Cole-Parmer®

SP-400 Series Spectrophotometers

- Scanning diode array technology
- Compact and lightweight with a small footprint
- USB ports for data storage and printer connectivity
- Ideal for applications in education and routine testing in clinical, veterinary, pharmaceutical, and QC laboratories



DOMINIQUE DUTSCHER SAS

SP-400 Series Spectrophotometers

The SP-400 series spectrophotometers are the first scanning spectrophotometers in our range to leverage diode array technology to produce exceptionally fast results. The range includes two models. Model SP-400-VIS covers a wavelength range of 335 to 800 nm with a spectral bandwidth of 7 nm. Model SP-400-UV covers a wavelength range of 198 to 800 nm with a spectral bandwidth of 5 nm.

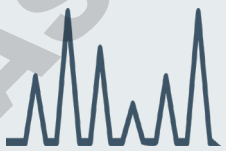
The SP-400 series spectrophotometers are covered by a 2 year warranty.

Key Features

- Scanning diode array technology
- Color touchscreen navigation
- Small footprint and lightweight
- Fast scan speed
- English, French and German language options
- Multiple USB ports for data storage and printer connectivity
- Extensive range of accessories available
- 2 year warranty

Measurement Modes

Both models offer measurement modes for single wavelength with basic absorbance and percent transmittance. Concentration can be calculated using a known factor or by measuring a single standard. Up to six standards can also be measured to create a quantitation curve, with the option to measure each standard up to three times. Optical density can be measured at 600 nm, which is ideal for cell harvesting.



Multiple measurement modes available



USB ports for data storage and printer connectivity



Scanning diode array technology



Color touchscreen user interface

DOMINIQUE DUTSCHER SAS

SP-400 Series Spectrophotometers

Measurement Modes (continued)

Both models perform an exceptionally fast spectrum scan across the entire wavelength range in less than 6 seconds; displaying the results at 1 nm resolution across the selected range.

The kinetics measurement mode can be used to measure the change in absorbance over time for up to 3 wavelengths simultaneously. The concentration can also be calculated following completion of the kinetics experiment.

Diode Array Technology

The benefits of diode array technology include very fast scanning with the ability to scan the entire wavelength range of 198 to 800 nm in less than 3 seconds for (model SP-400-UV), which is ideal for fast chemical reactions and denaturing materials. Traditional spectrophotometers use stepper motors to select the required wavelength. With diode array technology, each wavelength is selected by electrical scanning, which results in excellent wavelength reproducibility. Diode array optics are very reliable and require very little maintenance.

Due to the reversed optic structure utilized by the SP-400 series spectrophotometers, they are not affected by ambient stray light so experiments can be performed with the lid open. This is ideal for samples in tall test tubes, or where fast access is required for kinetics experiments where the prompt introduction of the reaction component is required.

With diode array technology, each time a measurement is performed the absorbance is recorded across the entire wavelength range regardless of the wavelength selected. Therefore, if a sample is measured incorrectly at 555 nm instead of 550 nm, there is no need to perform another blank and measure the sample again. Adjusting the wavelength range to the desired wavelength will automatically display the photometric results at that wavelength, saving valuable time.

Display

The color touchscreen user interface provides fast and easy setup and navigation of the instrument. The 4-inch display allows full spectrum scans, quantitation curves and kinetics runs to be viewed easily. The touchscreen capability enables users to zoom in and out and select spectral analysis points, all by simply tapping the screen.

DOMINIQUE DUTSCHER SAS

SP-400 Series Spectrophotometers

USB Connectivity

There are two USB ports for data storage and printer connectivity. The easy-access USB port on the front of the instrument can be used to easily store results and transfer data as tab delimited text files to Microsoft® Excel®. As well as results storage, quantitation curves can also be saved to a USB memory stick for easy and quick access, so there is no need to recreate the calibration curve each time you need to perform a measurement. User selected spectral analysis points (up to 50) can also be saved to USB memory stick or printed. The front USB port can also be used for software updates so it is easy to keep up to date with the latest software version.

The USB port on the rear of the instrument can be used for connection to the optional external printer for instant results. The spectrum scans and kinetics runs are printed in a vertical orientation to maximize the amount of information displayed. The spectrophotometers can also be configured to save results automatically to a USB memory stick or to automatically print to the external printer.

Sample Chamber

The instruments have been cleverly designed to incorporate a large sample chamber into a very small footprint, ideal when bench space is at a premium. The large sample chamber allows easy access for loading and unloading samples. It has been designed with a tapered base so that any accidental spillage will drain away, making it easy to clean.

The sample chamber will easily accommodate the optional long pathlength cuvette holder or the heated cuvette holder.

Cuvette Rack

There is a handy built-in cuvette rack for convenient storage of samples and blanks which keeps the bench space tidy and clutter free.

Design

The SP-400 series spectrophotometers use a 1024-element diode array detector with a tungsten halogen lamp or a xenon lamp which gives good intensity over the whole spectrum with low noise and drift. Both lamps are press to read which increases the lamp’s lifespan.

DOMINIQUE DUTSCHER SAS

SP-400 Series Spectrophotometers

Accessories

The SP-400 series spectrophotometers have been designed to be compatible with an extensive range of accessories. Accessories include a test tube holder, rectangular long-path cell holder (10 to 100 mm), micro-cuvette holder, heated cuvette holder, and a printer. All of the accessories are easy to interchange using the ergonomic thumb screw.

For applications where the temperature of the sample needs to be controlled, there is a heated cuvette accessory. The heated cuvette holder accepts a 10 x 10 mm cuvette and enables 2.5 mL of sample to be heated to 37 °C in 30 minutes. When this accessory is fitted, the instrument automatically detects it upon power up and the software controls become active. The heated cuvette holder has a temperature range of 32 °C to 42 °C in 0.5 °C increments. It can easily be fitted and removed without the need for any tools.

Both models are supplied with a 10 x 10 mm cuvette as standard. The sample chamber lid can also be left open during measurements which is ideal for samples in tall test tubes.

Test Tube Holder

For larger sample volumes we offer a holder that can hold test tubes with diameters of 16 or 24 mm. Also accepts 10 x 10 mm square cuvettes.

Rectangular Long-Path Cell Holder

Where cuvettes greater than 10 mm are required, we offer an adjustable pathlength cuvette holder that can accept cuvettes with a pathlength from 10 to 100 mm.

Micro-Cuvette Holder

For small sample volumes down to 50 µL, we offer a micro-cuvette holder which is ideal for use with micro-cuvettes.

Test Tube Holder



Rectangular Long-Path Cell Holder



Micro-Cuvette Holder



Heated Cuvette Holder



Printer



DOMINIQUE DUTSCHER SAS

SP-400 Series Spectrophotometers

Accessories (continued)

Heated Cuvette Holder

For applications where the temperature of the sample needs to be controlled, we offer a heated cuvette accessory. The heated cuvette holder accepts 10 x 10 mm cuvettes and can be easily fitted and removed without the need for any tools. This accessory has a temperature range of 32 °C to 42 °C. The heated cell accessory is supplied with a US, UK and EU power lead which is required to power the spectrophotometer and the heated cuvette holder.

Printer

The printer connects to the spectrophotometer via the USB port on the rear of the instrument and will provide instant results. Spectrum and kinetics graphs are printed in the vertical direction to maximize the amount of information displayed. The spectrophotometer can be set up to automatically send results to the printer. Printer has a rechargeable battery and is supplied with US, UK and EU power leads.

Technical Specifications

Model	SP-400-VIS	SP-400-UV
Wavelength		
Range	335 to 800 nm	198 to 800 nm
Accuracy	±2 nm	±2 nm
Repeatability	±2 nm	±2 nm
Spectral bandwidth	7 nm	5 nm
Photometrics		
Transmittance	0 to 199.9%	0 to 199.9%
Absorbance	–0.3 to 2.5 A	–0.3 to 2.5 A
Accuracy	±0.01 A at 1 A and 546 nm	±0.01 A at 1 A and 546 nm
Stability (A)	±0.005 A/h at 0.04 A and 546 nm after 60 minute warm-up	±0.005 A/h at 0.04 A and 546 nm after 60 minute warm-up

DOMINIQUE DUTSCHER SAS

SP-400 Series Spectrophotometers

Technical Specifications (continued)

Model	SP-400-VIS	SP-400-UV
Photometrics (continued)		
Noise	±0.002 A at 0.04 A and ±0.02 A at 2 A and 546 nm	±0.002 A at 0.04 A and ±0.02 A at 2 A and 546 nm
Stray light at 340 nm, %T	< 1% T according to ANSI/ASTM E387-72	< 1% T according to ANSI/ASTM E387-72
Concentration		
Range	±2500	±2500
Calibration	Blank with a single standard or factor	Blank with a single standard or factor
Factor	±1000	±1000
Standard	±1000	±1000
Optical Density		
Factor	±1000	±1000
Quantitation		
Range	±2500	±2500
Calibration	Blank with up to 6 standards	Blank with up to 6 standards
Curve fit algorithms	Linear and linear through zero	Linear and linear through zero
Kinetics		
Measurement time	15 to 9999 seconds	7 to 9999 seconds
Number of wavelengths	3	3
Calibration	Black with a factor	Black with a factor
Display	Graphical and concentration	Graphical and concentration
Analysis	Concentration	Concentration
Spectrum		
Range	335 to 800 nm	198 to 800 nm
Analysis	Absorbance or % transmittance and up to 50 spectral analysis points	Absorbance or % transmittance and up to 50 spectral analysis points

DOMINIQUE DUTSCHER SAS

SP-400 Series Spectrophotometers

Technical Specifications (continued)

Model	SP-400-VIS	SP-400-UV
Other		
Beam height	15 mm	15 mm
Light source	Tungsten halogen lamp	Xenon lamp
Results memory	Limited by attached mass storage device	Limited by attached mass storage device
Removable media	USB (not supplied)	USB (not supplied)
Supply voltage-frequency	100–240 VAC, 50/60 Hz	100–240 VAC, 50/60 Hz
Power	12 V DC, 3.8 A	12 V DC, 3.8 A
Size (W x H x D)	21.2 x 12.0 x 42.2 cm (8.7 x 4.7 x 16.6”)	21.2 x 12.0 x 42.2 cm (8.7 x 4.7 x 16.6”)
Weight	2.8 kg (6.2 lb)	2.8 kg (6.2 lb)
Warranty	2 years on the instrument, 1 year on the lamp	2 years on the instrument including the lamp

Ordering Information

Cole-Parmer model	Jenway model	Jenway legacy SKU	Item number
SP-400-VIS	7200 Visible Diode Array Scanning Spectrophotometer, 100-240 VAC, 50/60 Hz	720001	**83056-01**
SP-400-UV	7205 UV-Visible Diode Array Scanning Spectrophotometer, 100-240 VAC, 50/60 Hz	720501	**83056-02**

DOMINIQUE DUTSCHER SAS

SP-400 Series Spectrophotometers

Accessories

Description	Jenway legacy SKU	Item number
Test Tube Holder, 16 or 24 mm Diameter or 10 mm Square	637071	**83070-43**
Cuvette Holder, 10 x 10 mm Square	630204	**83070-41**
Rectangular Long-Path Cell Holder, 10 to 100 mm	630005	**83056-80**
Micro-Cuvette Sample Holder	630304	**83056-82**
Heated Cuvette Holder	725201	**83056-77**
External Printer fitted with a battery and supplied with UK, EU and US power lead	SMP50/PRINTER	**83056-79**

DOMINIQUE DUTSCHER SAS