# Automatic spectrophotometer with autosampler



## Overview

Following the suggestions in this document will help you get the most value and performance from your spectrophotometer and autosampler system.

## Key Takeaways

Automatic spectrophotometers with autosamplers enable high-throughput, unattended analysis of liquid or solid samples with precise, reproducible results.

## Overview

Automatic spectrophotometers integrate a UV-Vis or UV-Vis-NIR spectrophotometer with an autosampler system, allowing multiple samples to be measured sequentially without operator intervention. These systems are widely used in research, quality control, and industrial laboratories to improve efficiency, reduce human error, and maintain consistent measurement conditions. Key Features1.

## Sample Handling and Throughput

Sipper units use peristaltic or syringe pumps to deliver liquid samples to flow cells, capable of handling up to 100 samples automatically (Shimadzu UV-Vis systems) while maintaining high repeatability (±0. 03 mL) and chemical resistance with fluorine resin, glass, or fused silica surfaces. Robotic autosamplers (e.g., METTLER TOLEDO InMotion) use robotic arms to access sample trays, perform lid handling, and integrate cleaning or conditioning sequences for efficient, unattended operation.

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Solid sample autosamplers (e.g., Agilent Cary 7000 UMS) allow automated multi-angle reflectance and transmission measurements, accommodating small to large samples with 360° rotational flexibility. 2. Chemical CompatibilityHigh-quality autosamplers feature metal-free or corrosion-resistant flow paths to handle harsh chemical environments without compromising accuracy (Thermo Scientific CETAC ASX-520),.

Some sipper units are limited with strong acids, alkalis, or esters unless specialized solenoid valves or chemically resistant tubing are used. 3.

## Software Integration

Autosamplers are controlled via dedicated software for method setup, data acquisition, and sample mapping. Examples include VISIONlite Auto (Thermo Scientific) and AutoPro v7. 0 (Agilent) for automated multi-sample analysis.

Software allows scheduling, unattended operation, and integration with laboratory information management systems (LIMS) for secure data handling. 4. Flow Cells and Measurement FlexibilityFlow-through cells are often used to enable continuous sample measurement and easy cleaning.

Systems can accommodate various cuvette sizes, micro-volume cells, or specialized cells for high optical density samples.

## Applications

Pharmaceutical and chemical analysis: High-throughput quantification of compounds in solution. Materials science: Characterization of thin films, coatings, and optical components. Environmental monitoring: Automated measurement of water quality or pollutant concentrations.

Food and beverage: Routine quality control of color, turbidity, or nutrient content.

## Advantages

Increased productivity: Hundreds of samples can be analyzed overnight without supervision. Enhanced reproducibility: Automated sample handling reduces variability and human error. Flexible workflows: Systems can handle liquids, solids, or both, with temperature control and cleaning protocols.

Cost efficiency: Reduces labor and maximizes instrument utilization. Automatic spectrophotometers with autosamplers are essential for laboratories requiring high-throughput, precise, and reproducible measurements, offering flexibility for diverse sample types and chemical environments while integrating seamlessly with modern laboratory software and automation workflows.

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## Article Content

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Following the suggestions in this document will help you get the most value and performance from your spectrophotometer and autosampler system. Use this document as a starting point for developing

Automatic Analysis – UV-Vis Spectrophotometers

Shimadzu Scientific Instruments introduces the IRXross™ Fourier Transform Infrared (FTIR) Spectrophotometer. This mid-level FTIR model achieves upper-end performance including high-level

InMotion™ Autosamplers

Connect InMotion to any METTLER TOLEDO Excellence titrator, density meter, refractometer, UV/VIS spectrophotometer or pH meter to simplify the operation in

Ultraviolet-Visible (UV/Vis) and Ultraviolet-Visible-Near-Infrared (UV ...

Ensure fast, accurate, and high-throughput Cr6+ detection with the PerkinElmer LAMBDA 365+ UV/Vis Spectrometer and S23 Autosampler. This automated solution minimizes manual effort while

ICP Autosamplers | Agilent

Agilent autosamplers perfectly integrate with atomic spectroscopy instruments to automate the delivery of your sample solutions. Find out which one is the best fit for your lab.

UV-Vis-NIR Solids Autosampler

Revolutionize your materials analysis with the Solids Autosampler for the Cary 7000 Universal Measurement Spectrophotometer (UMS), and Universal Measurement

Autosampler For Spectrophotometric Analysis

This technical note will explain different hardware configurations, as well as software options, to use Gilson liquid handlers with TRILUTION® LH Software as

Product: LAMBDA 365+ UV/Vis Spectrometer

Offering high stability and low stray light, the LAMBDA 365+ double-beam UV/Vis spectrometer delivers a variable spectral bandwidth capability from 0.5 nm to 20

Autosamplers and Injectors

Expand automated sampling capabilities beyond liquid, headspace, and solid phase microextraction (SPME) injections. The advanced, built-in robotics of the Thermo

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AA-7800 : Shimadzu SOPS

The Shimadzu Atomic Absorption Spectrophotometer AA -7800 Series is versatile enough for a variety of analytical applications (Any Application), safe and easy to

Labomed, Inc. Spectrophotometers

Atomic Absorption Spectrophotometer AAS-4000 is a high performance automated instrument designed to meet the requirements of the modern laboratory.

SPECORD PLUS – UV/Vis Spectrophotometer

The SPECORD PLUS series offers versatile, high precision double-beam UV/Vis photometers for a large variety of applications.

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A complete description of each parameter is given along with typical values for a CETAC® ASX-260 or ASX-520 autosampler interfaced to a Thermo Scientific spectrophotometer running Thermo Scientific

UV-Vis-NIR Solids Autosampler

UV-Vis-NIR Solids Autosampler Revolutionize your materials analysis with the Solids Autosampler for the Cary 7000 Universal Measurement

Atomic Absorption Spectroscopy (AAS) Systems for Labs, AA-7800

The Atomic Absorption Spectrophotometer AA -7800 Series is versatile enough for a variety of analytical applications (Any Application), safe and easy to use even for beginners (Any User), and offers

Atomic Spectroscopy Autosamplers

Our comprehensive product range includes autosampler solutions for several spectroscopy applications. We offer automation for ICP-OES (also referred to as

Autosamplers and Injectors

Thermo Fisher Scientific is dedicated to improving the human condition through systems, consumables, and services for researchers.

Analysis Precision with UV-1900i Plus

Experience unmatched precision and ease with UV-1900i Plus. Featuring a refined user-friendly interface, ultra high-speed scanning, and comprehensive support

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