

DU[®] SERIES 500

UV/Vis Spectrophotometers



THE TOTALLY
AFFORDABLE,
COMPLETELY
MODULAR SOLUTION
TO DOING GREAT
SPECTRO

Packaging - Processing
Bid on Equipment

1-847-683-7720

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BECKMAN

A Complete and Integrated System for Routine Applications

Today's spectrophotometer users expect a complete and integrated system...one that provides easy sample handling and operation, along with the accurate measurement of all your samples—a value-based system that delivers high-quality results.

The DU® Series 500 spectrophotometers were developed to satisfy all of these expectations. Easily interchangeable sampling modules allow you to reconfigure the system in just seconds, and a complete set of application programs is included to avoid the costly addition of software options.



Generic Standard Features:

- Single Cell Module with 1 cm Cell Holder
- Graphical Liquid Crystal Display
- Keyboard and Alphanumeric Softpad
- 100 User Programs
- Methods and Data Storage
- Instrument Diagnostics
- Serial Interface (RS-232)
- Parallel Printer Port
- Support for Dot-Matrix, HP DeskJet and HP LaserJet Printers
- Multi-Language Software

OPERATIONAL SIMPLICITY

Simply select a pre-configured user program—clearly identified by an alphanumeric description—and run your samples. It's just that easy to obtain final answers.

Full-text prompts and soft keys guarantee flawless interaction with the system via a graphical, backlit liquid-crystal display (LCD).

COMPLETE APPLICATIONS SOFTWARE PACKAGE

The systems include a complete set of programs to address your application requirements.

The DU 520 model provides final answers for applications such as single and multiple wavelength analysis, wavelength scanning with spectral manipulation, time-based kinetic/rate determination and single component analysis to determine sample concentrations.

The DU 530 adds application programs for protein and nucleic acid analysis, including DNA/RNA/Oligo modes to determine sample purity, molecular weight, concentrations and theoretical melting point (T_m).

In addition, both systems contain extensive performance validation programs which guarantees full functionality of the system.

INTERCHANGEABLE SAMPLING MODULES

A unique, modular sample compartment accommodates a variety of single and multi-celled accessories. Sampling modules are exchanged in just seconds by simply unlatching and removing the current module, and replacing it with a module that supports another application.

You can easily add a multicell, Peltier temperature control, sipper sampling, or flow cell module for a customized system that meets all your application requirements.

ENHANCED PRODUCTIVITY

Now, even small labs can afford their own UV/Vis spectrophotometer so that measurements can be taken at the user's convenience.

The system stores data and allows you to review, print or send the data through the RS-232 interface.

Diagnostic routines are automatically performed upon startup—and you can execute additional performance checks at any time to guarantee accurate results. With the ability of the system to work in six different languages, you're most likely to have an instrument that speaks your lingo.

SYSTEM CONFIGURATIONS

DU 520 General Purpose UV/Vis Spectrophotometer

- Performance Validation
- Fixed Wavelength Mode
- Scanning Mode
- Time-Based Kinetics
- Single Component Analysis

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OMETER SOLUTION



DU 530 Life Science UV/Vis Spectrophotometer

- Performance Validation
- Fixed Wavelength Mode
- Scanning Mode
- Time-Based Kinetics
- Single Component Analysis
- Protein Analysis
- Nucleic Acid Analysis with DNA/RNA/Oligo Quantitation

SYSTEM CONFIGURATIONS

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No Need to Add Costly Software Options

The DU® Series 500 is the system of choice. The instrument comes standard with all application programs, so there's no need to purchase additional software options to address your application requirements.

Both quantitative and qualitative analyses are addressed, with easy-to-use integrated applications programs. The intuitive user interface and proven algorithms produce quality results at the press of a button.

FIXED WAVELENGTH MODE

The DU Series 500 system allows you to examine single or multiple wavelengths—in either absorbance or transmittance. The sample absorbance readings can be directly converted to concentrations by simply entering the appropriate factor(s).

WAVELENGTH SCANNING

Scan your samples quickly, or at high resolution in increments as small as 0.2 nm. View spectra on-line in absorbance or transmittance—or recall scans from memory. Spectral manipulations include:

- *Automatic Peak and Valley Pick*
- *Addition and Subtraction*
- *Spectrum Overlay*
- *Zoom*
- *Trace*

TIME-BASED KINETICS

Effortlessly analyze the rate reaction of your samples. Data is plotted in real time...and stored in memory for easy access.

The absorbance values used to calculate the rate are automatically corrected for any changes in blank and background. The rate of the kinetic reaction is calculated using linear regression for the best-fit straight line.

SINGLE-COMPONENT ANALYSIS

To obtain accurate concentration results, the system allows you to use up to 24 standards, and you can optimize your standard curve by adding, deleting or rerunning standards. Choose a linear or quadratic fit for optimal results. A background wavelength can be used to correct for turbidity or a sloping baseline.

PERFORMANCE VALIDATION

The DU Series 500 comes complete with comprehensive validation tools that make it easy to ensure quality results. The performance validation software tests for:

- *Stability*
- *Photometric Noise*
- *Wavelength Accuracy*
- *Stray Light*
- *Photometric Accuracy*
- *Lamp History*

PROTEIN ASSAY ANALYSIS*

Easy-to-use methods automatically determine the amount of protein in your samples. Simply select one of the pre-configured methods for the most common protein analyses:

- *Bradford*
- *Lowry (Low and High Sensitivity)*
- *Biuret*
- *Colloidal Gold*
- *Bicinchoninate*
- *Direct UV*

NUCLEIC ACID ANALYSIS WITH DNA/RNA/OLIGO MODE*

To simplify your analyses, the Nucleic Acid analysis program contains pre-configured methods for virtually all applications. You can determine the concentration and purity of your nucleic acid samples by selecting either a pre-configured method or by modifying parameters to suit your samples. Or use coefficients determined by Warburg and Christian.

Accurately quantify and characterize DNA, RNA and oligonucleotide samples and check for protein contamination using a simple single ratio or multiple ratios.

The oligo methods determine and report molecular weight, molar absorptivity (extinction coefficient, ϵ) and concentrations. For DNA samples, the theoretical melting point (T_m) can be obtained, using the nearest-neighbor interaction model for short oligos, in order to optimize your PCR** process.

* DU 530 life science applications only.

** PCR is covered by U.S. patents owned by Hoffmann-La Roche Inc.

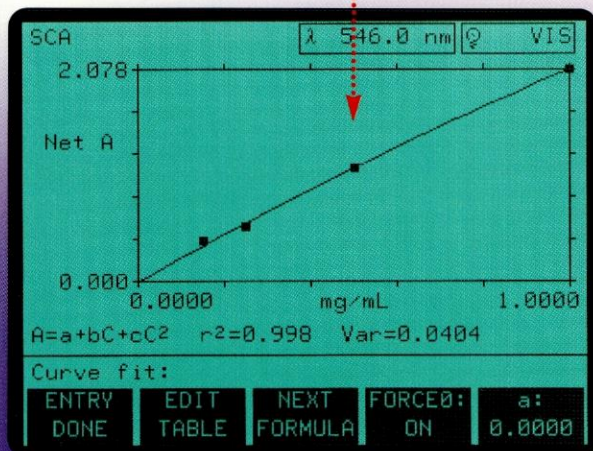
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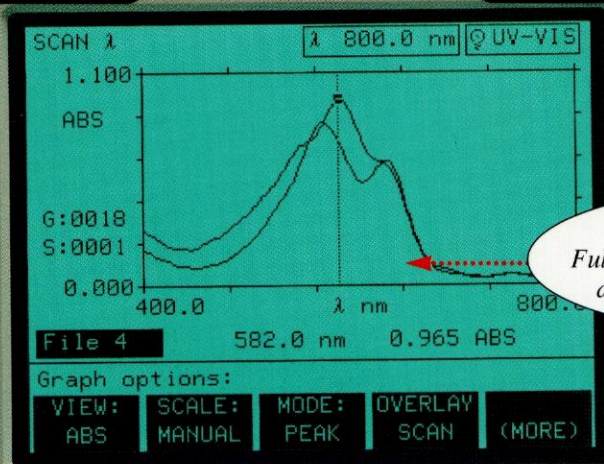
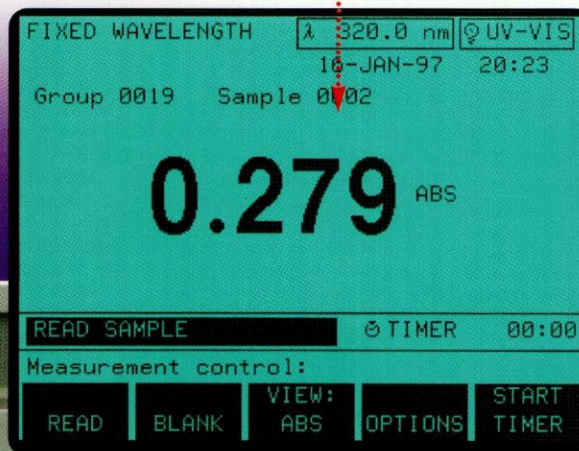
Single Component Analysis

Quickly determine sample concentrations with linear or nonlinear curve fits



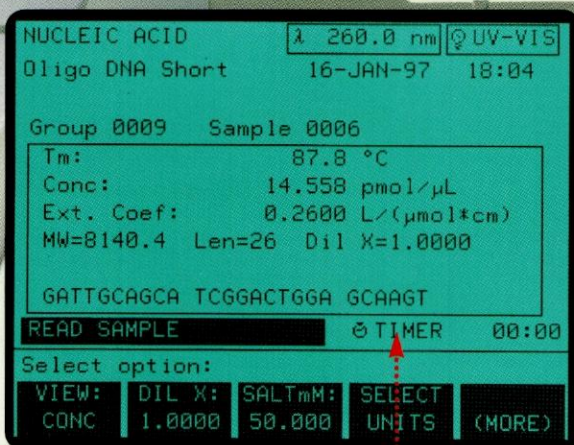
Fixed Wavelength Mode

Examine up to four wavelengths and easily obtain concentrations



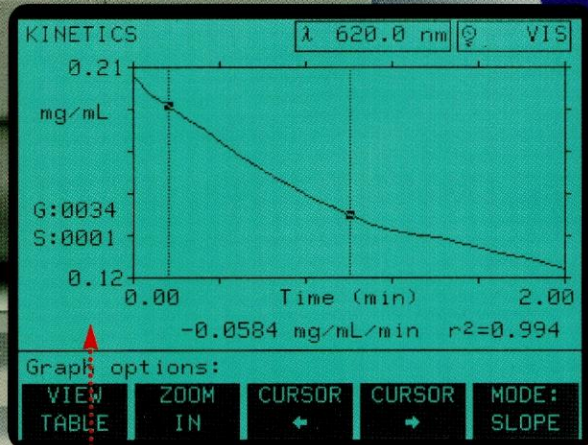
Wavelength Scanning

Full scan range from 190 to 1100 nm and automatic peak/valley determination



Nucleic Acid Analysis

Determine concentration and sample purity—



Time-Based Kinetics

Obtain real-time plots and determine reaction rates

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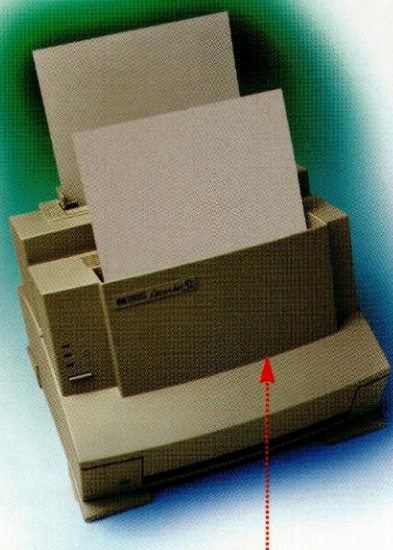
SYSTEM ENHANCEMENTS AND TOTAL

Responsive to Your Needs

For over 60 years, Beckman has responded to your lab instrumentation needs. The DU® Series 500 spectrophotometer systems continue with this tradition of outstanding support.

DU Series 500 accessories are designed with operational simplicity in mind, and easily interchangeable modules help you to reconfigure the system in just a few seconds.

The Beckman commitment includes everything you need—well designed systems, innovative sampling accessories and supplies, easy-to-use applications software, applications and technical support, plus responsive expert service.



The DU Series 500 spectrophotometers support a variety of common, state-of-the-art printers.

SINGLE CELL MODULE

The Single Cell Module with a standard 1 cm cell holder is included in the system. It is designed to accommodate other cell holders, such as the 50 μ L microcell holder, 16 mm test tube holder, and the 5 cm and 10 cm rectangular cell holders.

MULTICELL MODULE

For enhanced productivity when measuring multiple samples, use the Multicell Module to automatically process up to six samples in a batch. The six-position cell holder is included.

PELTIER TEMPERATURE CONTROL MODULE

For enzyme kinetic experiments and whenever accurate temperature control is required, the Peltier Temperature Control Module guarantees that each sample is measured within a temperature range of 15°C to 50°C at an accuracy of $\pm 0.5^\circ\text{C}$.

SIPPER SAMPLING MODULE

The Sipper Sampling Module provides a quick and convenient way to measure multiple samples. The sipper's peristaltic pump draws the liquid into the flow cell, a reading is taken, and the liquid is returned to the source, or discharged to a drain. Cell holder and 170 μ L flow cell are included.

FLOW CELL MODULE

The Flow Cell Module is an economical alternative for labs with high sample throughput. Cell holder and 600 μ L flow cell are included.

CELL HOLDERS AND CELLS

An array of cell holders, cuvettes and microcells is available from Beckman to support your applications.

DATA HANDLING

DU Series 500 systems are equipped with a parallel printer port and a serial interface (RS-232) to connect to a computer. Most dot-matrix printers, HP DeskJet Series and HP LaserJet printers are supported.

The systems conveniently store data in memory which can be recalled, printed or transferred to a computer.

TECHNICAL AND APPLICATIONS SUPPORT

The DU Series 500 is a "plug-and-play" system that does not require installation by service personnel.

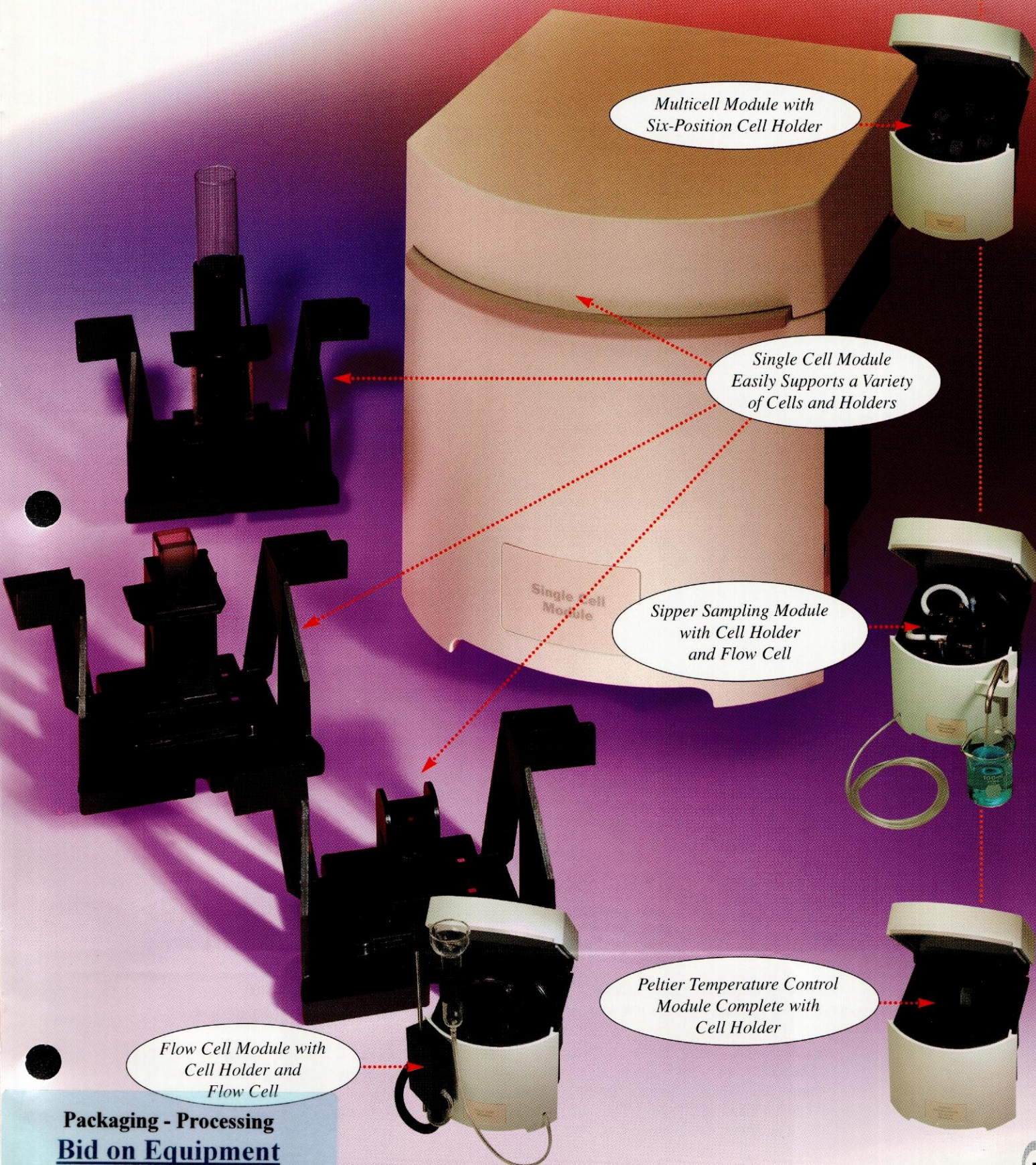
The quality and responsiveness of Beckman service and support is well-known and always available should you need it. In addition, technical applications support can be obtained from Beckman scientists.

Visit the Beckman web site at <http://www.beckman.com> for further information, or contact your local Beckman representative.

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*Multicell Module with
Six-Position Cell Holder*

*Single Cell Module
Easily Supports a Variety
of Cells and Holders*

*Sipper Sampling Module
with Cell Holder
and Flow Cell*

*Peltier Temperature Control
Module Complete with
Cell Holder*

*Flow Cell Module with
Cell Holder and
Flow Cell*

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DU® SERIES 500 UV/VIS SPECTROPHOTOMETERS

PERFORMANCE SPECIFICATIONS



DU 520 General Purpose
UV/Vis Spectrophotometer

Wavelength Range:	190 to 1100 nm
Wavelength Accuracy:	± 1 nm (ASTM E275-83)
Wavelength Repeatability:	± 0.1 nm (ASTM E275-83)
Spectral Bandwidth:	< 4.5 nm
Photometric Readout:	- 0.3 to 3.0 A or 0.1 to 200.0 %T
Photometric Accuracy:	± 0.005 A (1 A at 546.1 nm)
RMS Noise:	≤ 0.0005 A (0 A at 546.1 nm)
Stray Light:	≤ 0.05 %T maximum at 220 nm and 320 nm
Scanning Speed:	40 to 1000 nm/minute
Scanning Resolution:	0.2 nm
Source Lamps:	Deuterium (UV) and tungsten (visible)
Monochromator:	Seya-Namioka split beam
Grating:	1200 lines/mm
Display:	Backlit, Graphical Liquid Crystal Display



DU 530 Life Science
UV/Vis Spectrophotometer

PHYSICAL AND ENVIRONMENTAL SPECIFICATIONS

Width:	42 cm (16.5 in)
Height:	21 cm (8.3 in)
Depth:	39 cm (15.5 in)
Weight:	9 kg (20 lbs)
Line Voltage:	100 to 230V ± 10%
Frequency:	50/60 Hz
Temperature Operating Range:	+ 10°C to 40°C (50°F to 104°F)
Humidity:	< 85% relative humidity, non-condensing

ORDERING INFORMATION

Part Number	Description
517600	DU 520, 100-230V ± 10%, 50/60 Hz
517601	DU 530, 100-230V ± 10%, 50/60 Hz
517606	Multicell Module
517607	Sipper Sampling Module
517608	Flow Cell Module
517609	Peltier Temperature Control Module

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