



# Portable Spectrophotometer

version  
2006

PG INSTRUMENTS LIMITED

# T100 Portable spectrophotometer

## Testing items:

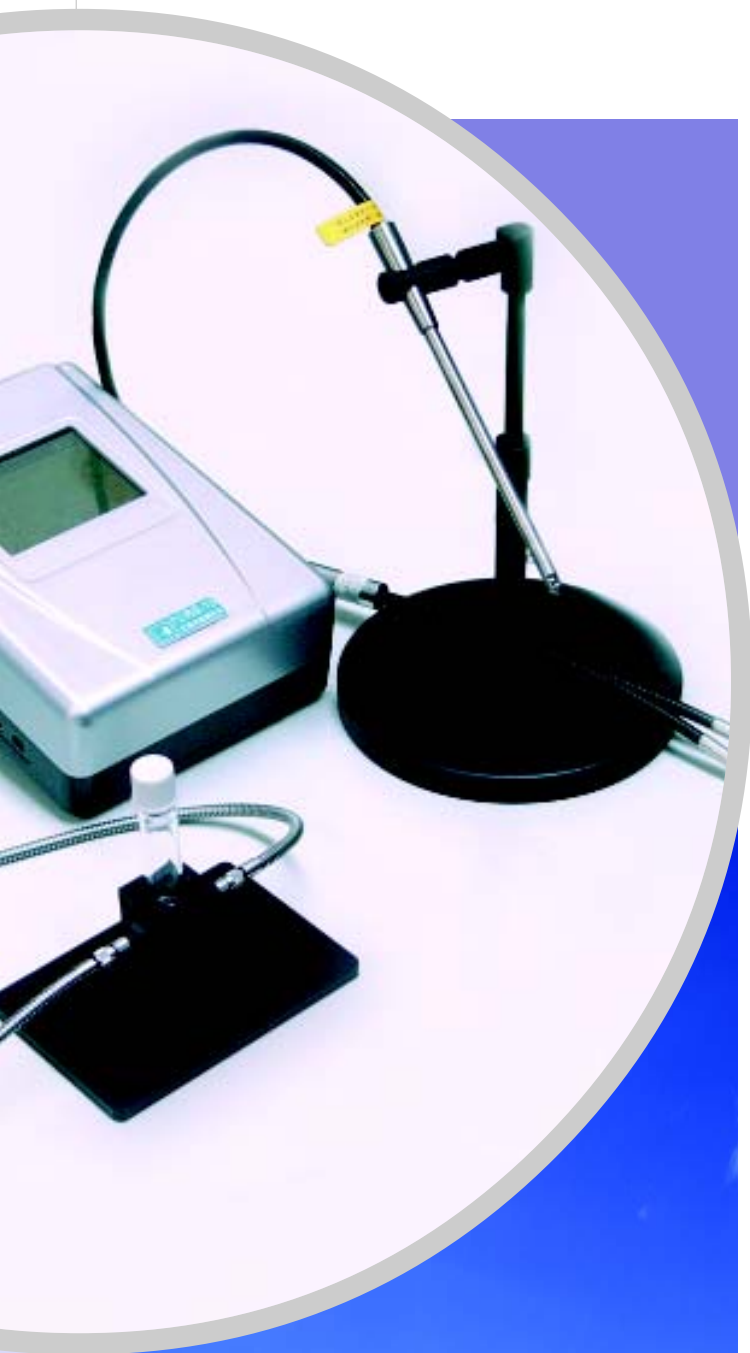
- ▶ COD<sub>Cr</sub> (low conc.)
- ▶ COD<sub>Cr</sub> (high conc.)
- ▶ ammonia nitrogen
- ▶ chromium VI
- ▶ cyanide
- ▶ COD<sub>Mn</sub>
- ▶ NO<sub>2</sub><sup>-</sup>
- ▶ nitrate
- ▶ Inorganic phosphor
- ▶ nitrogen



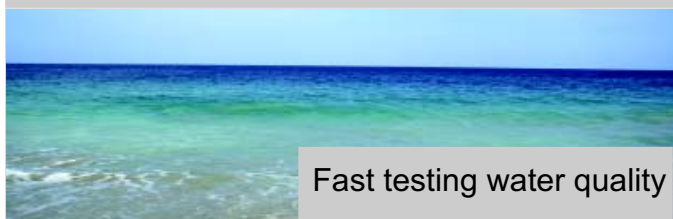
The following items also can be tested:

Residual Cl<sub>2</sub>, Total Cl<sub>2</sub>, Cl<sup>-</sup>, total P, volatile hydroxybenzene, aniline, sulfate, ferrous, solubility total iron, total iron, Total Manganese, Total chromium, fluoride, sulfide, anionic detergent, formaldehyde, carbamide, turbidity

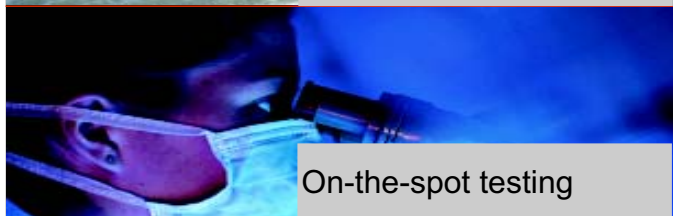
# T100 Portable spectrophotometer



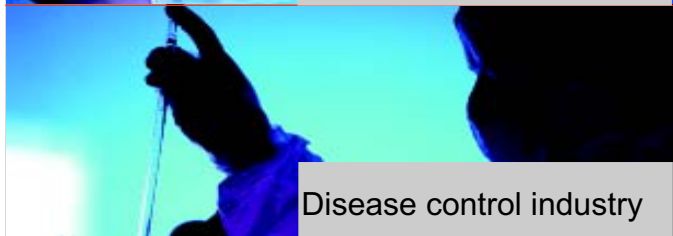
## Application:



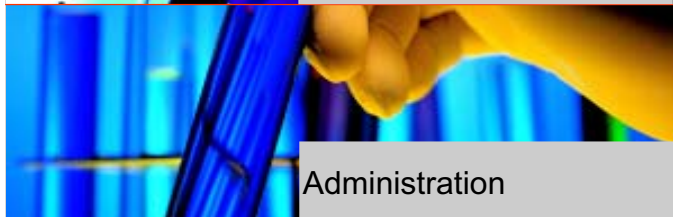
Fast testing water quality



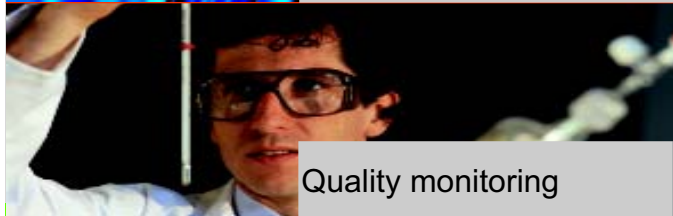
On-the-spot testing



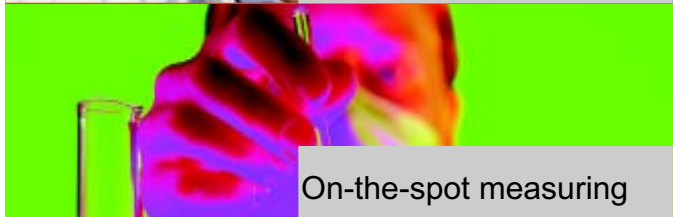
Disease control industry



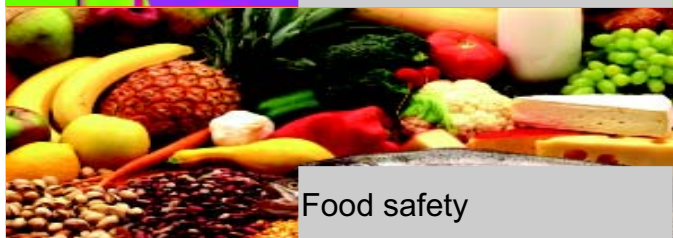
Administration



Quality monitoring



On-the-spot measuring



Food safety



## Powerful functions to meet various requirements

- Human-computer interface and touchpad makes the display more obvious and operation more convenient.
- Windows embedded operation system.
- Multiple functions: integrated timer, storage, power supply management module, online upgrade.
- Built-in curves: built-in curves are available for customers.
- Good expandability: as many as 50 custom methods.
- Excellent power supply management system: real time monitoring the battery voltage; low power alarming; charging status indicating.

## Water quality dedicated software

### Measuring items:

COD<sub>Cr</sub> (low conc.), COD<sub>Cr</sub> (high conc.), ammonia nitrogen, chromium VI, cyanide, COD<sub>Mn</sub>, NO<sub>2</sub><sup>-</sup>, nitrate, Inorganic phosphor, nitrogen.

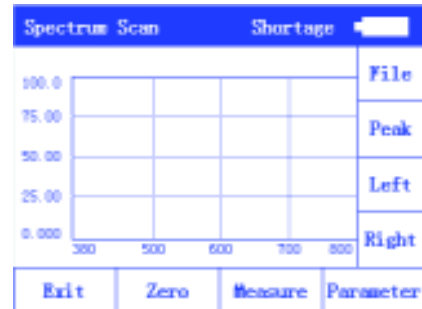
Residual Cl<sub>2</sub>, Total Cl<sub>2</sub>, Cl<sup>-</sup>, total P, volatile hydroxybenzene, aniline, sulfate, ferrous, solubility total iron, total iron, Total Manganese, Total chromium, fluoride, sulfide, anionic detergent, formaldehyde, carbamide, turbidity



## Traditional functions of spectrophotometer

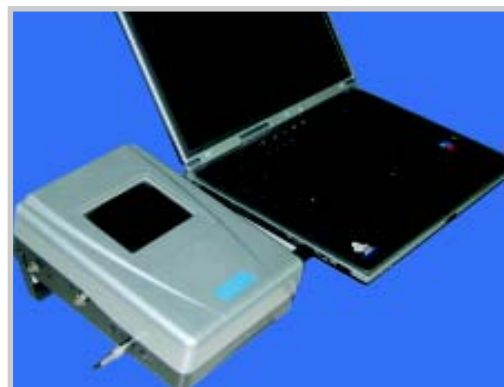
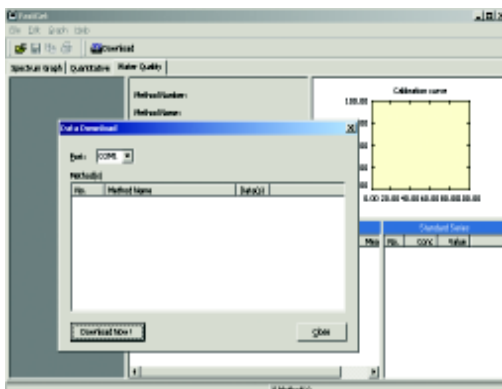
Spectrum scanning, peak picking, photometric measurement, quantitative measurement, kinetics scanning and user defined functions.

Multiple functions with a large storage, as many as 100 spectrums can be saved.



## Analysis with PC station

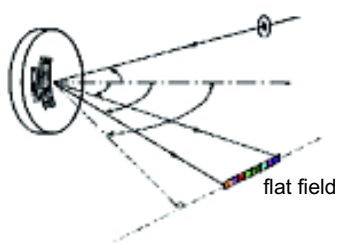
Dedicated T100 Win software for water quality, and user defined softwares are also possible.



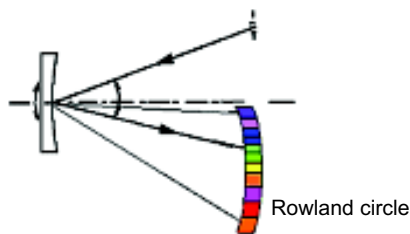
## Three leading core technologies

- ▶ Flat-field holographic concave grating
- ▶ PDA array receiver
- ▶ Anticorrosive fiber optics probe

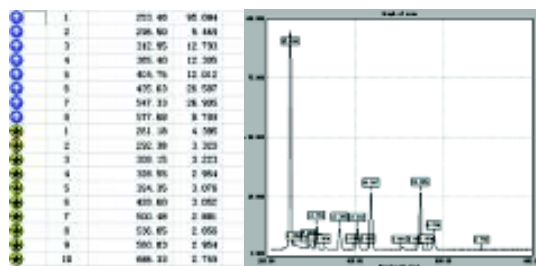
Flat-field concave grating



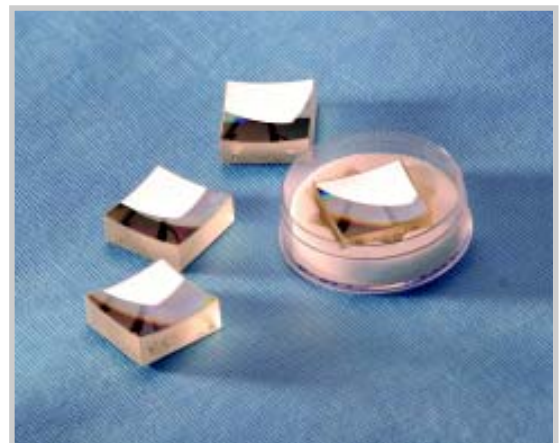
Ordinary grating



- The new flat-field holographic concave grating makes a simple optical system and high diffraction.
- Phase deviation correction
- Wide spectral region
- High diffraction efficiency
- PDA array receiver

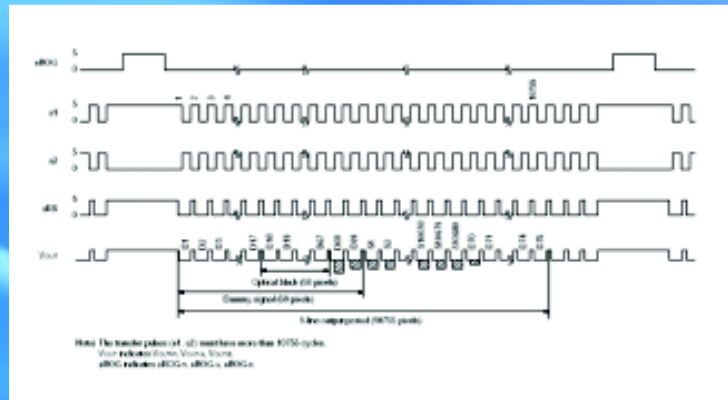


Checking the wavelength accuracy by mercury lamp

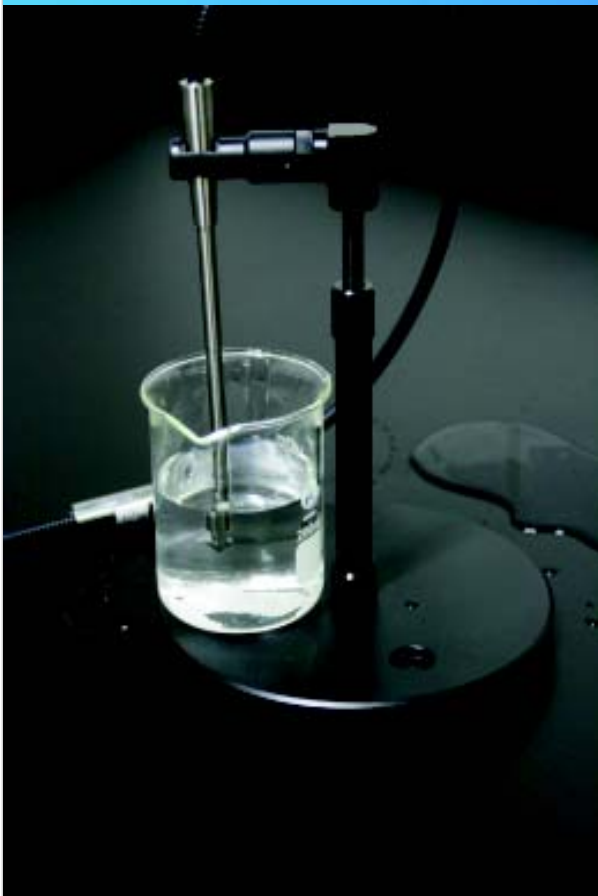


# T100 Portable spectrophotometer

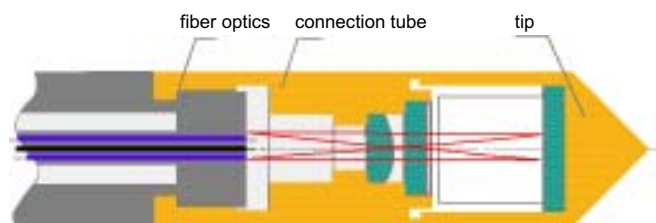
- The new photodiode array detector; full range spectrum simultaneously receiving; multi-channel simultaneously scanning; very fast measurement speed; finish full range spectrum scanning within 0.005s.



simultaneously receiving the full range spectrum



- The anti-corrosive fiber optics probe can be directly put into the sample, free from colorimetric tube and colorimetric cup.

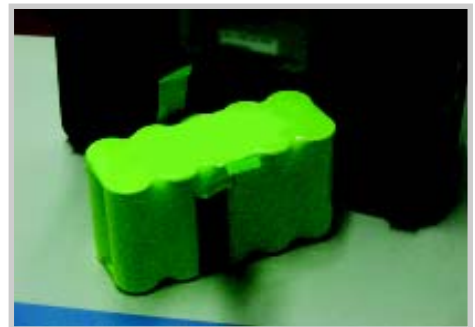


probe structure

**The compact and user-friendly spectrophotometer is especially for field measurement and real time testing.**



- The main unit weighs only 1.5kg, easy for hand held operation.
- The unique touch screen makes the operation easy.
- The built-in rechargeable battery provides power for 8 hours.
- Car adaptor is available.
- Carrying cases fully support the portable spectrophotometer.



## Provide multiple solutions to meet your need

▶ Computer



▶ printer



▶ independent accessory



▶ Main case



▶ reagent case for sea water



▶ COD testing case



▶ water quality reagent case



▶ preprocessing case for water samples



# Application in water quality testing field

**T100** Portable spectrophotometer

Items	Range	Error
COD <sub>Cr</sub> (low conc.)	10mg/L–150mg/L	< ± 10%
COD <sub>Cr</sub> (high conc.)	150mg/L–1500mg/L	< ± 10%
ammonia nitrogen	0.03mg/L–2.5mg/L	< ± 10%
chromium VI	0.01mg/L–0.60mg/L	< ± 8%
cyanide	0.001mg/L–0.200mg/L	< ± 8%
COD <sub>Mn</sub>	1.0 ~ 10.0mg/L	< ± 15%
NO <sub>2</sub> <sup>-</sup>	0.01 ~ 0.20mg/L	< ± 8%
nitrate	0.02 ~ 0.50mg/L	\
Inorganic phosphor	0.05 ~ 1.00mg/L	< ± 8%
nitrogen	0.01 ~ 0.20mg/L	< ± 15%
chromium	0.02 ~ 0.40mg/L	< ± 15%

## Application solutions

Item	Quantity	Item	Quantity
portable spectrophotometer	1	main unit case	1
cleaning bottle	1	instruction manual	1
car adaptor	1	water quality instruction manual	1
charger	1	certificate of acceptance	1
PC–RS232 interface cable	1	packing list	1
pen	1	warranty card	1
touch pen	1	calibration curve parameters table	1
immersed fiber optics probe	1	COD <sub>Cr</sub> testing procedures	1
holder	1	chromium VI testing procedure	1
tweezers	1	cyanide testing procedure	1
beaker	1	nitrate testing procedure	1
waste paper	1	NO <sub>2</sub> <sup>-</sup> testing procedure	1
software	1	Inorganic phosphor testing procedure	1
Filter paper	1	Ammonia nitrogen testing procedure	1
waste bottle	1	COD <sub>Mn</sub> testing procedure	
gloves	1 pair		
cross screwdriver	1		



## COD<sub>Cr</sub> solutions

Method	COD <sub>Cr</sub> parameters		
Item	COD <sub>Cr</sub>		
Complete set	main unit	COD <sub>Cr</sub> testing case	reagents: COD <sub>Cr</sub> (high conc.) digestion solution 50pcs/box COD <sub>Cr</sub> (low conc.) digestion solution 50pcs/box
Method	《COD <sub>Cr</sub> testing procedures》		

## COD<sub>Cr</sub> dedicated testing case

COD<sub>Cr</sub> testing case is especially designed for testing COD<sub>Cr</sub> with the instrument. It contains constant temperature heater, test tube, pipette, and COD tubes.

Item	quantity
Test tube	1
constant temperature heater	1
tips,	4
COD tube (empty)	50
paper box	1
pipette	1
case	1



## Water quality measurement solutions

Method	parameters			
Item	ammonia nitrogen determination; chromium VI determination, cyanide determination			
Complete set	main unit	water quality reagent case	preprocessing case for water samples	reagents: ammonia nitrogen reagent package 50pcs/box chromium VI reagent package 50pcs/box cyanide reagent package 50pcs/box
Method	《ammonia nitrogen testing procedures》, 《chromium VI testing procedures》, 《cyanide testing procedures》			

## Water quality reagent cases

Water quality reagent case is especially designed for testing ammonia nitrogen, chromium VI and cyanide of water with the instrument. It contains pipette, tubes holder, colorimetric tubes, thermometer, cyanide reagent, ammonia nitrogen reagent, chromium VI reagent, PH reagent etc.



Item	Quantity	Item	Quantity
Pipette	1	15 holes test tube holder	1
cyanide testing reagent No.1	1	waste bottle	1
cyanide testing reagent No.2	1	beaker	1
cyanide testing reagent No.3	1	colorimetric tube	8
chloramines-CAT	6	thermometer	1
ammonia nitrogen testing reagent No.1	1	pipette (2ml)	1
ammonia nitrogen testing reagent No.2	1	pipette (10ml)	1
chromium VI reagent No.1	1	ear syringe	1
chromium VI reagent No.2	1	PH paper	1
waste bottles of chromium VI/ ammonia nitrogen/ cyanide	3	graduated flask(100ml)	1
centrifuge tubes (4 tips, and 2 burette)	6	tips	4
PH reagent No.1	1	burette	2
PH reagent No.2	1	case	1

## Sea water testing solutions

Method	parameters		
Item	COD <sub>Mn</sub> testing, NO <sub>2</sub> <sup>-</sup> testing, nitrate testing, inorganic phosphor testing, ammonia nitrogen testing		
Complete set	main unit	sea water testing case	reagent: COD <sub>Mn</sub> reagent 50pcs/pack NO <sub>2</sub> <sup>-</sup> reagent 50pcs/pack nitrate reagent 50pcs/pack inorganic phosphor 50pcs/pack ammonia nitrogen 50pcs/pack
Methods	《sea water COD testing procedures》、《sea water NO <sub>2</sub> <sup>-</sup> testing procedures》、 《sea water nitrate testing procedures》、《sea water inorganic phosphor testing procedures》、 《sea water NH <sub>3</sub> testing procedures》		

### Sea water testing case

Sea water testing case contains needle filter, COD testing reagent, ammonia nitrogen testing reagent, NO<sub>2</sub><sup>-</sup> testing reagent, nitrate testing reagent, inorganic phosphor testing reagent etc. It also can be used with constant temperature heater, centrifuge, rectifying device, and circulator etc.



Item	Quantity	Item	Quantity
COD <sub>Mn</sub> testing reagent No.1	1	Inorganic nitrogen waste bottle	1
COD <sub>Mn</sub> testing reagent No.2	1	inorganic phosphor waste bottle	1
ammonia nitrogen testing reagent No.1	1	COD <sub>Mn</sub> waste bottle	1
ammonia nitrogen testing reagent No.2	1	beaker(200ml)	2
ammonia nitrogen testing reagent No.3	1	Cd column joint	1
ammonia nitrogen testing reagent No.4	1	Cd reductant column	1
ammonia nitrogen testing reagent No.5	2	brown flask(100ml)	1
ammonia nitrogen testing reagent No.6	1	injector(50ml)	1
NO <sub>2</sub> <sup>-</sup> testing reagent No.1	1	tips box	1
NO <sub>2</sub> <sup>-</sup> testing reagent No.2	1	filter membrane ( φ 35 )	1
nitrate testing reagent No.1	4	clamp	1
nitrate testing reagent No.2	1	filter paper ( PH5.5-9.0 )	1
nitrate testing reagent No.3	1	needle filter ( φ 35 )	1
nitrate testing reagent No.4	1	test tube	1
nitrate testing reagent No.5	1	centrifuge tubes	4
inorganic phosphor testing reagent No.1	1	tips	4
inorganic phosphor testing reagent No.2	1	case	1

## Other solutions

Method	parameters		
Items	other parameters on water quality		
Complete set	main unit	dedicated reagent case	dedicated reagent pack
Method	according to the specific item		

### Preprocessing case

The preprocessing undertakes sample distillation, filtering etc., containing built-in heating cover, distillation device and spares, filler, flask, cyanide preprocessing reagent, water quality preprocessing reagent, and ammonia nitrogen preprocessing reagent etc.



Item	Quantity	Item	Quantity
centrifuge tubes(2 tips)	3	Adapter bonnet	1
cyanide distillation preprocessing reagent No.1	2 vases	qualitative filter paper	1
cyanide distillation preprocessing reagent No.2	1vase	condensation tube bending	1
cyanide distillation preprocessing reagent No.3	1vase	graduate	1
cyanide distillation preprocessing reagent No.4	1vase	filler	1
water preprocessing reagent	1vase	tap joint	1
beaker	1	fastening clamp	2
ammonia nitrogen distillation preprocessing reagent No.1	1vase ( 50g )	zeolite	1
ammonia nitrogen distillation preprocessing reagent No.2	1vase ( 20g )	reagent bottle	4 (empty)
bracket	2	latex tube	4 meters
glass rod	1	case	1
heating cover	1		
flask(100ml)	1		

The excellent quality, outstanding specifications and stable performance T100, which recently introduced by PG INSTRUMENTS LIMITED, can fully meet the user's needs.

# Specifications

**T100** Portable spectrophotometer

Light source	convergence tungsten lamp: the service life is over 5000 hours	
	External light source: transmission deuterium lamp; both the Deuterium lamp and the tungsten can be independently controlled.	
Measurement mode	dedicated modules for water quality measurement, spectrum scanning, peak picking, quantitative determination, kinetics, photometric measurement	
Measuring part	immersed fiber optics probe, 10mm pathlength	
Power supply	built-in rechargeable battery provides power for all day long work	
	Car power supply (optional)	
	charger	
Operation system	embedded system, integrated memorizer 2M-Flash, with timing function	
Input/Display	320x240 dots touch display screen, with backlight	
Specifications	wavelength range	380nm – 800nm
	Data resolution	0.6nm
	Spectral bandwidth	4 ± 1nm
	Wavelength accuracy	<1.0 nm
	Wavelength reproducibility	0.1nm
	Baseline flatness	± 0.005Abs
	Noise	± 0.003Abs
	Integration time	0.005s–25s
	Scanning speed	>4200nm/s
	Measurement accuracy	± 2%
Dimensions	215 × 185 × 70mm	
Environment temperature	operation environment 0–40°C	
	Preservation environment 0–50°C	

## Accessories

- Multiple accessories:

Water quality testing case  
preprocessing case  
COD testing case  
sea water testing case  
circulator



- Various fiber optics accessories are for transmittance, reflectance, fluorescence, etc; also provide solutions for water quality measurement.



- SMA905 standard interface is available.



- Website update is possible.



### Distillation device

the special design can be used with T100 circulator; user friendly operation



### Heating cover

it is used for distillation. It can undertake the temperature as high as 450° C. A adjustment knob is used to control heating temperature and distillation speed.

### Constant temperature heater

it can heat several tubes the same time. The stable and accurate heater can adjust the temperature in a wide rang.



### Centrifuge

separate the solid and liquid. It is featured as small size and low noise. It also has the function of timing.



### Cooling water circulator

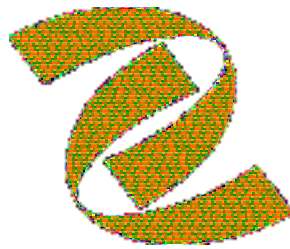
cooling water circulator is used with distillation device.



### Pipette

it can suck the solution according to the graduats. There is a anticorrosive filter on the tip, protecting the solution from impurity.





PG INSTRUMENTS LIMITED  
2nd. FLOOR, 145 - 157 ST JOHN STREET,  
LONDON EC1V 4PY  
TEL: 0044 845 310 8384  
FAX: 0044 870 762 3212  
E-MAIL: [sales@pginstruments.com](mailto:sales@pginstruments.com)  
[www.pginstruments.com](http://www.pginstruments.com)

PG INSTRUMENTS LIMITED  
POWERPOINT BUSINESS CENTRE  
122 HIGH STREET, EARL SHILTON  
LEICS LE9 7LQ  
TEL: 0044 1455 844443  
FAX: 0044 1455 851384  
E-MAIL: [support@pginstruments.com](mailto:support@pginstruments.com)