

BENEFITS INCLUDE

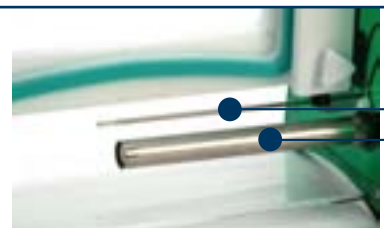
- Maximum 96-sample throughput** - using two 48-sample combs - allows samples to be transferred quickly and easily to the each gel from standard 96-well microplates or thermal cycler blocks
- Large format** - 20.5 x 20cm glass plates allow gradient gels to be poured containing wider ranges of denaturant concentration, maximising sensitivity and resolution
- 100ml gradient mixer** - used with the new-style TV400-GRM and casting base to make two 1mm parallel denaturing gradient gels
- SERVA formamide, urea and acrylamide available** - to pour denaturing gradient gels - contact sales@scie-plas.co.uk
- Techne TC-412 and TC-512 thermal cyclers** - also available through sales@scie-plas.co.uk - for pre-electrophoretic GC-clamping and amplification of the DNA target sequence by PCR®, particularly if 96 samples are screened at a time
- Can also be adapted for constant denaturing gel electrophoresis (CDGE)** - if the denaturant concentration required for partial melting of the DNA target sequence is already known



The TV400-DGGE Denaturing Gradient Gel Electrophoresis System

The TV400-DGGE denaturing gradient gel electrophoresis system is a cost-effective solution for researchers studying mutations and DNA polymorphisms critical in disease aetiology and genetic diversity. Designed primarily for parallel denaturing gradient gel electrophoresis (DGGE), where electrophoresis and the denaturing gradient run in the same direction, the TV400-DGGE has a maximum 96-sample throughput compatible with standard microplates and thermal cycler blocks. A 100ml gradient mixer is also included to pour gradient gels using our newly designed gel-running module and cam-caster, while a 400W heater, regulated by an external temperature control unit connected to a heat sensor within the gel tank, allows the gel temperature to be set to the predetermined melting temperature (T_m) of the PCR®-amplified DNA polymorphism or mutation of interest.

- 400W heating element** - manually controlled by a temperature control unit connected to a PT100 heat sensor - enables the gel and buffer temperature to be set in 1°C increments to a predetermined T_m , to a maximum 70°C



PT100
Heat
Sensor

400W
heating
element

TECHNICAL SPECIFICATION

TV400 GRM + Heated Tank

Unit Dimensions (W x D x H)	28.5 x 15 x 29cm	
Inner Tank Dimensions (W x D x H)	27 x 12.5 x 26cm	
Plate Dimensions (W x H x T)	20.5 x 20 x 0.4cm	
Standard Spacer Dimensions (W x H x T)	2 x 20 x 0.1cm	
Active Gel Dimensions (W x H)	16.5 x 17.5cm	
Sample Capacity	2 x 24	
Recommended Buffer Volume	Inner Buffer Chamber	700ml
	Gel Tank	4200ml
Recommended Running Conditions for Denaturing/Native PAGE Gel	Voltage	175 - 225V (8.75 - 11.25V/cm)
	Current	20 - 30mA
	Time	2.5 - 3.5h
Temperature Range Thermometer	0 - 100°C	
Power Output of Heating Element	400W	
Heating Element Dimensions (L x D)	14 x 1.5cm	
Operating Range of PT100 Temperature Sensor	-50 to +200°C	
PT100 Temperature Sensor Dimensions (L x D)	14 x 0.3cm	
Casting Base Silicone Seal Dimensions (W x L x H)	1.7 x 22.5 x 0.8cm	
Power Output Connectors (diameter)	Shrouded, 4mm	
Recommended Power Supplies	Consort EV243	

HS-UNIT

Unit Dimensions (W x D x H)	9.6 x 14 x 8cm
Recommended Temperature Control Range	50 to 70°C
Temperature Control Accuracy	+/-1°C

GM100

Unit Dimensions (W x D x H)	11 x 3 x 13.5cm
Internal Dimensions of Mixing and Reservoir Chambers (Diameter x Height)	2.5 x 12.5cm
Volume of Each Chamber	50ml
Internal Diameter of Outlet Port	2mm

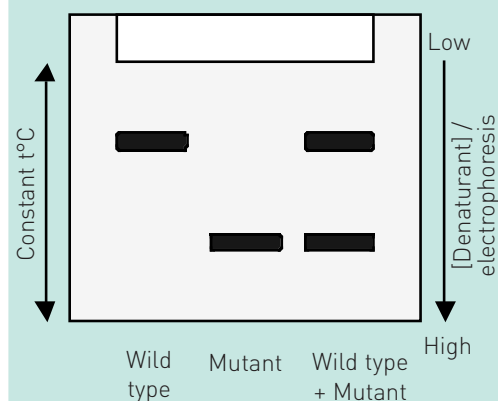
HS-UNIT heat sensor control unit - manually adjustable in 1°C increments to the desired T_m



PARALLEL DGGE - OVERVIEW

Parallel DGGE is based on the application of a denaturant concentration gradient - increasing in the direction of electrophoresis within a polyacrylamide gel - and uniform temperature to induce the partial unwinding or melting of double-stranded DNA by distinct domains in a sequence-specific manner. Melting breaks the hydrogen bonds holding together each base pair within a DNA sequence: with domains rich in G-C base pairs melting at higher temperatures than those with high A-T base-pair content. Incorporating sequence high in G-C content into the DNA target sequence by PCR® amplification (GC-clamping) prevents the DNA target with the lowest melting domain from melting completely at its predetermined T_m , which is maintained by the application of a constant temperature across the gel and within the buffer. Because both gel temperature and increasing denaturant concentration act to melt DNA in a sequence- and domain-specific manner, any point mutations amplified within a PCR® product will affect its T_m so that its subsequent mobility within a polyacrylamide gel differs from its wild type counterpart (see schematic diagram). Consequently, the sensitivity of this technique in distinguishing individual DNA sequences, which might differ only by a single point mutation, has proven highly attractive to scientists screening for unknown mutations.

Schematic of Parallel DGGE



ORDERING INFORMATION

Complete System

Twin-plate maxi-gel unit with GRM, heated gel tank with PT100 temperature sensor and thermometer, lid, 2 x (20.5 x 20cm; W x H) plain glass plates, 2 x (20.5 x 20cm) notched glass plates, 4 x 1mm spacers, 2 x spacer aligners and 2 x 1mm thick 24-sample combs, casting base, 2 x silicone seals and 1 x dummy plate; plus GM100 gradient mixer and heat sensor control unit

Part No.

TV400-DGGE

Replacement Parts & Accessories

1 x TV400 gel-running module	TV400-GRM
2 x (20.5 x 20cm) plain glass plates for TV400	TV400-PG
2 x (20.5 x 20cm) notched glass plates for TV400	TV400-NG
1 x dummy plate	TV400-DP
2 x 1mm thick spacers for TV400	TV400-S1
2 x spacer aligners for TV400	TV400-SA
1 x cam-pin casting base with 2 silicone seals	TV400-CB
2 x silicone seals for cam-pin casting base	TV400-CB-SEALS
1 x 100ml gradient mixer	GM100
1 x caster system for 2 x (20.5 x 20cm) gradient maxi-gels	TV400-MC2
1 x caster system for 10 x (20.5 x 20cm) gradient maxi-gels	TV400-MC10
2 x 0.2mm thick, platinum electrode wire	PT-0.2
2 x 1 metre power leads with shrouded 4mm power output connectors	CABLE-4

For a 110VAC electrical system use code **TV400-DGGE-A**

Reagents & Chemicals

1 x Formamide, 100ml	21710.01
1 x Urea, 1kg	24524.02
1 x Acrylamide-Bis Solution, 37.5:1 (40% w/v), 2.6%C, 500ml	10681.01

TV400-DGGE Combs

Part No.	Thickness (mm)	Sample Throughput	Tooth Width (mm)	Tooth Height (mm)	Max. Spacing (mm)	Sample Volume / Well (µl)
TV400-C1-24 (standard)	1	24	4.75	20	2	95
TV400-C1-48 (optional)	1	48	2.35	20	1	47

DO YOU NEED...?

A GRADIENT MIXER	SEE PAGE 89
ACRYLAMIDE	SEE PAGE 136
A GEL MULTICASTER	SEE PAGE 90
A POWER SUPPLY	SEE PAGES 100-103
A GEL DOCUMENTATION SYSTEM	SEE PAGE 108

FOR COMPATIBLE
COMB INFORMATION SEE PAGE 68