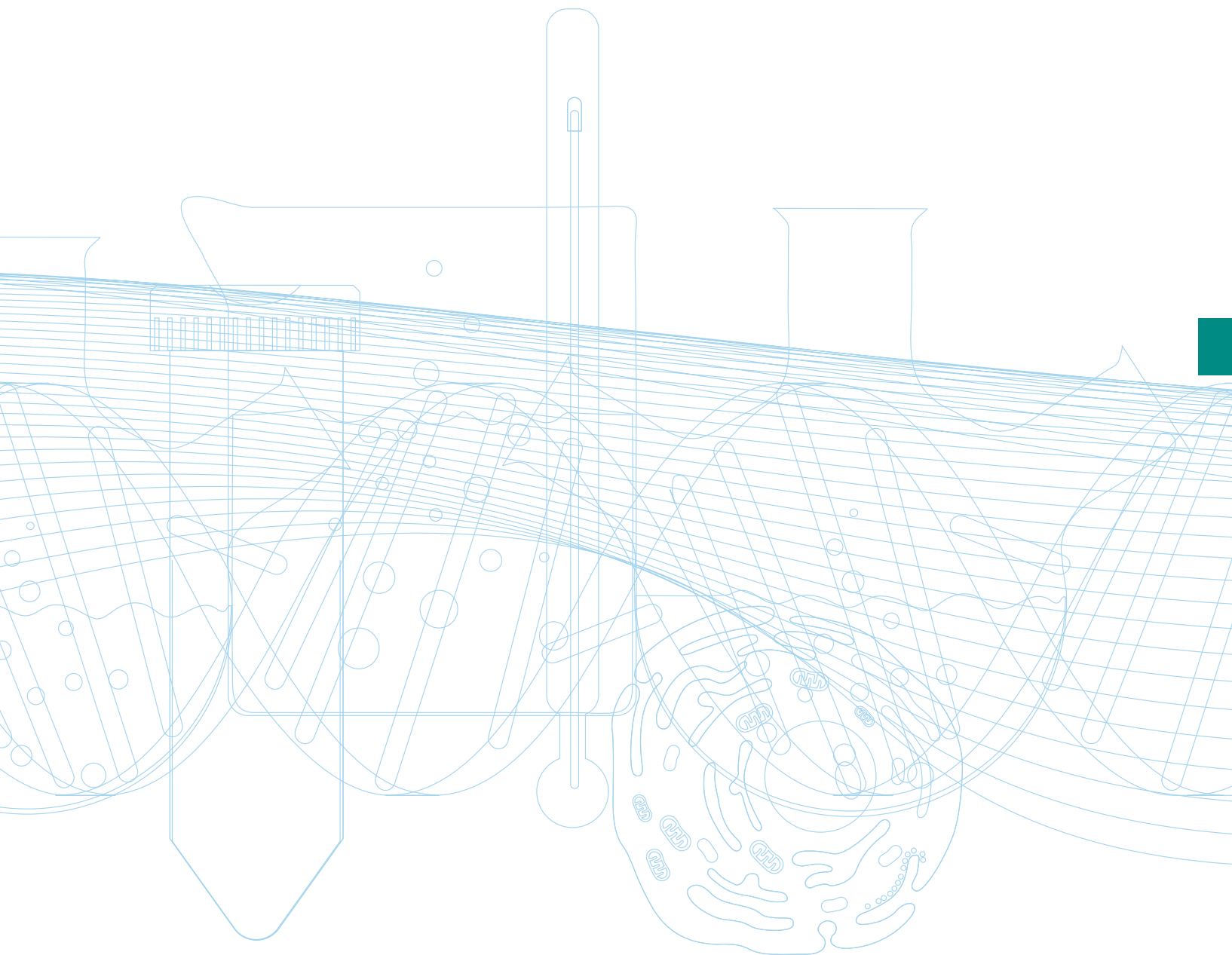


# 11 Microplate apparatus and equipment





# Microplate apparatus and equipment

A focused range of compact and efficient equipment for the heating, mixing and replicating of microplates in biotechnology, biomedical, biochemical and other life science laboratories.

- Microplate shakers
- Microplate thermoshakers
- Dry block heaters for microplates, strips and tubes
- Microplate replicators



PHMP



PHMP-4

PMS-1000



QBA2



\* please discuss requirements for other temperature ranges with Grant

(see also p. 13.4)



## PMS-1000 microplate shaker

Compact and efficient variable speed, horizontal shaker for reliable, regulated shaking of two or four microplates.

- Variable shaking speed: 150 to 1000 rpm
- Quick and easy screw fitting of any standard-depth multiwell plates
- Continuous or timed operation, with automatic switch off
- Holds two or four microplates
- Operating temperature ambient +5 to + 40°C

Platform for two microtitre plates supplied as standard. Platform for four plates (MPP-4) available as an option



Easy-to-use integral electronic timer ensures accurate count-down and repeatability of time-sensitive incubations

Low voltage cord easily fits through incubator door gaskets



PMS-1000 fitted with platform for two microplates

Quick and easy to use screw fittings – keep the plates securely in position and allow fitting of any standard-depth well plates

Simple graduated dial to adjust the speed to suit the application: – gentle shaking to ensure that the well contents remain *in situ*, or more vigorous agitation for effective aeration across the surface area of each well

Easy to read LED display clearly indicates time remaining on timed operations

Suitable for mixing, incubation and cultivation of biological and chemical components in many life science disciplines including microbiology, cell and molecular biology, immunology and biotechnology. Specific applications include: immunoassays, coloration tests, binding of template DNA to silica-coated magnetic beads. PMS-1000 avoids low signal caused by inadequate re-suspension of purified PCR products, helps ensure the correct optical density in each of the wells and helps achieve maximum yield and quality in production of plasmid DNA.

(see also p. 3.3)

## Thermoshakers PHMP and PHMP-4 for microplates

Highly versatile and efficient variable-speed, bi-directional heating microplate thermoshakers for use with all types of standard depth 96 and 384 well microplates. Combine three instruments in one for maximum versatility and efficiency:

- a microplate thermoshaker
- a compact benchtop incubator without shaking
- a microplate shaker without temperature control

- **Stability  $\pm 0.1^{\circ}\text{C}$ , uniformity  $\pm 0.2^{\circ}\text{C}$**
- **Bi-directional heating – both platform and lid heat the plate producing a controlled microenvironment**
- **Shaking speed: 250 to 1200 rpm**
- **Temperature range: ambient + 5 to  $60^{\circ}\text{C}^*$**
- **Rapid heat-up**
- **Continuous or timed operation, with alarm buzzer and automatic switch-off facility**
- **Choice of two models with capacity for two or four microplates**

The **PHMP-4** has the same functionality as the PHMP but can accommodate four microplates



### PHMP thermoshaker for two microplates

The heated lid completely covers the flat heating platform to provide bi-directional heating and excellent temperature stability and uniformity, whilst preventing condensation

Combination of bi-directional heating and powerful orbital shaking capability produces the maximum yield from incubations

Very easy to operate, with simple set-up of temperature, shaking speed and time via push buttons and the 2-line LCD status display

The powerful, reliable motor and sturdy construction combine to provide years of consistent operation

Low voltage cord easily fits through incubator door gaskets

Suitable for applications in many fields including: molecular biology (for microbial cell cultivation and DNA analysis), cytochemistry (for *in situ* reactions), biochemistry (for enzyme and protein analysis), molecular chemistry (for matrix analysis), immunochemistry, molecular diagnostics and ELISAs.

\* please discuss requirements for other temperature ranges with Grant

(see also p. 1.3)



## Dry block heaters for microplates, strips and tubes

Versatile dry block heating system with interchangeable microplate blocks for heating applications in molecular biology and biotechnology.

- **QBD2 digital controller**, temperature range ambient + 5 to 130°C
- **QBH2 programmable digital controller**, temperature range ambient + 5 to 200°C
- **QBA2 analogue controller**, temperature range ambient + 5 to 100°C

plus either

- **QDP-H block** for 0.2 ml microplates, strips or individual tubes **or**
- **QDP-FL universal undrilled block** with integral lid for standard/high temperature 96 well microtitre plates

- **Excellent stability and uniformity**
- **Rapid heat-up time**
- **Choice of easily removable/interchangeable microplate blocks for different applications\***
- **Choice of one analogue and two digital control units with different temperature ranges**

Versatile **QDP-H block** accommodates 0.2 ml microplates, strips or tubes:

- 1 x 96-well microplate or
- 12 x 8-well strip or
- 8 x 12-well strip or
- up to 96 individual capped tubes

Excellent  $\pm 0.3^\circ\text{C}$  temperature uniformity between tubes across the block

Digital models come with a convenient timer facility, with audible buzzer, for reaction timing and function timing such as delayed start

Simple-to-use rotor plus two keys provide access to the interactive interface for fast, accurate set-up and use of the many standard features

**Digital model QBD2** fitted here with **QDP-H block** for 0.2 ml microplates, strips or tubes. The QBD2 has a temperature range of ambient + 5 to 130°C, while similar model QBH2 offers a range up to 200°C plus three programmable time/temperature segments

**QDP-FL undrilled block** – of black anodised aluminium for efficient heat transfer – comes complete with a double layer hinged lid to create an insulated incubation chamber with very good uniformity:  $\pm 0.5^\circ\text{C}$  between wells

Simple dial for selecting temperature on analogue models




High quality, robust construction in streamlined coolwall aluminium and chemical-resistant plastic – durable in everyday use and in demanding environments

**Analogue model QBA2** fitted here with universal **QDP-FL block** for standard 96 well microtitre plates. Temperature range ambient + 5 to 100°C

\* see summary table on p. 11.6 for overview of options and accessories










## Microplate apparatus and equipment » Models and specifications

### Microplate shakers and thermoshakers – models and specifications

	Microplate shaker	2-plate thermoshaker	4-plate thermoshaker
	PMS-1000	PHMP	PHMP-4
	 h: 90 mm d: 185 mm w: 175 mm	 h: 125 mm d: 250 mm w: 265 mm	 h: 140 mm d: 390 mm w: 380 mm
Temperature range	°C	-	ambient + 5 to 60
Stability	°C	-	± 0.1
Uniformity	°C	-	± 0.2
Display	4 digit LED	2 line 16 character LCD	
Heat up time	room temperature to 37°C mins	-	15 to 20
Capacity	microplates	2 or 4	4
Shaking speed	rpm	150 to 1000	250 to 1200
Orbit	mm	2	250 to 1200
Timer, with automatic switch-off	1 min to 24 hours	-	-
Timer, with automatic switch-off and alerting buzzer	-	1 min to 96 hours	
Ambient temperature range	°C	4 to 40	
Input voltage	V dc	12	
Input current	A	0.5	5
External power supply	12 V, 500 mA	12 V AC/DC, 4.16 A	12 V AC/DC, 4.16 A

## Microplate apparatus and equipment » Models and specifications

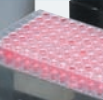

### Dry block heaters for microplates – range of models, options and accessories

Temperature range  ambient + 5 to 100°C  ambient + 5 to 130°C  ambient + 5 to 200°C   = standard  = available option  = option not available	Precision digital	High performance digital	Analogue
	QBD2	QBH2	QBA2
			
	h: 100 mm d: 280 mm w: 200 mm	h: 100 mm d: 280 mm w: 200 mm	h: 100 mm d: 280 mm w: 200 mm
Temperature range	ambient + 5 to 130	ambient + 5 to 200	ambient + 5 to 100
Temperature setting range	15 to 130	15 to 200	0 to 100
Setting resolution	0.1	0.1	2
Stability @ 37°C, °C	± 0.1	± 0.1	± 1.0
Uniformity within the block @ 37°C, °C	± 0.1	± 0.1	± 1.0
across similar blocks @ 37°C, °C	± 0.2	± 0.2	± 1.0
Temperature display, LED	●	●	–
Display resolution	0.1	0.1	–
Heat up time 25° to 100°C mins	15	15	25
Three programmable temperature/time segments plus end-of-program segments	–	●	–
Reaction timer, with audible buzzer	1 minute to 999 mins	1 minute to 999 mins	–
Function timer for delay of heater start-up/switch-off	up to 72 hours	up to 72 hours	–
Off-set adjustment	●	●	–
Two-point calibration of internal and external probes	●	●	–
High/low temperature alarms, settable to within 0.5°C of set temperature	●	●	–
Fault indication display	●	●	–
Power W	300	300	300
Supply voltage V	120 or 230	120 or 230	120 or 230
Safety overtemperature cut-out	thermal fuse	thermal fuse; adjustable	thermal fuse
Extraction tool for easy and safe block removal	●	●	●


### Options and accessories

#### Microtitre blocks for molecular biology and biotechnology applications



Double-size blocks, 140 x 100 x 75 mm, supplied with extraction tool

	QDP-H 96 holes in microplate configuration for 0.2 ml microplates, strips or individual tubes. Accommodates 1 x 96-well plate or 8 x 12-well or 12 x 8-well strips or up 96 individual capped tubes. Uniformity ± 0.3°C within tubes across the block; 6.2 mm Ø holes, 14 mm hole depth	●	●	●
	QDP-FL Universal block, undrilled black anodised aluminium, for standard 96-well plates (u-well, v-well, flat bottom, high temperature). Uniformity ± 0.5°C between wells. Supplied with hinged, double layer lid	●	●	●

#### Safety cover

	QBL2* Made from tough clear polycarbonate for maximum visibility whilst preventing accidental touching of a hot block or contamination of samples from splashes *Not required with QDP-FL microtitre blocks	●	●	●
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#### External Pt1000 temperature probes

	QBEP Standard probe for in-sample or in-block temperature control; encased in stainless steel sheath, Ø 3 mm x 30 mm long, with 350 mm of cable	●	●	✗
	QBEP-WM Short-form probe. For in-sample or in-block temperature control; encased in stainless steel sheath, Ø 3 mm x 14 mm long, with 350 mm of cable	●	●	✗