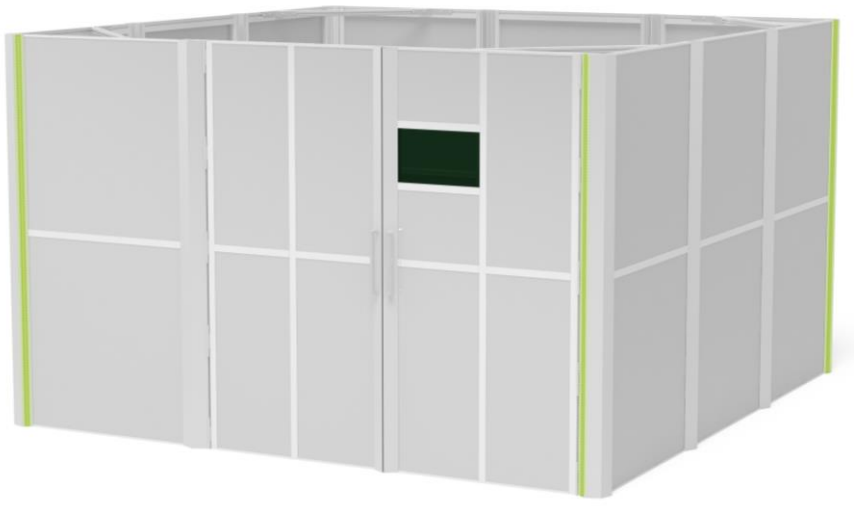
siegmund

Operating manual

(Translation of the original operating manual)

Laser welding cell

Item no. 2424.LC / 3636.LC / 4836.LC / xxxx.LC



Bernd Siegmund GmbH

Keep for future reference!

V1.3 / 20.01.2025

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Legal notice

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Warranty

The legal warranty obligations and periods will apply.

All warranty claims will become void if the product is used in a manner not corresponding to its intended purpose, is subjected to unauthorised technical alterations, or is opened (modification).

Bernd Siegmund GmbH will not be liable for any damage or accidents that are attributable to use in a manner not corresponding to the product's intended purpose, unauthorised modification of the product or non-observance of this operating manual.

Content

1 General information

IMPORTANT

Read carefully before use!

Keep for future reference!

These operating instructions contain information on the safe handling of the laser welding cell, article numbers 3636.LC / 4836.LC / xxxx.LC, a protective housing for working with hand-held laser welding devices. The "x" in the article number stands for different variants: So far, the variants with the article numbers 3636.LC and 4836.LC exist. Further article numbers are assigned for new variants according to this scheme.

The laser welding cell is also referred to as the "product" in these operating instructions.

Every person authorised by the operator to operate, maintain and repair the laser welding cell must have read and understood the operating instructions, in particular chapter "2 Safety", before starting work. This applies in particular to personnel who are only occasionally entrusted with work on the laser welding cell, e.g. maintenance and external personnel.

⚠ WARNING

Observe the operating manual:

- All people who operate the welding cell must have read the operating manual beforehand.

The operator must ensure that at least one copy of the operating instructions is kept with the laser welding cell and is accessible to the target persons who deal with the product.

The operating instructions are part of the product and must be retained during its service life.

The operating instructions must be passed on to any subsequent operator or user of the laser welding cell.

The manufacturer accepts no liability for personal injury or damage to property resulting from non-compliance with the operating instructions and, in particular, its safety instructions.

1.1 Target Group

The target group of these operating instructions are all persons who are authorised by the operator to carry out activities such as operation, cleaning, maintenance, repair, etc. on the laser welding cell. This also applies to external personnel.

Please also observe the requirements for personnel in section 2.2!

1.2 Documentation

The scope of delivery of the laser welding cell includes these operating instructions and assembly instructions. The data sheet for the protective discs used and the manufacturer's information on the table used are available in the Bernd Siegmund GmbH download area.

These operating instructions comply with the relevant standards and regulations.

1.3 Definition of terms

Begriff	Erklärung
PPE	Personal protective equipment
HLSW-device	Hand-held laser welding device

1.4 Copyright

2 Safety

2.1 Explanation of safety instructions and warning notices

This operating manual contains safety instructions and warning notices which are intended to prevent personal injuries and property damage. It is essential to observe the warning notices. Failure to observe these notices can lead to personal injuries, property damage and damage to the welding cell.

Presentation of safety instructions and warning notices

Safety instructions and warning notices are clearly highlighted. They have the following structure:

⚠ WARNING

Type of danger

Description, cause and source of the danger

- Measure 1 to avert the danger
  - ⇨ Optional: submeasure
- Measure 2

The following signal words are used:

⚠ DANGER	Warning of immediate severe injury or risk to life Indicates an immediately hazardous situation that will lead to death or severe injury if the safety measures are not observed.
⚠ WARNING	Warning of potential severe injury or risk to life Indicates a potentially hazardous situation that can lead to death or severe injury if the safety measures are not observed.
⚠ CAUTION	Warning of a danger Indicates a potentially hazardous situation that can lead to minor or slight injury if the safety measures are not observed.
NOTE	Warning of property damage Failure to observe this notice can result in damage to the machine or its surroundings.

Simplified safety instructions and warning notices

Safety instructions and warning notices may deviate from the form shown above if they are also understandable and actually more succinct in simplified form.

Simplified safety instructions and warning notices consist of

– Signal word with coloured background corresponding to the warning levels
– Information text

Example of a simplified warning notice, "Warning" danger level:

⚠ WARNUNG • Text of the simplified safety instruction and warning notice

Warning symbols

The following symbols indicate hazards:

	General hazard		Warning of laser radiation
	Risk of optical radiation		Danger from hot surfaces

Prohibition symbols

The following symbols indicate prohibitions:

	Access denied!		Avoid direct or indirect irradiation of the skin
	Avoid direct or indirect irradiation of the eyes		

Symbol for laser radiation class 4

The following symbol indicates class 4 lasers

Mandatory symbols

		Observe the operating instructions		

Personal protective equipment

The following symbols indicate personal protective equipment to be worn:

	Use hand protection		Use foot protection
	Use head protection		Use eye protection
	Use protective clothing		Use a welding mask

Please also observe the operator's internal health and safety regulations for wearing personal protective equipment!

The statutory safety and accident prevention regulations apply irrespective of the information provided in these operating instructions. Compliance with all applicable occupational health and safety regulations and legal requirements is a prerequisite for avoiding personal injury and damage to the product during operation, maintenance, repair work, etc..

2.2 Obligations of owner and personnel

2.2.1 Obligations of owner, organisational measures

The operator commissions his own or external personnel with the operation, maintenance, servicing etc. of the laser welding cell.

Hazard warnings

The operator must ensure that the safety and warning instructions for the product are observed and that the safety and warning instructions and signs are in a clearly legible condition.

In the area of escape routes and doors, it must be ensured that no objects are placed and block them. If necessary, the area must be clearly marked.

Modifications

No modifications, additions or conversions that could impair safety may be made to the product without the manufacturer's consent. If safety devices are installed, these must also be agreed with the manufacturer or the effects on safety must be considered on the user's own responsibility. If safety devices are added or replaced, e.g. safety switches, sensors for position monitoring, the existing safety level must always be maintained or increased, e.g. the performance level of control-related safety devices. New safety devices must not impair the effectiveness of existing ones.

Tests, inspections

The legally prescribed intervals for recurring tests and inspections specified in chapter "7 Maintenance, servicing" and in the operating instructions for the components (e.g. welding equipment) must be observed.

Personnel selection, personnel qualification

Work on the laser welding cell may only be carried out by personnel who are authorised and reliable by the operator. The activities on the laser welding cell require the knowledge of an instructed person and, for certain activities, a corresponding technical qualification. The operator must therefore ensure that instructed personnel or, if required for the activity to be carried out, qualified specialist personnel are used for the operation, maintenance, repair, etc. of the laser welding cell.

Certified instruction of operating personnel

– The owner is obliged to instruct every person who works on or with the product. The owner should be provided with confirmation of participation in instruction and training measures, etc. relating to the welding cell.

⚠ WARNING

- Access to the product is restricted to trained and authorised personnel only.

– The owner must clearly and unambiguously define the areas of responsibility of personnel with respect to operation, maintenance, repair, etc.

– The owner must establish the responsibilities of the operating personnel, also with regard to safety-compliant conduct, and empower the operating personnel to refuse to carry out unsafe activities.

– Personnel who are in the training, instruction, learning or onboarding phase, as well as people under the age of 18 may work on the laser welding cell only if they are under the constant supervision of an experienced person.

The owner must take organisational and instructive measures to ensure that the relevant safety standards and safety rules are observed by people who are tasked with operation, maintenance and repair of the machine.

The owner must check the safety-aware and risk-conscious conduct of the personnel at least occasionally.

Personal protective equipment

The owner is obliged to provide personnel with the required personal protective equipment, e.g. welding goggles, protective clothing, protective gloves and safety footwear.

The owner must ensure that only personnel with the required protective equipment work on the laser welding cell.

2.2.2 Obligations of personnel

All persons assigned to work on the laser welding cell undertake to

- to behave in a safe and responsible manner with regard to occupational health and safety at all times.
- to observe and comply with the applicable national laws and regulations as well as the operator's internal regulations on accident prevention, occupational safety and firefighting.
- to observe the operating instructions for components (e.g. laser welding device) when working on the laser welding cell. This applies in particular to personnel who only work occasionally, e.g. when servicing the laser welding cell.
- in the event of changes in operating behaviour and malfunctions that endanger the safety of persons:
  - stop the work process immediately
  - report malfunctions immediately to the responsible office / person
  - inform the affected personnel

2.3 General safety instructions

When working on and in the laser welding cell, the following must be observed:

- the safety instructions in these operating instructions
- Occupational health and safety and accident prevention regulations for the specific welding processes carried out in the laser welding cell.
- Operator's process instructions for the welding processes used

In addition, the operating instructions, in particular the safety and warning instructions for the welding device, must be observed.

The laser welding cell must be fully functional and in perfect technical condition before use. Before each use, a visual inspection of the laser welding cell must be carried out to ensure that it is in good working order, i.e. check for

- Damage, i.e. it must always be opaque against optical radiation.
- Proper function of the safety switches on the doors

Replace defective components immediately.

⚠ WARNING

- Wear suitable and approved personal protective equipment for the welding processes used: Eye protection in accordance with standards, other protective equipment if necessary..

Owner action required

When programming the system control unit, the operator must ensure the following:

- Safety switch with electromagnetic interlocking on safety doors ("guard locking"): The safety doors must remain locked until the laser is deactivated / no laser radiation is emitted. If a safety door is open, the work process must not start.
- The safety switch on the safety door must be supplied with power via the system control / laser source so that the function is maintained if the mains plug of the laser welding cell is not plugged in. It must be possible to deactivate the electromagnetic interlock from outside in order to be able to provide first aid at any time, for example. The laser must also be switched off at the same time as the interlock is deactivated (combined function of an external emergency stop). The safety switches must have a two-channel design and at least Performance Level E. Installation is recommended as close to the centre as possible (with the greatest possible distance to the hinges).

- If safety switches without electromagnetic interlocking are used: The system operator must ensure that the secured switch-off distance is small enough to prevent a direct view into the cabin when the switch-off distance is opened. The duration of the switch-off and the speed at which the door is opened must also be taken into account. If a safety door is open, the work process / laser must not start. The safety switch on the safety door must be supplied with power via the system control / laser source so that the function is maintained if the mains plug of the laser welding cell is not plugged in. The safety switches must have a two-channel design and at least Performance Level E. Installation is recommended as close to the centre as possible (with the greatest possible distance to the hinges). A switch-off distance of the safety switch of less than 30 mm is recommended and, in addition, the installation of the sight protection plate in a way that does not allow a direct view into the working area. If this cannot be guaranteed, safety switches with an interlocking function must be used. In the risk assessment, this distance and the triggering time until the laser is switched off must be analysed with the desired model of safety switch.
- The switch cabinet and welding machine must be equipped with lockable main switches. If there is no lockable main switch on the welding machine, another means of safely interrupting the power supply must be provided and switching on by other persons must be prevented.
- The operator must install a sufficient number of emergency stop devices in an easily accessible position, e.g. at each access door, outside and/or inside. An emergency stop is recommended on each side where access to the laser welding cell is possible through safety doors and inside the laser welding cell. If the operator deviates from this specification, he should record this in a separate assessment.

Furthermore, the standards 60825-1 and 60825-4 must be complied with, and in Germany, for example, the OStrV and TROS LASER in the applicable version (possibly also the TROS IOS). According to the latter, it is mandatory to appoint a laser safety officer.

The national regulations must be observed.

⚠ WARNING

When deciding whether a cover/roof is required and where the laser welding cell is to be installed, the operator must consider and document the risk to "persons at height" in accordance with EN 60825-4 E.2.5.

For completely enclosed booths (with roof), a supply and exhaust air system must be installed.

Dangers when working on the laser welding cell

The hazards associated with the laser welding cell result primarily from the welding processes used in it.

Therefore, in addition to the following safety instructions and warnings, the operating instructions for the components installed in the laser welding cell must be observed.

For hazards caused by the welding processes, the following must also be observed:

- Internal company regulations on occupational health and safety
- Relevant health and safety and accident prevention regulations for the welding processes used

Only start the work process if there is no danger to persons at the laser welding cell. The operator must ensure that nobody is endangered.

If there are signs of fire, e.g. smoke development, burning odour, which are not caused by the welding process, stop the work process immediately.

⚠ WARNING

Observe general safety regulations when welding, instruct users, only instructed personnel may work in/with it, observe welding equipment regulations, use PPE (gloves etc.)

- No persons who are not required for the work may remain in the danger zone.

⚠ WARNING

Danger caused by welding

Persons at the laser welding cell can be injured by laser / welding radiation or fumes.

- Welding in the laser welding cell may only be carried out with extraction.
- Wear approved protective goggles against welding radiation.
- Observe the operating instructions, in particular the safety instructions and warnings, for the welding machine used.
- Legal regulations and occupational health and safety must be observed.

⚠ CAUTION

Risk of physical overexertion

People can physically overexert themselves when lifting or raising heavy workpieces.

- Use suitable transport equipment for transporting, inserting and removing heavy workpieces.
- Lift heavy workpieces with the aid of several people if necessary.
- People with limitations to their physical capacity, such as orthopaedic injuries or pregnant women, must not lift heavy workpieces.
- Avoid subjecting your back, arms and legs to excessive strain.

In addition, observe the safety instructions and warnings in the chapters describing the activities with and on the laser welding cell, see Chap. 4-8.

Maintenance instructions

The reliability of the product can only be guaranteed if the maintenance instructions given in this operating manual and the operating manuals of the components are followed precisely.

Environmental regulations

The applicable environmental regulations must be complied with during all work operations.

When selecting cleaning agents and operating materials, consider environmental compatibility, health risks, disposal regulations and the local possibilities for correct disposal!

3 Product

3.1 Product description

The laser welding cell is a protective cabin designed for manual laser welding. The laser welding cell provides temporary resistance to directly impinging laser radiation. A welding and clamping table is used in the cabin for clamping parts.

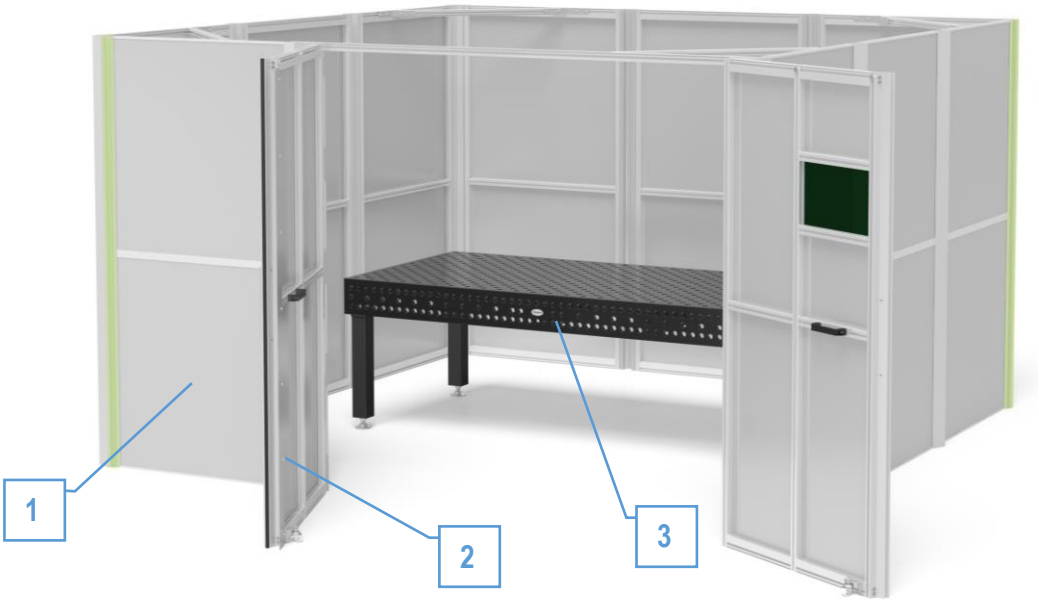

Figure 1: Sample laser welding cell

Pos.	Product component
1	Laser welding cell
2	Safety doors, number depending on the customer's order
3	Welding table / work area

The laser welding cell is available in different sizes (internal dimensions):

- 3600 mm x 3600 mm
- 4800 mm x 3600 mm

Fig. 1 shows an example of a variant/size.

Other sizes can be realised on customer request.

3.2 Scope of delivery

The laser welding cell comprises the components described in chapter 3.1.

The laser welding cell is assembled on site and placed on the hall floor.

As new variants and variants customised to customer requirements can be created, the respective variant and the additional equipment available for it can be found in the offers for configurations and specifications available from Bernd Siegmund GmbH. The scope of delivery includes assembly instructions. The data sheet for the welding protection discs is available in the Bernd Siegmund GmbH download area.

Other optional components depending on the order can be, for example:

- Safety switch
- Wiring
- Emergency stop devices
- Welding table
- Accessories for the table
- Roof
- Wall mounting (for L- or U-shaped construction)

The welding equipment installed in the laser welding cell, the extraction system and any other safety equipment are provided by the operator and are not included in the scope of delivery.

The system control including the safety functions is also programmed by the operator.

3.3 Operator positions

Operating stations are inside the laser welding cell. Access is through the built-in safety doors.

3.4 Intended use

The laser welding cell serves as a protective housing for welding work by a user who welds / processes components in the cell using a hand-held laser welding device.

Processing in the laser welding cell is intended to be carried out with

- Welding processes for which the laser welding cell is approved (primarily laser welding processes), see chapter 3.6 Technical data and chapter 10.3 Certificates in accordance with EN 60825-4.
- The following working ranges follow from these data for a laser with 3000W in the wavelength range between 940-1090nm:
    - The minimum distance (focus distance) of the laser at full power (3000W) to the outer walls of the laser welding cell depends on the beam optics and the imaging ratio of the laser used. This results from the distance at which the beam diameter (d86) is greater than or equal to 21mm, for common models (imaging ratio 2) this is at least 700mm.
        - This means that a laser welding cell with a size of 3600x3600 allows a maximum working area/welding table of 2200mmx2200mm with an even distance to all side walls.
        - And for a laser welding cell with 4800x3600, a maximum working area/welding table of 3400mmx2200mm is permitted with a uniform distance to all side walls.
    - For lower laser powers and/or larger beam diameters, a smaller distance between the working area and the outer walls is possible.

Operation of the laser welding cell in a completely closed state is only permitted with extraction. In principle, the use of an extraction system is recommended.

Inspection by the operator:

- - If the hazardous radiation from the laser cannot be stopped in time by opening the doors / triggering the safety switches, the safety doors must be interlocked during operation. The interlock must be integrated into a safety system that allows emergency opening of the laser welding cell. See also Chapter 2: Safety and Chapter 5: Commissioning

Welding processes may only be carried out in the laser welding cell if all the necessary safety measures have been taken and the operating instructions for the devices used for this purpose have been observed.

The laser welding cell and its components may not be modified without consulting the manufacturer. Unauthorised modifications are the responsibility of the operator.

Intended use also includes:

– The laser welding cell may only be used when it is in perfect working order

– compliance with the operating and environmental conditions specified by the manufacturer

– compliance with the procedures described in these operating instructions and observance of all safety instructions.

– compliance with the safety instructions in the operating instructions for the laser welding machine and the welding equipment used.

⚠ WARNING

- Only use the laser welding cell in accordance with its intended use, the technical data (see section 3.6) and the operating instructions for the welding equipment.

The manufacturer accepts no liability for any personal injury or damage to property resulting from improper use of the laser welding cell.

3.5 Foreseeable misuse

Misuse arises if

– welding or processing procedures other than those listed in chapter 3.4 Intended use are carried out in the laser welding cell.

⚠ WARNING

- Do not use the laser welding cell if it or the components installed in it are damaged.
- The laser welding cell may only be used for the application described in the intended use.

It is not permitted to

– to climb into the laser welding cell.

– to look into the laser welding cell from the outside with the aid of ladders or the like.

– in the laser welding cell without holding up the required PPE.

– or otherwise render the protective effect ineffective.

Do not carry out any maintenance work during operation.

The laser welding cell must be fully assembled for operation and must not be partially or completely dismantled during welding.

All types of use not described in chapter "3.4 Intended use" are prohibited and are considered improper use.

3.6 Technical data

Dimensions (Approx. length x width x height)	Versions with (exemplary) – 3800 mm x 3800 mm x 2250 mm – 5000 mm x 3800 mm x 2250 mm	Approx. weight 850 kg 960 kg
	Aluminium-profile (Extruded)	
Wavelength range	940-1090 nm	
Beam diameter d_{86}	1,6 mm	
Protective limit irradiation	$1{,}51*10^9$ W/m²	
Duration of protection	10,5 s	
Test class	T3	
	Aluminium composite panel	
Wavelength range	940-1090 nm	
Beam diameter d_{86}	20,8 mm	
Protective limit irradiation	$9{,}21*10^6$ W/m²	
Duration of protection	10,5 s	
Test class	T3	
	Ambient conditions	
Operating environment	Industrial and commercial areas, dry indoor areas	
Temperature	+2 to +50° C	

The technical specifications for all other components can be found in chapter 10.3.

The mechanical and electrical connections of the laser welding cell and for the exhaust air are described in the installation instructions from Bernd Siegmund GmbH (installation instructions can be found in the download area on the Bernd Siegmund GmbH homepage).

Other sizes can be realised on customer request.

3.7 Safety devices

Additional, necessary safety equipment must be selected and installed by the operator after carrying out a risk analysis or hazard assessment. They are not included in the scope of delivery of the Siegmund laser welding cell. The operator is responsible for the specification and maintenance of the functionality of the safety devices, see also chapter 2.3 General safety instructions and chapter 5 Commissioning.

Description	Location	Installation
Safety switch Doors	Doors and, if available, roof of the laser welding cell, to be installed by the operator	To be installed by the operator in accordance with the risk analysis (PL E, two-channel, preferably with guard locking)
Signal lamps	Outside, near the doors	To be installed by the operator in accordance with the risk analysis, "LASER" display
EMERGENCY STOP	Outside, near the doors	To be installed by the operator in accordance with the risk analysis
Signage	Outside, near the doors	To be installed by the operator in accordance with the risk analysis (warning sticker, laser class 4 sticker, protection values, laser power)

WARNING: For fully enclosed cabins (with roof), the operator must install a supply and exhaust air system. Furthermore, sufficient air conditioning and lighting must be provided.

3.8 Type plate

Symbol	Description
REF	**Article number** "x" in the article number (REF) stands for different variants: To date, the variants with the product numbers 3636.LC and 4836.LC exist. Further product numbers are assigned for new variants according to this scheme.
	Year of manufacture
SN	**Serial number** Unique identification number of the product.
CE	**CE labelling** The product fulfils all applicable European directives and regulations.
UK CA	**UKCA labelling** The product fulfils all applicable directives and regulations of the United Kingdom (UK).
	Attention: Read the operating instructions! Read these operating instructions carefully before use and keep them for future reference!
User manual	**QR code: Link to the download area of Bernd Siegmund GmbH** In our download area you will find the operating instructions, the installation instructions and the declaration of conformity for download.

4 Transport

4.1 Delivery

The laser welding cell is delivered by the manufacturer or a transport company.

4.2 Safety

When transporting the laser welding cell or individual components, e.g. for repair or replacement, injuries may occur if they fall or tip over. Therefore, please observe the following general safety instructions:

- Attach the laser welding cell and components to be transported securely to the transport equipment.
- Use only transport equipment, lifting gear and slings that are suitable for the load. Observe the weight specifications of the welding cell or the components to be transported.
- Attach the lifting gear at suitable attachment points.
- Move the load slowly and smoothly.
- Avoid unstable positioning of the load on the transport equipment; avoid rocking and swinging.
- Observe the applicable regulations for transport with a forklift truck or crane.
- When transporting and installing individual components, observe the operating manual from the respective manufacturer, also in particular the safety instructions.
- Do not use any frayed or scored lifting gear such as ropes and belts.
- Do not place lifting gear such as ropes and belts on sharp edges and corners and do not knot or twist it.
- Put down the load when leaving the work area.

⚠ CAUTION

Risk of physical overexertion

People may physically overexert themselves when lifting or raising the welding cell or its components.

- Use suitable transport equipment to transport the welding cell or its components.
- People with limitations to their physical capacity, such as orthopaedic injuries or pregnant women, must not lift heavy components.
- Avoid subjecting your back, arms and legs to excessive strain.

5 Commissioning

5.1 Safety

Installation and assembly may only be carried out by trained personnel. Commissioning must be carried out by a specialist.

The following requirements must be met (see also chapter 2.3. General safety instructions):

- Only trigger the laser beam after connecting and testing the required safety device
  - Safety switch on the doors (at least PL E, two-channel, installation in the center, preferably with guard locking)
  - Emergency stop switch (interruption of the laser beam, opening of the guard locking of the doors)
  - Signal LEDs at the corners (operating status display)
  - LASER display
  - See also chapter 2.2 Obligations of the operator and personnel
- Check the laser welding cell for gaps, especially in the area of the doors
- Check whether the signage has been attached correctly
- Check whether a roof is required and if so, set up the roof and check that there are no gaps
- Check: Gap between floor and laser welding cell must be less than 5mm, a sealing profile (Bernd Siegmund GmbH - ERP number: 00004917) must be used to seal the gap

General information on commissioning

- Users and commissioning engineers must wear PPE and ensure that no persons can be injured during commissioning and testing of the functions.
- Commissioning with at least two persons is recommended.
- Work on the safety device may only be carried out when the laser welding device is switched off.

A checklist for initial commissioning is available in chapter 10.4.

⚠ WARNING

- The laser welding cell must be inspected for gaps by a specialist after initial installation and after maintenance work, replacement of components or after relocation; there must be no people or reflective objects above the cabin. Otherwise, a roof must be installed
- Modifications to the cabin that impair the specified protective effect are not permitted

NOTE

The operator must ensure that the door is monitored by suitable means and may need to be locked during operation, e.g. by an interlock system.

The systems used must be compatible with the selected HLS device. (EN 60825-1: connector for a remote-controlled safety interlock must be fitted to every HSL of class 3 B and 4). The interlock system should fulfil the requirements of IEC 61508, EN 62061, EN ISO 14119 or EN ISO 13849-1 and be CE marked for Europe.

An emergency stop device must be installed in accordance with EN ISO 13850.

NOTE

The operator must ensure that only eye protection equipment for the required, specified wavelength may be used. Eye protection products must be approved in the EU in accordance with EN 207.

NOTE

A suitable installation site / ambient conditions must be provided:

- The operator must ensure sufficient lighting during work and maintenance. We recommend at least 300 LUX.
- Only use in environments with a humidity of <60%. Avoid waterlogging. Do not use aggressive cleaning agents. Do not operate in aggressive environments.

5.2 Owner action required

When programming the system control unit, the operator must ensure the following:

- Safety switch with electromagnetic interlocking on safety doors ("guard locking"): The safety doors must remain locked until the laser is deactivated / no laser radiation is emitted. If a safety door is open, the work process must not start.
- The safety switch on the safety door must be supplied with power via the system control / laser source so that the function is maintained if the mains plug of the laser welding cell is not plugged in. It must be possible to deactivate the electromagnetic interlock from outside in order to be able to provide first aid at any time, for example. The laser must also be switched off at the same time as the interlock is deactivated (combined function of an external emergency stop). The safety switches must have a two-channel design and at least Performance Level E. Installation is recommended as close to the centre as possible (with the greatest possible distance to the hinges).
- If safety switches without electromagnetic interlocking are used: The system operator must ensure that the secured switch-off distance is small enough to prevent a direct view into the cabin when the switch-off distance is opened. The duration of the switch-off and the speed at which the door is opened must also be taken into account. If a safety door is open, the work process / laser must not start. The safety switch on the safety door must be supplied with power via the system control / laser source so that the function is maintained if the mains plug of the laser welding cell is not plugged in. The safety switches must have a two-channel design and at least Performance Level E. Installation is recommended as close to the centre as possible (with the greatest possible distance to the hinges). A switch-off distance of the safety switch of less than 30 mm is recommended and, in addition, the installation of the sight protection plate in a way that does not allow a direct view into the working area. If this cannot be guaranteed, safety switches with an interlocking function must be used. In the risk assessment, this distance and the triggering time until the laser is switched off must be analysed with the desired model of safety switch.
- The switch cabinet and welding machine must be equipped with lockable main switches. If there is no lockable main switch on the welding machine, another means of safely interrupting the power supply must be provided and switching on by other persons must be prevented.
- The operator must install a sufficient number of emergency stop devices in an easily accessible position, e.g. at each access door, outside and/or inside. An emergency stop is recommended on each side where access to the laser welding cell is possible through safety doors and inside the laser welding cell. If the operator deviates from this specification, he should record this in a separate assessment.

Furthermore, the standards 60825-1 and 60825-4 must be complied with, and in Germany, for example, the OStrV and TROS LASER in the applicable version (possibly also the TROS IOS). According to the latter, it is mandatory to appoint a laser safety officer.

The national regulations must be observed.

Electrical components are installed in the laser welding cell by the operator. For this reason, in Germany, for example, the operator must carry out a VDE test in accordance with DIN VDE 0113 (EN 60204-1) once the electrical installation has been completed..

⚠ CAUTION

Risk of physical overexertion

Only assemble in accordance with the assembly instructions, several people (at least two) are required for assembly, wear PPE.

⚠ CAUTION

Risk of physical overload / risk of damage to the laser welding cell

Die Kabine darf nicht als Ganzes bewegt werden. Falls örtliche Versetzung notwendig, muss die Kabine in Ihre Bestandteile demontiert werden.

NOTE

The operator must

- install the safety technology compatible with the HLS device used (EMERGENCY STOP, warning signals and signage). HLS device may only be used if it has an EMERGENCY STOP.
- Attach the prescribed labelling to the cabin. A selection of warning signs are included in the scope of delivery; the operator must decide which ones to affix.

6 Operation

6.1 Safety

Before each use, a visual inspection of the laser welding cell must be carried out to ensure that it is functioning properly, i.e. check

- for damage and tight fit / absence of gaps in all components
- for proper functioning of the safety switches on the doors
- of the electrical cabling.

If there are signs of fire, e.g. smoke development, burning odour, which are not caused by the welding process, stop work immediately.

⚠ WARNING

Danger caused by welding

Persons at the laser welding cell can be injured by laser radiation, welding spatter, sparks or fumes.

- Welding in the welding cell may only be carried out with an extraction syste.
- Wear approved safety goggles against welding radiation/laser radiation, see also EN 207:2017 (or the currently valid version)
- General: The prescribed protective equipment must always be worn when entering the cabin
- Observe the operating instructions, in particular the safety and warning instructions, for the welding equipment used.
- Persons who are not required for the work must not remain in the danger zone.

⚠ WARNING

Check the cabin walls for damage before each use. Components must be replaced if damaged. Regular maintenance is necessary.

6.2 Inserting and removing a workpiece

To insert workpieces into the laser welding cell, access via the safety doors must be requested via the control system. Processing operations are stopped. The safety doors remain electromagnetically locked for as long as these processes continue. Safety must be ensured by looking through the viewing window. The status display of the hand-held laser welding device must also be set to "inactive" / not illuminated (display for laser operation, additional signalling LEDs at the corners of the laser welding cell).

Light workpieces can be inserted and removed by hand. Heavy workpieces are inserted into and removed from the laser cell using a means of transport, e.g. forklift truck..

The following safety rules apply when transporting heavy workpieces by forklift or other means of transport:

- Attach the workpiece securely to the transport equipment.
- Use only transport equipment, lifting gear and slings that are suitable for the load. Observe the weight of the workpiece.
- Move the load slowly and smoothly.
- Avoid unstable positioning of the load on the transport equipment; avoid rocking and swinging.
- Observe the applicable regulations for transport with a forklift truck or crane.
- Do not use any frayed or scored lifting gear such as ropes and belts.
- Do not place lifting gear such as ropes and belts on sharp edges and corners and do not knot or twist it.
- Put down the load when leaving the work area.

Personnel

- The workpieces must only be transported by trained and authorised personnel.
- All people who are not required for the work must leave the danger zone.
- The operator must ensure that nobody is put at risk when lifting, transporting and setting down the workpieces. Pay attention to people in the transport path

⚠ VORSICHT

Risk of physical overexertion

People can physically overexert themselves when lifting or raising heavy workpieces.

- Use suitable transport equipment for transporting, inserting and removing heavy workpieces.
- Lift heavy workpieces with the aid of several people if necessary.
- People with limitations to their physical capacity, such as orthopaedic injuries or pregnant women, must not lift heavy workpieces.
- Avoid subjecting your back, arms and legs to excessive strain.

⚠ WARNUNG

Transport with a crane:

- Do not stand under loads and do not enter the swivel range of the crane.
- Wear a protective helmet

The workpiece must be attached to the welding plate or tabletop before the machining process.

6.3 Machining process

After inserting the workpieces to be welded, the user can start the welding process. To do this, the welding machine must be switched on and the mains plug for the laser welding cell must be plugged in.

The machining process can only be started when the safety doors are closed. During the machining process, the safety doors are closed and may be locked electromagnetically.

After the machining process, access to the laser welding cell must be requested again in order to remove the workpieces again.

⚠ WARNING

The walls of the laser welding cell must be checked for damage before each use. Components must be replaced if damaged. Regular maintenance is necessary.

NOTE

Unless otherwise required, always work with your back to the door and viewing window.

7 Repairs and maintenance

Maintenance and servicing ensure that the laser welding cell can always be used safely. The laser welding cell is basically maintenance-free. However, it must be in a fully functional, undamaged condition at all times. Damage must be repaired immediately.

NOTE

Also observe the maintenance instructions for the laser welding device.

Clean the protective screens and LED profiles regularly and if they are very dirty. The laser welding cell must be visible at all times and the traffic light signals must be recognisable.

7.1 Safety

Before carrying out maintenance, repair work, etc. Switch off the main switch of the welding machine and secure it against being switched on again: Lock the main switch, remove the key and take it with you. If there is no lockable main switch on the welding device, the power supply must be interrupted in another way and secured against being switched on again.

⚠ WARNUNG

- Wear protective clothing: protective gloves, safety footwear.

⚠ WARNUNG

Risk of electric shock!

Live electrical components installed in the welding cell, the control cabinet and other electrical installations can cause life-threatening injuries or death from electric shock if touched.

- The electrical connection and work on electrical components must only be carried out by qualified electricians.
- Perform work only on devices that have been disconnected from the mains. Observe the 5 safety rules of electrical engineering when working on electrical components:
  1. Disconnect completely
  2. Secure against reconnection
  3. Check that there is no voltage
  4. Carry out earthing and short-circuiting
  5. Provide protection against adjacent live parts
- Use insulated tools.

⚠ WARNING

Risk of crushing!

People may be crushed by falling or tipping components, e.g. during removal or replacement.

- Secure components against tipping and falling over before assembly or after disassembly.

⚠ WARNING Unsuitable replacement parts may result in injuries to people and damage to the welding cell.

- Use only original replacement parts from the manufacturer.
- If you require replacement parts, contact the service address (section 9)!

Proper maintenance of the laser welding cell requires appropriately trained specialist personnel. All maintenance, servicing and repair work may only be carried out by trained specialist personnel with the qualifications required for the tasks. Repairs may only be carried out by qualified personnel.

Work on the electrical system may only be carried out by electrically trained specialists (qualified electricians).

The operator is responsible for the deployment of specialised personnel and for appropriate training.

Contact Bernd Siegmund GmbH in the event of defective components or modifications to the laser welding cell.

Maintenance staff and specialised personnel are responsible for the safe execution of the work and occupational safety. They must have read and understood the relevant regulations before starting work.

After upkeep work:

- All covers and fastenings removed during the work must be replaced before reuse.
- Check that all components and connections are firmly seated. Check that there are no gaps (see also chapter 5. Commissioning)!

⚠ WARNING

- If maintenance work on the laser welding cell, robot or welding machine is not carried out in good time or is carried out improperly, it can endanger people once regular operation has commenced.

⚠ WARNING

The laser welding cell must be inspected for gaps by a specialist after initial installation and after maintenance work, replacement of components or after relocation.

7.3 Cleaning

Clean the laser welding cell regularly and remove welding spatter.

⚠ WARNING

- Do not use aggressive cleaning substances.

Wipe the laser welding cell with a dry or damp cloth for cleaning.

NOTE

When cleaning, ensure that contaminated washing liquids are disposed of in an environmentally friendly manner and in accordance with regulations.

8 Decommissioning

Temporary decommissioning

⚠ WARNING

- Unauthorised use of the laser welding cell can endanger persons.

Ensure suitable ambient conditions during storage, see section "3.6 Technical data".

Final decommissioning, disposal

Dismantling may only be carried out by specialised personnel.

Clean the laser welding cell before dismantling..

NOTE: Dismantle welding equipment in accordance with the operating instructions for these components.

NOTE

- Residual media, in particular hazardous and environmentally harmful substances, from the components installed in the laser welding cell must be collected in suitable containers and disposed of in accordance with regulations.

⚠ WARNING

Risk of crushing!

People may be crushed by falling or tipping components.

- Personnel are responsible for ensuring that work is performed safely, e.g. use suitable lifting gear and slings when transporting components.
- Secure disassembled components to prevent them from falling or tipping.
- Wear personal protective equipment: protective gloves, safety footwear!

NOTE

- Disassemble the product into its components for final decommissioning and disposal.
- The parts must be recycled, disposed of in accordance with local regulations or returned to the manufacturer.

9 Service address

These operating instructions contain descriptions and instructions for the operation and simple maintenance activities of the laser welding cell.

It does not describe any complex maintenance or repair work. For such activities, please contact Bernd Siegmund GmbH or refer to the operating instructions for the components installed elsewhere!

Do you have any questions or requests? We will be happy to help you.

Our company address is:

Bernd Siegmund GmbH

Landsberger Straße 180

D-86507 Oberottmarshausen

Tel.: +49 8203 9607-0

Fax: +49 8203 9607-33

E-Mail: info@siegmund.com

www.siegmund.com

10 Appendix

10.1 Declaration of conformity – EU

siegmund

CE

EU-Konformitätserklärung
EU Declaration of Conformity

Hiermit bestätigen wir, dass das nachfolgend bezeichnete Gerät den Anforderungen der angegebenen Richtlinien entspricht. Die alleinige Verantwortung für die Ausstellung dieser Konformitätserklärung trägt der Hersteller Bernd Siegmund GmbH.
We hereby confirm that the product specified below complies with the requirements of the stated directives. This declaration of conformity is issued under the sole responsibility of the manufacturer Bernd Siegmund GmbH.

Artikelbezeichnung: Article description:	**Laserschweißzelle** Laser Welding Cell
Artikelnummer: Article number:	xxxx.**LCxx** Varianten /Variants xxxx.LCm, xxxx.LCR, 3636.LC / 4836.LC / etc.
Firmenanschrift: Company address	Landsberger Straße 180 D-86507 Oberottmarshausen GERMANY

Einschlägige Harmonisierungsrechtsvorschriften der Union / relevant Union harmonisation legislation:

Maschinenverordnung Machinery regulation 2023/1230/EU	Niederspannungsrichtlinie (LVD) Low-Voltage Directive (LVD) 2014/35/EU
Produktsicherheitsverordnung General product safety regulation (GPSR) 2023/988/EU	Beschränkung der Verwendung bestimmter gefährlicher Stoffe in Elektro- und Elektronikgeräten Restriction of the use of certain hazardous substances (RoHS) 2011/65/EU + 2015/863/EU

Normen und alle angewandten Gemeinsamen Spezifikationen (CS), für die die Konformität erklärt wird:
Standards and any Common Specifications (CS) applied in relation to which conformity is declared:

EN ISO 12100:2010 Sicherheit von Maschinen - Allgemeine Gestaltungsleitsätze - Risikobeurteilung und Risikominderung
EN ISO 20607:2009 Sicherheit von Maschinen - Betriebsanleitung - Allgemeine Gestaltungsgrundsätze
EN 60825-1:2014 + AC:2017 + A11:2021 + A11:2021/AC:2022 Sicherheit von Lasereinrichtungen - Teil 1: Klassifizierung von Anlagen und Anforderungen
EN 60825-4:2006 + A 1 :2008 + A2:2011 Sicherheit von Lasereinrichtungen - Teil 4: Laserschutzwände
EN ISO 11553-1:2020 Sicherheit von Maschinen — Laserbearbeitungsmaschinen — Teil 1: Allgemeine Sicherheitsanforderungen
EN ISO 7010:2020 Graphische Symbole - Sicherheitsfarben und Sicherheitszeichen - Registrierte Sicherheitszeichen
ISO 3864-2:2012 Gestaltungsgrundlagen für Sicherheitsschilder zur Anwendung auf Produkten
ISO 3864-3:2012 Gestaltungsgrundlagen für graphische Symbole zur Anwendung in Sicherheitszeichen

Konformitätsbewertungsverfahren:
Das Produkt unterliegt dem Konformitätsbewertungsverfahren auf der Grundlage einer internen Fertigungskontrolle (Modul A – Verordnung (EU) 2023/1230, Anhang VI).
Conformity Assessment Procedure:
The product is subject to the conformity assessment procedure based on internal production control (Module A - Regulation (EU) 2023/1230, Annex VI).

Unterzeichnet für und im Namen der Bernd Siegmund GmbH:
Signed for and on behalf of Bernd Siegmund GmbH:

Daniel Siegmund
Geschäftsführer / CEO

Oberottmarshausen

Bernd Siegmund GmbH
Landsberger Straße 180
86507 Oberottmarshausen
Tel.: +49 8203 9607-0 Fax.: +49 8203 9607-33
E-Mail: info@siegmund.com
www.siegmund.com

, 20.01.25

[stamp], [signature], [date]

DoK.ID: HLSK_Declaration of Conformity_rev.1.2

Download-area
of Bernd Siegmund GmbH

10.2 Declaration of conformity - UKCA

UK CA

siegmund

Declaration of Conformity

In accordance with UK Government Guidance

We hereby confirm that the product specified below complies with the requirements of the stated directives. This declaration of conformity is issued under the sole responsibility of the manufacturer Bernd Siegmund GmbH.

Article description:	**Laser Welding Cell**
Article number:	xxxx.**LCxx** Varianten /Variants xxxx.LCm, xxxx.LCR, 3636.LC / 4836.LC / etc.
Company address:	Landsberger Straße 180 D-86507 Oberottmarshausen GERMANY

The object of the declaration described above is in conformity with the relevant UK Statutory Instruments (and their amendments):

Supply of Machinery (Safety) Regulations 2008	The Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations 2012.
The General Product Safety Regulations 2005	Electrical Equipment (Safety) Regulations 2016

Standards and any Common Specifications (CS) applied in relation to which conformity is declared:

EN ISO 12100:2010 Safety of machinery - General principles for design - Risk assessment and risk reduction
EN ISO 20607:2009 Safety of machinery - Instructions - General principles for design
EN 60825-1:2014 + AC:2017 + A11:2021 + A11:2021/AC:2022 Safety of laser products - Part 1: Classification of equipment and requirements
EN 60825-4:2006 + A 1 :2008 + A2:2011 Safety of laser products - Part 4: Laser safety barriers
EN ISO 11553-1:2020 Safety of machinery - Laser processing machines - Part 1: General safety requirements
EN ISO 7010:2020 Graphical symbols - Safety colours and safety signs - Registered safety signs
ISO 3864-2:2012 Design principles for safety signs for use on products
ISO 3864-3:2012 Design principles for graphic symbols for use in safety signs

Conformity Assessment Procedure:
The product is subject to the assessment of conformity with internal checks on the manufacture of machinery (PART 8 Annex VII).

Signed for and on behalf of Bernd Siegmund GmbH:

Daniel Siegmund
CEO

Oberottmarshausen

Bernd Siegmund GmbH
Landsberger Straße 180
86507 Oberottmarshausen
Tel.: +49 8203 9607-0 - Fax.: +49 8203 9607-33
E-Mail: info@siegmund.com
www.siegmund.com

20.01.25

[stamp], [signature], [date]

SUPPLEMENTARY INFORMATION: UK Authorised Representative / Importer / Distributor

Company Name

Address:

DoK.ID: HLSK_UKCA_Declaration of Conformity_rev.1.2

Download-area
of Bernd Siegmund GmbH

10.3 Certificates according to EN 60825-4

Prof. Dr.-Ing. Peter Hoffmann
Öffentlich bestellter und vereidigter
Sachverständiger
Lasertechnik / Lasermaterialbearbeitung

Wilhelmshavener Str. 24a
90425 Nürnberg

Certificate

No. S-003/R02

Passive laser guard material

Composite Panel Type 1

manufactured by

Bernd Siegmund GmbH
Landsberger Str. 180, 86507 Oberottmarshausen, Germany

complies with the standard
Safety of laser products - Part 4: Laser guards (IEC 60825-4:2006 + A1:2008 + A2:2011);
German version EN 60825-4:2006 + A1:2008 + A2:2011.

Parameters of conducted tests:

Wave length λ:	[nm]	1030	1030
Laser power P_{av}:	[W]	1550	3135
Operating mode:		Contin. wave	Contin. wave
Effective beam diameter d_{86}:	[mm]	18.7	20.8
Duration of exposure:	[s]	15	15
Test report:		020-2023	001-2025

Permissible limits (70% safety factor included):

Range of wave length λ:	[nm]	940 - 1090	940 - 1090
Beam diameter d_{86}:	[mm]	18.7	20.8
Protective exposure limit (PEL):	[W/m²]	$I_{av} = 5.64 \cdot 10^6$	$9.21 \cdot 10^6$
Protection time:	[s]	10.5	10.5
Classification:		T3	T3

This certificate confirms that the tested guard material has a protection time of 10.5 s at the specified values for wave lengths and protective exposure limit.

Nuremberg, 7th January 2025

Prof. Dr.-Ing. Peter Hoffmann

Prof. Dr.-Ing. Peter Hoffmann
Öffentlich bestellter und vereidigter
Sachverständiger
Lasertechnik / Lasermaterialbearbeitung

Wilhelmshavener Str. 24a
90425 Nürnberg

Certificate

No. S-004/R01

Passive laser guard material

Composite Panel Type 2

manufactured by

Bernd Siegmund GmbH
Landsberger Str. 180, 86507 Oberottmarshausen, Germany

complies with the standard
Safety of laser products - Part 4: Laser guards (IEC 60825-4:2006 + A1:2008 + A2:2011);
German version EN 60825-4:2006 + A1:2008 + A2:2011.

Parameters of conducted tests:

Wave length λ:	[nm]	1030
Laser power P_{av}:	[W]	3135
Operating mode:		Contin. wave
Effective beam diameter d_{86}:	[mm]	20.8
Duration of exposure:	[s]	15
Test report:		001-2025

Permissible limits (70% safety factor included):

Range of wave length λ:	[nm]	940 - 1090
Beam diameter d_{86}:	[mm]	20.8
Protective exposure limit (PEL):	[W/m²]	$I_{av} = 9.21 \cdot 10^6$
Protection time:	[s]	10.5
Classification:		T3

This certificate confirms that the tested guard material has a protection time of 10.5 s at the specified values for wave lengths and protective exposure limit.

Nuremberg, 2nd January 2025

Prof. Dr.-Ing. Peter Hoffmann

Prof. Dr.-Ing. Peter Hoffmann
Öffentlich bestellter und vereidigter
Sachverständiger
Lasertechnik / Lasermaterialbearbeitung

Wilhelmshavener Str. 24a
90425 Nürnberg

Certificate

No. S-002/R02

Passive laser guard material

Aluminium profile

manufactured by

Bernd Siegmund GmbH
Landsberger Str. 180, 86507 Oberottmarshausen, Germany

complies with the standard
Safety of laser products - Part 4: Laser guards (IEC 60825-4:2006 + A1:2008 + A2:2011);
German version EN 60825-4:2006 + A1:2008 + A2:2011.

Parameters of conducted tests:

Wave length λ:	[nm]	1030
Laser power P_{av}:	[W]	3053
Operating mode:		Contin. wave
Effective beam diameter d_{86}:	[mm]	1.6
Duration of exposure:	[s]	15
Test report:		006-2025

Permissible limits (70% safety factor included):

Range of wave length λ:	[nm]	940 - 1090
Beam diameter d_{86}:	[mm]	1.6
Protective exposure limit (PEL):	[W/m²]	$I_{av} = 1.51 \cdot 10^9$
Protection time:	[s]	10.5
Classification:		T3

This certificate confirms that the tested guard material has a protection time of 10.5 s at the specified values for wave lengths and protective exposure limit.

Nuremberg, 13th January 2025

Prof. Dr.-Ing. Peter Hoffmann

Prof. Dr.-Ing. Peter Hoffmann
Öffentlich bestellter und vereidigter
Sachverständiger
Lasertechnik / Lasermaterialbearbeitung

Wilhelmshavener Str. 24a
90425 Nürnberg

Certificate

No. S-001/R01

Passive laser guard material

Sheet steel painted

manufactured by

Bernd Siegmund GmbH
Landsberger Str. 180, 86507 Oberottmarshausen, Germany

complies with the standard
Safety of laser products - Part 4: Laser guards (IEC 60825-4:2006 + A1:2008 + A2:2011);
German version EN 60825-4:2006 + A1:2008 + A2:2011.

Parameters of conducted tests:

Wave length λ:	[nm]	1030
Laser power P_{av}:	[W]	1505
Operating mode:		Contin. wave
Effective beam diameter d_{86}:	[mm]	22.9
Duration of exposure:	[s]	15
Test report:		016-2023

Permissible limits (70% safety factor included):

Range of wave length λ:	[nm]	940 - 1090
Beam diameter d_{86}:	[mm]	22.9
Protective exposure limit (PEL):	[W/m²]	$I_{av} = 3.67 \cdot 10^6$
Protection time:	[s]	10.5
Classification:		T3

This certificate confirms that the tested guard material has a protection time of 10.5 s at the specified values for wave lengths and protective exposure limit.

Nuremberg, 2nd October 2023

Prof. Dr.-Ing. Peter Hoffmann

Prof. Dr.-Ing. Peter Hoffmann
Öffentlich bestellter und vereidigter
Sachverständiger
Lasertechnik / Lasermaterialbearbeitung

Wilhelmshavener Str. 24a
90425 Nürnberg

Certificate

No. S-005/R01

Passive laser guard material

Laser Protection Window

manufactured by

Bernd Siegmund GmbH
Landsberger Str. 180, 86507 Oberottmarshausen, Germany

complies with the standard
Safety of laser products - Part 4: Laser guards (IEC 60825-4:2006 + A1:2008 + A2:2011);
German version EN 60825-4:2006 + A1:2008 + A2:2011.

Parameters of conducted tests:

Wave length λ:	[nm]	1030
Laser power P_{av}:	[W]	3053
Operating mode:		Contin. wave
Effective beam diameter d_{86}:	[mm]	22.9
Duration of exposure:	[s]	15
Test report:		003-2025

Permissible limits (70% safety factor included):

Range of wave length λ:	[nm]	940 - 1090
Beam diameter d_{86}:	[mm]	22.9
Protective exposure limit (PEL):	[W/m²]	$I_{av} = 7.44 \cdot 10^5$
Protection time:	[s]	10.5
Classification:		T3

This certificate confirms that the tested guard material has a protection time of 10.5 s at the specified values for wave lengths and protective exposure limit.

Nuremberg, 10th January 2025

Prof. Dr.-Ing. Peter Hoffmann

10.4 Certificates according to DIN EN 207

DIN CERTCO
Gesellschaft für Konformitätsbewertung mbH

COMPLIANCE OF CONFORMITY

Holder	**LASERVISION GmbH & Co. KG** **Siemensstr. 6** **90766 Fürth** **GERMANY**
Product	Filter against laser radiation
Type, model	P1P10
Identification	
Test basis/bases	DIN EN 207:2017-05, DIN EN 208:2010-04
Test mark	11941-PZA-14, 12501-PZA-14, 12991-PZA-14, 10681-PZA-16, 10682-PZA-16, 10683-PZA-16, 14274-PZA-17
Registration number	K0473LV/R0
Marking	Detailed marking see annex
Valid until	Unlimited
Right of use	Herewith DIN CERTCO PZA confirms that the products mentioned above are found to be in compliance with the evaluation basis mentioned above. The evaluation is based on the products submitted one-time by the manufacturer and the test report. This confirmation is not a generalized statement concerning the serial production of the product. It does not authorize to use a DIN CERTCO quality mark.

DAkkS Deutsche Akkreditierungsstelle D-ZE-11125-01-00

2018-07-19
Dipl.-Wi.-Ing. (FH) Sören Scholz
Head of Certification Body

DIN CERTCO Gesellschaft für Konformitätsbewertung mbH · Alboinstraße 56 · D-12103 Berlin · www.dincertco.de

DIN CERTCO
Gesellschaft für Konformitätsbewertung mbH

ANNEX

Compliance of conformity K0473LV/R0 dated 2018-07-19

Marking of the product For window material the following scale numbers were achieved for laser test duration of 10s:

Centre thickness (3 mm – 3.3 mm):

180-315 D LB10 + IR LB4 + M LB6 LV F CE
>315-385 D LB6 + IRM LB8 LV F CE
>385-400 DIRM LB4 LV F CE
635-<720 DIRM LB1 LV F CE
720-<770 DIRM LB2 LV F CE
770-<800 DIRM LB3 LV F CE
800-<840 DIRM LB4 LV F CE
840-<880 DIRM LB5 LV F CE
880-<960 DIRM LB6 LV F CE
960-<1030 D LB6 + IRM LB7 LV F CE
1030-1400 D LB6 + IRM LB8 LV F CE
>1400-3600 D LB3 + I LB4 + R LB3Y + M LB1 LV F CE
>3600-4800 DI LB3 + R LB3Y + M LB1 LV F CE
>4800-11500 DI LB4 + R LB3Y LV F CE
0,01W 2x10E-6J 635-690 RB1 LV F CE

Centre thickness (6 mm – 6.6 mm):

180-315 D LB10 + IR LB4 + M LB6 LV F CE
>315-385 D LB6 + IRM LB8 LV F CE
>385-400 DIRM LB4 LV F CE
635-<720 DIRM LB1 LV F CE
720-<770 DIRM LB2 LV F CE
770-<800 DIRM LB3 LV F CE
800-<840 DIRM LB4 LV F CE
840-<880 DIRM LB5 LV F CE
880-<960 DIRM LB6 LV F CE
960-<1030 DIRM LB7 LV F CE
1030-1400 D LB7 + IRM LB8 LV F CE
>1400-3600 DI LB4 + R LB3Y + M LB1 LV F CE
>3600-4800 DI LB3 + R LB3Y + M LB1 LV F CE
>4800-11500 DI LB4 + R LB3Y LV F CE
0,01W 2x10E-6J 635-690 RB1 LV F CE

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DIN CERTCO
Gesellschaft für Konformitätsbewertung mbH

ANNEX

Page 2 of 2

Compliance of conformity	K0473LV/R0 dated 2018-07-19
Product specification	Material: PC Colour: Blue

DIN CERTCO Gesellschaft für Konformitätsbewertung mbH · Alboinstraße 56 · D-12103 Berlin · www.dincertco.de

10.5 Initial commissioning checklist

See also chapter 2.2 Obligations of the operator and personnel

Nr.	Description	Check
1	**Risk and hazard assessment**	
1.1	Has a risk assessment been carried out in accordance with EN 60825-4 or other statutory occupational health and safety regulations?	☐
1.2	Has a laser safety officer been appointed (Germany, in other countries other local regulations may apply) and have the personnel been adequately trained?	☐
2	**Installation of the necessary safety technology**	
2.1	Safety switch on the doors (PL E, two-channel, installation in the middle, preferably with guard locking)	☐
2.2	Emergency stop inside and outside the laser welding cell (interruption of the laser beam, opening of the guard locking of the doors)	☐
2.3	LASER display outside (operating status display)	☐
⚠	Only trigger the laser beam after connecting and testing the required safety device	
3	**Testing the welding cell after assembly**	
3.1	Check the laser welding cell for gaps, especially in the door area	☐
3.2	Check whether the signage has been attached correctly.	☐
3.3	Check: Gap between floor and laser welding cell must be smaller than 5mm, a sealing profile (Bernd Siegmund GmbH - ERP number: 00004917) must be used to seal the gap	☐
3.4	**Roof**	
3.4.1	Assembly of the laser welding cell incl. roof: check for gaps	☐
3.4.2	If the laser welding cell was set up without a roof: Has the risk to persons outside the laser welding cell been checked and excluded in the risk assessment (keyword: persons in an elevated position, reflections on the hall ceiling)?	☐