IDR150 UV Spectroradiometer for IEC 60335 (200-400nm)

The IDR150 double monochromator offers superior stray light performance and detector signal recovery electronics in a single compact transportable unit.

Composed of two 150mm focal length Czerny-Turner monochromators arranged for additive dispersion with a stepping motor driven sine bar grating drive, the IDR150 can be configured to include a single or dual exit ports. Grating drive control electronics are located to the base of the unit alongside the signal recovery electronics required to interface up to two detectors, including a dual-channel picoammeter and a high voltage power supply for operation of detectors in the photoemissive or photoconductive modes.

Core benefits

- Superlative stray light performance
- Compact and reliable monochromator
- Benefit of a single-unit solution
- High accuracy across UV-VIS-IR applications

Features

- Two 150mm focal length monochromators in Czerny-Turner mount
- Sine bar driven pair of interchangeable, kinematically mounted diffraction gratings
- One entrance and up to two exit ports, with automated mirror-based selection
- Intergrated drive electronics, dual-channel picoammeter and high voltage power supply
- Compatible with the full range of sources, detectors and accessories of the Bentham portfolio
- Fully automated through USB 2.0 interface

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Specification

Optical Layout

Configuration	Pair symmetrical Czerny Turner monochromators, additive dispersion
Focal length	- Total focal length: 300mm - Individual units: 150mm
Grating mount	Kinematic
Number of gratings	1 pair
Grating size	33x33mm
Aperture ratio	f/4
Number of entrance/exit ports	1 entrance, 1-2 exits

Opto-Mechanical

Wavelength scanning	By integrated stepping motor and micro-stepping drive electronics
Slit type	Fixed, micrometer or motorised variable
Slit width & height	10μm-10mm (W) x 20mm (H)
Filter size	- 6 position filter wheel : 25mm diameter - 8 position filter wheel : 22mm diameter

Opto-Performance (quoted for typical 2400 g/mm gratings)

Spectral range	200-600nm
Linear dispersion	5.4nm/mm
Wavelength accuracy	± 0.15nm, ± 0.05nm with software correction
Wavelength reproducibility	± 0.05nm
Resolution full/reduced slit height	0.25/0.1nm
Stray light rejection at 2.5 FWHM	10^{-8}
Wavelength sweep speed	30nm/s
Spectral range	200-600nm

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487 Dual-Channel Picoammeter Module - Electrical

Channel 1 input	Current input to picoammeter
Channel 2 input	Current input to picoammeter
Gain ranges	10^{10}-10^{5} V/A
Maximum current Input	100μA
Frequency response	DC to 30Hz
Gain accuracy	+1%
Gain stability	200ppm/°C
Output stability	5ppm/°C to 500ppm/°C depending on sensitivity
Linearity	< 0.025% departure from linearity from zero to full scale
ADC resolution	4½ digit BCD (0 to 19999) i.e. > 14 bit resolution
ADC integration time	100ms
Auxiliary input range	0- 9.8V
Picoammeter input impedance	Virtual earth
Auxiliary input impedance	1 MΩ

415 High Voltage Power Supply Module - Electrical

Output voltage range	-350 to -1500V
Maximum current	1.5mA
Temperature stability	100 ppm/°C
Stability to voltage fluctuations	25ppm for 10% change in line voltage
Ripple and noise	100ppm peak-peak