.35mm (1/4")
Needle position	Variable to suit Techne® Dri-Blocks®
Dimensions L x W x H (mm)	295 x 240 x 530
Shipping weight (gas chamber and stand)[1]	5kg

Standard Sample Concentrator (FSC400D).



Patented gas chamber

Ordering Information

Product Code	Description
FSC400D	Sample Concentrator gas reservoir and stand only [2]
FSC496D	Sample Concentrator gas reservoir and stand only (96-wells)
Needles[1]	
F7209	Pack of 100 needles, 76mm long
F7210	Pack of 100 needles, 127mm long
FSC4NCS	Pack of 100 PTFE coated needles, 76mm long
FSC4NCL	Pack of 100 PTFE coated needles, 127mm long

[1] Needles are not included with the Sample Concentrator and must be ordered separately.

[2] The Sample Concentrator comes complete with gas chamber and stand. Two models are available, one for test tubes, cuvettes and small containers (FSC400D) and one for 96-well plates (FSC496D). A DB-3 Dri-Blocks® heater and insert blocks are also required.

Gelation Timers

Techne® has been setting the benchmark for gelation timing for almost 60 years, with several British Standards for this methodology written using our equipment. Our new GT-5 and GT-6 digital gelation timers have set the bar even higher. Both models have digital timers, with the output time in 1 minute increments up to 9999 minutes, for the 1 rpm model (GT5), and in tenths of a minute up to 999.9 minutes, for the 10 rpm model (GT6).

With an easy to use, push button display. It is the perfect instrument for accurate measurement and quality control for the gelation of resin or adhesive based samples in the laboratory.

Page 26 - Gelation Timers

Gelation Timers

Techne® has been setting the benchmark for gelation timing for almost 60 years. In fact, several British Standards for this methodology have been written using our equipment. Gelation timers are used to measure the transition from liquid to solid during polymerisation.

All models have digital timers, with the time in 1 minute increments (GT-5) up to 9999 minutes or in tenths of a minute (GT-6) up to 999.9 minutes. Every unit is supplied with the usual Techne® quality guarantee, including a calibration certificate for traceability, before leaving the factory each instrument is calibrated and certified.

A bright LED display shows the time to the nearest minute or tenth of a minute, and an audible bleep and light confirm completion of gelation.

The Techne® Gelation Timer is the ideal instrument for accurate measurement and quality control for the gelation of resin or adhesive based samples in the laboratory.

- Digital timer: 2 models available, 1rpm and 10rpm
- Stops automatically when gelation occurs
- Easy to use, push button display
- Can be mounted on a retort stand for ease of use
- Plungers are removable for easy cleaning
- Sample cups and disposable plungers are available
- 3 year warranty

Technical Specification

	GT-5	GT-6
Digital timer increment	1 minute	1/10th minute
Maximum time	9999 minutes	999.9 minutes
Dimensions L x W x H (mm)	94 x 69 x 119	94 x 69 x 119
Voltage	230V, 50Hz	230V, 50Hz
Power	5W	5W
Shipping Weight	7.7kg	7.7kg

Ordering Information

Product Code	Description
FGT5	GT-5 digital gelation timer, 1rpm
FGT6	GT-6 digital gelation timer, 10rpm

Accessories

Product Code	Description
F0985	22mm stainless steel plunger
F0979	19mm stainless steel plunger
F0982	16mm stainless steel plunger
F1794	Pack of 100 disposable plungers
F1795	Disposable plunger adaptor
F7846	Pack of 240 sample cups

Baths and Themoregulators

For over 50 years, Techne® has been the leader in developing and offering clip-on Thermoregulators for water baths used in both laboratory and calibration environments. Our latest ranges, the TE and TU series continue in our proud tradition. Our thermoregulators, baths, dip and flow coolers and refrigerated systems allow for precise temperature control from -40°C to +250°C, integrating the latest in technology to assure excellence in your laboratory.

Baths and Thermoregulators

Water Baths

A comprehensive range of temperature controlled water baths are available from Techne®. Twenty different water bath combinations allow the use of accurate temperatures from -40°C up to 200°C; ensuring a solution for most laboratory applications.

First select the unheated stainless steel bath (see page 29) which has the appropriate volume for the application, for example B-26 which has a volume of 26 litres.

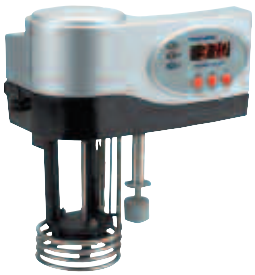
Then add a thermoregulator (see pages 30 and 31) which is suitable for the required temperature range, for example the TE-10D Tempette is a digital thermoregulator for temperatures between -40°C and 120°C

Select any accessories that are required, for example, both gabled and flat lids are available for all bath sizes. Gabled lids allow particularly tall tubes to be accommodated.

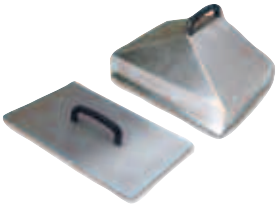
If sub-ambient temperatures are required it is necessary to add a cooling mechanism to the bath. Techne® recommends the use of a dip or flow cooler for temperatures down to -35°C. For example the RU-200 can lower temperatures down to -20°C. It is also possible to use the cooling coil with a water supply for temperatures from 5°C above the water temperature to ambient.

To assemble the complete system shown opposite the following products are required:

B-26



TE-10D



Bath Lids

RU-200

Product Code	Description
FBATH26	B-26 stainless steel bath, 26 litre capacity
FTE10DDC	TE-10D, digital thermoregulator
FFLAT18	Flat lid for 18 or 26 litre bath
FRU2D	RU-200 dip cooler

Unheated Baths

Designed to be used with a clip-on Tempette or Tempunit® thermoregulator, these baths incorporate carrying handles for added safety. All baths have stoved enameled steel outer cases and are supplied with bridge mounting plate to hold the thermoregulator.

B-8

Four bath capacities – 8, 12, 18 and 26 litre

- Stainless steel construction
- Seam-free and corrosion resistant stainless steel inners for easy cleaning
- Rugged splash-proof case
- Integrated carrying handle
- Maximum working temperature of 200°C
- All models come with a 3 year warranty as standard

B-12

48 litre

- 48 litre capacity
- Welded construction
- All submerged parts are made from stainless steel
- Rugged splash-proof case
- Maximum working temperature of 200°C

B-18

Technical Specifactions

Capacity litres		8	12	18	26	48
Dimensions (mm)	Length	265	354	530	530	594
	Width	325	325	325	325	365
	Height	172	172	172	222	298
Internal Dimensions (mm)	Length	240	329	505	505	559
	Width	300	300	300	300	330
	Height	150	150	150	200	274
Top of bath to liquid level max depth (mm)		65	65	65	65	65
Working length to thermoregulator (mm)		115	205	380	380	430
Working depth - max/min (mm)		130/100	130/100	130/100	180/150	255/224
Working capacity - max/min (litres)		8.0/6.0	11.6/8.4	18.0/13.2	26.0/20.5	8.5/42.5
Shipping Weight		5.5kg	6.1kg	7.5kg	9.5kg	14.6kg

For temperatures up to 250°C we recommend the use of the LCB range of baths.

B-48

Ordering Information

Product Code	Description
FBATH08	B-8 stainless steel bath, 8 litre capacity
FBATH12	B-12 stainless steel bath, 12 litre capacity
FBATH18	B-18 stainless steel bath, 18 litre capacity
FBATH26	B-26 stainless steel bath, 26 litre capacity
FBATH48	B-48 stainless steel bath, 48 litre capacity

Baths and Thermoregulators

Techne® invented the "Clip On" thermoregulator in 1948 and now offer four "Clip On" units. Thermoregulators are designed to be used with the Techne® unheated water baths or any other suitable laboratory vessels. They will heat, circulate and safely control the temperature of the liquid in the bath within precise limits.

TE-10A Tempette

- Temperature range of -20°C* to 95°C
- Excellent temperature stability: ±0.01°C at 40°C
- Simple to use analogue control
- Suitable for most routine laboratory applications
- User adjustable over-temperature cut-out for unbeatable safety

TE-10D Tempette

- Temperature range of -40°C* to 120°C
- Excellent temperature stability: ±0.01°C at 40°C
- 4 digit setting with a bright LED digital temperature display
- Suitable for most routine laboratory applications
- User adjustable over-temperature cut-out
- Low liquid level cut-out as standard

Technical Specification

Specifications to DIN 12876	TE-10A	TE-10D
Temperature range*	-20°C to +95°C	-40°C to +120°C
Temperature selection	Analogue	Digital
Temperature stability using water @ 40°C	±0.01°C	±0.01°C
Method of control	Proportional	PID
Temperature sensor	Thermistor	PRT
Adjustable over-temperature cut-out	Yes	Yes
Low liquid level cut-out	Yes	Yes
Heating/Pumping		
Pump capacity litres/minute	10	10
Pump capacity (mbar)	145	145
Nominal heater power at 120V (W)	1000	1000
Nominal heater power at 240V (W)	1000	1000
Extension below base (mm)	145	145
Dimensions L x W x H (mm)	237 x 124 x 260	237 x 124 x 260
Shipping Weight	3.7kg	3.9kg

* Refrigeration or cooling coil required for below ambient cooling (see Techne Flow and Dip Coolers and the cooling coil).

Ordering information

Product Code	Description
FTE10ADC	TE-10A, analogue thermoregulator, -20°C to 95°C, (supplied with clamp)
FTE10DDC	TE-10D, digital thermoregulator, -40°C to 120°C, (supplied with clamp)

TE-10A

TE-10D

TU-20D

TU-20D Tempunit®

- A wider temperature range of -40°C* to 200°C
- Excellent temperature stability: ±0.005°C at 40°C
- 1.8kW heater power for fast heat up
- 4 digit setting with a bright LED digital temperature display
- This unit incorporates an RS232 connection
- User adjustable over-temperature cut-out
- Low liquid level cut-out as standard

TU-20HT

TU-20HT Tempunit®

- This sophisticated Tempunit® covers a wide temperature range of -40°C* to 250°C
- Excellent temperature stability: ±0.005°C at 40°C
- 1.8kW heater power for fast heat up
- 4 digit setting with a bright LED digital temperature display
- RS232 connection supplied with TechneWorks software package and connecting lead as standard
- User adjustable over-temperature cut-out with an audible alarm fitted
- Low liquid level cut-out as standard

Technical Specification

Specifications to DIN 12876	TU-20D	TU-20HT
Temperature range*	-40°C to +200°C	-40°C to +250°C
Temperature selection	Digital	Digital
Temperature stability using water @ 40°C	±0.005°C	±0.005°C
Method of control	PID	PID
Temperature sensor	PRT	PRT
Adjustable over-temperature cut-out	Yes	Yes
Low liquid level cut-out	Yes	Yes
PC Interface	Yes RS232	Yes RS232
Heating/Pumping		
Pump capacity litres/minute	10	Internal circulation only
Pump capacity (mbar)	145	-
Nominal heater power at 120V (W)	1500	1500
Nominal heater power at 240V (W)	1800	1800
Cooling coil	No	Option
Extension below base (mm)	145	145
Dimensions L x W x H (mm)	237 x 124 x 260	237 x 124 x 260
Shipping Weight	4.0kg	4.0kg

* Refrigeration or cooling coil required for below ambient cooling (see Techne Flow and Dip Coolers and the cooling coil). The TU-20HT can only be used with the Dip Coolers

Downloadable free of charge from www.techne.com

Ordering Information

Product Code	Description
FTU20DDC	TU-20D, advanced thermoregulator with RS232, -40°C to 200°C, (supplied with clamp)
FTU20HDC	TU-20HT, advanced high temperature thermoregulator with RS232 and TechneWorks software, -40°C to 250°C, (supplied with clamp)

Liquid Bath Accessories

Cooling coil

Connects to the mains water supply; the water being circulated through the coil should be at least 5°C cooler than the set temperature of the bath. The cooling coil fits on to all the thermoregulators.

Flat and gabled lids

Manufactured of stainless steel and available to fit all sizes of baths to help prevent evaporation losses. Gabled lids provide extra working headroom within the bath.

Adjustable trays

Supported by a ball chain and clip the stainless steel trays can be used to alter the depth of the bath.

Polypropylene spheres

A ball blanket is an effective way of reducing evaporation and loss of heat from a water bath. It acts as effectively as a lid, whilst providing instant access to the bath. The 25mm diameter spheres are supplied in packs of 250.

Bath Lids

Ordering Information

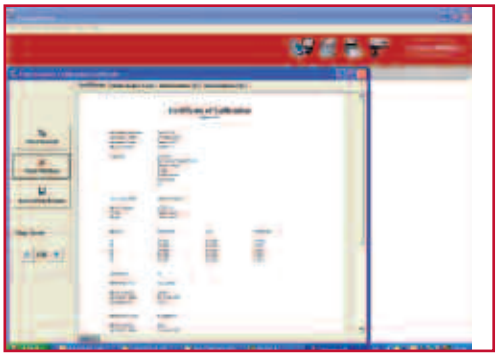
Flat Lids	Description
FFLAT08	8 litre size
FFLAT12	12 litre size
FFLAT18	18 and 26 litre size
FFLAT48	48 litre size

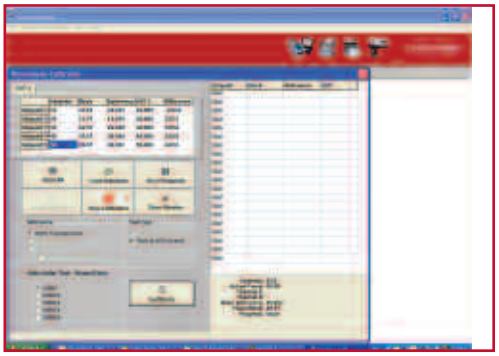
Gabled Lids	Description
FGABLE08	8 litre size
FGABLE12	12 litre size
FGABLE18	18 and 26 litre size
FGABLE48	48 litre size

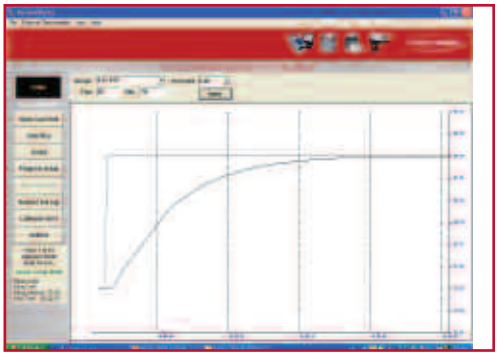
Adjustable Trays	Description
FADJ08	8 litre size
FADJ12	12 litre size
FADJ18	18 litre size
FADJ26	26 litre size
FADJ48	48 litre size

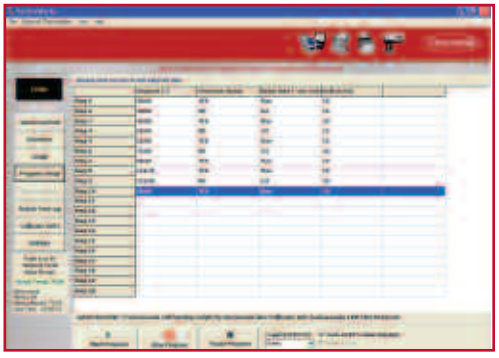
Polypropylene Spheres	Description
F840D	250 x 25mm diameter polypropylene spheres

TechneWorks software	Description
FTWORKS	TechneWorks software CD









TechneWorks

Techne are pleased to announce the introduction of our FREE OF CHARGE, easy to use control software for many of our RS232 compatible products. This software has been designed to supersede the existing Calsoft and Thermsoft software packages.

It will allow customers to carry out all the tasks previously available on Calsoft and Thermsoft plus many new options on one new package. It is fully compatible with all Techne RS232 calibration products including all current models and older discontinued models such as the TU-20C.

Compatible units are as follows:-

Dri-Block Calibrators	- Tecal H, S and F models
	- New Tecal 1200S High temperature furnace
Thermoregulators	- TU-20D and TU-20HT (and TU-20C)
Precision Digital Thermometer	- Accu-Temp with RS232 communication option
Fluidised Baths	- FB-08C and TC-8D with RS232 communication option

TechneWorks software allows connection to a range of Precision Thermometers such as the Techne Accu-Temp, ASL model F250, Accu-TempII and the Cropico 3000 series. TechneWorks software enables you to calibrate thermometers and sensors and to then generate calibration certificates using a Techne Liquid bath or Dri-Block as a temperature source. The Calibration bath or Dri-Block's display can act as the reference temperature or connect to a range of external thermometers.

Software Features

ALL MODELS

- Create, open and save programs with up to 20 set points.
- Specify either °C or °F.
- Specify ramp rates and hold times.
- Log data from the instrument while connected to the computer and export the data to an Excel spreadsheet.
- Open, save, view and print logged data.
- Perform a calibration where temperature of the probe is manually entered.
- Perform an automatic calibration routine where the temperature reference probes data is added automatically.
- Run a program in real-time mode.
- Specifying the logging interval from every 5 seconds to 60 seconds

TechneWorks is downloadable free of charge from
www.techne.com and www.techneusa.com
Note: CD with software included with Tecal H and TU-20HT models

Dip and Flow Coolers

The Techne® Flow Coolers work in conjunction with a Techne® thermoregulator. The bath liquid flows through the unit which continually extracts heat from the bath fluid by means of the heat exchanger which is built into the unit. The cooling head of the Techne® Dip Cooler fits neatly and unobtrusively into the corner of the bath and can be secured with a specially designed mounting bracket (supplied). If cooling can be achieved by using cold tap water, a dip cooler is recommended as it conserves water and is easier and more convenient to use.

Techne® Dip and Flow coolers are designed for use when temperatures down to -35°C are required.

- Four models
- Compact refrigeration units for achieving temperatures down to -35°C*
- Cooling head of the Dip Cooler fits neatly into the corner of a Techne® liquid bath (RU series of Dip Coolers)
- Designed for use with Techne liquid baths

RU-200 and FC-500

FC-200

Technical Specification

Cooling (at 20°C ambient)		FC-200	FC-500	RU-200	RU-500
Minimum achievable temperature		-20°C	-35°C	-20°C	-35°C
Cooling capacity: 20°C		140W	210W	145W	240W
Cooling capacity: 0°C		140W	210W	145W	240W
Cooling capacity: -10°C		110W	200W	110W	230W
Internal capacity		200ml	200ml	–	–
Nominal dimensions (excluding handles/coil) Overall (mm)	width	235	370	235	370
	length	420	430	420	430
	height	300	325	300	325
Coil dimensions (mm)	length	–	–	85	85
	diameter	–	–	75	75
Hose length to coil (mm)		–	–	1250	1250

*At an ambient of 20°C, using a mixture of 40% water, 40% antifreeze and 20% ethanol

Ordering Information

Product Code	Description
FRU2D	RU-200 dip cooler, -20°C
FRU5D	RU-500 dip cooler, -35°C
FFC2D	FC-200 flow cooler, -20°C
FFC5D	FC-500 flow cooler, -35°C
FCC01	Cooling coil

Refrigerated Baths

RB-12A

These baths are a complete refrigerated circulating system for open or closed applications for temperature ranges from -35°C to 100°C. Each bath is supplied with a lid and bridging plate.

There are three bath capacities: 7 litre (RB-5A), 12 litre (RB-12A) and 22 litre (RB-22A). Temperature control is via one of the four thermoregulators and together they offer a choice of 12 different bath combinations.

- Circulating bath with built in refrigeration
- Temperature range from -35°C to 100°C
- Three different capacities of refrigerated bath; 7, 12 or 22 litre
- The combination of 3 circulating baths and 4 thermoregulators provides 12 options

RB-5A

Technical Specification

Cooling (at 20°C ambient)	RB-5A	RB-12A	RB-22A
Minimum achievable temperature[1]	-20°C	-35°C	-30°C
Cooling capacity at 20°C	145W	240W	240W
Cooling capacity at 0°C	145W	240W	240W
Cooling capacity at -10°C	110W	230W	220W
Dimensions			
Dimensions - L x W x H (mm)[2]	430 x 250 x 566	430 x 370 x 610	430 x 395 x 565
Liquid surface to top of bath - max (mm)	65	65	65
Internal dimensions - L x W x H (mm)	192 x 151 x 200	208 x 300 x 150	360 x 295 x 220
Working length to thermoregulator (mm)	224	224	250
Working depth - max/min (mm)	180/135	130/85	200/160
Working capacity max/min (litres)	7.0/5.5	11.6/9.6	22/18
Shipping weight kg[3]	31	53	61

[1] Using a mixture of 50% water and 50% antifreeze to achieve -20°C or 40% water, 40% antifreeze, 20% ethanol to achieve -35°C.
[2] Overall size with thermoregulator
[3] Add thermoregulator and bath shipping weight to get shipping weight of complete bath system.

Ordering Information

Product Code	Description
FRB5D	RB-5A bath, 7 litre capacity with built in refrigeration unit, -20°C to 100°C
FRB2D	RB-12A bath, 12 litre capacity with built in refrigeration unit, -35°C to 100°C
FRB22D	RB-22A bath, 22 litre capacity with built in refrigeration unit, -30°C to 100°C

Liquid Calibration Baths

The Techne® liquid calibration bath (LCB) series offer compact, accurate and reliable liquid baths which can be used for external circulation or temperature calibration of thermal sensors.

- -35°C to 250°C
- Three different capacities available; 5, 7 or 12 litres
- Temperature stability; ±0.005°C depending on choice of control unit
- Fully insulated bath for excellent heat retention
- Analogue or digital temperature selection, depending on choice of control unit
- Includes cover, lid and bridging plate

When temperature calibration is required the compact liquid baths offer excellent stability over the entire temperature range. The LCBs can be also be used for external circulation to maintain temperatures of samples in viscometers, photometers, refractometers, fermenters and other reaction vessels.

All models of LCB offer high pump performance and exceptional thermal stability from -35°C to 250°C. The baths are fully insulated on all sides and base and are fitted with a cooling coil for connection to a cold water supply for use at temperatures around ambient. The minimum temperature achievable is -35°C when a Dip or Flow Cooler is added to the system.*

Each bath is supplied complete with lid, drain tap, carry handles, a cooling coil (with bung) and hole to position a certified sensor. The TechneWorks software package is available for the TU-20 thermoregulators free of charge from www.techne.com.

Technical Specification

	5 litre	7 litre	12 litre
Dimensions L x W x H (mm)	351 x 260 x 183	351 x 260 x 233	351 x 260 x 358
Bath opening (mm)	140 x 140	140 x 140	140 x 140
Working depth (mm)	125	175	300
Shipping Weight	5kg	6kg	9kg

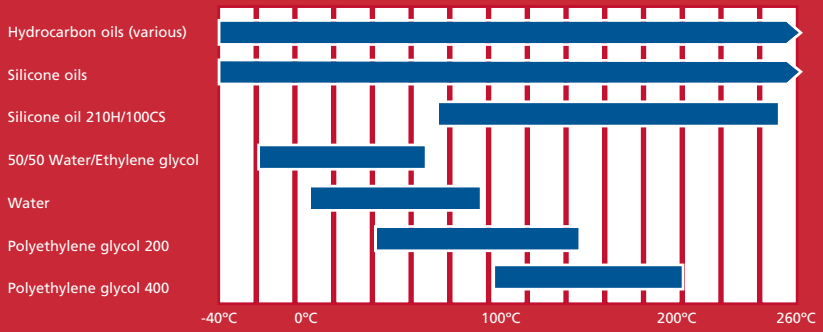
Ordering Information

Product Code	Description
FBCAL05D	LCB insulated liquid calibration bath with cooling coil, 5 litre capacity
FBCAL07D	LCB insulated liquid calibration bath with cooling coil, 7 litre capacity
FBCAL12D	LCB insulated liquid calibration bath with cooling coil, 12 litre capacity

*LCB baths fitted with a TU-20HT thermoregulator are not suitable for use with a Flow Cooler.

Choice of liquids

Some liquids can be hazardous when used in thermostatic baths. The user should ensure that due regard is paid to the flash-point and other characteristics of the chosen liquid. This table does not represent the recommendations of Techne but may be of assistance to the user in making an initial selection.



Biological Stirrers

The cell culture system from Techne® offers the ideal system for the growth of suspension cells. The combination of the magnetic stirrer and the glass culture vessels ensures excellent growth conditions and high cell viability.

Biological Stirrers

The stirrers are designed for optimal suspension cell culture and the use of microcarriers.

A system comprises of a stirrer platform and a number of glass culture vessels.

- Five stirrer platform sizes are available, along with 7 sizes of culture vessel
- Speed range from 0 to 80rpm
- Softstart/stop for slow acceleration and deceleration
- Interval setting option
- Stainless steel stirrer platform with locators for the culture vessels
- Designed for incubator environments upto 40ºC and 95% humidity

Unique stirring action

The culture vessels incorporate a unique base design which, together with the bulb-ended stirrer, ensures that the cells are lifted into suspension at the lowest possible speeds. This gentle stirring action promotes high cell yields by preventing cell shearing.

The stirrers create virtually no heat so there is negligible heat transfer from the magnetic drive to the culture vessel, making the system suitable for use in both incubators and cold rooms.

Calibrated speed control and interval stirring

Cell attachment to microcarriers and high cell yields are ensured by the special softstart/stop design and interval stirring option. The former ensures slow acceleration and deceleration of the stirrer, avoiding excessive turbulence in the culture media and eliminating cell damage.
The interval stirring can be used during the attachment phase to further reduce agitation of the media or when culturing particularly fragile cells.

Computer generated image of flow pattern.

MCS-101L

- Accommodates one 3 or 5 litre culture vessel
- Strong, rugged and lightweight

MCS-101L

MCS-102L

- Holds up to two 1 litre culture vessels
- Small, light and compact and space saving

MCS-102L

Biological Stirrers

MCS-104S

MCS-104S

- Hold up to four 500ml culture vessels
- Small, light, compact and space saving

MCS-104L

MCS-104L

- Holds up to four 1 litre culture vessels
- Strong, rugged and lightweight

MCS-104XL

MCS-104XL

- Accommodates four 5 litre culture vessels
- Designed for large-scale production
- Strong, rugged and lightweight

Technical Specifications

	All models
Speed	
Speed range	0 to 80rpm
Speed setting accuracy	<± 3rpm
Softstart speed control	20 second acceleration 20 second deceleration
Interval stirring	
Variable on-time	6 seconds to 5 minutes
Variable off-time	2 minutes to 2 hours
Limited operating conditions	40°C and 95% relative humidity (non-condensing)
Voltage	Dual Voltage 230/110V 50/60Hz
Nominal power consumption	2W

Biological Stirrers

Technical Specifications

Specifications unique to each model

	MCS-101L	MCS-102L	MCS-104S	MCS-104L	MCS-104XL
Vessels per system	1	2	4	4	4
Maximum vessels size (ml)	5000 (3000 min.)	1000	500	1000	5000 (only)
W x D x H (mm)	395 x 495 x 90	140 x 400 x 90	250 x 365 x 90	395 x 495 x 90	530 x 595 x 90
Net weight, excluding vessels	6.5 kg	3.0 kg	4.1 kg	6.1 kg	11.5 kg
Shipping weight	7.5 kg	4.2 kg	5.3 kg	7.1 kg	13.5 kg

Ordering Information

Product Code	Description
FMCS101L	MCS-101L biological stirrer
FMCS102L	MCS-102L biological stirrer
FMCS104S	MCS-104S biological stirrer
FMCS104L	MCS-104L biological stirrer
FMCS104X	MCS-104XL biological stirrer

Cell Culture Vessels

The culture vessels can be sealed for use with pathogenic materials. The stirrer rod design eliminates rotating bearings within the culture vessels, avoiding the difficulties arising from attempts to clean and autoclave conventional vessels.

The stirring system uses Pyrex® borosilicate glass culture vessels and stirrer rods which are siliconised to reduce the possibility of cells attaching to and growing on the surfaces. Vessels are available with nominal working volumes of 125ml, 250ml, 500ml, 1 litre, 3 litre (all with two side necks) and 5 litre (with two or five side necks).

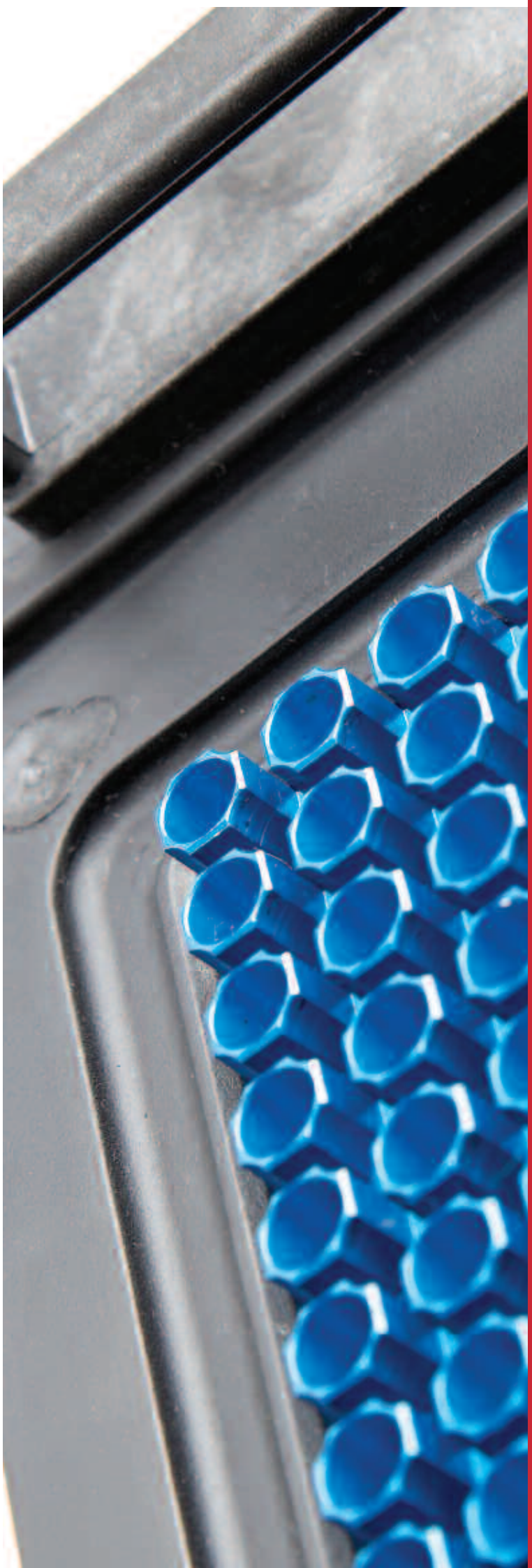
Note that you must order culture vessels to suit your needs; they are not supplied with the MCS platform.

Technical Specification

	125ml	250ml	500ml	1 litre	3 litre	5 litre	5 litre
Filled volume, (ml)	250	500	1000	2000	6000	10000	10000
Nominal working volume, (ml)	125	250	500	1000	3000	5000	5000
Working volume range, (ml)	50 –175	100 –350	200 – 700	500 –1500	1500 – 3500	2000 – 7000	2000 – 7000
Height, (mm)	145	170	205	263	284	365	365
Diameter, (mm)	65	80	100	140	215	240	240
Port size (mm)	14	14	23	33	33	18	33
No. of side necks	2	2	2	2	2	5	2

Ordering Information

Flask size	Complete Culture Vessel	Flask Only	Stirrer Rod Only
125ml	F7988	F7987	6007989
250ml	F7689	F7690	6007635
500ml	F7607	F7609	6007619
1 litre	F7608	F7610	6007620
3 litre	FA298	FA299	6100290
5 litre (5 neck)	FA296	FA297	6100289
5 litre (2 neck)	FA709	FA710	6100289



Technical Information

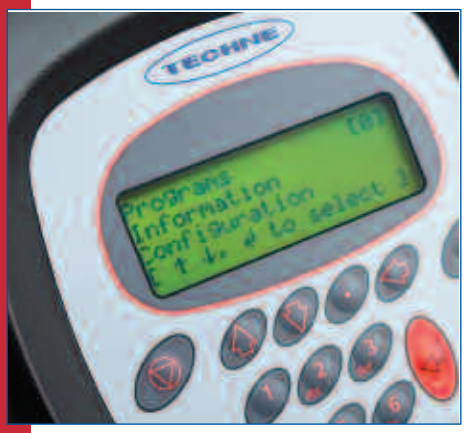
Service and repair

Our dedicated service staff are on hand to help in the unlikely event that your Techne® equipment develops a fault. Please contact them by one of the following means with a clear description of the problem:

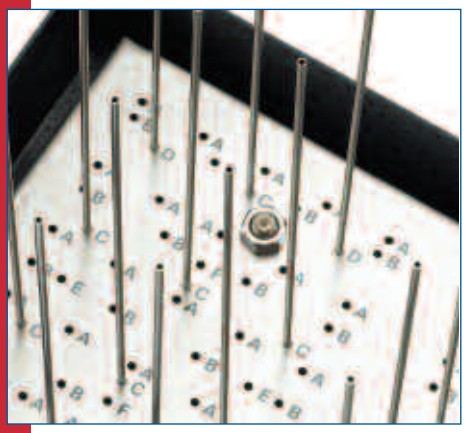
E-mail: service@bibby-scientific.com

Tel: +44 (0) 1785 810475

Fax: +44 (0) 1785 810471



On occasion it may be necessary for your equipment to be sent back to our service department for repair. In this case please contact the service department for a reference number, which you should include with your faulty equipment. Please also ensure you include a clear description of the fault and a completed copy of our decontamination certificate, to certify that the returned item is not contaminated with any harmful substance. The decontamination certificate is available as a download at www.bibby-scientific.com, or contact us and we will be happy to fax you a copy. Please clearly mark the package for the attention of the service department and post to the following address:



Service Department

Bibby Scientific

Beacon Road

Stone

Staffordshire

ST15 0SA

United Kingdom

All replacement parts are guaranteed for 6 months and wherever possible returned equipment is turned around within 5 working days.

Please contact our service department for further information on onsite repairs and equipment calibration services.

Technical Support

Techne have a dedicated Technical Support team who are on hand to help with any applications advice and questions you may have about our products and how to use them. The team is made up of experienced laboratory scientists whose backgrounds include chemistry, biochemistry, cell and molecular biology. There are two fully equipped laboratories which are used for developing applications, testing new products and assisting with customer protocols.

We aim to respond to queries on the same day if at all possible. If you have any technical queries concerning any of our products you may call our dedicated Technical Support phone line or email us at the following address:

E-mail: technehelp@bibby-scientific.com

Tel: +44 (0)1785 810433

Fax: +44 (0) 1785 810471

CE Conformity

We rigorously test our electrical products against the CE and safety standards in place. In addition, the majority of our products are independently tested by an accredited test house. This is reinforced by comprehensive technical and manufacturing data which is available for inspection upon request. Copies of the conformity certificates may be downloaded from our website: www.techne.com

WEEE & RoHS Regulations

The Waste Electrical and Electronic Equipment ("the WEEE Regulations- Directive 2002/96/EC") legislation is now in place in the UK. The primary purpose of the WEEE directive is the prevention of waste electrical and electronic equipment, and to require the re-use, recycling and other forms of recovery as to reduce such waste disposal to landfill or incineration.

The Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations 2005 ("the RoHS Regulations- Directive 2002/95/EC") have now been passed into UK legislation. The primary purpose of these regulations is to restrict the use of lead, mercury, cadmium, hexavalent chromium, polybrominated biphenyls (PBB) or polybrominated diphenyl ether (PBDE) in new electrical and electronic equipment put on the market in the European Union after July 1, 2006.

As a responsible manufacturer, Bibby Scientific will comply with such regulation as it affects our products, and will continue to promote "clean" environmental manufacturing practices.

ISO9001:2008

Our quality assurance system was first approved in 1993, and is currently certified to the International Quality Standard BS EN ISO 9001:2008. This means that Techne® is committed to providing the highest quality products, services and customer satisfaction.

The scope of our certificate No. FM537326 is: the design, manufacture and distribution of science equipment to national/international standards and customer specifications.

Further details of certification may be downloaded from our website: www.techne.com

Certificate No: **FM 537326**

DNA Codons

First Position	Second Position T	C	A	G	Third Position
T	TTT Phe (F)	TCT Ser (S)	TAT Tyr (Y)	TGT Cys (C)	T
	TTC Phe (F)	TCC Ser (S)	TAC Tyr (Y)	TGC Cys (C)	C
	TTA Leu (L)	TCA Ser (S)	TAA Ter (stop)	TGA Ter (stop)	A
	TTG Leu (L)	TCG Ser (S)	TAG Ter (stop)	TGG Trp (W)	G
C	CTT Leu (L)	CCT Pro (P)	CAT His (H)	CGT Arg (R)	T
	CTC Leu (L)	CCC Pro (P)	CAC His (H)	CGC Arg (R)	C
	CTA Leu (L)	CCA Pro (P)	CAA Gln (Q)	CGA Arg (R)	A
	CTG Leu (L)	CCG Pro (P)	CAG Gln (Q)	CGG Arg (R)	G
A	ATT Ile (I)	ACT Thr (T)	AAT Asn (N)	AGT Ser (S)	T
	ATC Ile (I)	ACC Thr (T)	AAC Asn (N)	AGC Ser (S)	C
	ATA Ile (I)	ACA Thr (T)	AAA Lys (K)	AGA Arg (R)	A
	ATG Met (M)	ACG Thr (T)	AAG Lys (K)	AGG Arg (R)	G
G	GTT Val (V)	GCT Ala (A)	GAT Asp (D)	GGT Gly (G)	T
	GTC Val (V)	GCC Ala (A)	GAC Asp (D)	GGC Gly (G)	C
	GTA Val (V)	GCA Ala (A)	GAA Glu (E)	GGA Gly (G)	A
	GTG Val (V)	GCG Ala (A)	GAG Glu (E)	GGG Gly (G)	G

IUB Coding for 2 possible bases		IUB Coding for 3 possible bases		IUB Coding for 4 possible bases	
M	A and C	V	A and G and C	N	A and T and G and C
R	A and G	H	A and C and T		
W	A and T	D	A and G and T		
S	G and C	B	G and T and C		
Y	C and T				
K	G and T				

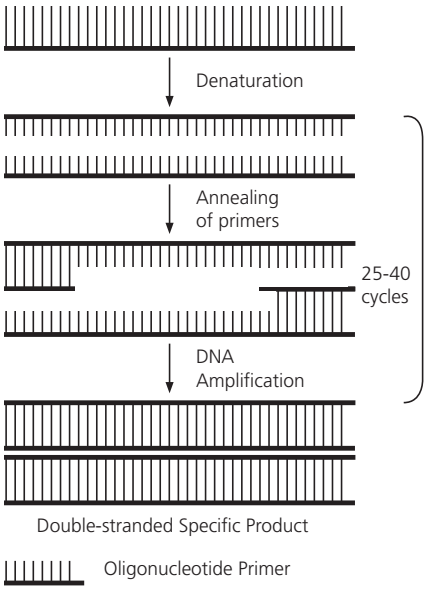
Spectrophotometric Quantitation of Nucleic Acids

Spectrophotomeric Conversions: A_{260} = 1 (1cm detection path)	Concentration (µg/ml in water)
dsDNA	50
ssDNA	33
ssRNA	40
Oligonucleotide	20 - 30

Pure DNA has an A_{260}/A_{280} ratio of 1.8-2.0 in 10mM Tris-Cl, pH 8.5
Pure RNA has an A_{260}/A_{280} ratio of 1.9-2.1 in 10mM Tris-Cl, pH 7.5

Electrophoretic Analysis of DNA Fragments

% Agarose	Optimal Size of Fragments (bp)
0.5	1,000 – 30,000
0.7	800 – 12,000
1.0	500 – 10,000
1.2	400 – 7,000
1.5	200 – 3,000
2.0	50 – 2,000



Schematic Diagram of PCR

Thermal Cycling

The Polymerase Chain Reaction (PCR)* is an extremely sensitive technique for amplifying minute amounts of DNA and is used in nearly all molecular biology labs today. PCR is based on the DNA polymerisation reaction and involves the copying of DNA from a specific template using a thermostable DNA polymerase, two primers and deoxynucleotide triphosphates (dNTPs). Primers are short pieces of DNA complementary to the sequence on the DNA strand to be amplified and are used to begin the process of copying a strand of DNA. Extension always begins at the 3' end of the primer with *Taq* DNA polymerase synthesising exclusively in the 5' to 3' direction.

One PCR cycle consists of the following steps:

1. Denaturation:

Temperatures higher than 92°C are required to separate double-stranded DNA (dsDNA) into single strands. The hydrogen bonds linking the two strands together are routinely weak and break at lower temperatures than the covalent bonds of the individual strands. 95°C for 30 seconds is the standard incubation. For complex templates such as genomic DNA an additional denaturation step of 5-10 minutes is beneficial prior to the cycling.

2. Annealing:

The two primers bind, one to each of the complementary single DNA strands produced during denaturation. Annealing usually takes place between 40°C and 65°C for ~20 seconds, depending on the length and base sequence of the primers. The annealing temperature is estimated from the primer's melting temperature (temperature at which 50% of the dsDNA is "unzipped") minus 5°C. For low concentrations and long primers, the time required for annealing should be extended.

3. Extension:

Once the primers anneal to the complementary DNA sequences, the temperature is raised to approximately 72°C and the enzyme *Taq* DNA polymerase replicates the strands. Approximately 60 bases are synthesised per second under optimal conditions, so a 2kb fragment requires ~ 60 seconds for extension.

Number of Cycles

At the end of the first cycle there are two new DNA strands, identical to the original target. Every cycle results in a doubling of the number of specific DNA strands. 25-40 cycles are carried out, depending on the number of template molecules in the sample at the start. More than 40 cycles should be avoided as this can lead to the formation of non-specific products. For rare templates nested PCR should be performed using 20-30 cycles with the first set of primers and a further 20-40 cycles with an additional set which bind between the first set of primers.

Buffer

Specially optimised buffer is usually supplied with the enzyme. The 10x buffer normally contains 500mM KCl, 100mM Tris-HCl, pH 8.3 (at 25°C) or 150-200mM $(NH_4)_2SO_4$ with 500-750mM Tris-HCl, pH 9 (at 25°C), 1-2% Triton® X-100 or 0.1% Tween® and 10-15mM Mg^{2+} (usually available separately).

dNTPs

dNTPs are the nucleotides that make up DNA: adenine, guanine, cytosine and thymine and are usually known by their first letter i.e. A, T, C and G. dNTPs are used at a final concentration of 20-200µM in a reaction. It is important to note that all nucleotides must be at the same concentration. Mispriming and mis-incorporation of bases occurs if the concentration is too high. If modified nucleotides are used they must be at a higher relative concentration than the unmodified bases due to a lower efficiency of incorporation.

*Polymerse Chain Reaction (PCR) is a process covered by the patents owned by Hoffmann-La Roche.

Primers

Typically, primers are 15-30 bases long, and are designed to bind to a unique DNA region on the template. If the primer is not specific, numerous products are amplified and "ghost" bands appear on the agarose gel. The upstream primer and the downstream primer are designed to have similar melting temperatures. This is based on the number of A and T nucleotides versus G and C nucleotides. A and T are paired by two hydrogen bonds, whereas there are three linking G and C, thus requiring more energy to separate the strands. Primers should not bind to themselves or the other primer as these result in primer dimers which appear as low molecular weight bands. Today, primers are designed using computer programs to optimise features such as GC content and melting temperatures.

Magnesium

Magnesium is a co-factor for DNA polymerases and the amount required (0.5 - 3.5mM) is template specific. If the concentration is too high non-specific fragments are amplified, too low and the annealing efficiency and synthesis rate of *Taq* DNA polymerase are reduced.

DNA Polymerase

Taq DNA polymerase is an enzyme from the organism *Thermus aquaticus*, and unlike normal polymerase enzymes it is active at high temperatures. 1 unit of *Taq* is normally required for a 50µl PCR reaction. If the concentration is too high reduced specificity results and if too low, reduced efficiency.

There are many variations on the standard *Taq* DNA polymerase:

- Proofreading enzymes check the newly synthesised DNA with a 3'-5' exonuclease activity. Enzymes such as *Pfu*, which possess this activity, reduce the error rate of 1 in 10^5 bases when *Taq* is used to that approaching 1 in 10^8 bases. Proofreading is normally used during cloning of genes to ensure that no errors are introduced into the sequence.

- PCR beads and "ready-to-go" master mixes contain all the reaction components, only template and primers need to be added, thus simplifying reaction set-up.

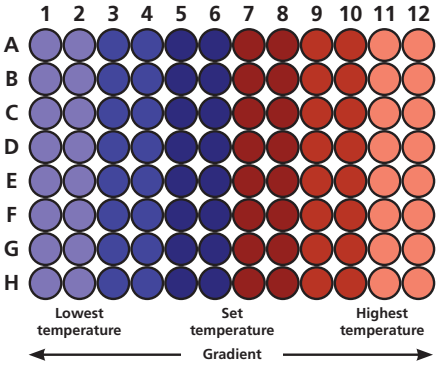
- Hot start *Taq* is only activated during the first denaturation step, so preventing extension from any non-specific priming that may have occurred during PCR set-up.

Trouble-Shooting

The single most important factor is the annealing temperature. Development of gradient thermal cyclers has solved this time-consuming optimisation and reduced the amount of time, reagents and template required. A gradient of temperatures is set across the block around the predicted annealing temperature. The set temperature is the temperature required in the middle columns of the block and the gradient is the variation at the two extremes of the block; the left hand columns being the coolest and the right hand columns the hottest.

Contamination of the reaction is probably the second most common problem. As the PCR is extremely sensitive it is easy to introduce non-specific contamination into the reaction at any stage. The following guidelines should help to eliminate errors:

- Use RNase, DNase-free reagents and disposables
- Use filter or positive displacement tips
- Perform PCR set-up and analysis by gel electrophoresis separate areas
- Change gloves regularly
- Use master mixes to set up reactions
- Use positive and negative controls wherever possible



Schematic of a 96-well gradient block

Solvent Properties

IUPAC Name	Common Name	Boiling point (°C) at 1013 mbar pressure	Pressure (mbar) which b.p is 40°C
2-propanone	Acetone	56	556
1-pentanol	Pentyl alcohol	137	11
Benzene	Benzene	80	236
1-butanol	Butyl alcohol	118	25
2-methyl-2-propanol	Tert-butyl alcohol	83	130
Chlorobenzene	Chlorobenzene	132	36
Chloroform	Trichloromethane	61	474
Cyclohexane	Cyclohexane	81	235
Ethoxyethane	Diethyl ether	35	Atmospheric
1,2-dichloroethane	Ethylene chloride	83	210
1,2-dichloroethene	Cis-acetylene dichloride	60	479
1,2-dichloroethene	Trans-acetylene dichloride	48	751
2-propan-2-yloxypropane	Isopropyl ether	68	375
1,4-Dioxane	Diethylene oxide	101	107
N,N-Dimethylformamide	Dimethylformamide (DMF)	153	11
Acetic acid	Ethanoic acid	118	44
Ethanol	Alcohol	79	175
Ethyl acetate	Ethyl ester	77	40
Heptane	Dipropylmethane	98	120
Hexane	n-hexane	69	335
Propan-2-ol	Isopropanol	82	137
3-methyl-1-butanol	Isoamyl alcohol	130	14
Butan-2-one	Methylethylketone (MEK)	80	243
Methanol	Methyl alcohol	65	337
Dichloromethane	Methylene chloride	40	Atmospheric
Pentane	Pentane	36	Atmospheric
Propan-1-ol	Propyl alcohol	97	67
1,1,1,2,2-pentachloroethane	Pentachloroethane	162	13
1,1,2,2-tetrachloroethane	Tetrachloroethane	138	35
1,1,1 -trichloroethane	Trichloroethane	75	271
Tetrachloromethane	Carbon tetrachloride	76	300
1,1,2,2-tetrachloroethene	Tetrachloroethylene	121	53
Oxolane	Tetrahydrofuran (THF)	67	357
Toluene	Methylbenzene	111	77
1,1,2-trichloroethene	Trichloroethylene	87	183
Oxidane	Water	100	72
Dimethylbenzene	Xylene (mixed)	137	25
1,2-dimethylbenzene	o-xylene	144	34
1,3-dimethylbenzene	m-xylene	139	25
1,4-dimethylbenzene	p-xylene	138	31

Technical Information

SI Base Units

Quantity	Name of Base Unit	Unit Symbol
Length	metre	m
Mass	kilogram	kg
Time	second	s
Electric current	ampere	A
Thermodynamic temperature	kelvin	K
Amount of substance	mole	mol
Luminous intensity	candela	cd

SI Derived Units

Quantity Units	Unit Name	Unit Symbol	Expression in terms of SI base
Force	newton	N	$m\ kg\ s^{-2}$
Energy	joule	J	$m^2\ kg\ s^{-2}$
Power	watt	W	$m^2\ kg\ s^{-3}$
Pressure, stress	pascal	Pa	$m^{-1}\ kg\ s^{-2}$
Electric potential	volt	V	$m^2\ kg\ s^{-3}\ A^{-1}$
Electric charge	coulomb	C	s A
Electric flux	coulomb	C	s A
Magnetic flux	weber	Wb	$m^2\ kg\ s^{-2}\ A^{-1}$
Magnetic flux density	tesla	T	$kg\ s^{-2}\ A^{-1}$
Electric resistance	ohm	Ω	$m^2\ kg\ s^{-3}\ A^2$
Capacitance	farad	F	$m^{-2}\ kg^{-1}\ s^4\ A^2$
Inductance	henry	H	$m^2\ kg\ s^{-2}\ A^{-2}$
Celsius temperature	degree Celsius	°C	K
Frequency	hertz	Hz	s^{-1}
Luminous flux	lumen	lm	cd sr
Illuminance	lux	lx	m^{-2} cd sr
Activity (of a radionuclide)	becquerel	Bq	s^{-1}
Absorbed dose	gray	Gy	$m^2\ s^{-2}$
Dose equivalent	sievert	Sv	$m^2\ s^{-2}$
Torque	newton metre	Nm	$m^2\ kg\ s^{-2}$
Electric field strength	volt per metre	V/m	$m\ kg\ s^{-3}\ A^{-1}$
Magnetic field strength	ampere per metre	A/m	m^{-1} A
Thermal conductivity	watt per metre kelvin	$W\ m^{-1}\ k^{-1}$	$m\ kg\ s^{-3}\ K^{-1}$
Luminance	candela per square metre	cd/m^2	m^{-2} cd

Physical Constants

Constant	Symbol	Value	Unit
Atomic mass unit	m_u	1.660540×10^{-27}	kg
Avogadro constant	N_A	6.022137×10^{23}	mol^{-1}
Bohr magneton	μ_B	9.274015×10^{-24}	JT^{-1}
Bohr radius	a_o	5.291771×10^{-11}	m
Boltzmann constant	k_B	1.380662×10^{-23}	JK^{-1}
Compton wavelength (e)	λ_{Ce}	2.426311×10^{-12}	m
Compton wavelength (n)	λ_{Cn}	1.319591×10^{-15}	m
Compton wavelength (p)	λ_{Cp}	1.321410×10^{-15}	m
Electric field constant in vacuo	ε_o	8.854188×10^{-12}	Fm^{-1}
Electron radius	r_e	2.817941×10^{-15}	m
Elementary charge	e	1.602177×10^{-19}	C
Faraday constant	F	9.648531×10^{4}	$Cmol^{-1}$
Fine structure constant	α	7.297353×10^{-3}	
Gas constant	R	8.31451	$J\ mol^{-1}K^{-1}$
Gravitation constant	G	6.672590×10^{-11}	$Nm^{-2}kg^{-2}$
Intrinsic impedance	r	3.767301×10^{2}	Ω
Light velocity in vacuo	c	2.997924×10^{8}	ms^{-1}
Loschmidt constant	n_o	2.686763×10^{25}	m^{-3}
Magnetic field constant in vacuo	μ_0	1.256637×10^{-7}	Hm^{-1}
Molar volume of ideal gases 298K, 101.325kPa	υ	2.445294×10^{-2}	m^3mol^{-1}
Normal acceleration of fall	g	9.80665	ms^{-2}
Planck constant	h	6.626075×10^{-34}	Js
Rest mass of the electron	m_e	9.109390×10^{-31}	kg
Rest mass of the neutron	m_n	1.674929×10^{-27}	kg
Rest mass of the proton	m_p	1.672623×10^{-27}	kg
Rational quantum	$h/(2\pi)$	1.054588×10^{-34}	Js
Rydberg constant	R_∞	1.097373×10^{7}	m^{-1}

Voltage variants

Product Code	Description	Voltage	Frequency	Power (W)	Shipping Weight (kg)
TC-3000					
FTC3/02Y	Thermal cycler TC3000, 25 x 0.2ml capacity	100V	50/60Hz	230	8
FTC3/05Y	Thermal cycler TC3000, 20 x 0.5ml capacity	100V	50/60Hz	230	8
TC-4000					
FTC4/05Y	TC-4000 for 60 x 0.5ml microtubes	100V	50/60Hz	620	13
FTC4/H02Y	TC-4000 for 96 x 0.2ml microtubes or 96-well plate	100V	50/60Hz	620	13
FTC4/F02Y	TC-4000 for 96 x 0.2ml microtubes or 96-well fully skirted plate	100V	50/60Hz	620	13
FTC4/384Y	TC-4000 for 384-well microtitre plate	100V	50/60Hz	620	13
FTC4/FLAT	TC-4000 flat plate for In-situ (holds 4 slides)	100V	50/60Hz	620	13
TC-5000					
FTC5/05Y	**TC-5000 for 60 x 0.5ml microtubes**	**100V**	**50/60Hz**	**620**	**14**
FTC5/H02Y	**TC-5000 for 96 x 0.2ml microtubes or 96-well plate**	**100V**	**50/60Hz**	**620**	**14**
FTC5/F02Y	**TC-5000 for 96 x 0.2ml microtubes or 96-well fully skirted plate**	**100V**	**50/60Hz**	**620**	**14**
FTC5/384Y	**TC-5000 for 384-well microtitre plate**	**100V**	**50/60Hz**	**620**	**14**
FTC5/FLAT	**TC-5000 flat plate for In-situ (non-gradient) (holds 4 slides)**	**100V**	**50/60Hz**	**620**	**14**
Cycler Accessories					
FHSEALSP	**Heat sealer (plate adaptor not supplied)**	**120V**	**50/60Hz**	**500**	**4.3**
FGEN485E	**Power pack EU and Gensoft software**	**230V**	**50/60Hz**		
FGEN485P	**Power pack US and Gensoft software**	**115V/110V**	**50/60Hz**		
Hybridisation Incubators					
FHB4DP	**Hybrigene HB-3D hybridisation incubator**	**120V**	**50/60Hz**	**750**	**21**
FHB4DY	**Hybrigene HB-3D hybridisation incubator**	**100V**	**50/60Hz**	**525**	**21**
FHB1DQ	**Hybridiser HB-1D hybridisation incubator**	**120V**	**50/60Hz**	**750**	**24**
FHB1DK	**Hybridiser HB-1D hybridisation incubator**	**100V**	**50/60Hz**	**750**	**24**
Dri-Block Heaters					
FDB02AP	**DB-2A ambient to 100°C, requires 2 insert blocks**	**115V**	**50/60Hz**	**300**	**4**
FDB02DP	**DB-2D ambient to 100°C, requires 2 insert blocks**	**115V**	**50/60Hz**	**300**	**5**
FDB02HDP	**DB-2DH ambient to 200°C, requires 2 insert blocks**	**115V**	**50/60Hz**	**300**	**5**
FDB02DPR	**DB-2D + RS232 ambient to 100°C, requires 2 insert blocks**	**115V**	**50/60Hz**	**300**	**5**
FDB02DPTC	**DB-2TC ambient to 100°C, requires 2 insert blocks**	**115V**	**50/60Hz**	**300**	**5**
FDB02DYTC	**DB-2TC ambient to 100°C, requires 2 insert blocks**	**100V**	**50/60Hz**	**300**	**5**
FDB03OP	**DB-3 ambient to 100°C, requires 3 insert blocks**	**115V**	**50/60Hz**	**450**	**6**
FDB03AP	**DB-3A ambient to 200°C, requires 3 insert blocks**	**115V**	**50/60Hz**	**450**	**6**
FDB03DP	**DB-3D ambient to 200°C, requires 3 insert blocks**	**115V**	**50/60Hz**	**450**	**6**
FDB03LDP	**DB-3DL ambient to 100°C, requires 3 insert blocks**	**115V**	**50/60Hz**	**450**	**6**
FDB03DPR	**DB-3D + RS232 ambient to 200°C, requires 3 insert blocks**	**115V**	**50/60Hz**	**450**	**6**
FDB04DP	**DB-4D ambient to 100°C, requires 4 insert blocks**	**115V**	**50/60Hz**	**600**	**7**
FDB04DPR	**DB-4D + RS232 ambient to 100°C, requires 4 insert blocks**	**115V**	**50/60Hz**	**600**	**7**

Voltage variants

Product Code	Description	Voltage	Frequency	Power (W)	Shipping Weight (kg)
Gelation Timers					
FGT5/120V/60	GT-5 digital gelation timer, 1rpm	120V	60Hz	5	7.7
FGT5Y	GT-5 digital gelation timer, 1rpm	100V	50Hz	5	7.7
FGT6/120V/60	GT-6 digital gelation timer, 10rpm	120V	60Hz	5	7.7
FGT6Y	GT-6 digital gelation timer, 10rpm	100V	50Hz	5	7.7
Thermoregulators					
FTE10APC	TE-10A analogue thermoregulator, -20°C to 95°C	115V	50/60Hz	1000	3.7
FTE10AYC	TE-10A analogue thermoregulator, -20°C to 95°C	100V	50/60Hz	850	3.7
FTE10DPC	TE-10D digital thermoregulator, -40°C to 120°C	115V	50/60Hz	1000	3.9
FTE10DYC	TE-10D digital thermoregulator, -40°C to 120°C	100V	50/60Hz	850	3.9
FTU20DPC	TU-20D advanced thermoregulator, -40°C to 200°C	115V	50/60Hz	1500	4.0
FTU20HPC	TU-20HT high temperature thermoregulator, -4°C to 250°C	120V	50/60Hz	1500	4.0
FTU20HYC	TU-20HT high temperature thermoregulator, -40°C to 250°C	100V	50/60Hz	1250	4.0
Refrigerated Baths					
FRB5P	RB-5A 7 litre capacity, -20°C to 100°C	115V	50/60Hz	320	31
FRB2P	RB-12A 12 litre capacity, -35°C to 100°C	115V	50/60Hz	760	53
FRB22P	RB-22A 22 litre capacity, -35°C to 100°C	115V	50/60Hz	760	61
Dip and Flow Coolers					
FCP2P	Cooling water control pack	120V			
FRU2E	RU-200 dip cooler, -20°C	230V	50/60Hz	320	19
FRU2P	RU-200 dip cooler, -20°C	115V	50/60Hz	320	19
FRU5E	RU-500 dip cooler, -35°C	230V	50/60Hz	760	39
FRU5P	RU-500 dip cooler, -35°C	115V	50/60Hz	760	39
FFC2E	FC-200 flow cooler, -20°C	230V	50/60Hz	320	19
FFC2P	FC-200 flow cooler, -20°C	115V	50/60Hz	320	19
FFC5E	FC-500 flow cooler, -35°C	230V	50/60Hz	760	39
FFC5P	FC-500 flow cooler, -35°C	115V	50/60Hz	760	39

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