

VARIABLE PULSE DURATION FLASHLAMP DRIVER PS5021



FEATURES

- Built-in serial ignition circuit
- Built-in simmer power supply
- Internal/external triggering
- Remote control through CAN/RS-232 interface

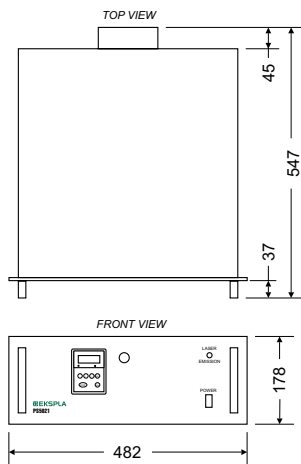
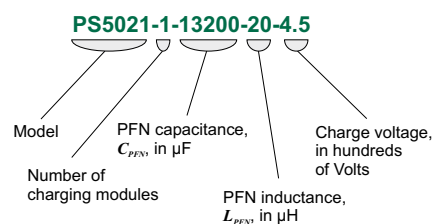


Fig. 1. Physical dimensions

Ordering / Part number information

Please indicate following points by inquiry:

- Flash lamp type (bore diameter, gap length, gas type and pressure)
- Maximal pulse energy
- Pulse duration tuning range
- Maximal pulse repetition rate



Specifications in table are given as reference. We always suggest to optimize power supply by customer's usage conditions.

PS5021 flashlamp driver is designed for pumping of variable or long pulsewidth solid-state lasers. It features variable pumping pulse in 0.5–2 ms range and output voltage of up to 450 V. Custom versions can achieve tens of milliseconds pulse duration.

Excellent pulse-to-pulse voltage stability. The charger is based on resonant inverter topology which is most efficient way to charge capacitive loads. Innovative design of charger circuit allows to charge capacitor bank with an excellent precision of 0.2%.

Built-in serial ignition circuit. The driver features a built-in serial ignition circuit. It greatly simplifies the design of laser head since external triggering circuit is not required anymore. The simmer module provides up to 900 V striking voltage. The flashlamp is ignited by 16 kV pulse of approximately 1 μs duration, applied to the flashlamp cathode. The ignition circuit reliably ignites flashlamps with up to 200 mm arc length.

Remote control. Microprocessor-based control allows seamless integration of the driver into sophisticated laser systems. The charge voltage, repetition rate and pulse duration can be controlled remotely through RS-232

and/or CAN interface. In addition, the interface allows monitoring of status and error messages. The discharge pulse can be triggered from external pulse generator facilitating synchronisation of several units.

Built-in simmer power supply. The simmer power supply improves pulse-to-pulse stability and flashlamp lifetime. It is a constant current source producing 600 mA current at up to 300 V output voltage. Other current values are available optionally. Linear xenon flashlamps of 4–6 mm bore diameter and arc length of more than 200 mm are reliably simmered.

Modular design. The output parameters of power supply can be easily modified to meet customer needs subject to active lasing material, average output power or pulse energy. The average output power of the driver can be scaled up by paralleling several charger modules. Up to four modules with resulting 6.8 kJ/s peak charging rate can be fitted into a single 19" body.

Seamless integration. The driver can be easily integrated with EKSPLA cooling units of PS1222, PS1223 and PS1245 series. Up to 6 units can be mounted into up to 25U height 19" racks providing powerful yet compact laser pumping cabinets.

GENERAL SPECIFICATIONS

Number of independent outputs	1		
Number of charging modules	1	2	3
Max. average output power P_{avg} at 10 Hz PRR ¹⁾	1.3 kJ/s	2.6 kJ/s	4.0 kJ/s
Standard charging voltage U_{ch}	350 V, 450 V, 500 V		
Pulse duration	variable		
Max pulse repetition rate	250 Hz		
Pulse to pulse voltage stability	0.2 %		
Resolution	1 V		
Ignition pulse voltage	16 kV		
Ignition pulse duration	> 1000 ns		
Simmer current options	0.6 A; 1.2 A; tunable 0.1 - 1 A		
Simmer voltage	< 300 V		
Striking voltage	< 900 V		
Protection features	overvolt, overheat, flashlamp breakdown, interlock		
Error report	no simmer current, no charge, HV connectors		
Remote control	RS-232 / CAN (CANopen on request)		
Standard C_{PFN} value	13200 or 26400 μF		
Mains	single phase 230 V (-10%, +6%) or 3-phase 380 V (-10%, +6%) ²⁾		
Power consumption, average	1.8 kW	3.2 kW	4.5 kW
Power consumption, peak	2 kW	4 kW	6 kW
Operation conditions			
Ambient temperature	from 0 to +40 °C		
Humidity	from 10 to 90 % non-condensing		

¹⁾ See Fig. 5 on page 3 for other repetition rates.

²⁾ 3-phase 200 V or 208 V mains are optional.