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## 1100 Series - High Stability Flashlamps

# 1100 Series FlashPacs



## Description

The 1100 Series FlashPacs have been designed to combine state-of-the-art circuitry and components into a packaged light source which provides microsecond-duration pulses of broadband light with exceptional arc stability. 1100 Series FlashPacs utilize the PS1110 and PS1120 variable output power supplies in conjunction with the appropriate LitePac® trigger Module to operate several types of flashlamps.

A fully shielded steel case and EMI suppression circuitry combine to diminish the radiated and conducted noise normally associated with high peak discharge currents.

FlashPacs can be ordered with a wide range of discharge capacitance values and several types of the 1100 Series flashlamps. These systems make ideal sources of pulsed light for ultraviolet-visible absorption spectroscopy, HPLC, blood analyzers, colorimetry, machine vision and ultraviolet applications.

## Features

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



## Inputs

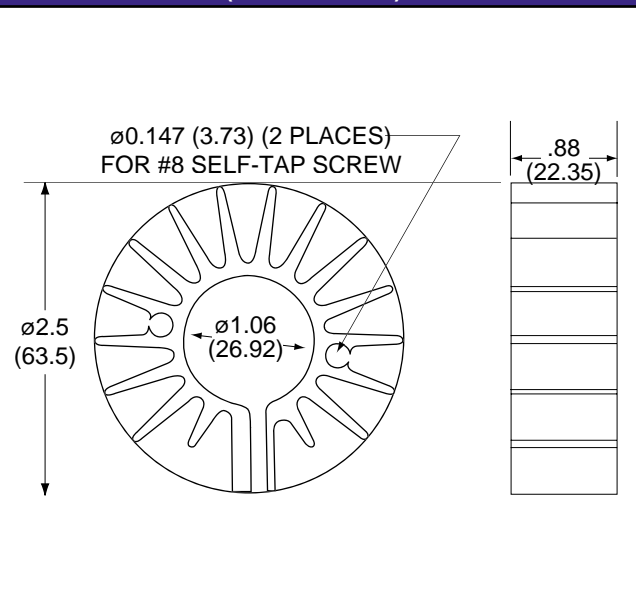
	LS 1102	LS 1130
Voltage (VDC)	11 – 28	15 – 28
DC Current (amps)	1.3 @ 12V	<1.4 @ 24V
Peak Current (amps)	3.5 @ 12V	3.5 @ 12V
Trigger	(1) TTL	(1) TTL
Vref (Vo:Vref = 100:1)	(2) 4.5 – 6.0	(2) 4 – 10
EMI Suppression	(3) YES	(4) YES

## Discharge Parameters

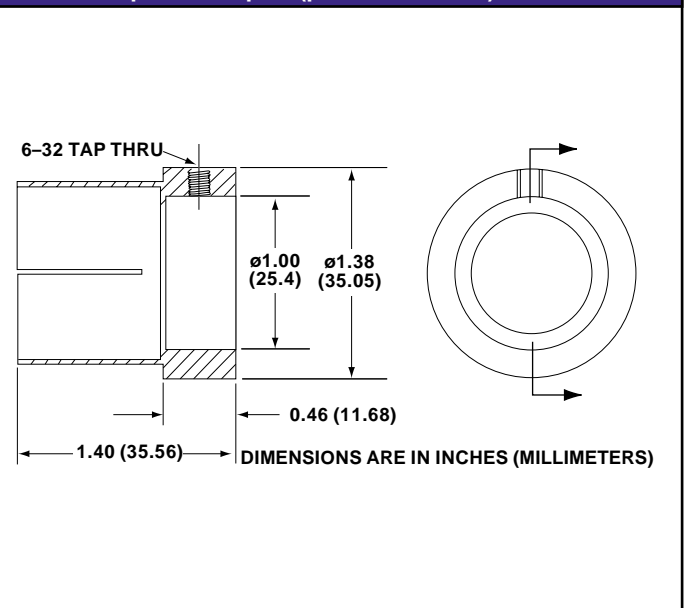
	LS 1102	LS 1130
Voltage (DC) (Vo)	(2) 450 – 600	(2) 400 – 1000
Power (watts)	10 max	20 max
Line Regulation	1%	1%
Ripple	(5) 0.5%	(5) 0.5%
Recharge Delay (µsec)	200 (Capacitor-value dependent, see next page)	200
Flash Rate (Hz)	0.1 standard (see next page for other values available)	
Discharge Capacitance (µfd)	0.1 standard (see next page for other values available)	

- Notes:
- (1) Opto-isolated, + 5V TTL compatible, 20–50 ma peak input, 10–100 µsec pulse width, leading edge trigger, internal series resistor 150 Ohms.
  - (2) Output voltage level is controlled by a reference voltage (Vref) which may be adjusted internally or applied externally. The internal/external mode is determined by the position of a jumper on the power supply PC board. When set to the internal mode, voltage is set via a potentiometer which is accessible from the rear panel of the unit on the LS 1102 and LS 1130.
  - (3) Inductor and filter capacitor for power input. All inputs through a shielded 9-PIN "D" connector.
  - (4) Common-mode inductor and filter capacitor in power input. All inputs through a shielded 9-PIN "D" connector.
  - (5) Peak-to-peak maximum with 0.1 µfd discharge capacitor at maximum output.

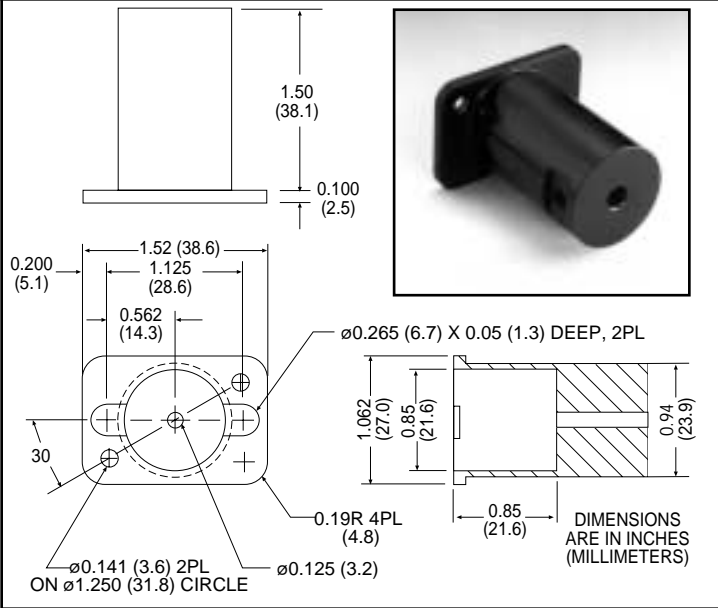
### LS-1130 Heat Sink (Part # MVS-15)



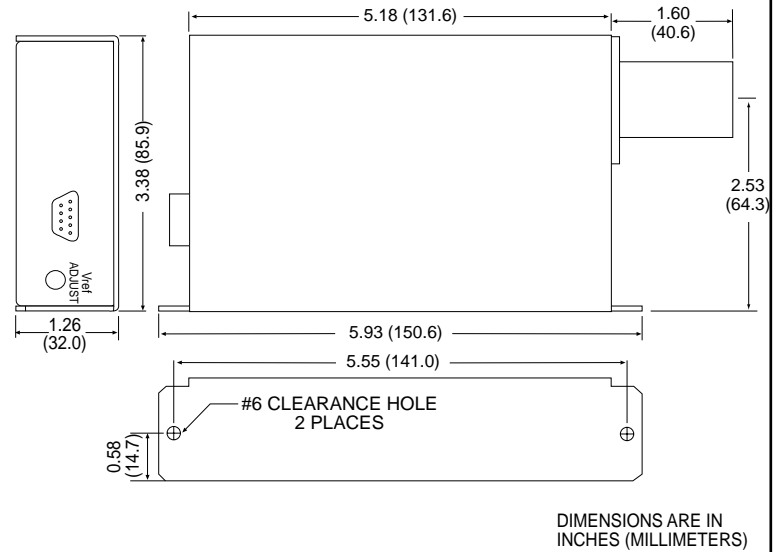
### LS-1130 Optical Adapter (part # MVS-14-1)



### LS-1102 Optical Connector



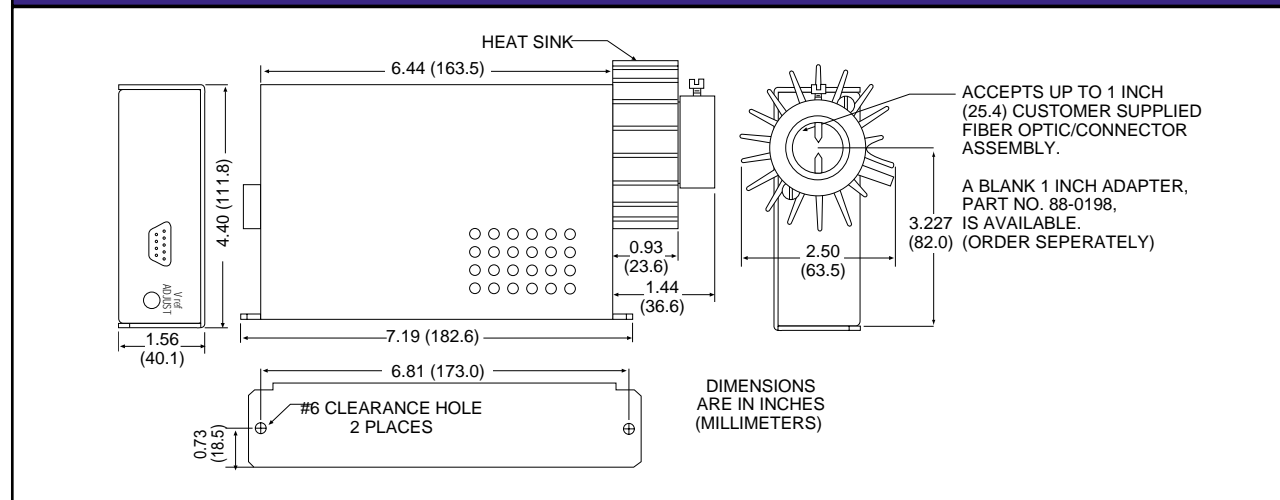
### LS-1102



### Discharge Capacitors Available

Model Number	Discharge Capacitor	Maximum Input Energy Per Flash	Maximum Flash Rate @ 600 VDC
LS 1102-1	0.1 $\mu$ fd – standard	18 mJ	550 Hz
LS 1102-2	0.22 $\mu$ fd	40 mJ	250 Hz
LS 1102-3	0.47 $\mu$ fd	85 mJ	118 Hz
LS 1102-4	1.0 $\mu$ fd	180 mJ	55 Hz
LS 1102-5	2.0 $\mu$ fd	360 mJ	28 Hz

### LS-1130



### Discharge Capacitors Available

Model Number	Discharge Capacitor	Maximum Input Energy Per Flash	Maximum Flash Rate @ 1000 VDC
LS 1130-1	0.1 $\mu$ fd – standard	50 mJ	400 Hz
LS 1130-2	0.22 $\mu$ fd	110 mJ	180 Hz
LS 1130-3	0.47 $\mu$ fd	235 mJ	85 Hz
LS 1130-4	1.0 $\mu$ fd	500 mJ	40 Hz

### Flashlamps Available for LS-1102 FlashPacs (order flashlamps separately)

Type	Arc Length (mm)	Spectral Distribution (nm)	Window Material	Stability (Intensity)	Stability (Spatial)	Jitter	Life
FX 1101	1.5 mm	225 – 1100+	Borosilicate	1%	<0.1 mm	<200 ns	>1 x 10 <sup>9</sup>
FX 1102	1.5 mm	190 – 1100+	UV	1%	<0.1 mm	<200 ns	>1 x 10 <sup>9</sup>
FX 1103	1.5 mm	120 – 1100+	VUV	1%	<0.1 mm	<200 ns	>1 x 10 <sup>9</sup>

### Flashlamps Available for LS-1130 FlashPacs (order flashlamps separately)

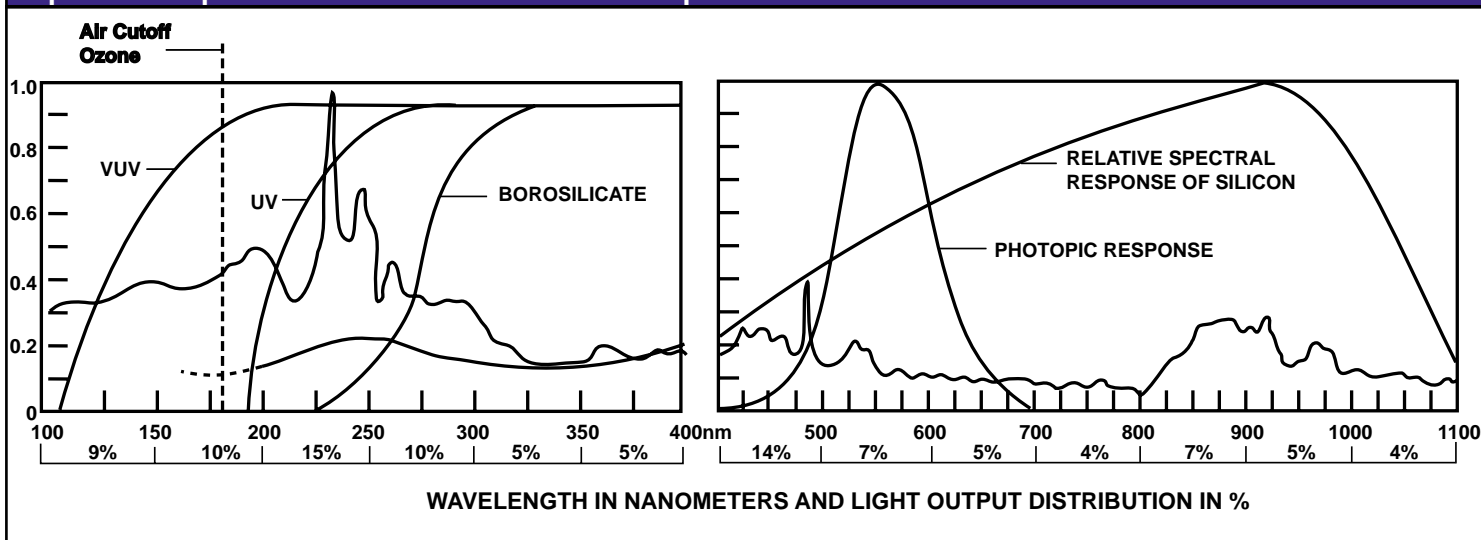
Type	Arc Length (mm)	Spectral Distribution (nm)	Window Material	Stability (Intensity)	Stability (Spatial)	Jitter	Life
FX 1150	1.5 mm	225 – 1100+	Borosilicate	1%	<0.1 mm	<200 ns	>1 x 10 <sup>9</sup>
FX 1151	1.5 mm	190 – 1100+	UV	1%	<0.1 mm	<200 ns	>1 x 10 <sup>9</sup>
FX 1152	1.5 mm	120 – 1100+	VUV	1%	<0.1 mm	<200 ns	>1 x 10 <sup>9</sup>
FX 1153	3.0 mm	225 – 1100+	Borosilicate	1%	<0.1 mm	<200 ns	>1 x 10 <sup>9</sup>
FX 1154	3.0 mm	190 – 1100+	UV	1%	<0.1 mm	<200 ns	>1 x 10 <sup>9</sup>
FX 1155	3.0 mm	120 – 1100+	VUV	1%	<0.1 mm	<200 ns	>1 x 10 <sup>9</sup>

### High Output Reflector Flashlamps for LS-1130 FlashPacs (order flashlamps separately)

Type	Arc Length (mm)	Spectral Distribution (nm)	Window Material	Stability (Intensity)	Stability (Spatial)	Jitter	Life
FX 1160	1.5 mm	225 – 1100+	Borosilicate	1%	<0.1 mm	<200 ns	>1 x 10 <sup>9</sup>
FX 1161	1.5 mm	190 – 1100+	UV	1%	<0.1 mm	<200 ns	>1 x 10 <sup>9</sup>
FX 1162	1.5 mm	120 – 1100+	VUV	1%	<0.1 mm	<200 ns	>1 x 10 <sup>9</sup>
FX 1163	3.0 mm	225 – 1100+	Borosilicate	1%	<0.1 mm	<200 ns	>1 x 10 <sup>9</sup>
FX 1164	3.0 mm	190 – 1100+	UV	1%	<0.1 mm	<200 ns	>1 x 10 <sup>9</sup>
FX 1165	3.0 mm	120 – 1100+	VUV	1%	<0.1 mm	<200 ns	>1 x 10 <sup>9</sup>

Note: The data shown in the above charts is typical for the products listed. Refer to the PerkinElmer 1100 Series Flashlamp Data Sheet and Technical Brief for complete specifications.

### Spectral Output Distribution of Xenon Flashlamps and Window Transmittance



### Outline Drawings or Specification Charts

$E = 1/2 CV^2$	where: E = Discharge energy (joules)
	C = Capacitance (microfarads)
	V = Discharge voltage (kilovolts)
$P_{AVG} = E F$	$P_{AVG}$ = Average power (watts)
	E = Discharge energy (joules)
	F = Flash rate (pulses per second)
$I_{PK} = V(C/L)^{1/2}$	$I_{PK}$ = Peak discharge current (keep below 1000 amps)
	L = Circuit inductance (use 0.5 $\mu$ H for best approximation)
$t_{1/3} = \pi (LC)^{1/2}$	$t_{1/3}$ = Pulse width at 1/3 peak.

**Note:** Peak currents should be kept below 1000 amps. Exceeding this limit could cause envelope fracture, excessive electrode wear and premature darkening.

### Caution

Some glass flashlamps are under high internal pressure, and, if broken, could result in glass particles being blown into the face and hand areas. To prevent injury, wear suitable protective devices such as safety glasses and/or face mask and gloves.

Some types of pulsed lamps generate intense ultraviolet radiation which, if not properly shielded from personnel in the area, will cause burns to any exposed skin and especially to the eyes. Do not expose any skin area or the eyes to the direct or reflected radiation of an operating lamp. If you have to view an operating lamp, always use protective covering for exposed skin area and ultraviolet-attenuating goggles for the eyes.

For more information email us at [opto@perkinelmer.com](mailto:opto@perkinelmer.com) or visit our web site at [www.perkinelmer.com/opto](http://www.perkinelmer.com/opto)

Note: All specifications subject to change without notice.

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