Unico SQ4802

UNICO SQ4802 UV/VIS Spectrophotometer User Manual

Model: SQ4802 | Brand: Unico

1. Introduction

The UNICO SQ-4802 is a sophisticated double beam, scanning UV/VIS Spectrophotometer designed for precise analytical measurements. This stand-alone unit features a fixed bandwidth of 1.8nm and incorporates two detectors that simultaneously measure both the test sample cell and reference sample cell, ensuring optimized measurement accuracy and stability. It delivers excellent performance across a wavelength range of 190nm to 1100nm, making it suitable for a wide array of applications including pharmaceutical, biochemical, clinical laboratory analyses, as well as routine tasks such as quantitative analyses, kinetics, spectrum scanning, multiple component analysis, and DNA/Protein quantification. The instrument is equipped with a USB port, parallel port, and built-in software that supports various functions including Transmittance/Absorbance/Concentration (T/A/Conc), standard curve generation, kinetics studies, multi-wavelength analysis, scanning, and DNA/Ratio measurements. Optional PC download software and PC Windows application software further enhance its versatility.

Figure 1: Front view of the UNICO SQ4802 UV/VIS Spectrophotometer, showing the LCD screen and control panel.

2. Setup and Installation

2.1 Unpacking and Inspection

Carefully unpack the spectrophotometer and all accessories from the shipping carton. Inspect all components for any signs of damage that may have occurred during transit. If any damage is found, contact your supplier immediately. Verify that all items listed in the "What's in the Box" section are present:

- Spectrophotometer unit
- Mains Lead (Power Cable)
- 4 Optical Glass Cuvettes
- 2 Quartz Cuvettes
- User Manual
- Dust Cover

2.2 Placement

Place the spectrophotometer on a stable, level surface away from direct sunlight, strong magnetic fields, and sources of vibration. Ensure adequate ventilation around the unit.

2.3 Power Connection

The UNICO SQ4802 is designed to operate on both 110V and 220V, 50/60Hz power supplies. The unit is factory-set at 110V. Before connecting the power cable, ensure the voltage selector switch (if present, typically on the rear panel) matches your local power supply. Connect the provided mains lead to the power input on the rear of the instrument and then to a grounded electrical outlet.

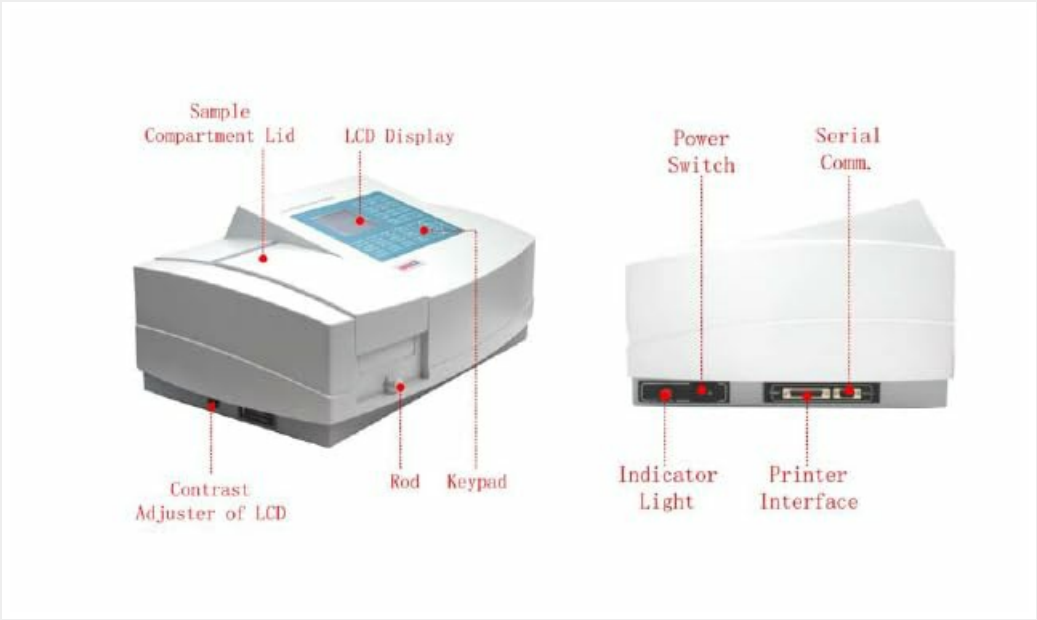


Figure 2: Rear and side view of the spectrophotometer, highlighting the Power Switch, Indicator Light, and Printer Interface.

2.4 Component Identification

Familiarize yourself with the main components of the spectrophotometer:

- **LCD Display:** Shows measurement data, menus, and instrument status.
- **Keypad:** Numeric keys, function keys (F1-F4), and control keys for navigation and input.
- **Sample Compartment:** Area for placing cuvettes with samples.
- **Sample Compartment Lid:** Covers the sample compartment during measurements.
- **Power Switch:** Turns the instrument on/off.
- **USB Port:** For data transfer and PC connection.
- **Parallel Port:** For printer connection.
- **Contrast Adjuster of LCD:** Adjusts the display contrast.

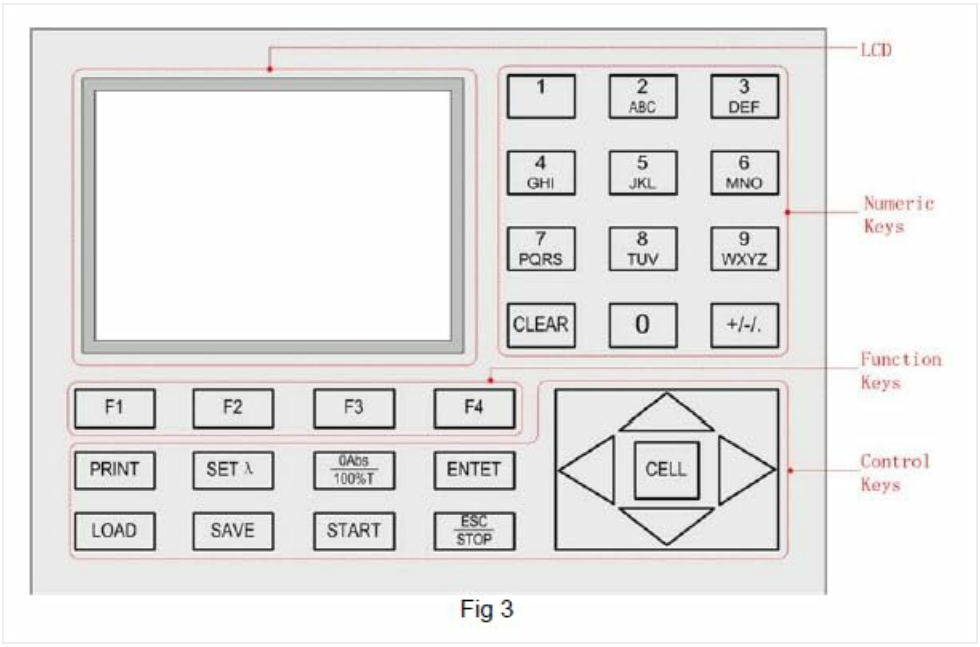


Figure 3: Detailed view of the LCD and Keypad, showing Numeric Keys, Function Keys (F1-F4), and Control Keys.

Figure 4: The spectrophotometer with its sample compartment lid open, revealing the cuvette holder.

3. Operating Instructions

3.1 Powering On and Initializing

Press the power switch located on the rear of the instrument. The spectrophotometer will perform a self-test and initialization sequence. Wait for the instrument to complete this process and display the main menu or default measurement screen.

3.2 Basic Measurement Modes

The SQ4802 offers several built-in measurement modes:

- **T/A/Conc:** For basic Transmittance, Absorbance, and Concentration measurements at a single wavelength.
- **Standard Curve:** Allows creation of a calibration curve using known standards for quantitative analysis.
- **Kinetics:** Measures absorbance changes over time to study reaction rates.
- **Multi-Wavelength:** Measures absorbance at multiple user-defined wavelengths.
- **Scanning:** Performs a full spectrum scan across a specified wavelength range.
- **DNA/Protein:** Specialized mode for DNA and protein concentration determination.

Navigate through the modes using the control keys and select the desired function. Refer to the on-screen prompts and the detailed user manual for specific steps within each mode.

3.3 Sample Preparation and Cuvette Usage

Ensure samples are clear and free of particulates. Use appropriate cuvettes (glass for visible range, quartz for UV range).

Handle cuvettes by the frosted sides to avoid fingerprints on the optical path. Fill cuvettes to the recommended volume and wipe external surfaces clean before placing them in the sample compartment.
For double beam operation, ensure both the reference cuvette and sample cuvette are correctly positioned in their respective holders.

3.4 Data Analysis and Software

The instrument's built-in software allows for data processing, including various curve fitting options for standard curves (linear, square, cubic, linear through zero fit). Results can be viewed on the LCD and saved internally.

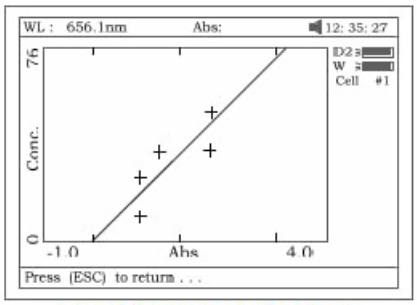


Fig 34 linear through zero fit

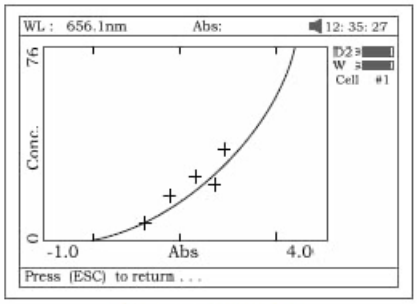


Fig 35 square fit

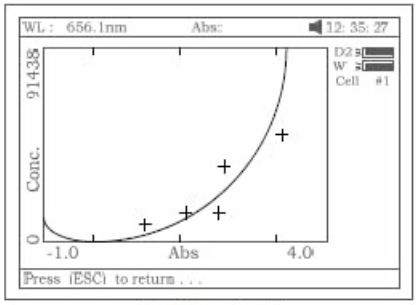


Fig 36 cubic fit

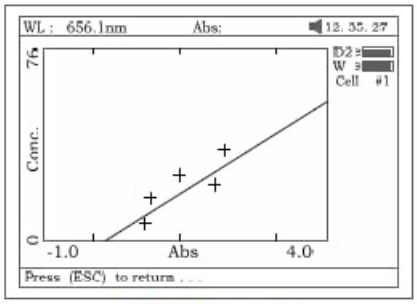


Fig 37 linear fit

Figure 5: Examples of standard curve fitting options (linear, square, cubic, linear through zero fit) as displayed on the spectrophotometer screen.

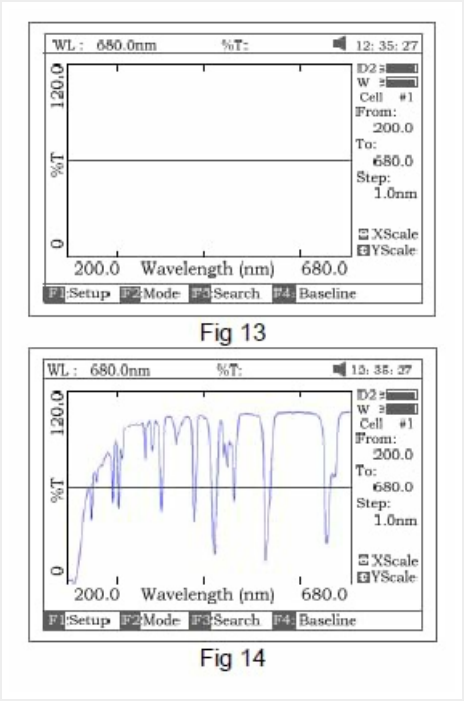


Figure 6: Examples of spectrum scanning results displayed on the spectrophotometer screen, showing both a flat baseline and a sample spectrum.

For advanced data management and analysis, optional PC download software and PC Windows application software are available. Connect the spectrophotometer to a computer via the USB port to utilize these features.

4. Maintenance

4.1 Cleaning

Keep the exterior of the instrument clean by wiping it with a soft, damp cloth. Do not use abrasive cleaners or solvents. For the optical components, use only lens paper or a soft, lint-free cloth specifically designed for optics, and avoid touching the optical surfaces directly.

4.2 Cuvette Care

Thoroughly clean cuvettes immediately after use to prevent residue buildup. Rinse with distilled water and dry them completely. Store cuvettes in a clean, dust-free environment. Avoid scratching the optical surfaces of the cuvettes.

4.3 Dust Cover

Always place the provided dust cover over the spectrophotometer when it is not in use to protect it from dust and environmental contaminants.

5. Troubleshooting

This section provides solutions to common issues. For problems not listed here or if issues persist, contact technical support.

Problem	Possible Cause	Solution
Instrument does not power on.	Power cable not connected; power outlet faulty; voltage switch incorrect.	Check power cable connection; test power outlet; verify voltage switch setting.

Problem	Possible Cause	Solution
Unstable readings.	Dirty cuvettes; air bubbles in sample; instrument not warmed up; external vibrations.	Clean cuvettes; remove air bubbles; allow instrument to warm up (15-30 min); ensure stable environment.
Error message on display.	Specific error condition.	Refer to the full user manual for error code definitions and solutions. Try restarting the instrument.
Cannot connect to PC.	Incorrect cable; driver not installed; software not running.	Ensure correct USB cable is used; install necessary drivers; launch PC application software.

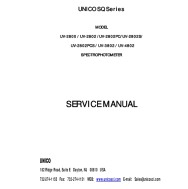
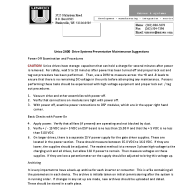
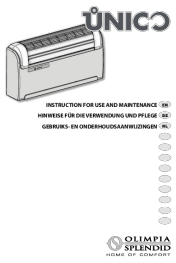
6. Specifications

- **Model:** SQ4802
- **Bandpass:** 1.8nm (Fixed)
- **Wavelength Range:** 190nm ~ 1100nm
- **Design:** Double Beam, Scanning
- **Detectors:** Two (simultaneous test and reference cell measurement)
- **Connectivity:** USB Port, Parallel Port
- **Built-in Software Functions:** T/A/Conc, Standard Curve, Kinetics, Multi-Wavelength, Scanning, DNA/Ratio
- **Power Supply:** 110/220V, 50/60Hz (Switchable, factory set at 110V)
- **Certifications:** CE Certified, ISO9001:2000 Registered
- **Product Dimensions:** 16 x 22 x 30 inches
- **First Available:** August 14, 2013
- **Manufacturer:** Unico

7. Warranty and Support

For warranty information, technical support, or service inquiries, please contact your authorized Unico distributor or the seller from whom the product was purchased. Keep your purchase receipt and product serial number readily available when contacting support.
The product is CE Certified and ISO9001:2000 Registered, ensuring adherence to international quality and safety standards.

Related Documents - SQ4802

	[UNICO SQ Series Spectrophotometer Service Manual] Comprehensive service manual for the UNICO SQ Series Spectrophotometers, covering models UV-2800, UV-2802, UV-2802PC, UV-2802S, UV-2802PCS, UV-3802, and UV-4802. Includes detailed information on specifications, layout, optical and electronic systems, troubleshooting, and maintenance procedures.
	[Unico 2400 Drive Systems Preventative Maintenance Guide] This guide provides essential preventative maintenance procedures and long-term recommendations for Unico 2400 Drive Systems. It covers critical safety precautions, power-off examinations, power-on diagnostic checks, data archiving best practices, and advice on component lifespan, including NVRAM chips and electrolytic capacitors, to ensure optimal performance and reliability of industrial drive systems.
	[Catalogo Climatizzazione 2023 Olimpia Splendid] Esplora la gamma completa di climatizzatori portatili, fissi e raffrescatori Olimpia Splendid, progettati per offrire comfort, efficienza e design italiano. Scopri le ultime tecnologie per il trattamento dell'aria.
	[Olimpia Splendid UNICO Monoblock Air Conditioner: User & Maintenance Manual] Comprehensive guide for the Olimpia Splendid UNICO monoblock air conditioner, covering installation, operation, safety, maintenance, and troubleshooting. Includes multilingual instructions.
	[Olimpia Splendid UNICO EVAN R32 User Manual and Maintenance Instructions] Comprehensive guide for the Olimpia Splendid UNICO EVAN R32 air conditioner, covering installation, usage, maintenance, and safety precautions. This manual is available in multiple languages.