cermax xenon lighting

Features

- Very robust ceramic body
- Integrated reflector
- Broad band xenon emission spectrum
- CW operation
- Instant ON

Typical Applications

- Tunable Excitation Source for Fluorescence Applications
- Photo-Activation Source for Photo Therapy Applications
- Medical Fiber Optic Illuminators Used for Endoscopy, Surgical Headlamp, Surgical Microscropy
- Spectroscopy
- UV Curing
- Video Projection

Available Related Products

Power supplies, accessories and complete fiber optic systems

Datasheets available upon request

Description

PerkinElmer Optoelectronics' Cermax® xenon short arc lamps and associated operating equipment are a unique and innovative approach to many challenging and demanding lighting applications.

Utilizing an integrated parabolic or ellipsoidal reflector, Cermax® lamps produce high intensity, collimated or focused light output. Due to the xenon lamps broad color spectrum, the lamp is filtered to emit either visible, UV or IR light depending on application or usage. With their internal reflector and rugged ceramic body and seal construction, Cermax® lamps are a safe and compact alternative to conventional quartz xenon lamps making them ideal for such applications as medical endoscopy, fiber optic illumination and video projection.

Cermax® Xenon Arc 1.5" Lamps

Cermax® Xenon Arc 1.0" Lamps

Cermax® Xenon Arc Mini Lamps

Cermax® Xenon Arc Lamps

Technical Specification

Part Number	Power Watts	Operating Current Amps (DC)	Ignition Voltage Vdc	Voltage kV min.	Temperature	Arc Gap	Reflector	Window Diameter
PE80AF/AUV	85–100	7–10	10.5–13.5	28	120˚C	.025"	Parabolic	.770"
PE80A-10F/AUV	85–100	7–10	10.5–13.5	28	120˚C	.025"	Ellipsoidal	.770"
PE80A-13F/AUV	85–100	7–10	10.5–13.5	28	120˚C	.025"	Ellipsoidal	.770"
PE150AF/AUV	100–150	10–14	10–13.6	28	120˚C	.032"	Parabolic	.770"
PE150A-10F/AUV	100–150	10–14	10–13.6	28	120˚C	.032"	Ellipsoidal	.770"
PE150A-13F/AUV	100–150	10–14	10–13.6	28	120˚C	.032"	Ellipsoidal	.770"
PE125BF	75–150	7–14	9.5–12.5	23	150˚C	.044"	Parabolic	1"
PE125BUV	75–150	8–14	9.5–12.5	23	150˚C	.044"	Parabolic	1"
PE125B-10F/UV	75–150	7–14	10–12.5	23	150˚C	.038"	Ellipsoidal	1"
PE175BF	150–200	12–16	11–14	23	150˚C	.045"	Parabolic	1"
PE175BUV	150–200	13–16	11–14	23	150˚C	.045"	Parabolic	1"
PE175B-10F/UV	150–200	12–16	10.5–13.5	23	150˚C	.038"	Ellipsoidal	1"
PE300BF	180–320	10–22	13–16	23	150˚C	.049"	Parabolic	1"
PE300BUV	180–320	11–22	13–16	23	150˚C	.049"	Parabolic	1"
PE300B-10F/UV	175–305	13–23	11.5–15	23	150˚C	.038"	Ellipsoidal	1"
PE300C-10F/UV	175–300	13–23	11.5–15	23	150˚C	.045"	Ellipsoidal	1"
PE300C-13F/UV	175–300	13–23	11.5–15	23	150˚C	.045"	Ellipsoidal	1"
PE500C-10F/UV	350–525	23–35	14–16.5	30	150˚C	.045"	Ellipsoidal	1"
PE500C-13F/UV	350–525	23–35	14–16.5	30	150˚C	.045"	Ellipsoidal	1"
PE700C-10F/UV	600–750	35–46	15.5–18	38	180˚C	.045"	Ellipsoidal	1"
PE700C-13F/UV	600–750	35–46	15.5–18	38	180˚C	.045"	Ellipsoidal	1"
PE500DF/DUV	340–575	20–32	16–21	35	150˚C	.090"	Parabolic	2"
PE1000DF/DUV	850–1050	46–54	18.5–22	35	150˚C	.090"	Parabolic	2"
PE1000D-10F/UV	600–1050	30–56	15–24	28	150˚C	.062"	Ellipsoidal	1.375"
PE1000D-13F/UV	600–1050	30–56	15–24	28	150˚C	.062"	Ellipsoidal	1.375"
PE1200D-10F/UV	950–1250	45–70	17–22	28	160˚C	.067"	Ellipsoidal	1.375"
PE1200D-13F/UV	950–1250	45–70	17–22	28	160˚C	.067"	Ellipsoidal	1.375"
PE1500D-10F/UV	900–1550	45–80	17–23	28	160˚C	.075"	Ellipsoidal	1.375"
PE1500D-13F/UV	900–1550	45–80	17–23	28	160˚C	.075"	Ellipsoidal	1.375"

PE=PerkinElmer
A=0.75"
B=1"
C=1.4"
D=2"
E=3"
F=UV Filtered Output
UV=Enhanced Output
-10=f/1 reflector (elliptical)
-13=f/1.3 reflector (elliptical)

cermax xenon lighting

Features

- Output of 3480 lumens
- Input voltage: 90–264VAC, 50/60 Hz, auto select
- Line cord: IEC320, 6', US and European options
- ACMI fiber optic adapter—Storz, Olympus, Wolf, ACMI, or Liquid Light Guide
- Mechanical shutter: continuously adjustable from front panel knob, 0–100%
- Main power switch: located on rear panel
- AC power connector: located n rear panel, dual fuses
- Warranty: 12 months, excluding lamp

Typical Applications

- Tunable Excitation Source for Fluorescence Applications
- Photo-activation Source for Photo Therapy Applications
- Medical Fiber Optic Illuminators used for Endoscopy, Surgical Microscopy, and Surgical Headlamp
- Spectroscopy
- Dental Curing

Datasheets available upon request

Description

The XL-2000 fiber optic light source is a superior choice for machine vision, endoscopy, boroscopy, microscopy, minimally invasive surgery, headlamps, and dental curing. This is a high performance light source, which is light weight, compact and cost competitive with lower performing light sources.

This light source utilizes the latest in Cermax® technology, the PE300C-10F, 300 watt xenon lamp. This lamp sets new standards in optical efficiency and ease of use. As with all Cermax® lamps the PE300C-10F has an integral reflector, extremely high brightness, excellent color rendering, stable color over life and operating range, instant-on operation, and modulation capability.

The XL-2000 Fiber Optic Light Source can be supplied with fiber optic adapters for Storz, Olympus, Wolf, ACMI or Liquid Light Guides. A manually operated mechanical shutter allows the output intensity to be continuously adjusted from 0–100% without affecting color temperature. Additionally, this unit can be customized to individual specifications to meet all customer needs.

Optional Features

- Constant output: Optical feedback
- Electronic shutter
- Remote on/off
- Turret fiber optic adapter—Storz, Olympus, Wolf, ACMI, or Liquid Light Guide
- Hour meter
- Lamp aging/Over voltage indicator
- Dental adaptation—filters, EPROM, switches, membrane control panel
- Alternate fiber optic adapters—Storz, Olympus, Wolf, Liquid Light Guide, turret or custom.

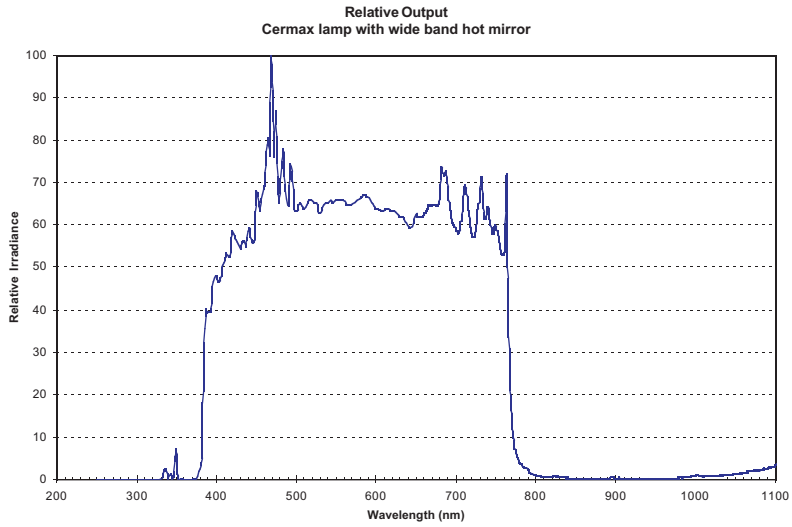
Fiber Optic Light Source—
XL-2000

XL-2000 Fiber Optic Light Source

Technical Specification

Part Number	Dimension inches	Weight lbs.	Operating Temperature	Storage Temperature	Humidity non-condensing	Noise
XL-2000	11.5W x 4.5T x 8.37D	9.75	6–40˚C	20–+85˚C	0%–95%	<45 dB

Spectral Output



guided arc pulsed xenon lighting

Features

- Small size
- High radiant intensity
- Continuous spectrum UV-VIS-IR
- Long life
- Adjustable intensity control
- Ozone free windows and collimating lens options
- Metal enclosure for improved EMI performance
- Optional SMA fiber optic connector
- Customization available

Typical Applications

- Absorption Analysis
- Clinical Chemistry Analysis
- Liquid Chromatography
- Immunoassay Systems
- Fluorimetry
- Gas Chromatography
- Colorimetry
- Machine Vision
- Particle Sizing
- Portable Instrumentation

Principle of Operation

Miniature xenon flashlamp systems that offer exceptional arc stability, microsecond flash duration and long life characteristics.

Datasheets available upon request

Description

The RSL2100 is a miniature, pulsed xenon system with broadband spectrum from UV to IR. The system operates at up to 2 watts and produces high peak intensities from 200–1100+ nm.

The RSL3100 offers SMA connector flexibility, intensity control and reduced EMI, all in a small package designed to meet CE directives. Along with a standardized “D-Sub” connector, various window options and optimized lamp alignment, the new RSL3100 meets the most demanding system requirements. The RSL3100 operates at up to 2 watts and offers high radiant, broad-band optical energy with the long life customers have grown to expect.

RSL2100

RSL3100

Input Specification

Part Number	Voltage	DC Current	Peak Current	Trigger	Input Connector
RSL2100	11–15 VDC	0.2 amps RMS	1.0 amps	TTL	9-pin sub-D
RSL3100	11–28 VDC	0.2 amps RMS	1.0 amps	TTL	9-pin sub-D

Opto-isolated, +5 V TTL Compatible, 20–50 mA Peak Input, 10–100 µsec Pulse Width, Leading Edge Trigger, Internal Resistor 150 ohms.

Electrical Output

Part Number	Voltage	Power (Joules/sec)	Standard Discharge Capacitor	Flash Rate Hz
RSL2100	400–600 VDC	2 Watts max.	0.047 min. µfd	$F_{MAX}=2/E$
RSL3100	400–600 VDC	2 Watts max.	0.047 min. µfd	$F_{MAX}=2/E$

$E=1/2CV^2$.

Power=Joules x Flash Rate

Light Output

Part Number	Spectral Range	Stability CV	Lifetime
RSL2100	190–2,000 nm	<3%	>1 x 10^8 Flashes
RSL3100	160–5,000 nm	<3%	>1 x 10^8 Flashes

CV or Coefficient of Variation is Defined as: CV%=(standard deviation of 20 flashes) ÷ (mean of 20 flashes)

Operating Temperature: 32 to 104˚F (0 to 40˚C)

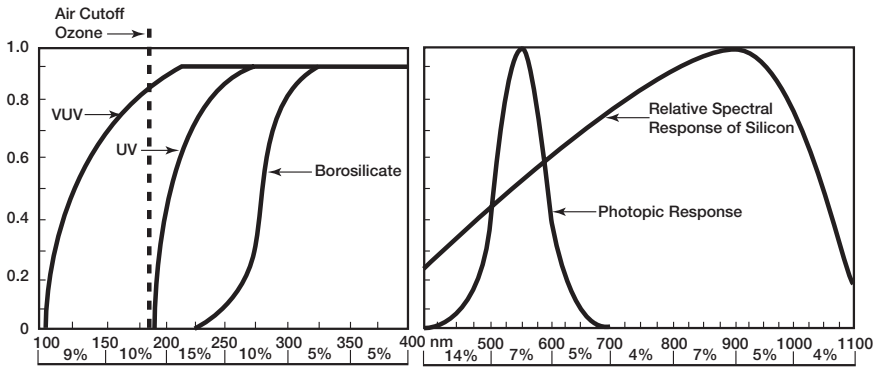
Storage Temperature: -40 to 194˚F (-40 to 90˚C)

Humidity: 95% RH, Non-condensing

Shock and Vibration: 1.5G, 5–200 Hz (Mil-STD-810C)

Safety and EMI Compliance: Designed to Meet EN60950

Spectral Output



guided arc pulsed xenon lighting

Features

- Exceptional arc stability
- High radiant intensity
- Continuous spectrum UV-VIS-IR
- Long life
- High repetition flash rates
- Low heat radiation
- Microsecond flash durations
- Various envelope materials
- No warm up period
- High efficiency output in the blue
- Simple fiber optic coupling
- Small size

Typical Applications

- Absorption Analysis
- Clinical Chemistry Analysis
- Liquid Chromatography
- Immunoassay Systems
- Fluorimetry
- Gas Chromatography
- Colorimetry
- Machine Vision
- Particle Sizing

Available Related Products

Power Supplies:
- PS-1105
- PS-1110
- PS-1120

FlashPacs:
- LS-1102
- LS-1130

Lite-Pac® Trigger Modules:
- FYD-1101
- FYD-1104
- FYD-113-
- FYD-1150
- FYD-1153

Datasheets available upon request

Description

The 1100 Series short arc xenon flashlamps are unconfined arc flashlamps which produce microsecond duration pulses of broadband light of high radiant intensities. Capable of operating at high repetition rates, these small flashlamps generate light over a continuous spectrum from ultraviolet to infrared. Exceptional arc stability and life characteristics will make the 1100 Series Flashlamps indispensable in precision photometry, radiometry, and spectroradiometry. When coupled with the 1100 Series Trigger Modules and highly regulated-low ripple power supplies, the short arc flashlamps make ideal sources of pulsed light for absorption analysis, immunoassay systems, fluorescent photometers, spectroradiometry, liquid chromatography, gas chromatography, colorimetry and ultraviolet applications.

A broad range of flashlamp, trigger modules, and power supply configurations are available to satisfy the most demanding application.

The FX-1160 Reflector Lamp has greater than 40% more usable light intensity than our standard FX-1150 and is completely interchangeable. PerkinElmer customers have the option of either taking advantage of the greatly increased light output or they can operate the FX-1160 at a reduced input energy. Lower energy operation equates to increased lamp life and stability.

The hemispherical reflector internal to the FX-1160 should not be confused with competitive types employing paraboloids or ellipsoids in which all of the forward direct light is nonrecoverable and becomes a serious source of optical scattering. PerkinElmer's FX-1160 has an electrode orientation which does not block the forward light emission and therefore does not cause a "black hole" in the output beam profile.

The optical design of the FX-1160 is ideal for use with lenses and fiber bundles, and provides the additional advantage of reduced optical noise by preventing back-plane scattering caused by the pin base. Applications that will benefit from this new PerkinElmer product introduction include: Absorption Spectroscopy, Fluorimetry, HPLC and Machine Vision.

1100 Series Flashlamps

LitePac Trigger Modules with Pulsed Xenon Flashlamps

1100 Series Pulsed Xenon Flashlamps

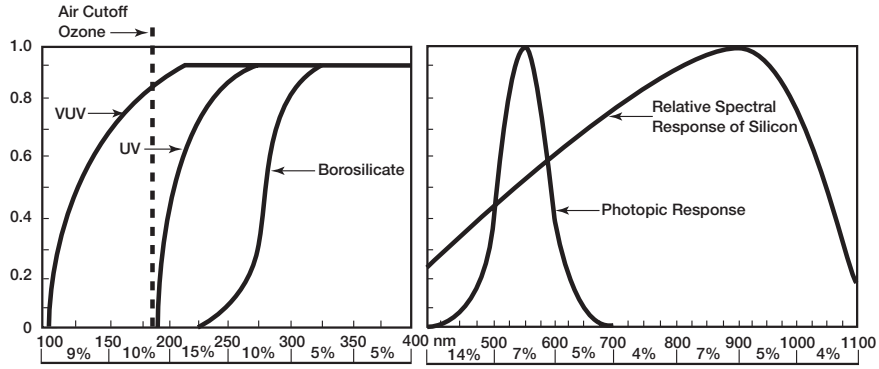
Technical Specification

Part Number	Power Level	Arc Length mm	Spectral Distribution nm	Window Material	Energy Per Flash joules max.	Average Power W max.	Voltage Vdc	Flash Rate Hz max.	Life flashes
FX 1101	Low	1.5	225–1100+	Borosilicate	0.15	10	350–1000	300	>1 x 10^9
FX 1102	Low	1.5	190–1100+	UV	0.15	10	350–1000	300	>1 x 10^9
FX 1103	Low	1.5	120–1100+	VUV	0.15	10	350–1000	300	>1 x 10^9
FX 1104	Low	3.0	225–1100+	Borosilicate	0.15	10	350–1000	300	>1 x 10^9
FX 1105	Low	3.0	190–1100+	UV	0.15	10	350–1000	300	>1 x 10^9
FX 1106	Low	3.0	120–1100+	VUV	0.15	10	350–1000	300	>1 x 10^9
FX 1130	Medium	1.5	225–1100+	Borosilicate	0.25	15	350–1000	300	>1 x 10^9
FX 1131	Medium	1.5	190–1100+	UV	0.25	15	350–1000	300	>1 x 10^9
FX 1132	Medium	1.5	120–1100+	VUV	0.25	15	350–1000	300	>1 x 10^9
FX 1160	Medium	1.5	225–1100+	Borosilicate	0.5	20	350–1000	300	>1 x 10^9
FX 1161	Medium	1.5	190–1100+	UV	0.5	20	350–1000	300	>1 x 10^9
FX 1162	Medium	1.5	120–1100+	VUV	0.5	20	350–1000	300	>1 x 10^9
FX 1163	Medium	3.0	225–1100+	Borosilicate	0.5	20	350–1000	300	>1 x 10^9
FX 1164	Medium	3.0	190–1100+	UV	0.5	20	350–1000	300	>1 x 10^9
FX 1165	Medium	3.0	120–1100+	VUV	0.5	20	350–1000	300	>1 x 10^9
FX 1150	High	1.5	225–1100+	Borosilicate	0.5	20	350–1000	300	>1 x 10^9
FX 1151	High	1.5	190–1100+	UV	0.5	20	350–1000	300	>1 x 10^9
FX 1152	High	1.5	120–1100+	VUV	0.5	20	350–1000	300	>1 x 10^9
FX 1153	High	3.0	225–1100+	Borosilicate	0.5	20	350–1000	300	>1 x 10^9
FX 1154	High	3.0	190–1100+	UV	0.5	20	350–1000	300	>1 x 10^9
FX 1155	High	3.0	120–1100+	VUV	0.5	20	350–1000	300	>1 x 10^9

Arc Stability Light Output: 1%

Arc Stability Spatial Movement: <0.1 mm

Spectral Output



guided arc pulsed xenon lighting

Features

- Up to 20x the output intensity of traditional xenon style lamps
- Exceptional arc stability
- Long life
- Continuous spectrum UV-VIS-IR
- Collimated output beam
- Ideal for use with optical lenses and fiber bundles
- Low optical noise
- Microsecond flash durations
- Various window materials (transmissions ranging from 160 nm to 20 microns)
- High repetition flash rates
- No warm-up period required
- Compact size

Typical Applications

- Absorption Analysis
- Clinical Chemistry Analysis
- Liquid Chromatography
- Immunoassay Systems
- Fluorimetry
- Gas Chromatography
- Colorimetry
- Machine Vision
- Particle Sizing

Available Related Products

Power Supplies:

PS-4400

Datasheets available upon request

Description

The new FX-4400 light source from PerkinElmer Optoelectronics is a compact, high-output, long-life pulsed xenon flashlamp that offers exceptional arc stability, microsecond pulse durations and a high-intensity continuous line spectrum from the deep UV to the far IR.

The lamp utilizes an integral parabolic reflector to provide a collimated output beam and is capable of operating at up to 60 Watts average power. This new design measures approximately the same size as our traditional pulsed xenon lamps, yet provides up to 20X the light output intensity. This allows customers the option of either taking advantage of the greatly increased light output or operating the FX-4400 at a reduced input energy for increased lamp life and stability.

Lamp life exceeds 1 billion flashes, when operating at an input energy of up to 0.5 Joules per flash. The maximum flash rate is 1 kHz for an input energy of 60 milli Joules. Several window materials are available to provide customers with transmission output ranging from 160nm to 20 microns.

PerkinElmer will work closely with OEM's to customize the light source and related electronics to meet the most demanding applications. Also, our broad technical expertise in light sources, optics, detectors, light management and signal processing allows us to work with and provide OEM's with unique Sensor solutions that generate, control and measure light.

High Output Xenon Flashlamp—FX-4400

FX-4400 Series High Output Xenon Flashlamp

Technical Specification

Part Number	Energy Per Flash Joules* max.	Average Power W**	Voltage volts	Flash Rate Hz***	Life flashes****	Output Stability*****	Spectral Distribution	Window Material
FX-4400	1.0	60	400–1000	1000	>1 x 10^9	<3%	275–2000+	Borosilicate
FX-4401	1.0	60	400–1000	1000	>1 x 10^9	<3%	190–2000+	UV Glass
FX-4402	1.0	60	400–1000	1000	>1 x 10^9	<3%	160–4000	Sapphire
FX-4403	1.0	60	400–1000	1000	>1 x 10^9	<3%	600–20,000	ZnSe

* Input Energy or $E=1/2\ CV^2$ where E=Discharge Energy (joules)

C=Discharge Capacitor Value

V=discharge Voltage

The lamp is capable of an input energy higher than 1.0 J/flash but long life cannot be guaranteed.

** Maximum Average Power or $P_{AVE}=EF$ where

P_{AVE}=Average Power (watts)

E=Discharge Energy

F=Rate of flashes in pulses per second

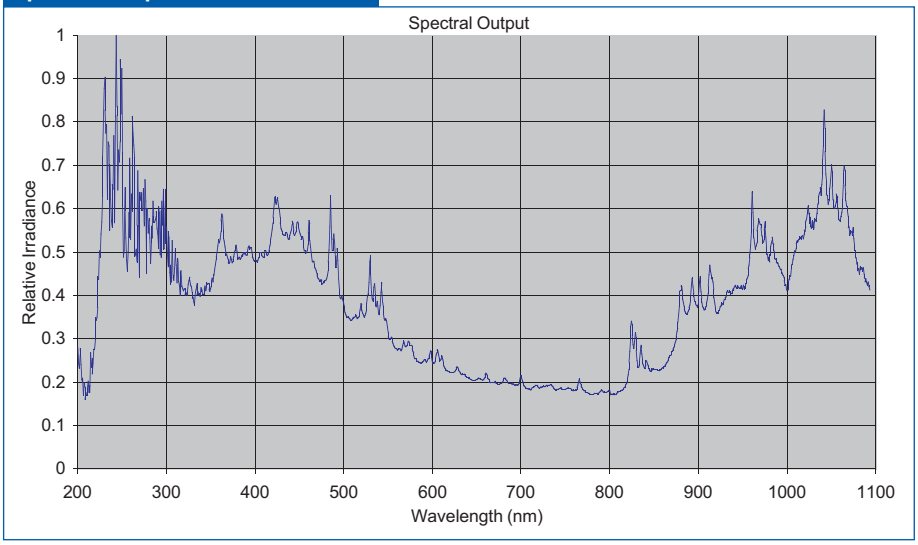
Additional cooling required when operating above 40 watts.

*** Flash rate must be set so as not to exceed 60-watts Average Power. To operate the lamp at greater than 1000 Hz consult with a PerkinElmer Product Specialist.

**** Life is primarily a function of input energy per flash ($E=1/2\ CV^2$) but is also influenced by average power and peak current.

*****Typical for most operating conditions. Lamp output stability is dependent on a number of variables including input energy, flash rate, optics design, Lite Pac and Power Supply.

Spectral Output



UV/Vis/NIR spectrophotometers

Features

- Custom OEM design solutions
- Designs from 190–1,950 nm
- High resolution
- Low stray light
- Fast data acquisition (10 ms)
- Spectral calibration
- Built-in scan control and data acquisition
- Small footprint
- Deuterium, Xenon and Tungsten sources
- Photodiode array, photodiode, CPM, SPCM or PMT type detectors
- Cuvette, fiber or gas sampling
- Solid state design
- Vibration tolerant

Typical Applications

- Molecular Spectroscopy
- Materials Analysis
- Process Control

Datasheets available upon request

Description

PerkinElmer's spectrophotometer platforms are rugged, high performance modules that can be customized for a variety of applications in the field of Analytical Chemistry, Clinical Diagnostics, Colorimetry, Process Monitoring, Food and Agriculture, Gas Chromatography and many others. The Cross Czerny-Turner design utilizes high performance optics to minimize stray light and maximize optical performance. The modules include an integrated, miniature UV-Vis or NIR light source that provide extremely stable, high-intensity broad band output to ensure maximum signal to noise. The modules also feature compact size, high speed, solid state design and RS232/USB interface.

Companies depend on PerkinElmer for their unique ability to design and manufacture precision electro-optical OEM subsystems. In doing so, we call upon our broad technical expertise in emitters, detectors, optics design, circuit design, embedded programming and signal processing. Specializing in managing light within complex optical systems, we work with OEM teams to ensure minimum lead times, maximum value and superior performance.

Cuvette Based UV/Vis Spectrophotometer

Fiber Coupled UV/Vis Spectrophotometer

Technical Specification

	UV-Vis	NIR
Spectral Range*	190–800 nm	900–1700 nm
Spectral Resolution*	<3 nm	5 nm
Detector	1024 Si	256 InGaAs
Source	Pulsed Xenon	Halogen
A/D Converter	16-bit	16-bit
Photometric Accuracy	±0.01A @1 AU	±0.02A @1 AU
Photometric Repeatability	±0.005 @1 AU	±0.01A @1 AU
Photometric Noise	0.001 @0 AU, 550 nm	0.001 @0 AU, 1400 nm
Stray Light	<0.1% @ 220 nm	<0.1%
Photometric Range	0–3 AU	0–3 AU
Minimum Scan Speed	0.035 seconds	0.035 seconds
Wavelength Producibility	0.1 nm	0.4 nm
Wavelength Accuracy	0.2 nm	0.8 nm
Outputs*	USB or RS232	USB or RS232
Computer Capability	700 MHz Pentium or equiv.	700 MHz Pentium or equiv.
Power Requirements	12 V	12 V
Size (including light source)	6" x 4" x 2"	6" x 4" x 2"
Weight	2 lbs.	2 lbs.

* Configurable for application specific requirements