Colo Science
Laboratory & Scientific Equipment

COLO.SCIENCE · TECHNICAL SPECIFICATION

DOUBLE BEAM UV/VIS SPECTROPHOTOMETER WITH PMT DETECTOR

# LEGEND-PMT

## UV/Vis Double Beam PMT Spectrophotometer · 190–900 nm · Spectral bandwidth 2 / 1 / 0.5–5 nm · Double beam · Photomultiplier detector · 7″ colour display

**LEGEND-PMT** is a double beam UV/Vis scanning spectrophotometer with a photomultiplier tube (PMT) detector for the 190–900 nm range. The PMT gives high sensitivity and a low noise level, the reference beam keeps the baseline stable during long scans and kinetic runs. Three models differ only in spectral bandwidth — fixed 2 nm, fixed 1 nm or selectable 0.5 / 1 / 2 / 4 / 5 nm — for routine UV/Vis analysis, pharmaceutical and biochemical methods, research and quality control.

UV/Vis 190–900 nm · Double beam · PMT detector · Bandwidth 2 / 1 / 0.5–5 nm · Stray light ≤0.03 %T · Noise 0.0005 A · Scanning up to 3000 nm/min · D2 + W lamps · 7″ colour display

Document type: **Technical Specification Sheet**
Product: **LEGEND-PMT UV/Vis Double Beam PMT Spectrophotometer**
Format: Print layout · A4 landscape

LEGEND-PMT product page · UV/Vis spectrophotometers — overview · UV/Vis spectrophotometers catalogue · Request quote




LEGEND-PMT · UV/Vis double beam spectrophotometer with PMT detector

| | |
|---|---|
| WAVELENGTH RANGE | 190–900 nm · auto setting |
| SPECTRAL BANDWIDTH | 2 nm · 1 nm · 0.5/1/2/4/5 nm |
| WAVELENGTH ACCURACY | ±0.1 nm at 656.1 nm · ±0.3 nm |
| STRAY LIGHT | ≤0.03 %T at 220 and 360 nm |

MODELS
LEGEND-PMT200
LEGEND-PMT250
LEGEND-PMT250S

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# LEGEND-PMT · product overview

Double beam optics and photomultiplier detection for sensitive UV/Vis measurements

## CORE TECHNOLOGY

**Double beam optics** with a 1200 lines/mm grating — the reference beam compensates lamp drift: stability ±0.0005 A/h, baseline flatness ±0.001 A.

**Photomultiplier tube (PMT) detector** — high sensitivity and noise of 0.0005 A at 500 nm.

**Deuterium and tungsten lamps** in socket-type holders — lamp replacement without optical realignment.

**Three bandwidth versions:** fixed 2 nm, fixed 1 nm or selectable 0.5 / 1 / 2 / 4 / 5 nm.

**Photometry, quantitation, kinetics and wavelength scanning**, multi-wavelength measurement and protein / DNA test.

**Scanning speed** high, medium or low, up to 3000 nm/min; automatic wavelength setting.

**Memory up to 1024 MB** for test data and working curves; USB storage and export to Excel.

**Large sample compartment** for cuvettes with path lengths from 5 to 100 mm; PC software in standard delivery.

## PRODUCT HIGHLIGHTS



**Quartz and glass cuvettes**
2 quartz and 4 glass cuvettes, 10 mm path length, in standard delivery.



**Automatic 8-cell holder**
Series of up to eight 10 mm cuvettes measured in sequence (option).



**Path length 5–100 mm**
Large sample compartment for long-path cells and low concentrations.



**Peltier / sipper system**
Temperature-controlled measurement and sample aspiration (option).

## APPLICATIONS

Pharmaceutical analysis

Clinical testing

Biochemistry · DNA / protein

Petrochemical industry

Environment & water

Quality control

| OPTICS | DETECTOR | PHOTOMETRIC ACCURACY | NOISE |
|---|---|---|---|
| Double beam · 1200 lines/mm | Photomultiplier tube (PMT) | ±0.002 A (0–0.5 A) | 0.0005 A at 500 nm |

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# LEGEND-PMT · technical parameters

Double beam · 190–900 nm · PMT detector · three bandwidth versions

## TECHNICAL PARAMETERS

| | |
|---|---|
| **Optical system** | Double beam; grating 1200 lines/mm |
| **Wavelength range** | 190–900 nm |
| **Spectral bandwidth** | LEGEND-PMT200: 2 nm<br>LEGEND-PMT250: 1 nm<br>LEGEND-PMT250S: 0.5 / 1 / 2 / 4 / 5 nm |
| **Wavelength accuracy** | ±0.1 nm at 656.1 nm · ±0.3 nm over the range |
| **Wavelength repeatability** | ≤0.1 nm |
| **Wavelength setting** | Automatic |
| **Photometric accuracy** | 0.2 %T (0–100 %T)<br>±0.002 A (0–0.5 A) · ±0.004 A (0.5–1 A) |
| **Photometric repeatability** | ≤0.15 %T (0–100 %T)<br>0.001 A (0–0.5 A) · 0.002 A (0.5–1 A) |
| **Photometric range** | 0–200 %T · −4 to 4 A · 0–9999 C (0–9999 F) |
| **Stray light** | ≤0.03 %T at 220 nm and 360 nm |
| **Stability** | ±0.0005 A/h at 500 nm |
| **Baseline flatness** | ±0.001 A |
| **Noise** | 0.0005 A at 500 nm |

| | |
|---|---|
| **Measuring modes** | T, A, C, E |
| **Functions** | Photometric measurement, quantitation, kinetics, wavelength scan, multi-wavelength, protein / DNA test |
| **Scanning speed** | High, medium, low · max. 3000 nm/min |
| **Light source** | Deuterium and tungsten lamps, socket type |
| **Detector** | Photomultiplier tube (PMT) |
| **Cell holder** | 10 mm single cell holder (standard) |
| **Sample compartment** | Cuvettes with path length 5–100 mm |
| **Display** | 7″ colour display, graphic interface |
| **Data memory** | Up to 1024 MB for test data and working curves |
| **Data output** | USB drive, USB host, RS232 · export to Excel |
| **PC software** | Included in standard delivery |
| **Power supply** | AC 110–220 V, 50–60 Hz |

## WHY A PHOTOMULTIPLIER (PMT) DETECTOR

In a photomultiplier tube, light striking the photocathode releases electrons that are multiplied along a chain of dynodes — the signal is amplified inside the detector, before any electronics. This internal gain makes the difference whenever little light reaches the detector — dense or strongly absorbing samples, the deep UV and narrow slits.

**High sensitivity**

Weak light signals are amplified inside the tube — reliable readings at low transmittance and for trace concentrations.

**Low noise at high absorbance**

Stable signal where only little light passes the sample — photometric range up to 4 A.

**Strong deep-UV performance**

Better signal-to-noise near 190–230 nm, where lamp energy is lowest — nucleic acids, proteins, organic compounds.

**Narrow bandwidth without compromise**

At 1 nm or 0.5 nm less light passes the slit; the PMT keeps the signal high so resolution does not cost precision.

| | PMT detector (LEGEND-PMT) | Silicon photodiode |
|---|---|---|
| **Signal amplification** | Internal gain in the tube | No internal gain |
| **Low-light / high-absorbance work** | Preferred choice | Limited by noise |
| **Wavelength coverage** | 190–900 nm — optimised for UV and visible | Up to 1100 nm, including near-IR |
| **Best suited for** | Research, pharmaceutical and biochemical methods, narrow bandwidths | Routine UV/Vis and near-IR measurements |

# LEGEND-PMT · accessories and sample handling

Standard delivery and optional cell holders, film holders and sampling systems

## ACCESSORIES



**Quartz and glass cuvettes, 10 mm**

STANDARD



**Automatic 8-cell holder, 10 mm**

OPTIONAL



**Manual 4-cell holder, up to 100 mm**

OPTIONAL



**Single cell holder, 10 mm**

OPTIONAL



**Adjustable XY micro cell holder**

OPTIONAL



**Single-hole film holder**

OPTIONAL



**Manual 4-position film holder**

OPTIONAL



**Integrating sphere**

OPTIONAL



**Test-tube rack**

OPTIONAL



**Peltier / sipper system**

OPTIONAL

### Standard delivery

| | |
|---|---|
| **Instrument** | LEGEND-PMT UV/Vis double beam spectrophotometer |
| **Cell holder** | Single cell holder, 10 mm |
| **Cuvettes** | 4 × glass cuvette, 2 × quartz cuvette, 10 mm path length |
| **Software** | PC software |
| **Cable · documents** | Power cable · operation manual |

### Optional

| | |
|---|---|
| **Cell holders** | Automatic 8-cell holder · manual 4-cell holder up to 100 mm · adjustable XY micro cell holder |
| **Solids and films** | Film holders · integrating sphere · reflectance accessory |
| **Sampling systems** | Peltier / sipper system · test-tube rack |
| **Printer · software** | Built-in thermal printer · 21 CFR Part 11 compliant software |

Cell holders and cuvettes are selected according to sample volume and path length; COLO confirms the set with the quotation.

PATH LENGTH
**5–100 mm**

CELL POSITIONS
**1 standard · 8 automatic (option)**

SAMPLE TYPES
**Liquids · films · solids · tubes**

TEMPERATURE CONTROL
**Peltier / sipper (option)**

# LEGEND-PMT · configuration and support

Ordering information, configuration checklist and contact

## OPERATION, CONFIGURATION AND SUPPORT




**LEGEND-PMT · photometry, wavelength scan, quantitation, multi-wavelength, kinetics and protein / DNA test on the instrument**

### Ordering information

| | |
|---|---|
| LEGEND-PMT200 | 190–900 nm · bandwidth 2 nm |
| LEGEND-PMT250 | 190–900 nm · bandwidth 1 nm |
| LEGEND-PMT250S | 190–900 nm · bandwidth 0.5 / 1 / 2 / 4 / 5 nm |
| Power | AC 110–220 V, 50–60 Hz |

### Configuration checklist

**Methods and resolution:** routine UV/Vis at 2 nm, 1 nm for narrower bands, selectable 0.5–5 nm where a method prescribes the bandwidth.

**Samples:** solutions, micro volumes, films or solids — defines cell holders, film holders, integrating sphere or reflectance accessory.

**Throughput and temperature:** automatic 8-cell holder for series, Peltier / sipper for temperature-controlled and kinetic work.

**Data:** PC software as standard; 21 CFR Part 11 software and built-in printer as options.

SALES AND SUPPORT

### COLO Lab Experts
### Polje ob Sotli 4, SI-3255 Buče, Slovenia

**Selection guidance:** send your sample type, wavelength range and methods — we confirm the model, accessories and delivery time with the quotation.

QUICK CONTACT

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sales@colo.si
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COLO.SCIENCE · SPECTROPHOTOMETRY SUPPORT

### Need help choosing the bandwidth, cell holders or the right configuration?

Send your sample type, the wavelengths and methods you use and the number of samples per day — we propose the model and configuration and confirm it with the quotation.

Request quotation | sales@colo.si | +386 70 713 437

Specifications are subject to change without notice. Values refer to standard laboratory conditions.