

FLASHLAMP DRIVER FOR HIGH ENERGY LASER SYSTEMS

PS514x

FEATURES

- 1 to 10 and more discharging channels with one charging channel
- Output voltage up to 4000 V
- Output voltage regulation better than $\pm 0.3\%$
- Up to two discharge channels per one 19" case
- LAN, RS232, CAN computer interface options
- USB for software update
- Measuring of discharge current and voltage traces and last shot energy

Applications

- Glass amplifier pumping
- Intense pulsed lighting (IPL)

Fig. 2. Example of PS5070, PS5201 and PS5144 based system for driving a few flashlamps



PS514x series flashlamp drivers are designed for multi-lamp pumping of high energy pump chambers usually based on phosphate or silicate glass rods. This is highly-customizable power supply containing one-channel charging unit PS5144k and required quantity of one or two channel discharging units PS5144i. Each discharging channel is suited to drive one lamp. The PS514x has as many discharge channels as pump chamber has flashlamps. All discharging channels work synchronically. Usually, high energy systems work at very low repetition rate – not exceeding 1 Hz down to 1 shot per hour. Hence simmer option is not applicable and lamp igniting (triggering) appears with every discharge. We usually recommend external lamp igniting with separate igniting unit (one- or multi-channel). However internal serial igniting is possible in some cases as well.

As standard front and rear panels are powder coated in RAL7035 (Light Grey). RAL7021 (Black Grey) and RAL9002 (Grey white) are possible upon request.

Description of PS514x given here is only as one example of possibilities to build a high energy powering system, and any time by ordering it can be flexibly changed. All set of charging and discharging units can be mounted to 19" standard racks (sold separately).

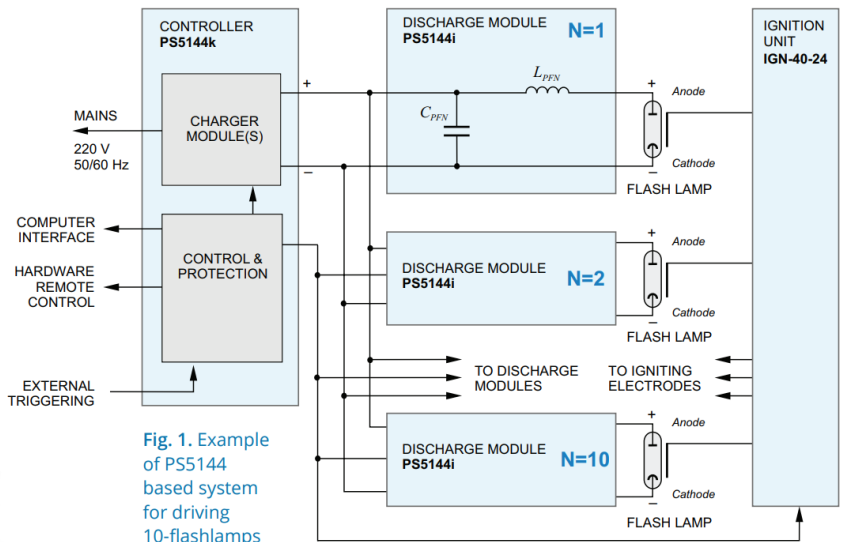


Fig. 1. Example of PS5144 based system for driving 10-flashlamps

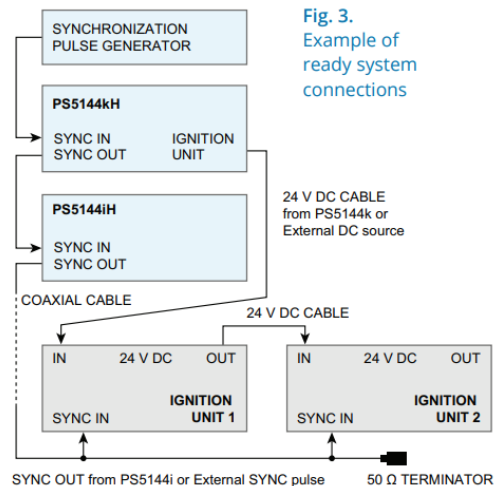


Fig. 3. Example of ready system connections

General Specifications

Charging unit		PS5144k
Number of independent outputs		1
Max. average output power P_{avg}	0.8; 1.6; 2.4; 3.2 kJ/s (options)	
internal capacitor at output	1 μ F	
Capacitor bank charging voltage U_{ch}	4000 V	
Load voltage regulation	0.3 %	
Pulse to pulse stability	0.3 %	
Voltage linearity	0.3 %	
Protection features	overvolt, overheat, interlock	
Computer interface	LAN / CAN	
Triggering mode	external	
Mains for options 0.8, 1.6, 2.4 kw of P_{avg}	single phase 220V AC (-10%, +15%) 50/60Hz; (L+N) 1F1	
Mains for option 3.2 kw of P_{avg}	3-phase 400V AC (-15%, +15%) 50/60Hz; star with neutral (L1+ L2+ L3+N) 3FY or 3-phase 208V AC (-10%, +15%) 50/60Hz. delta or star without neutral (L1+ L2+ L3) 3FD	
Power consumption, average	<1.8; <3.2; <4.5; <5.8 kw (as per options above)	
Power consumption, peak	2; 4; 6; 8 kw (as per options above)	
Dimensions	19" \times 4U front panel, 547(D) \times 440(W) mm case	
operation conditions		
Ambient temperature	Storage	from +5 to +50 $^{\circ}$ C
	Operation	from +15 to +40 $^{\circ}$ C
Humidity	below 80 % non condensing	
Protection class	IP20	
Discharging unit		PS5144i
Number of independent outputs		2 (1 as option)
Maximal capacitors bank voltage		4000 V Maximal
Capacitors bank capacity @ 3 kV		700 μ F
Typical repetition rate		<1 Hz
Computer interface		LAN
Triggering mode		Controlled by charging unit
Simmer		N/A
Mains		N/A
Dimensions		19" \times 6U or 8U front panel, 547(D) \times 440(W) mm case
Operation conditions		
Ambient temperature	Storage	from +5 to +50 $^{\circ}$ C
	Operation	from +15 to +40 $^{\circ}$ C
Humidity	below 80 % non-condensing	
Protection class	IP20	

Customized orders

Depending on customer needs, we can produce flashlamp drivers with specific average charging power, output voltage, pulse duration, repetition rate values or/and specific application areas.

CONFIGURATION EXAMPLES OF PS514X SERIES POWER SUPPLIES

Capacitor charging units

Model	PS5144k	Charging rate	Maximal voltage	Control interface
		1.5 kJ/s	3000 V	CAN, LAN
	PS5144kH	3 kJ/s	4000 V	CAN, LAN

Capacitor discharging units

Model	Number of discharge channels	PFN specifications					Flashlamp Recommended
		Capacitance	Inductance	Rated voltage	Maximal stored energy	Pulse duration FWHM	
		μ F	μ H	V	J	μ s	mm
PS5144i	2	700	40	3000	3150	350	\varnothing 15 \times 200
PS5144iH	2	500	85	4000	4000	430	\varnothing 15 \times 300

Ignition units

Model	Number of channels	Maximal output voltage for each channel	Supply voltage
IGN-30-24-1	1	9–28 kV	+24 V
IGN-40-24-1-T100	1	>40 kV	+24 V
IGN-40-24-9	9	>40 kV	+24 V
IGN-40-24-14	14	>40 kV	+24 V

