



UV/VIS SPECTROPHOTOMETER

version
2005

PG INSTRUMENTS LIMITED



UV-VIS

Spectrophotometer

- ◆ The T70 series of UV-Visible Spectrophotometers have been designed using “state of the art technology” .
- ◆ The instruments are professionally manufactured to a very high specification, with excellent quality control.
- ◆ The instruments have been designed using expertise gathered over many years in the field of UV-Visible Spectrophotometry.
- ◆ This gives the T70 series of instruments high performance characteristics, flexibility and user friendliness.

The T70 series is a new generation of split beam UV-Visible Spectrophotometers ● ● ●

UV-Visible Spectrophotometer is a well-accepted, documented technique with many applications. The technique is extensively used for the analysis of foods, drugs, agricultural products and is widely used in the medical care, public health, environmental protection, life sciences industries and many other organic and biochemical applications.

As a major manufacturer of analytical instrumentation, PG Instrument Limited has recently introduced the T70 series of UV-Visible Spectrophotometers. This range of instruments, which offer excellent performance, high quality and are competitively priced. The T70 range of UV-Visible Spectrophotometers can fully meet the requirements of the chemist.

The T70 UV-Visible series is innovative in terms of instrument application, mechanical and optical design, electronic control and software whilst retaining features that are well established and accepted through the industry.

The T70 series of UV-Visible Spectrophotometers are able to carry out the following analysis: photometric measurement, spectrum scans, kinetic measurements, quantitative determination and DNA/Protein analysis. When interfaced to a PC the software offers many more user-friendly applications such as access to data base, three-dimensional spectrum analysis, GLP Laboratory protocol, fast analysis of pesticide residues and other applications within the environmental protection code of analysis.



T70

UV-VIS Spectrophotometer

Features:

- **Accurate analysis**

Holographic grating greatly reducing stray light of the instrument and making the analysis more accurate.

- **Stable performances**

The split beam ratio optics ensures good stability.

- **High-speed measurement**

The fastest scanning speed is over 1000nm.

- **Powerful function**

The main unit of the spectrophotometer can analyse for photometric measurement, quantitative measurement, spectrum scan, DNA/Protein analysis and can print data. When connected to a computer the Spec UV software adds many additional functions, such as 3D spectrum analysis, GLP laboratory protocol. It can be applied in fast pesticide remain detection, environment protection, inspection and quarantine and other fields.

- **Convenient operation**

High degree of automation, the operator only needs to press keys twice when measuring ordinary samples.

- **Easily upgraded**

Many optional accessories enhance the flexibility and the measurement range of the instrument.

- **Easy routine maintenance**

The simple mechanical structure and modular electrical design make the routine maintenance easy.

- **Original technology**

The deuterium and tungsten lamps can be easily replaced and are supplied pre-aligned.

A motorised automatic 8-cell holder is supplied as standard which is particularly useful for the determination of pesticides.



Tungsten lamp and deuterium lamp



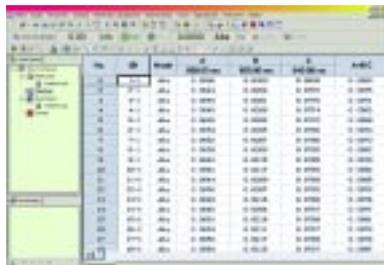
LCD 320 × 240



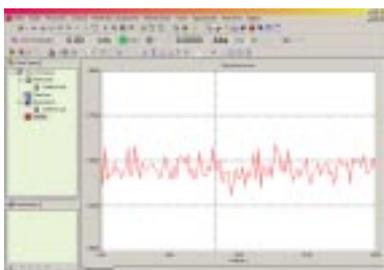
Analysis with Spec UV Software

Powerful Functions with user friendly operation

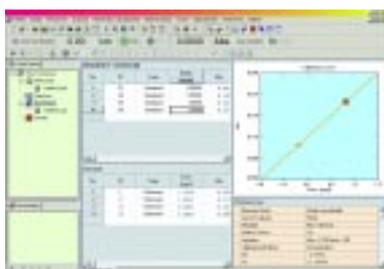
Four regular functions



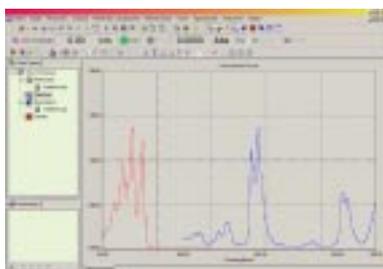
Photometric measurement



Kinetics measurement



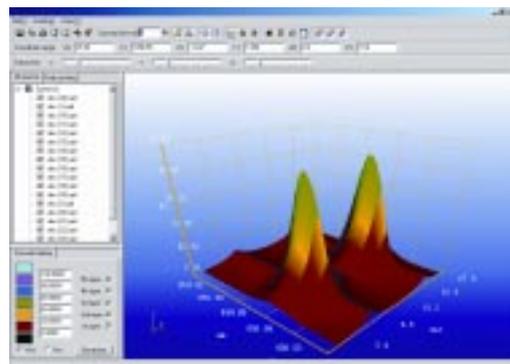
Quantitative measurement



Spectrum scan

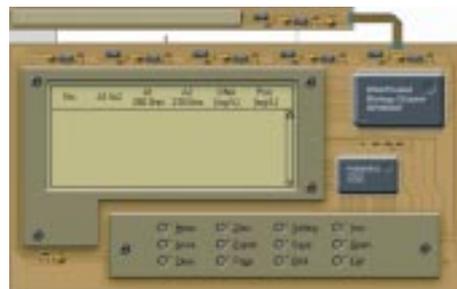
3D Presentation

- 3D Presentation by combining multiple spectrum
- Spectra can be fully and easily manipulated
- Peak Picking
- Graphics printout



DNA/Protein Analysis

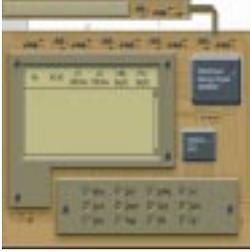
- Measurement of absorbance ratios at 260nm and 230nm, at 260nm and 280nm, and at custom defined wavelengths
- Background correction using absorbance at 320nm (Optional)
- Absorbance ratio calculation for user selected wavelengths
- Concentration calculation using arbitrary factors when selecting custom defined wavelengths



T70

UV-VIS Spectrophotometer

Software packages for various industries



Gene analysis

- DNA/Protein analysis software package



Drug analysis

- Pharmacopoeia software package



Pesticide analysis

- Pesticide residues software package



Foods analysis

- Foods analysis software package



Environmental analysis

- Environmental analysis with environmental software package

Log Record

- Automatically records each operator's usage
- Reliable database format to save the log
- The administrator can sort the log records and perform many other useful tasks

Software Conforming to GLP

- Multi-user management
- Log record
- Quality control
- Printout record

Binary File Save

- Binary format to save measurement data
- Binary format improve the data secrecy
- Save the disk space

Data Printout

- Share data with other software
- The results can be saved in
- Microsoft Word
- Microsoft Excel
- Text

Multi-User Management

- Allows the administrator to create users and groups with different privileges
- Access control by user ID and password

Printout Records

- Printout measurement results
- Personal settings for the report format
- Print preview

Quality Control

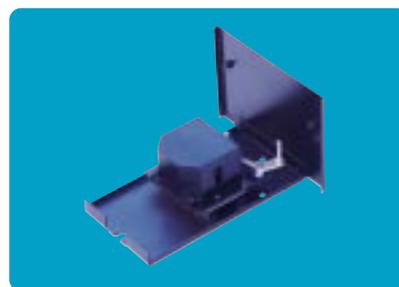
- Monitor the data according to the user's setup
- The system will take corrective measures if the data is out of range

Optional accessories

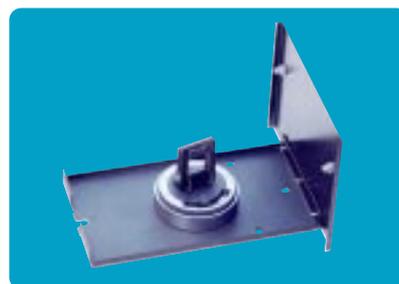
- **MR181-1 Specular reflection unit**
Function: measure the reflective spectrum character on the surface of solid materials.
Specifications: incidence angle: 5°
- **MS 181-1 Automatic 8-cell holder**
Function: Used for multi-sample measurement.
- **S181-1 Solid sample cell holder**
Function: Measure solid samples easily.
- **DS181-1 Changeable angles solid samples cell holder**
Function: measure solid samples from multiple angles.
- **PS182-2 Dual-channels sipper pump**
Function: With external structure, it is a half-automatic sampler with a sipper pump as a driver. There are two working modes-quantitative sampling and continuous sampling. The multi-sample measurement without changing cuvettes and continuous flow survey can be done with it.
- **CH18-1 Constant-temperature cell holder**
Function: It can be connected with a constant-temperature water-bath device to measure the samples in a certain temperature.
- **LS181-1 50mm Long-pathlength cell holder**
Function: It is used when using long-pathlength cell to measure.
- **SS19-1 Short-pathlength cell holder**
Function: It is used when using short-pathlength cell to measure.
- **TC181-1 Peltier thermoelectric cell holder**
Function: The accessory uses thermoelectric cooling components to control temperature. It is easy to use and control the temperature quickly.
Temperature range: 15°C -55°C
- **TR181-1 Test Tube holder**
Function: Measure the samples by using test tube conveniently.
- **MH 181-1 Micro-cell holder**
Function: it is used with micro-cell to improve the measurement accuracy of the micro samples.



Constant-temperature cell holder



Specular reflection unit



Changeable angles solid samples cell holder

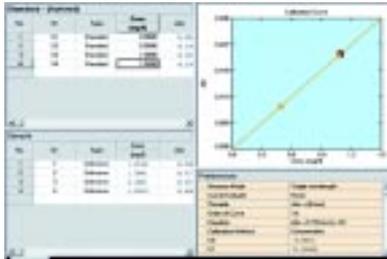
T70

UV-VIS Spectrophotometer

Instrument application

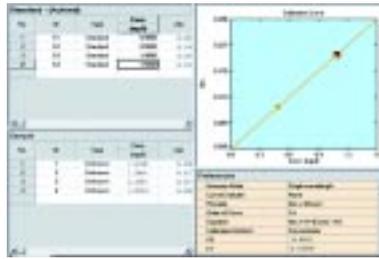
Environment:

Monitoring of water quality, atmospheric pollution, rainfall and soil contamination.



Geology exploration:

Determination of metallic elements and inorganic salt in minerals.



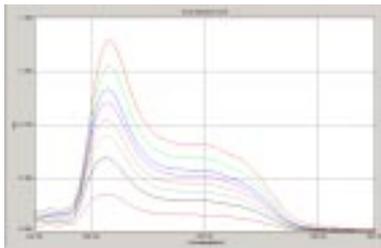
Agriculture:

Can be applied in various agriculture, such as pesticide detection, crops analysis, animal medicine analysis, fertiliser inspection, soil analysis, animal food stocks inspection etc.

| Sample | Unit | Result | A | B | C | Unit C |
|--------|------|--------|--------|--------|--------|--------|
| 1 | mg/L | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 2 | mg/L | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 3 | mg/L | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 4 | mg/L | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 5 | mg/L | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 6 | mg/L | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 7 | mg/L | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 8 | mg/L | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 9 | mg/L | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 10 | mg/L | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 11 | mg/L | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 12 | mg/L | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 13 | mg/L | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 14 | mg/L | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 15 | mg/L | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 16 | mg/L | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 17 | mg/L | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 18 | mg/L | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

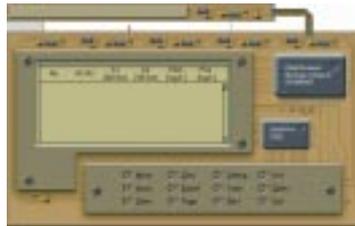
Food inspection:

Analysis of additives preservatives and flavours, fat contents, enzyme, glucose, flavouring, minerals, vitamins, etc.

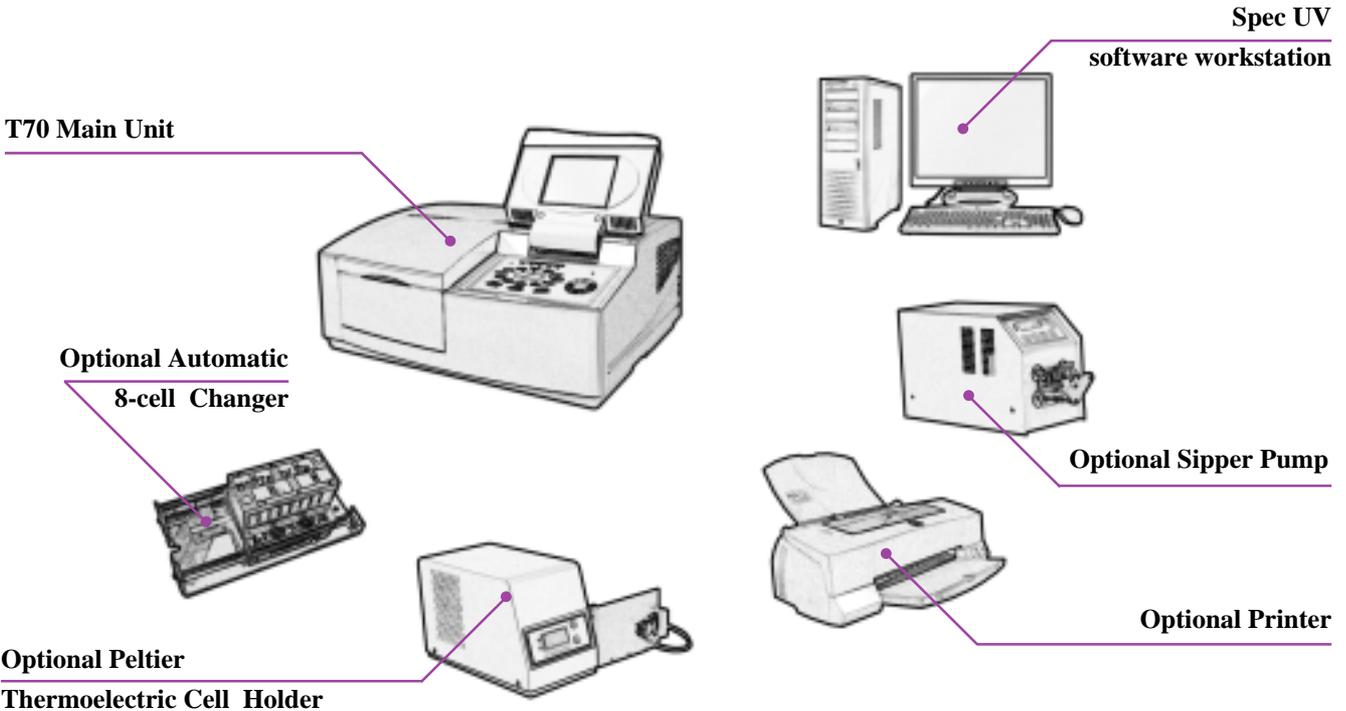


Life science:

Test the micro samples of life science and provide DNA/Protein detector to measure the DNA/Protein concentration.



System Configuration



Specifications

| Split beam optics | | |
|-----------------------------|--|--|
| Instrument Type | T70 | T70+ |
| Spectral Bandwidth | 2nm(fixed slit) | 0.5, 1, 2, 5nm(variable slit) |
| Working Mode | MPU Mode/PC Mode | MPU Mode/PC Mode |
| Software Support | MPU Software Platform/Spec UV software workstation | MPU Software Platform/Spec UV software workstation |
| Wavelength Range | 190~1100nm | 190~1100nm |
| Wavelength Accuracy | ± 0.3nm (Automatic wavelength correction) | ± 0.3nm (Automatic wavelength correction) |
| Wavelength Reproducibility | 0.2nm | 0.2nm |
| Stray Light | < 0.12%T (220nm, NaI; 340nm, NaNO ₂) | < 0.12%T (220nm, NaI; 340nm, NaNO ₂) |
| Photometric Mode | Transmittance, Absorbance, Energy | Transmittance, Absorbance, Energy |
| Photometric Range | -0.3~3Abs | -0.3~3Abs |
| Photometric Accuracy | ± 0.002Abs(0~0.5A) | ± 0.002Abs(0~0.5A) |
| | ± 0.004Abs(0.5~1A) | ± 0.004Abs(0.5~1A) |
| | ± 0.3%T(0~100%T) | ± 0.3%T(0~100%T) |
| Photometric Reproducibility | 0.001Abs (0~0.5A) ; | 0.001Abs (0~0.5A) ; |
| | 0.002Abs (0.5~1A) ; | 0.002Abs (0.5~1A) ; |
| | 0.15%T(0~100%T) | 0.15%T(0~100%T) |
| Baseline Flatness | ± 0.002Abs(190~1100nm) | ± 0.002Abs(190~1100nm) |
| Baseline Stability | 0.001Abs/h(500nm,0Abs 2nm Spectral Bandwidth, 2hr warm-up) | 0.001Abs/h(500nm,0Abs 2nm Spectral Bandwidth, 2hr warm-up) |
| Photometric Noise | ± 0.001Abs(500nm,0Abs 2nmSpectral Bandwidth) | ± 0.001Abs(500nm,0Abs 2nm Spectral Bandwidth) |



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