



*The Affordable Spectrophotometry Solution  
for Life Science, Research and Analytical Labs*

## DU<sup>®</sup> SERIES 700

UV/VIS SCANNING  
SPECTROPHOTOMETER



*Accuracy*

*Easy-to-Use*

*Protein Analysis*

*Nucleic Acid  
Analysis*

# DU<sup>®</sup> SERIES 700 UV/VIS

## *The Affordable Spectrophotometry Solution for*

*The DU Series 700 spectrophotometers are advanced and affordable systems that generate accurate and reproducible measurements. The narrow bandwidth allows you to scan your samples with excellent resolution. With its focused-beam design, the system provides optimal and reproducible results for small samples, capabilities usually found only on more expensive systems. The systems have a unique touch-screen user interface with easy-to-use but powerful software. A wide range of applications software is included and makes the DU Series 700 the perfect solution for life science, research and analytical labs.*

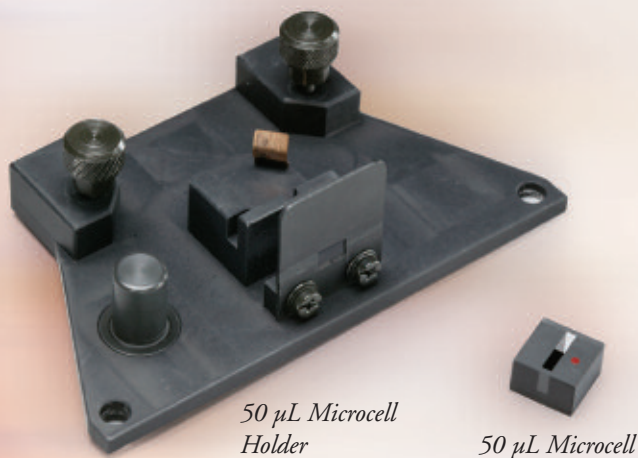
### **DU 700 Focused Beam**

*The narrow beam width ensures excellent results for small samples in semi-microcells.*

*Conventional Beam with positioning issues means reduced and varied light energy through sample leading to reproducibility problems.*

*Blocked Light Energy*

*Semi-Microcell*



*50 µL Microcell Holder*

*50 µL Microcell*

### **MICROSAMPLES AND FOCUSED BEAM**

The narrow beam width of the system ensures excellent results for small samples in semi-microcells. With the focused beam, there is no need for masking and the entire energy is utilized to provide a wide dynamic range and excellent linearity. With this design, small variances in cell positioning have no effect on the reproducibility of your results.

For even smaller samples, the popular 50 µL microcells from Beckman Coulter can be used with a specifically designed cell holder. The cells are easy to clean and, if not diluted, your precious DNA, RNA, or oligonucleotide samples can be quickly recovered.

### **ADVANCED FEATURES**

- Startup diagnostics and a range of system checks to guarantee that the instrument performs to specifications each day
- Both the UV and Visible lamps can be turned off automatically and independently to protect lamp life and save cost
- USB ports for printer, memory device, and keyboard. Data can be transferred to a PC quickly and easily in CSV format (comma-separated values). The CSV format has become the standard import format for spreadsheets and LIMS
- Temperature control for single samples with the optional Peltier temperature control module, ideal for enzyme samples
- Built-in transport mechanism for 7-position carousel
- Password protection with individual access control (security list)
- With the DNA/Protein Tools (DU 730 only), calculations, common conversions, and lookup tables are at your fingertips



# SPECTROPHOTOMETER

*Life Science, Research, and Analytical Labs*

## COMPLETE SYSTEM CONFIGURATIONS

Each system comes with a Single Cell Holder and includes a complete set of application programs to address your application needs.

### DU 720 GENERAL PURPOSE

- Fixed Wavelength
- Wavelength Scan
- Kinetics/Time
- Single Component Analysis (SCA)

### DU 730 LIFE SCIENCE

*All DU 720 Modes, plus:*

- Protein Assay Analysis
- Nucleic Acid Analysis
- Dye Incorporation (%)
- DNA/Protein Tools

*CSV File Format for  
Data Transfer*

*USB Ports*

*Spectral Bandwidth  
of 3.0 nm*

*Touch-Screen  
User Interface*

*Operator and  
Sample ID's*

*Wavelength Range  
from 190 to 1100 nm*

*Focused Beam  
Design*

*Quick Interchange  
of Cell Holders &  
Modules*

*Password Protection  
with Security List*

*Automatic Lamp  
Turn-Off*



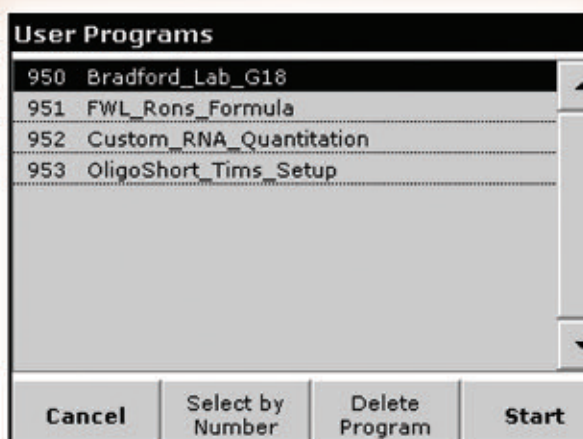
## OPERATIONAL SIMPLICITY

- Intuitive and convenient touch-screen user interface makes operation a breeze
- Operator and Sample ID's with alphanumeric input for quick and convenient sample identification
- Multilanguage Software

# SYSTEM SOFTWARE AND E

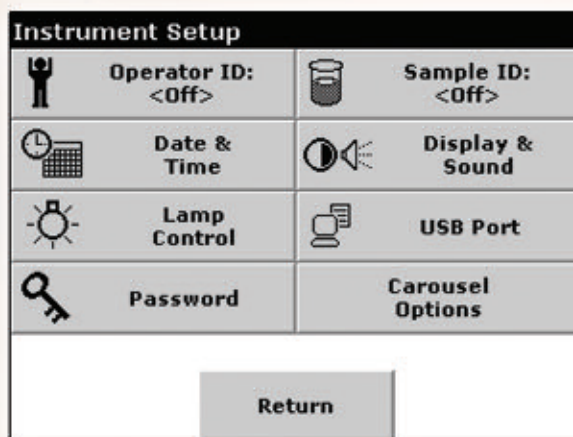
*Convenient and intuitive operation makes everything*

*The touch-screen user interface of the DU Series 700 spectrophotometers provides easy access to system functions and application parameters can be optimized quickly and easily. User programs or methods can be defined and permanently stored. These customized settings can be quickly recalled and applied. Data can be stored temporarily in the system and after the run sent to the attached devices, such as printer, PC, or memory device.*



## SYSTEM SETUP & OPTIMIZATION

- Storage and recall of up to 50 User Programs or Methods
- Automatic or manual storage of data with recall
- Automatic lamp turnoff after a user-specified idle time, individually for UV and Visible source
- Peripherals, such as printer, keyboard, and memory device are automatically detected

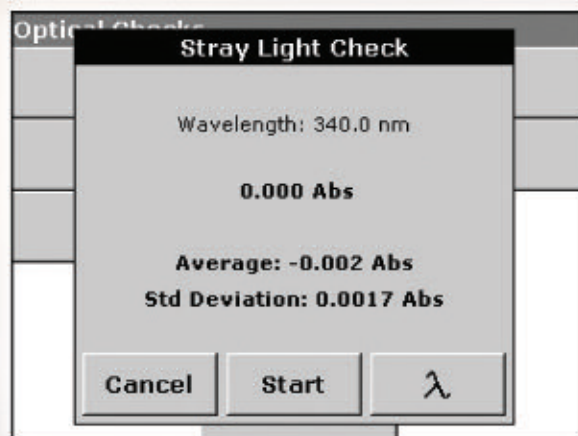


## SYSTEM CHECKS (PERFORMANCE VALIDATION)

- Software upgrade via memory stick
- Lamp History and Reset

*The following diagnostic tests are included:*

- Wavelength Accuracy and Bandwidth
- Photometric Accuracy and Reproducibility
- Photometric Noise
- Stray Light
- Drift (Stability)





*from simple measurements to complex analyses fast and easy.*

## CELL HOLDERS

- 
- der. The transport  
t-in. Cell holders  
lications to ensure  
samples. The cell  
nged
- Carousel Cell Holder
- Multi-Cell Holder
- Turbidity Cell Holder
- 1 cm Single Cell Holder
- 50  $\mu$ L Single Cell Holder

- For quick and convenient measurements of multiple samples without the need to transfer samples to cuvettes
- A peristaltic pump draws the liquid into the flow cell; the instrument takes a reading and returns the liquid to the source or discharges it
- The Flow Cell has a volume of 350  $\mu\text{L}$  and is included together with an appropriate tubing kit. The Single Cell Holder or the Multi-Cell Holder can be utilized with the module

# APPLICATIONS SOFTWARE

*Easy-to-use application programs are included*

## DU 720 & DU 730

### FIXED WAVELENGTH

Takes measurements from up to 4 wavelengths automatically in absorbance or transmittance.

- Results can be obtained with a formula or a simple factor

### WAVELENGTH SCAN

Takes an absorbance or transmittance scan at a specified wavelength range and resolution.

- Trace and Zoom functions
- Overlay with stored scans
- Peak and valley determination

### KINETICS/TIME

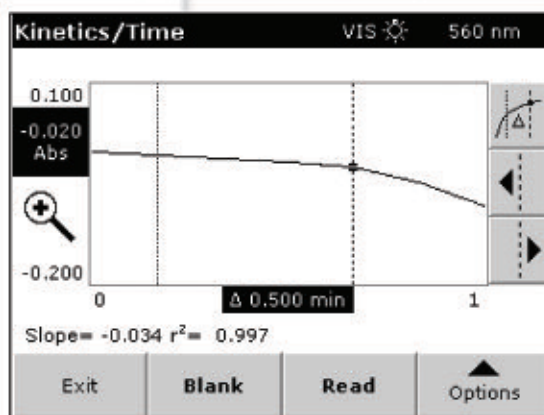
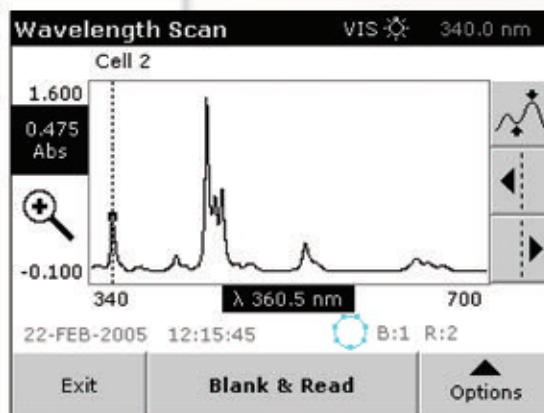
Measures samples in absorbance at specified time intervals and determines the slope or rate.

- Simultaneous measurement of up to 7 rate reactions
- Calculation of rate and variance
- Background correction with 2<sup>nd</sup> wavelength

### SINGLE COMPONENT ANALYSIS

Determines the concentration of unknown samples via a standard curve.

- Accepts up to 24 standards
- Determination of standard curve or input of known coefficients
- Rerun of individual standards
- Linear or non-linear (quadratic) curve fit
- Replicates with average, %CV calculation and outlier indication
- Background correction with 2<sup>nd</sup> wavelength

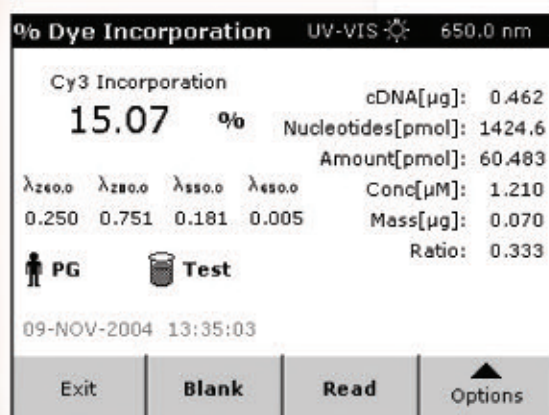
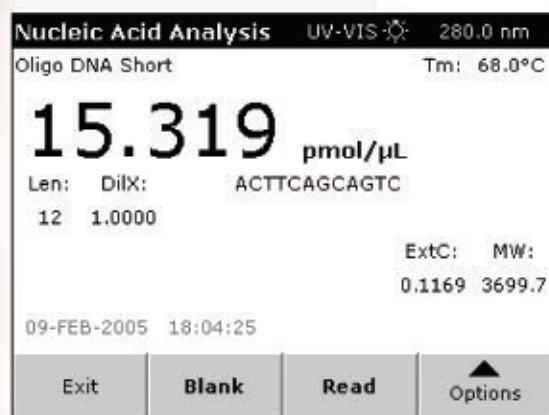
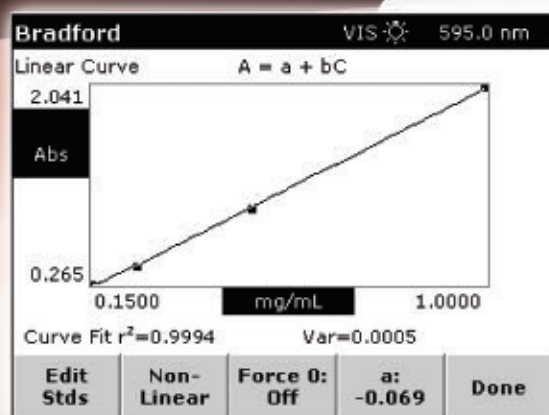


SCA screen showing a table of sample data. The screen includes a VIS icon, a wavelength of 600.0 nm, and a large display of 0.100 Abs. Below the display, it shows a table of sample data, a timestamp of 07-MAR-2005 21:25:28, and buttons for Exit, Blank, Read, and Options.

Rep	NetA	mg/mL
1	0.455	0.25
2	0.456	0.25
3	0.269	0.16
Avg:		0.22
%CV:		23.391 [OUT]



- no need to add costly software options.



**Tables**

Solubility/Density/and pI of Amino Acids

Amino Acid	Solubility	Crystal Dens.	pI at 25°C
Arginine	15.000	1.100	10.760
Asparagine	0.778	1.660	2.980
Aspartic Acid	3.530	1.540	-
Cysteine	very	-	5.020
Glutamic Acid	0.864	1.460	3.080
Glutamine	2.500	-	-
Glycine	24.990	1.607	6.064
Histidine	4.190	-	7.640

Cancel Prev Next

## DU 730

### PROTEIN ASSAY ANALYSIS

Determines protein concentrations with the most commonly used assay methods:

- Bradford
- Lowry (high and low)
- Biuret
- UV 280
- Colloidal Gold
- Bicinchoninate (BCA)

- Features are similar to the Single Component Analysis application

### NUCLEIC ACID ANALYSIS

Determines sample purity, concentrations, and other parameters from DNA, RNA, and oligonucleotide samples.

- 260/280 Ratio
- Single Ratio (with or w/o Background Correction)
- Double Ratio & Concentration (with or w/o Background Correction)
- Concentration for dsDNA, ssDNA, and RNA with pathlength correction
- Oligonucleotide Quantitation for long and short oligos with nearest-neighbor algorithm, including determination of theoretical thermal melting point for DNA samples

### DYE INCORPORATION (%)

Analyzes labeling reaction for spotted array sample preparation.

- Single or dual-color methods
- Suitable for any dye that has fluorescence wavelengths similar to Cy3 (550 nm) or Cy5 (650 nm)

### DNA/PROTEIN TOOLS

Provides many functions to aid you in your daily laboratory tasks.

- Calculations
- Common Conversions
- Common Tables from the Microbiology Handbook

## Performance Specifications



*DU 720 General Purpose  
UV/Vis Spectrophotometer*



*DU 730 Life Science  
UV/Vis Spectrophotometer*

## ORDERING INFORMATION

**Operating Mode:** ..... Absorbance and Transmittance (%T)

**Source Lamp:**..... Deuterium (UV) and Tungsten (visible)

**Wavelength Range:**..... 190 to 1100 nm

**Wavelength Accuracy:** .....  $\pm 1$  nm from 200 to 900 nm

**Wavelength Calibration:** ..... Automatic

**Scanning Speed:** ..... Depending on selected resolution (100-4500 nm/min)

**Wavelength Resolution:**..... Selectable Interval (0.1, 0.2, 0.5, 1.0, 2.0, and 5.0 nm)

**Spectral Bandwidth:** .....  $\leq 3$  nm

**Photometric Readout:**..... -0.3 to 3.0 Å or 0.1 to 100 %T

**Photometric Accuracy:** .....  $\pm 0.005$  Å at 0.0 to 0.5 Å  
1% at 0.5 to 2.0 Å

**Photometric Linearity:**.....  $< 0.5\%$  at 2.0 Å  
 $\leq 1\%$  at  $> 2.0$  Å

**Stray Light:**.....  $> 3.3$  Å or  $< 0.05\%$ T with KI-solution at 220 nm

## Physical and Environmental

**Width:** ..... 17.7 in (45 cm)  
**Height:** ..... 7.9 in (20 cm)  
**Depth:** ..... 19.7 in (50 cm)  
**Weight:** ..... 34.2 lbs (15.5 kg)  
**Operating Requirements:** ..... 10 to 40°C (50 to 104°F), max. 90%  
relative humidity (non-condensing)

## Power and Interface Connections

**Power:** ..... 100 to 120 V; 200 to 240 V; 50/60 Hz; automatic changeover  
**Ports:** ..... USB 1.1

PART NO.	DESCRIPTION
A23615	DU 720, General Purpose UV/Vis Spectrophotometer
A23616	DU 730, Life Science UV/Vis Spectrophotometer
A23618	Multi-Cell Holder
A23619	Sipper Module
A23620	Carousel Cell Holder
A23621	Peltier Temperature Control Module
A23622	50 µL Single Cell Holder
A23623	Turbidity Cell Holder

For more information on the DU Series 700 Spectrophotometer  
visit us on the web at [www.beckmancoulter.com/DU700](http://www.beckmancoulter.com/DU700).

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*Beckman Coulter instruments include automated liquid handling, capillary electrophoresis, centrifugation, ultracentrifugation, chromatography data systems, DNA sequencing, electrochemistry, HPLC, integrated core systems, laboratory data management, scintillation counting, and spectrophotometry.*



*Developing innovative solutions in Systems Biology.*

Innovate ~~Simplify~~ Automate

Beckman Coulter, Inc. • 4300 N. Harbor Boulevard, Box 3100 • Fullerton, California 92834-3100  
Sales & Service: 1-800-742-2345 • Telex: 678413 • Fax: 1-800-643-4366 • [www.beckmancoulter.com](http://www.beckmancoulter.com)

**Worldwide Biomedical Research Division Offices:**

**Australia** (61) 2 9844-6000 **Canada** (905) 819-1234 **China** (86) 10 6515 6028 **Eastern Europe, Middle East, Africa** (41) 22 994 07 07  
**France** 01 49 90 90 00 **Germany** 49 21 513335 **Hong Kong** (852) 2814 7431/2814 0481 **Italy** 02-953921 **Japan** 03-5404-8359  
**Mexico** 525-605-77-70 **Netherlands** 0297-230630 **Singapore** (65) 6339 3633 **South Africa** (27) 11-805-2014/5 **Spain** 91 3836080  
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