

GAM EX50 KrF Excimer Laser Operational Procedure

DC Excited, pulsed, max mean power 30W, maximum frequency 260, pulse width <10 ns.

Operation of this laser requires the presence of at least one trained personnel. Authorised key holders are Dr Ian Watson and Mr I Peden. At least one of the authorised keyholders should be made aware of the laser being used, experiments to be done and the protocol being implemented. A laser request form needs to be completed prior to using the laser. You have to be a registered laser user to use this equipment and be trained to use this laser. This laser is a Class IV laser; with beam contained within the protective enclosure it is a Class I laser. Always operate the laser with the correct safety eyewear on and as a Class I laser.

The laser has been installed and approved by personnel from Photonic solutions (GAM)

WARNING: THE ENERGY METER OF THE LASER HAS BEEN DISABLED AND REMOVED DUE TO THE MODIFICATION THAT WAS MADE TO THE LASER AND HENCE IF THE LASER IS OPERATED ON CONSTANT ENERGY MODE, THERE IS A POTENTIAL THAT THE LASER WILL BE DAMAGED. DO NOT OPERATE ON CONSTANT ENERGY MODE!

The energy meter, (FieldmaxII TOP, Coherent Inc., UK) should be used to monitor the power and/or the pulse energy of the laser; this can be used as a beam dump.

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1. Before starting the laser, check that the laser is connected to the UPS (unlimited power supply) which generates a mains isolated voltage and frequency and check the voltage is set to 230 V at 50 Hz.
2. There are three switches on the laser all of which must be turned on. This includes one turn key switch, one flip/lever switch, and an emergency stop switch (which usually remains on).
3. Switch on the computer (which drives the laser) and open the laser operation program called "EX50".
4. Once the program starts, it will automatically induce a warm up of the laser which takes around 8 min.
5. Once the laser has warmed up and no errors are observed on the screen, check that the gas pressure and temperature are at the correct operational region of the laser: Gas pressure ~2400 torr, and operational temperature 20 ± 4 °C.
6. Once the parameters are checked and cleared take off the silver end cap of the laser at the output coupler of the laser. Make sure the connecting tube to the enclosure is safely secured.
7. Set the desired parameters of the laser on the computer which include: continuous operation or defined number of pulses (in which case the number of pulses), the PRF and continuous voltage mode (in which case the voltage input) or continuous energy mode (in which case the energy output).
8. Once you have finished using the laser, close the program down by going to "file" and "exit". The laser will then go into a cool down mode. Leave the laser cooling by itself for 20 min plus/minus 5 min. Then switch off the lever/flip switch and the turn key.