

Information sheet

Laser systems

The operation of laser systems is subject to approval, and Messe Frankfurt Venue GmbH, Technical Event Management, must be notified in writing ("Registering a laser system" form) of the use of such devices at least six weeks before the start of the set-up period. In addition, the Darmstadt Regional Council [Regierungspräsidium Darmstadt], Department of Occupational Health and Safety and the Environment [Abt. Arbeitsschutz und Umwelt], Dezernat IV / F45.2, Gutleutstrasse 138, 60327 Frankfurt am Main, Tel. +49 69 2714-0, Fax +49 69 2714-5951, must also be informed thereof. In the event that your laser/LED equipment, during normal operation and/or during the set-up phase, corresponds to Class 3R, 3B or 4 in accordance with DIN EN 60825-1, you must have a trained laser protection advisor pursuant to IEC/EN 60 825 and/or 2006/25 EG/OSTrV (national) at your stand. Please include a copy of the certification of the laser protection advisor with your registration, along with a copy of the necessary certification/classification of the laser system from an independent testing institute (e.g. TÜV, BG-Zert, VDE, BSI, UL, FDA).

Laser systems in accordance with DIN EN 60825-1 generate extremely intense radiation that is concentrated to create a high energy density using optical systems. Even at great distances, the decline in energy density is very small. If laser radiation strikes human eyes, it can result in irreparable damage to the retina. Improper handling can also result in skin burns. As a result, the following must be observed when setting up lasers and LED equipment at trade fairs, exhibitions and shows:

1. Only those lasers that emit visible light (wavelength from 400 to 700 nm) can be used. The output power must be limited to that which is required for the use in question.

Klasse	Leistung	Grundkonzept	Kommentar	Genehmigung spflichtig
1	< 25 µW	augensicher; die zugängliche Laserstrahlung ist ungefährlich oder der Laser ist in einem geschlossenen Gehäuse	Keine zusätzliche Schutzausrüstung erforderlich	
1M	< 25 µW	augensicher; die zugängliche Laserstrahlung ist ungefährlich, solange keine optischen Instrumente, wie Lupen oder Ferngläser verwendet werden	Keine zusätzliche Schutzausrüstung erforderlich, sofern man keine optischen Instrumente benutzt	
2	≤ 1 mW	bedingt augensicher; die zugängliche Laserstrahlung liegt nur im sichtbaren Spektralbereich (400 nm bis 700 nm). Sie ist bei kurzzeitiger Bestrahlungsdauer (bis 0,25 s) auch für das Auge ungefährlich	Keine zusätzliche Schutzausrüstung erforderlich	
2M	≤ 1 mW	bedingt augensicher; wie Klasse 2, solange keine optischen Instrumente, wie Lupen oder Ferngläser, verwendet werden.	Keine zusätzliche Schutzausrüstung erforderlich, sofern man keine optischen Instrumente benutzt	
3R	1 bis 5 mW	Die zugängliche Laserstrahlung ist gefährlich für das Auge.	Gefahr für Augen vorhanden, Schutzbrille empfohlen	X
3B	5 bis 500 mW	Die zugängliche Laserstrahlung ist gefährlich für das Auge und in besonderen Fällen auch für die Haut. Diffuses Streulicht ist in der Regel ungefährlich. (Laser von CD-/DVD-Brennern; Laserstrahlung allerdings nicht direkt zugänglich)	Gefahr für Augen u.eventuell Haut vorhanden, Schutzbrille erforderlich	X
4	> 500mW	Die zugängliche Laserstrahlung ist sehr gefährlich für das Auge und gefährlich für die Haut. Auch diffus gestreute Strahlung kann gefährlich sein. Beim Einsatz dieser Laserstrahlung besteht Brand- oder Explosionsgefahr. (Materialbearbeitung, Forschungslaser)	Persönliche Schutzausrüstung nötig (Brille, Abschirmung)	X

2. Laser systems must be assigned to a class (1-4) in accordance with DIN EN 60825-1/11.01 and must be labelled accordingly.
3. Laser systems must satisfy the requirements of the German Product Safety Act [ProdSG] and generally recognised engineering standards. Laser equipment must comply with the requirements of the German occupational health and safety regulations on artificial optical radiation 2006/25 EG/OStrV, DIN EN 60825-1 and DIN EN 12254, and show lasers must also meet the requirements of DIN 56912.
4. The operation of Class 3R, 3B or 4 laser systems at stands is only permitted if they have been inspected by a publicly appointed and sworn authority before the start of the trade fair and certified as safe. In the event that the exhibitor is unable to produce this certification, Messe Frankfurt reserves the right to have this inspection conducted at the expense of the exhibitor or to prohibit the operation of these systems.
5. If lasers of class 3A to 4 are used, optical installations must be employed to widen the beam such that it is reduced to a harmless power density in all areas where people are present. Otherwise, it must be located at least 2.7 metres above the floor. Laser beams can only be used if the beams have been widened such that the energy of the direct or reflected beam anywhere within the room would not generate a temperature over 80 °C even with extended exposure. Furthermore, a laser protection advisor must be present on location at all times.
6. In the event that it is not possible to comply with these requirements, the following protective measures must be taken: Fixed installations are to be used to direct the laser beam such that people cannot enter the beam area. In addition, radiation reflected either intentionally or unintentionally from reflective surfaces (mirrors, metal surfaces, glasses, bottles) cannot be directed at areas in which people are present. If this possibility cannot be excluded or if it is accepted that this may happen during demonstrations, then the people thus affected must be given suitable certified protective goggles. When they are being used to create lighting effects for shows and other such events, no people are permitted in the projection area of the laser. This also applies to areas through which the laser beam may pass as a result of reflection equipment. No focusing facilities are permitted in the laser area. The unintentional straying or deflection of the laser beam is to be prevented by the use of non-flammable barriers.
7. Laser systems must be shielded such that only the useful beam is emitted.
8. Laser systems must be set up such that they are stable and secured against shifting out of position.
9. Optical equipment, deflector devices, scanners etc. must be secured against falling or being moved unintentionally. The applicable rules and regulations of event engineering must be observed.
10. Optical equipment that is intended for use with the lasers but which is not directly attached to the laser system must include information that makes it possible to assess the changes in the beam data.
11. The adjustment of the laser system must be tested before every demonstration. If it is determined that the system is out of adjustment, the system must be taken out of operation immediately and repaired by an expert.
12. It must be ensured that unauthorised individuals cannot access the laser systems, operating consoles and other control facilities or accidentally activate these (emergency-off switch with key).
13. The operating personnel must be able to view the laser's entire area of action.
14. Laser pointers that are designated "IIIa", "IIIA", or "3A" in accordance with the US-American ANSI/CDRH regulations do not correspond to the applicable EN 60825-1 and cannot be used.

Messe Frankfurt can intervene in the event that these rules are violated and may demand that the systems be deactivated.

Contact:

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