**UV-1280**

**Easy to Operate**
Easy-to-see LCD and buttons ensure simple measurement and instrument validation operations.

**A Wealth of Measurement Modes**
- From photometric measurements to DNA/protein quantitation.
- Fully equipped with the programs needed for UV/VIS analysis, even for high-level multi-component quantitation.
- Accommodates a variety of applications due to a wealth of available accessories.

**Data Storage on USB Flash Drives**
- Data from the unit can be saved directly to a USB flash drive.
- Data can be displayed using commercially available spreadsheet software.

**Stable Measurements**
- Combined monitor double-beam system for the D/WI lamps.
- Highly stable analyses in a compact unit.

**UV-VIS Spectrophotometer**
Designed by the leaders in UV-Visible Spectroscopy for molecular absorption quantitative analysis, the UV-1280 Multipurpose UV-Visible Spectrophotometer offers wavelength scanning from 190-1100nm. This lower-cost, high-quality instrument is ideal for applications ranging from routine environmental and food quality testing to life science analyses.
Easy to Operate

UV-1280 + DPU-S445 screen copy printer (option)
Prints hard copies of screens, including numerical data. It also allows printing of the items displayed on the screen, such as spectra and calibration curves.

UV-1280 + Commercial printer (option)
Printing is possible to printers that support ESC/P-9, ESC/P-24, ESC/P Raster, and PCL control codes.
For details on compatible commercially available printers, contact your Shimadzu representative.
The easy-to-see LCD and buttons enable user-friendly, intuitive measurement, instrument validation, and printing operations.

Instrument validation and maintenance/inspection functions have been enhanced.

Instrument Validation Functions

- The checks for eight JIS items can be performed automatically or semi-automatically.
- Linking with a 6-series multi-cell (optional) is possible, making sample replacement unnecessary. Inspections can be performed efficiently.

Instrument Maintenance and Inspections

The usage times of the deuterium (D2) lamp and the halogen (W2) lamp can be recorded and displayed, which enables users to ascertain the expected replacement period of the lamps when performing periodic inspections.
A Variety of High-Level Measurement Modes

Equipped with a range of programs, the UV-1280 can be used for everything from photometric, spectral, and kinetics measurements to DNA/protein and high-level multi-component quantitation.

1 Photometric Mode

Measures the absorbance or transmittance at a single wavelength or multiple (up to eight) wavelengths. The instrument is also capable of simple quantitation using the K-factor method. For a multiple-wavelength measurement, calculations can be performed on the data obtained for up to four wavelengths, including the calculation of the difference between, or ratio of, the measurements obtained for two wavelengths.

2 Spectrum Mode

A sample spectrum is recorded using wavelength scanning. Repeat scans let you follow sample changes over time. Zoom in on the finished spectrum for a better view; subsequently, use the peak/valley pick function to select maxima and minima and perform a wide variety of data processing functions.

3 Quantitation Mode

Generates a calibration curve from the measurement of standards, and then calculates the concentrations of unknowns. Allows various combinations of wavelength number (1 to 3 wavelengths and derivatives) and calibration curves (K-factor and first-to-third order).
4 Kinetics Mode

Measures absorbance changes as a function of time, and obtains the enzymatic activity values. The kinetics measurement method automatically calculates the amount of change per minute, and then calculates an activity value from a specified coefficient. The rate measurement method, which determines whether the absorbance is changing linearly, can also be selected. In addition, add the CPS-100 thermoelectrically temperature-controlled cell positioner for measurement of multiple samples in succession.

5 Time Scan Mode

Measures the change in absorbance, transmittance or energy as a function of time. Add the CPS-100 thermoelectrically temperature-controlled cell positioner for simultaneous measurement of multiple samples under constant-temperature conditions.

6 Multi-Component Quantitation Mode

Quantitates up to eight components mixed in a single sample. The calibration equation is determined using pure or mixed components with known values.

7 Biomethod Mode

Determine DNA and protein concentrations with the following quantitation methods using the bioscience/life science program included as standard.

DNA/Protein Quantitation
- Quantitates DNA or protein using the absorbance at 260/230 nm or 260/280 nm.

Protein Quantitation
- Lowry method
- BCA method (method using bicinchoninic acid)
- Biuret method
- CBB method (method using Coomassie Brilliant Blue G-250)
- UV absorption method (direct measurement at 280 nm)
Data Storage on USB Flash Drives

Using USB flash drives makes it easy to transport analysis data and to store large amounts of data in a PC.

- USB flash drives can be connected directly to the UV-1280.
- Data for spectra and time-course curves can be displayed and saved with commercial spreadsheet software.

UV-1280 + USB flash drive + PC

With the UV-1280, the curve-related data (spectra and time-course curves) can be converted to, and saved in, CSV format. Transferring this data with USB flash drives allows it to be read directly at a PC using commercial spreadsheet software.

Analysis Compatibility Table

<table>
<thead>
<tr>
<th>Pharmaceuticals and Life Sciences</th>
<th>Optimal</th>
</tr>
</thead>
<tbody>
<tr>
<td>DNA/protein quantitation</td>
<td></td>
</tr>
<tr>
<td>Culture fluid turbidity measurements</td>
<td>Optimal</td>
</tr>
<tr>
<td>Enzymatic reaction measurements</td>
<td>Optimal</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Chemicals</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Transmittance measurements for films</td>
<td>Optimal</td>
</tr>
<tr>
<td>Thickness measurements for thin films and other films</td>
<td>Suboptimal</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Foods</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Pigment measurements</td>
<td>Optimal</td>
</tr>
<tr>
<td>Quantitation of vitamins, food additives, and minerals</td>
<td>Optimal</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Environmental</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Turbidity measurements</td>
<td>Optimal</td>
</tr>
<tr>
<td>Quantitation of total phosphorus and total nitrogen in river water, and lakes and marshes</td>
<td>Optimal</td>
</tr>
<tr>
<td>Measurements of plating liquids (hexavalent chromium, aluminum, nickel, etc.)</td>
<td>Optimal</td>
</tr>
<tr>
<td>Quantitation of iron, copper, arsenic, and ammonia in water</td>
<td>Optimal</td>
</tr>
</tbody>
</table>
Applications

Pharmaceuticals and Life Sciences

The UV-1280 includes programs for enzymatic reaction measurements, and DNA/protein quantitation, essential in bioscience/life science fields. A monitor double-beam has been adopted using a highly stable deuterium lamp and halogen lamp, which is optimal for kinetics measurements tracking changes over time. With a wealth of accessories, this instrument can even accommodate trace samples and measurements as in test tubes.

DNA/Protein Quantitation

Program: DNA/Protein Quantitation

Easily obtain DNA and protein concentrations, which are measured directly from absorption bands in the UV wavelength region, without performing coloring operations. With preset wavelengths and computational formulas, simply position the sample and press the START/STOP key for one-touch quantitation results. The measurement wavelengths and computational coefficients can be freely changed.

Calculates two-wavelength absorbance ratios and DNA/protein concentrations. Select from the following two quantitation formulas*:

*Absorbance at 320 nm can be used for background correction.

1. \( A_1 = 260 \text{ nm absorbance} \); \( A_2 = 230 \text{ nm absorbance} \)
Absorbance ratio = \( A_1/A_2 \)
DNA concentration = \( 49.1 \times A_1 - 3.48 \times A_2 \)
Protein concentration = \( 183.0 \times A_2 - 75.8 \times A_1 \)

2. \( A_1 = 260 \text{ nm absorbance} \); \( A_2 = 280 \text{ nm absorbance} \)
Absorbance ratio = \( A_1/A_2 \)
DNA concentration = \( 62.9 \times A_1 - 36.0 \times A_2 \)
Protein concentration = \( 1552.0 \times A_2 - 757.3 \times A_1 \)

References

Trace Sample Measurements

Spectral measurements of a 100 µL of dsDNA sample were performed using a supermicro cell holder. A conventional square cell with a path length of 10 mm requires approx. 3.5 mL of sample. However, a supermicro cell allows measurements with a 100 µL to 200 µL sample.

Program: Spectrum
Accessories: supermicro cell, supermicro cell holder, and sample compartment unit

Culture Fluid Turbidity Measurements

If the photometric function is used, dilution and other coefficients can be calculated automatically. In addition, measure microbial counts as is in test tubes using the test tube holder (special order product).

Program: Photometric
Accessory: Test tube holder

The sample compartment unit (P/N 206-60184-07) is separately required.
Applications

Chemicals

A wealth of accessories enables analysis of a variety of samples, including liquids and films. In addition, the UV-1280 can accommodate both spectral and quantitation measurements.

Transmittance Measurements of Films

This is an example of a spectral measurement of colored cellophane. Absorption by the red colored cellophane is evident at around 530 nm, and by the blue colored cellophane at around 650 nm.

Program: Spectrum
Accessories: sample compartment unit and film holder

Foods

Perform single wavelength measurements with a single touch of a button. Coefficients can also be calculated simultaneously. The data is exported to a CSV file, simplifying subsequent analysis. In addition to quantitation using one or two wavelengths, a multi-component quantitation function using multiple peaks is also included as standard.

Color Value Measurements of Food Dyes

Dye concentrations (color values) were determined by measuring the absorbance. Conventionally, the color value is determined by measuring the absorbance at the wavelength of maximum absorption in the visible range in the solution with the food coloring, and then converting the value to the absorbance for a 10 w/v% solution (E10 % 1 cm).

Program: Spectrum
Accessory: 10-mm standard cell

Measurement Results

<table>
<thead>
<tr>
<th>Sample Name</th>
<th>Collected Material (g)</th>
<th>F</th>
<th>Cell Used</th>
<th>λmax</th>
<th>ABS</th>
<th>Color Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blue Dye #1</td>
<td>0.500</td>
<td>1000</td>
<td>STDCELL</td>
<td>629.5</td>
<td>0.7488</td>
<td>14976</td>
</tr>
<tr>
<td>Red Dye #2</td>
<td>0.100</td>
<td>100</td>
<td>STDCELL</td>
<td>521.5</td>
<td>0.3889</td>
<td>3889</td>
</tr>
<tr>
<td>Yellow Dye #4</td>
<td>0.100</td>
<td>100</td>
<td>STDCELL</td>
<td>426.5</td>
<td>0.4611</td>
<td>4611</td>
</tr>
</tbody>
</table>

Color Value = \(10 \times A \times F\)

F: Dilution rate to adjust the measured absorbance so that it falls in a range between 0.3 and 0.7
A: Measured absorbance
Environmental

Easily perform both transmitted light turbidity measurements and RoHS hexavalent chromium quantitation with a simple quantitation program. In addition to the standard sample chamber for 10-mm cells, you can use a long path length cell for measuring low concentration solutions, or a sipper unit that does not require a cell.

**Transmitted Light Turbidity Measurement as per JIS K0101**
"Testing Methods for Industrial Water"

In accordance with JIS K0101, a standard formazin solution was prepared. The absorbance at 660 nm was measured, and a calibration curve was created. A rectangular cell with a 50 mm path length is used for turbidities of 4 to 80 degrees, and a square cell with a 10 mm path length for 20 to 400 degrees.

Program: Quantitation
Accessories: Sample compartment unit, long-path rectangular cell holder, and a 50-mm rectangular cell

\[
\text{Abs} = K_1 C + K_0 \\
K_1 = 1.5908 \times 10^{-3} \\
K_0 = 1.0420 \times 10^{-2} \\
r^2 = 0.9996
\]
Multi-Sample Measurements

Measurements Using Multiple Cells

When measuring multiple samples under the same conditions, it is convenient to use the four-cell sample compartment unit and the six-cell sample compartment, which are capable of automatically measuring multiple positioned cells. A 4-cell-type universal rectangular cell holder is also available to accommodate long-path rectangular cells.

Accessories: various cells, four-cell sample compartment unit, six-cell sample compartment, and the 4-cell-type universal rectangular cell holder

Multi-Sample Measurements without Cells

Using a sipper allows measurements without transferring samples to cells. Both a peristaltic pump type sipper unit and a syringe sipper with a syringe pump system are available. With the sipper unit 160C and the syringe sipper model CN, the temperature can be controlled via a circular flow of water at a constant temperature. Combining the instrument with an auto sample allows automatic measurements from up to 100 test tubes. A test tube holder (available by special order) allows performing measurements by placing the test tubes directly in the sample chamber instead of using cells. The measurements can be performed with the test tube lids left sealed, which is convenient for measurements of culture fluids.

Accessories: various sipper units, syringe sipper, auto sample changer, and test tube holder (cells not required)
Optional Software

Water Analysis Program
P/N 207-22430-42/43

Easy and accurate water analysis can be conducted in combination with simplified reagents.
- There are 39 analysis items in 22 types of samples, and all the analysis conditions are installed.
  Just select an item (including measurement of wavelength, calibration curve, measuring time, and measurement concentration range for each individual item) and the conditions will be set automatically.
- Required sample volume is only approx. 1.5mL.
- Results can be acquired even without analytical knowledge through operation in accordance with screen instructions. The pack comes with an analysis guide which displays the number of the reagent to be used and the operation procedure, so there is no need to refer to the manual.
- If the optional multicell holder (6 cells) is used, up to six cells can be measured consecutively in one analysis.
- Automatic analysis commences after a specified time. The elapsed time is displayed on screen, concentration values are displayed automatically after the specified time has elapsed, and a buzzer sounds to state that analysis is complete.

Note: Water analysis program cannot work with Sipper unit.

List of Measurable Items

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>ClO</td>
<td>Residual Chlorine (Free)</td>
</tr>
<tr>
<td>CN</td>
<td>Free Cyanide</td>
</tr>
<tr>
<td>COD</td>
<td>COD</td>
</tr>
<tr>
<td>Cr</td>
<td>Color</td>
</tr>
<tr>
<td>6+</td>
<td>Chromium (Hexavalent)</td>
</tr>
<tr>
<td>50</td>
<td></td>
</tr>
<tr>
<td>Cr+</td>
<td>Total Chromium</td>
</tr>
<tr>
<td>Cu</td>
<td>Copper</td>
</tr>
<tr>
<td>Fe</td>
<td>Iron</td>
</tr>
<tr>
<td>Fe (D)</td>
<td>Low Range</td>
</tr>
<tr>
<td>H2O2</td>
<td>Formaldehyde</td>
</tr>
<tr>
<td>Mn</td>
<td>Manganese</td>
</tr>
<tr>
<td>NH4</td>
<td>Ammonium</td>
</tr>
<tr>
<td>NH4-N</td>
<td>Ammonium-Nitrogen</td>
</tr>
<tr>
<td>Ni</td>
<td>Nickel</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| NO2 | Nitrite          |
| NO3 (1) |                  |
| NO3 (2) |                  |
| NO3 (3) |                  |
| NO2-N | Nitrite-Nitrogen |
| NO3-N (1) | Nitrate-Nitrogen |
| NO3-N (2) | Nitrate          |
| NO3-N (3) | Lead            |
| Pb  | Phenol           |
| PO4 | Phosphoric Acid  |
| PO4 (D) |                |
| PO4-P | Phosphate-Phosphoric |
| PO4-P (D) |        |
| S  | Sulfide (Hydrogen Sulfide) |
| TH  | Total Hardness   |
| Turbid (FTU) | Turbidity    |
| Turbid (PS) |                  |
| Zn (D) | Zinc            |

For detailed information of PACKTEST and reagent, please contact:
KYORITSU CHEMICAL-CHECK Lab., Corp.
5-37-11, Den-enchofu, Ota-ku, Tokyo, 145-0071, JAPAN
Phone: +81-3-3721-9207 FAX: +81-3-3721-0666
http://kyoritsu-lab.co.jp/english/index.html
## Accessories

### Film Holder

**P/N 204-58909**

Used in transmittance measurement of thin samples such as films and filters. Holds thin samples, such as films and filters, for analysis.

**Sample Size**
- Minimum: 16 (W) x 32 (H) mm  
- Maximum: 80 (W) x 40 (H) x 20 (T) mm

**Note**
The sample compartment unit (P/N 206-60184-07) is required.

### Didimium Filter

**P/N 202-30242-09**

These are used for operational checks of the instrument.

### Holmium Filter

**P/N 202-30242-05**

These are used for operational checks of the instrument.

### Four-Cell Sample Compartment Unit

**P/N 206-23670-91**

Accommodates 4-cell holders of various types.

- Incorporates a 4-cell holder for a standard cell.

### Sample Compartment Unit

**P/N 206-60184-07**

This is needed when using the various cell holders (micro flow cell, long-path rectangular cell, cylindrical cell, film holder, constant-temperature cell, etc.).

### Six-Cell Sample Compartment

**P/N 206-60605-42**

**Note** Rectangular cells are not included. Purchase them separately.

### Four-Cell Type 50-mm Long-Path Rectangular Cell Holder

**P/N 206-65898-41**

This is attached instead of the six-cell holder, enabling placement of up to four 50-mm long-path rectangular cells. Cells are switched automatically in sync with the measurements as with a multi-cell.

### Spacers for Short-Path Cells

**P/N 204-21473-XX**

If samples are too concentrated and cannot be measured with the standard 10-mm path cell, they can be measured without dilution using a short-path cell. Spacers are available for 1 mm, 2 mm, and 5 mm path cells. As shown in the figure at right, the spacer is mounted in a standard rectangular cell holder in conjunction with a short-path cell.

### Universal Rectangular Cell Holder, Four-Cell Type

**P/N 204-27208**

Holds rectangular cells with an optical path length of 10, 20, 30, or 50 mm.

### Reference-Side Long-Path Rectangular Cell Holder

**P/N 204-28720**

If using a 4-cell-type universal rectangular cell holder, use a reference-side cell holder if necessary.

### Spacers for Short-Path Cells

**P/N 204-21473-03, 204-21473-01, 204-21473-02**

1 mm, 2 mm, 5 mm

### Didimium Filter

**P/N 202-30242-09**

These are used for operational checks of the instrument.

### Holmium Filter

**P/N 202-30242-05**

These are used for operational checks of the instrument.

### Note

The four-cell sample compartment unit (P/N 206-23670-91) is required.

When a long-path rectangular cell is used on the reference side, its holder (P/N 204-28720) is additionally required.

### Note

The multi-cell sample compartment (P/N 206-60605-42) is required.
Spacers for Short-Path Cells

P/N 204-21473-XX

- If samples are too concentrated and cannot be measured with the standard 10-mm path cell, they can be measured without dilution using a short-path cell.
- Spacers are available for 1 mm, 2 mm, and 5 mm path cells. As shown in the figure at right, the spacer is mounted in a standard rectangular cell holder in conjunction with a short-path cell.

<table>
<thead>
<tr>
<th>P/N</th>
<th>Optical Path Length</th>
</tr>
</thead>
<tbody>
<tr>
<td>204-21473-03</td>
<td>1mm</td>
</tr>
<tr>
<td>204-21473-01</td>
<td>2mm</td>
</tr>
<tr>
<td>204-21473-02</td>
<td>5mm</td>
</tr>
</tbody>
</table>

Universal Rectangular Cell Holder, Four-Cell Type

P/N 204-27208

Holds rectangular cells with an optical path length of 10, 20, 30, or 50 mm.

Note

The four-cell sample compartment unit (P/N 206-23670-91) is required. When a long-path rectangular cell is used on the reference side, its holder (P/N 204-28720) is additionally required.

Reference-Side Long-Path Rectangular Cell Holder

P/N 204-28720

If using a 4-cell-type universal rectangular cell holder, use a reference-side cell holder if necessary.

Four-Cell Type 50-mm Long-Path Rectangular Cell Holder

P/N 206-65898-41

This is attached instead of the six-cell holder, enabling placement of up to four 50-mm long-path rectangular cells. Cells are switched automatically in sync with the measurements as with a multi-cell.

Applicable Cell
Rectangular cell (50 mm path length); P/N: 200-34944

Note

The multi-cell sample compartment (P/N 206-60605-42) is required.

Long-Path Rectangular Cell Holder

P/N 204-23118-01

Holds rectangular cells with an optical path length of 10, 20, 30, or 50 mm.

Note

The sample compartment unit (P/N 206-60184-07) is required. The 100 mm rectangular cell cannot be used.
Long-Path Rectangular Cell Holder (For Wide Cells)
P/N 206-69421

Typically, only long-path rectangular cells up to 50 mm path length can be used, due to the restriction of beam width. However, this holder, designed while taking beam width into account, allows using cells with a longer path length. With special cells, path lengths of 100 mm can be used.

Note The sample compartment unit (P/N 206-60184-07) is required.

Long-Path Rectangular Cell (Wide Type)

This is a glass 15 mm wide long-path rectangular cell, which is wider than the conventional 10 mm wide cell. A special lid is provided, which is effective in preventing the sample from spilling out of the cell.

<table>
<thead>
<tr>
<th>Optical Path Length</th>
<th>P/N</th>
<th>Special Lid P/N</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 mm</td>
<td>200-66599-01</td>
<td>200-66600-01</td>
</tr>
<tr>
<td>33 mm</td>
<td>200-66599-02</td>
<td>200-66600-02</td>
</tr>
<tr>
<td>50 mm</td>
<td>200-66599-03</td>
<td>200-66600-03</td>
</tr>
<tr>
<td>100 mm</td>
<td>200-66599-04</td>
<td>200-66600-04</td>
</tr>
</tbody>
</table>

Cylindrical Cell Holder

P/N 204-06216-02

Holds two cylindrical cells with an optical path length of 10, 20, 50, or 100 mm.

Note The sample compartment unit (P/N 206-60184-07) is required.

Super Micro Cell Holder

P/N 206-14334-01

Holds super micro cells for measurement of extremely small volume samples. The cell height is adjustable, and the required sample volume can be adjusted in the range of 100 to 200 µL, depending on the type of black cell used.

Applicable cells: (7), (7)', and (8) in the list of cells on page XXX.

Mask: Choice of 1.5 (W) x 1 (H) mm or 1.5 (W) x 3 (H) mm

When using a 5-mm super micro black cell, the measurement with 50 µL sample is available.

Note The sample compartment unit (P/N 206-60184-07) is required.

* The quantity of light passing through the cell is reduced, so it may not be possible to satisfy the optical specifications of the instrument.
Micro Cell Mask for Six-Cell Holder

P/N 206-66828

This mask is used to narrow the beam width when micro cells are placed in the multi-cell sample compartment for measurement.

Applicable Cell
- Semi-micro cell (10 mm path length)
  - P/N 200-66501 (silica)
  - P/N 200-66501-01 (glass)
- Semi-micro black cell (10 mm path length)
  - P/N 200-66551 (silica)

Note: The quantity of light passing through the cell is reduced, so it may not be possible to satisfy the optical specifications of the instrument.

Constant-Temperature Cell Holder

P/N 202-30858-04

Maintains a sample cell and reference cell at a desired, uniform temperature by circulating constant-temperature water.

- Temperature range: 5 °C to 90 °C
  (depends on the performance of the constant-temperature water circulator)
- Cell holder: Accepts a pair of standard cells.
- Connecting joint outer diameter: 6 mm and 9 mm (two levels)

Note: The sample compartment unit (P/N 206-60184-07) is required.

Constant-Temperature Four-Cell Holder

P/N 204-27206-02

Maintains four sample cells and a reference cell at a desired, uniform temperature by circulating constant-temperature water.

- Temperature range: 5 °C to 90 °C
  (depends on the performance of the constant-temperature water circulator)
- Cell holder: Accepts four standard cells plus a reference cell.
- Connecting joint outer diameter: 9 mm

Note: The four-cell sample compartment unit (P/N 206-23670-91) is required.
NTT-2200P Constant-Temperature Water Circulator

P/N 208-97263

Circulates temperature-controlled water to a constant-temperature cell holder.

- Temperature range: Ambient +15 °C to 80 °C
- Temperature control precision: ±0.05 °C or more
- Maximum pumping rate: 27/31 L/min, 9.5/13 m (50/60 Hz)
- External circulation nozzle: 10.5 mm OD (both outlet and return)
- Tank capacity: About 10 L (9 L during use)
- Safety features: Detection of over-temperature of upper or lower limits; detection of heater wire malfunction; protection from heating too little circulating water; detection of sensor malfunction; independent over-heat protection; over-current circuit protector
- Standard accessories: Lid with handles; rubber hose (4 m; inner diameter: 8 mm; outer diameter: 12 mm; quantity: 1); hose clamps (4 pcs); instruction manual (Japanese and English)
- Dimensions: W270 × H560 × D400 mm
- Power requirements: 100 VAC, 1,250 VA, with 1.7-m power cord and grounded plug

Note NTT-220P cannot be used for S-1700 or TMSPC-8.

CPS-100 Cell Positioner, Thermoelectrically Temperature Controlled

P/N 206-29500-42/43/58

This attachment permits measurement of up to six sample cells under constant-temperature conditions.

- Number of cells: 6 on the sample side (temperature-controlled)
- Temperature control range: 16 °C to 60 °C
- Temperature display accuracy (difference from the true value): ±0.5 °C
- Temperature control precision (variation of temperature): ±0.1 °C
- Ambient temperature: 15 °C to 35 °C

Note A standard cell (P/N 200-34442) is not included. A USB adapter CPS (P/N 206-25234-91) is required. Purchase them separately.

TCC-100 Thermoelectrically Temperature-Controlled Cell Holder

P/N 206-29510-42/43/44

Uses Peltier effect for controlling the sample and reference temperature, so no thermostated bath or cooling water is required.

- Number of cells: 1 on the sample side (temperature-controlled)
- Temperature control range: 7 °C to 60 °C
- Temperature display accuracy (difference from the true value): ±0.5 °C
- Temperature control precision (variation of temperature): ±0.1 °C

Note A standard cell (P/N 200-34442) is not included. Purchase it separately.
Circulates temperature-controlled water to a constant-temperature cell holder.

Temperature range: Ambient +15 °C to 80 °C

Temperature control precision: ±0.05 °C or more

Maximum pumping rate: 27/31 L/min, 9.5/13 m (50/60 Hz)

External circulation nozzle: 10.5 mm OD (both outlet and return)

Tank capacity: About 10 L (9 L during use)

Safety features: Detection of over-temperature of upper or lower limits; detection of heater wire malfunction; protection from heating too little circulating water; detection of sensor malfunction; independent over-heat protection; over-current circuit protector

Standard accessories: Lid with handles; rubber hose (4 m; inner diameter: 8 mm; outer diameter: 12 mm; quantity: 1); hose clamps (4 pcs); instruction manual (Japanese and English)

Dimensions: W270 × H560 × D400 mm

Power requirements: 100 VAC, 1,250 VA, with 1.7-m power cord and grounded plug

**Sipper Unit 160L (Standard Sipper)**
P/N 206-23790-51

**Sipper Unit 160T (Triple-Pass Sipper)**
P/N 206-23790-52

**Sipper Unit 160C (Constant-Temperature Sipper)**
P/N 206-23790-53

**Sipper Unit 160U (Supermicro Sipper)**
P/N 206-23790-94

Four sipper units with different flow cell types are available. The stepping motor-driven peristaltic pump ensures reliable and smooth aspiration of sample solution.

(Direct driving is possible from the UV-1280 so no interface is required.)

**Note**
- The use of a solenoid valve (fluoropolymer) (P/N 204-06599-01) and the SWA-2 sample waste unit (P/N 206-23820-58) are recommended when strong acids, strong alkalis, or organic solvents are to be measured.
- The quantity of light passing through the cell is reduced, so it may not be possible to satisfy the optical specifications of the instrument.

**Syringe Sipper**

<table>
<thead>
<tr>
<th>Model</th>
<th>P/N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Syringe Sipper N (Normal temperature type)</td>
<td>206-23890-51</td>
</tr>
<tr>
<td>Syringe Sipper CN (Constant temperature, water circulator type)</td>
<td>206-23890-92</td>
</tr>
</tbody>
</table>

The sipper unit employs a syringe-pump system. The liquid-contact surfaces are composed of fluoropolymer, glass, or quartz, imparting excellent chemical resistance and ease of maintenance, and allowing measurement of almost any sample type. Further, the extremely high repeatability of sipping volume (repeat precision: ±0.03 mL) makes it ideal when performance validation is required.

- The type of flow cell can be selected in accordance with the application.
- The flow cell can be changed independently for excellent ease of maintenance.
- Circulated-water temperature range: ambient to 60 °C (CN type)

**Recommended Flow Cells**

<table>
<thead>
<tr>
<th>Model</th>
<th>P/N</th>
<th>Optical Path Length</th>
<th>Dimensions of Aperture</th>
<th>Standard Required Sample Volume</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rectangular (micro)</td>
<td>208-92113</td>
<td>10mm</td>
<td>ø0.8mm</td>
<td>1.0mL</td>
</tr>
<tr>
<td>Rectangular (semi-micro)</td>
<td>208-92005</td>
<td>10mm</td>
<td>H11xW9.5mm</td>
<td>5.0mL</td>
</tr>
</tbody>
</table>

**Note**
- The sample compartment unit (P/N 206-60184-07) is required.
- If a rectangular flow cell (micro) is used, attaching mask R (206-88679) to the reference cell holder is recommended to balance the light intensity. Flow cells available separately. Choose from the recommended flow cells listed below.
This enables connection with the Gilson GX-271 Liquid Handler. The liquid handler automatically performs a variety of pretreatments, including sample dispensing and dilution, and the addition of reagents. This connection kit interfaces the spectrophotometer and the liquid handler.  
• The connection kit consists of a flow cell unit and connection cable.

**ASC-5 Auto Sample Changer**
P/N 206-23810-92/93
Combine with a Sipper 160 to build an automated multisample spectrophotometry system.

- The aspirating nozzle is programmed to move in the X, Y, and Z (vertical) directions.
- Up to 8 sets of operational parameters, including the sizes of racks and the numbers of test tubes, may be memorized in the battery back-up protected files.
- Up to 100 test tubes may be set together on the rack.

**Note** A commercially available test tube stand, with a footprint smaller than 220 × 220 mm, is applicable.

**10 mm Micro Flow-Thru Cell with Holder**
P/N 204-06222

**5 mm Micro Flow-Thru Cell with Holder**
P/N 204-06222-01
Used for the continuous analysis of samples such as the liquids produced by column chromatography.

- Inner diameter of tube: 1 or 2 mm

**Front Panel with Holes**
P/N 204-27588-03
Allows the tubes of a flow cell, for example, to be connected through the front panel of the instrument.

**Note** The sample compartment unit (P/N 206-60184-07) is required.

**UV Automated System Connection Kit**
P/N 206-80880-02

This enables connection with the Gilson GX-271 Liquid Handler. The liquid handler automatically performs a variety of pretreatments, including sample dispensing and dilution, and the addition of reagents. This connection kit interfaces the spectrophotometer and the liquid handler.

- The connection kit consists of a flow cell unit and connection cable.

**Note** The sample compartment unit (P/N 206-60184-07) is required.
This enables connection with the Gilson GX-271 Liquid Handler. The liquid handler automatically performs a variety of pretreatments, including sample dispensing and dilution, and the addition of reagents. This connection kit interfaces the spectrophotometer and the liquid handler.

The connection kit consists of a flow cell unit and connection cable.

**UV Automated System Connection Kit**
P/N 206-80880-02

Combine with a Sipper 160 to build an automated multisample spectrophotometry system.

The aspirating nozzle is programmed to move in the X, Y, and Z (vertical) directions.

Up to 8 sets of operational parameters, including the sizes of racks and the numbers of test tubes, may be memorized in the battery back-up protected files.

Up to 100 test tubes may be set together on the rack.

**ASC-5 Auto Sample Changer**
P/N 206-23810-92/93

A commercially available test tube stand, with a footprint smaller than 220 × 220 mm, is applicable.

The sample compartment unit (P/N 206-60184-07) is required.

Used for the continuous analysis of samples such as the liquids produced by column chromatography.

Inner diameter of tube: 1 or 2 mm

**10 mm Micro Flow-Thru Cell with Holder**
P/N 204-06222

**5 mm Micro Flow-Thru Cell with Holder**
P/N 204-06222-01

**P/N Optical Path Length Volume**
204-06222
204-06222-01

**10 mm**
0.3mL

**5 mm**
0.15mL

**P/N Description Country / Region**
088-52083-36
088-52083-38
088-52083-51
088-52083-52

**Cable CB-US04-18A-E**
**Cable CB-CE01-18B-E**
**Cable CB-UK01-20A-E**
**Cable CB-CH01-20A-E**

U.S., Canada
EU, EFTA
UK
China

Allows the tubes of a flow cell, for example, to be connected through the front panel of the instrument.

**Front Panel with Holes**
P/N 204-27588-03

**Note**

- Dimensions: W145×D135×H58 mm
- Weight: 490 g (without the adapter)
- Thermal paper (10 rolls; P/N 088-58907-04)

Allows the tubes of a flow cell, for example, to be connected through the front panel of the instrument.

**Cells**

<table>
<thead>
<tr>
<th>Description</th>
<th>Optical Path (L)</th>
<th>Required Sample Volume</th>
<th>Type</th>
<th>Fused Silica (S)</th>
<th>Glass (G)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rectangular cell</td>
<td>10mm</td>
<td>2.5 to 4.0mL</td>
<td>①</td>
<td>200-34442</td>
<td>208-92296</td>
</tr>
<tr>
<td></td>
<td>20mm</td>
<td>5.0 to 8.0mL</td>
<td>②</td>
<td>200-34446</td>
<td>200-34446-01</td>
</tr>
<tr>
<td></td>
<td>50mm</td>
<td>12.5 to 20.0mL</td>
<td>③</td>
<td>200-34944</td>
<td>200-34944-01</td>
</tr>
<tr>
<td>Rectangular cell with stopper</td>
<td>10mm</td>
<td>2.5 to 4.0mL</td>
<td>④</td>
<td>200-34444</td>
<td>200-34444-01</td>
</tr>
<tr>
<td>Semi-micro cell</td>
<td>10mm</td>
<td>1.0 to 1.6mL</td>
<td>⑤</td>
<td>200-66501</td>
<td>200-66501-01</td>
</tr>
<tr>
<td>Semi-micro black cell</td>
<td>10mm</td>
<td>1.0 to 1.6mL</td>
<td>⑥**</td>
<td>200-66551</td>
<td>—</td>
</tr>
<tr>
<td>Super Micro black cell</td>
<td>5mm</td>
<td>50 to 100µL</td>
<td>⑦**</td>
<td>208-92116</td>
<td>—</td>
</tr>
<tr>
<td></td>
<td>10mm</td>
<td>100 to 200µL</td>
<td>⑧</td>
<td>200-66578-11</td>
<td>—</td>
</tr>
<tr>
<td>Micro black cell</td>
<td>10mm</td>
<td>100 to 400µL</td>
<td>⑨</td>
<td>200-66578-12</td>
<td>—</td>
</tr>
<tr>
<td></td>
<td>10mm</td>
<td>3.8mL</td>
<td>⑩</td>
<td>200-34448</td>
<td>200-34448-01</td>
</tr>
<tr>
<td></td>
<td>20mm</td>
<td>7.6mL</td>
<td>⑪</td>
<td>200-34472</td>
<td>200-34472-01</td>
</tr>
<tr>
<td></td>
<td>50mm</td>
<td>19.0mL</td>
<td>⑫</td>
<td>200-34473-01</td>
<td>200-34473-03</td>
</tr>
<tr>
<td></td>
<td>100mm</td>
<td>38.0mL</td>
<td>⑬</td>
<td>200-34473-02</td>
<td>200-34473-04</td>
</tr>
<tr>
<td>Cylindrical cell</td>
<td>1mm</td>
<td>0.3 to 0.4mL</td>
<td>⑭</td>
<td>200-34660-01</td>
<td>200-34662-01</td>
</tr>
<tr>
<td></td>
<td>2mm</td>
<td>0.5 to 0.8mL</td>
<td>⑮</td>
<td>200-34655</td>
<td>200-34662-11</td>
</tr>
<tr>
<td></td>
<td>5mm</td>
<td>1.3 to 2.0mL</td>
<td>⑯</td>
<td>200-34449</td>
<td>200-34449-01</td>
</tr>
</tbody>
</table>

**Note**

- *1 The micro cell mask for six-cell holder (206-66828) is required when Multi-Cell Sample Compartment is used.
- *2 The super Micro cell holder (206-14334-01) is required.
- *3 A 1.5 x 3 mm mask is applicable.
# Specifications

<table>
<thead>
<tr>
<th>Photometric system</th>
<th>Monitor double beam optics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monochromator</td>
<td>Uses an aberration correcting concave holographic grating</td>
</tr>
<tr>
<td>Wavelength range</td>
<td>190.0 to 1100.0 nm</td>
</tr>
<tr>
<td>Spectral bandwidth</td>
<td>5 nm</td>
</tr>
<tr>
<td>Detector</td>
<td>Silicon photodiode</td>
</tr>
<tr>
<td>Light source</td>
<td>20 W halogen lamp Deuterium lamp</td>
</tr>
<tr>
<td>Output device</td>
<td>USB memory (optional)</td>
</tr>
<tr>
<td>PC control</td>
<td>UVProbe control</td>
</tr>
<tr>
<td>Power requirements</td>
<td>100 to 240 V, 50/60 Hz, 140 VA</td>
</tr>
<tr>
<td>Environmental requirements</td>
<td>Temperature: 15 °C to 35 °C Humidity: 30 % to 80 % Humidity of 70 % or less at temperatures of 30 °C or higher</td>
</tr>
<tr>
<td>Dimensions</td>
<td>W416 x D379 x H274 mm</td>
</tr>
<tr>
<td>Weight</td>
<td>10 kg</td>
</tr>
</tbody>
</table>

## Software mode

<table>
<thead>
<tr>
<th>Software mode</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Photometric mode</td>
</tr>
<tr>
<td>2. Spectrum mode</td>
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<tr>
<td>3. Quantitation mode</td>
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<tr>
<td>4. Kinetics mode</td>
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<tr>
<td>5. Time scan mode</td>
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<tr>
<td>6. Multi-component quantitation mode</td>
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<tr>
<td>7. Biomethod mode</td>
</tr>
</tbody>
</table>

## Maintenance / inspection functions

<table>
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<tr>
<th>Maintenance / inspection functions</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Baseline correction</td>
</tr>
<tr>
<td>2. Lamp usage time display and reset.</td>
</tr>
<tr>
<td>3. Security settings</td>
</tr>
<tr>
<td>4. Instrument validation functions</td>
</tr>
</tbody>
</table>
UV-1280
UV/VIS Spectrophotometer

Specifications

Photometric system
- Monitor double beam optics
  - Uses an aberration correcting concave holographic grating

Wavelength range: 190.0 to 1100.0 nm
Spectral bandwidth: 5 nm

Detector
- Silicon photodiode

Light source
- 20 W halogen lamp
- Deuterium lamp

Output device
- USB memory (optional)
- UVProbe control

PC control
- UVProbe control

Power requirements
- 100 to 240 V, 50/60 Hz, 140 VA

Environmental requirements
- Temperature: 15 °C to 35 °C
- Humidity: 30 % to 80 %
- Humidity of 70 % or less at temperatures of 30 °C or higher

Dimensions
- W416 × D379 × H274 mm

Weight
- 10 kg

Software mode
- 1. Photometric mode
- 2. Spectrum mode
- 3. Quantitation mode
- 4. Kinetics mode
- 5. Time scan mode
- 6. Multi-component quantitation mode
- 7. Biomethod mode

Maintenance / Inspection functions
- 1. Baseline correction
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- 3. Security settings
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