

# Local Rules for the Use of Lasers

**Location: Department of Physics, Rutherford 880**

Person responsible for this room	Dr Stephen Wotton  Principal Research Associate, HEP Group
Laser Safety Contact for this room	Dr Stephen Wotton <a href="mailto:wotton@hep.phy.cam.ac.uk">wotton@hep.phy.cam.ac.uk</a> (+44 1223 3)37008
Reference Number	
Version and Date	Version 1, July 2017
Person signing off these Rules	Dr Stephen Wotton
Department Laser Safety Officer	Richard Gymer <a href="mailto:rwg11@cam.ac.uk">rwg11@cam.ac.uk</a>   (01223 3)37264
University Laser Protection Adviser	Libby Yates, University Safety Office <a href="mailto:Lisabeth.Yates@admin.cam.ac.uk">Lisabeth.Yates@admin.cam.ac.uk</a> (01223 7)66354

## Scope

These local rules cover the use of the Hamamatsu PLP-10-040C laser located in Rutherford 880. They cover the normal use and user maintenance operations only. They implement the University's laser safety policy at a practical level and form part of the University's duties under Section 2(3) of the Health and Safety at Work etc Act 1974.

## Description

Hamamatsu PLP-10-040C picosecond light pulser, Class 3B, 405nm, 100MHz maximum repetition rate, 100ps maximum pulse width, solid state laser diode, 200mW peak power at laser head FC connector.

## Authorised Users

Only persons who are adequately trained through attendance at the University or Department Laser Safety course, provided with in-lab local training on the specific lasers listed, and authorised through the Laser User Authorisation Form may work with the laser. Confirmation of practical in-lab training is at the end of these Local Rules.

Topics covered in local training include:

- The risk assessment
- Risk control precautions including enclosure and eye protection
- These local rules
- Checking, storage and maintenance of eye protection
- Laser beam alignment

## **Laser Controlled Area**

It is occasionally necessary to operate the laser with the enclosure open for alignment purposes. Therefore room 880 is considered a Laser Controlled Area.

The room has two exits, one to the general corridor and a second infrequently used access door to an internal room (886). Signage is displayed at both. Protective eyewear is kept near the usual corridor entrance. The room is accessed by key. This key is held by a restricted subset of HEP group members and the lab maintenance team.

## **Procedures**

At the laser head the beam is coupled into a fibre optic cable with an FC connector that enters a fully enclosed volume where the beam exits the fibre. The laser controller is key-activated and interlocked with a manual electromechanical system. Users operating the laser should obtain the key from the responsible person named above and should ensure that the interlock mechanism is correctly coupled before activating the laser.

## **Protection Measures**

The beam delivery fibre must not be disconnected from the laser head except when the laser is not powered. Users should check that the fibre is properly coupled to the head and that the beam exit end of the fibre is fully routed into the enclosure before activating the laser.

Occasionally it may be necessary to manually adjust the fibre position inside the enclosure. It is rarely necessary to do this with the laser on but if it is necessary, the laser should be pulsed at the lowest visible repetition rate and protective eyewear must be used. The user should arrange the apparatus so that the beam exits from the fibre in a direction that is not towards the enclosure opening. The user should ensure that the exit of the fibre is securely fixed.

Users should deactivate the laser and return the key when the laser is not in use.

## **Summary of Hazards**

Ocular exposure is the principal hazard. The risk only presents under the conditions described above i.e. when the beam delivery fibre is not correctly connected or installed or the fibre is broken.

The enclosure opening is relatively large and some people find it difficult to manipulate. Therefore there may be a small risk minor injury.

## **Contingency Plan**

In case of ocular exposure, the victim should immediately seek first-aider or medical assistance. Where possible the laser should be disabled to avoid exposure to third parties.

