



**Laser safety for
hand-held applications**

Introduction

Due to the high power, free targeting and propagation of the laser beam, laser protection for hand-held laser devices (HLD) is of even greater importance than with conventional laser applications. Laser welding can cause serious injuries, especially to the eyes, if used incorrectly.

With our product portfolio carefully tailored to this application, we offer a system solution directly and via our qualified partner network for all users of hand-held laser devices. We are happy to answer any questions you may have - thank you for your interest.

Important requirements for the standard



Laser protection EN207

- LB protection levels
- Permanent labelling
- Validity of OStrV / TROS Laser
- Skin and eye protection
- Coverage area



Welding protection EN169

- Protection levels and transmission requirements for viewing filters
- Permanent labelling on the edge
- Shade ≥ 3 for welding
- Validity of OStrV / TROS IOS (incoherent radiation)
- Skin and eye protection
- Environmental protection according to ISO 25980; EN 1598 (transparent curtains and windows)



LASERVISION GmbH & Co. KG

Würzburger Str. 152
90766 Fürth
GERMANY

T +49 911 9736 8100
F +49 911 9736 8199
E info@lvg.com

East Germany Office
Berlin – GERMANY
T +49 911 9736 8191
+49 30 3434 7185
E M.Mahmoudi@lvg.com

West Germany Office
Lollar – GERMANY
T +49 911 9736 8196
+49 6406 836 7676
E A.Rau@lvg.com

North Germany Office
Hamburg – GERMANY
T +49 911 9736 8195
+49 40 4191 3920
E K.Hutter@lvg.com

Austria and Switzerland Office
Scharnstein – AUSTRIA
T +43 664 1508 385
E M.Lidauer@lvg.com

Panoramaxx welding helmet

For all users who use both conventional and laser welding and who appreciate the functionality of a welding helmet, we offer, under the claim

ENGINEERED LASER PROTECTION three different helmet designs. These were developed especially for use with hand-held laserdevices in close co-operation with one of the leading manufacturer of welding helmets, the Swiss company Optrel.

For this purpose, into the Panoramaxx model, known for its good field of vision and high wearing comfort, a certified laser protection system has been integrated. The two Panoramaxx hybrid models are certified to EN 207 and EN 379 as well. Both helmets have an auto-darkening filter (ADF) as glare protection. The third, inexpensive entry-level model, only offers laser protection without ADF.



Currently available laser safety filters

	Panoramaxx Hybrid CLT	Panoramaxx Hybrid	Panoramaxx L
Art. no.	HY2.T6K00.4001	HY1.P1P16.4001	HL1.P1P16.4001
Application	Conventional and laser	Conventional and laser	Laser
Filter	2 mm IR glass with reflective coating	6 mm P1P16 absorbent plastic	6 mm P1P16 absorbent plastic
EN 207	1000-1100 D LB7 + I LB8	1000-1080 D LB7 + I LB8	1000-1080 D LB7 + I LB8
EN 379	Shade 3.5-12	Shade 4-12	EN 169 (Shade 2)
ADF	2.0 ClearLensTechnology	2.5	-
Colour View			
Weight approx.	670 g	650 g	550 g
Including Accessories			Welding protection eyewear Shade 3 or 5

Personal protective equipment for HLD

FS1 laser protection visor

For all users who work exclusively with lasers, we offer the FS1 laser safety visor a solution that is as light as it is safe.

The FS1 is based on the uvex industrial safety visor and protects not only the eyes, but the entire face. The entire visor is certified in accordance with EN207 and protects against accidental exposure to

laser radiation, like all laser safety filters, however not against permanent, direct exposure. The large viewing shield ensures an unobstructed field of vision and comfortable working.

Depending on the materials to be welded and the associated characteristic plasma brightness you can choose between three filter variants.

Safety

- EN 207 certified laser filters and head gear
- Welding filters certified to EN 169 (depending on model)
- Basic requirements and mechanical protection in accordance with EN 166
- Protection of the entire face area
- Anti-fog coating on the inside, scratch-resistant coating on the outside
- Ergonomically optimised wearing comfort

Ergonomics

- Slim design, maximum freedom of movement
- Height-adjustable head support
- Stepless one-hand width adjustment
- uvex spiderneck for doubling the neck support surface
- Only 386 g total weight
- For head sizes from 52-64 cm

Unique kinematics

- Semi-automatic, spring-driven visor
- Central parking position above the center of the head
- Perfectly balanced system
- Stepless visor lock

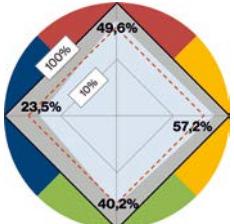
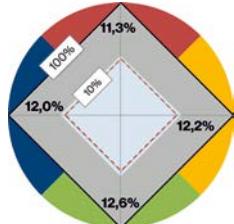
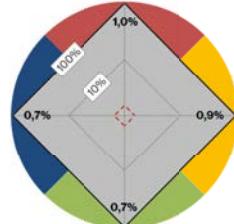


Currently available laser safety filters

Three different filter shields are currently available, so that, depending on the plasma brightness and the laser used (power and wavelength), a suitable version can be selected. Here the blue-grey Shade-3 and -6 filters attenuate the plasma light significantly more than the bright P1P18 filter.

The protection of D LB6 against laser radiation with a wavelength of 1070 nm according to EN 207 is identical for all three shields.

The colour view is shown in the diagram and, apart from the overall brightness, balanced for all models.

	P1P18	P1P22	P1P23
Art. no.	FS1.P1P18.1003	FS1.P1P22.1003	FS1.P1P23.1003
Filter			
EN 207	880-1080 D LB6 + I LB8	1030-1100 D LB6 + I LB8	1030-1100 D LB6 + I LB8
Shade	(1.7)	3	6
VLT	46.5%	12%	0.8%
Colour View			
Pilot Laser 635nm	Very high visibility	High visibility	Visibility
Brightness of Plasma	Low	Bright	Bright

Options (for purchase from the manufacturer)

Here you will find a small selection of useful additional products and add-ons for the FS1. With the specified part number and the description, these products can be purchased directly from the respective manufacturer or in the corresponding webshop.

Sun/Neck protection	Hearing protection	Bump cap	Chest protection	Laser protection
UV protection UPF > 40	Noise protection 28 dB damping	Bump protection according to EN 812	UV-protection on the neck (clip-on)	Additional glare and laser protection, especially for clear P1P18 shields
				
Art. no. 9790170	Art. no. 2600216	Art. no. 9790159	Art. no. z.B. 4028.029	Art. no. F22.P1L07.1001
uvex-safety.com	uvex-safety.com	uvex-safety.com	optrel.com	uvex-laservision.com

Respiratory protection



swiss air system

With the swiss air PAPR, you always have enough fresh air available.

The respiratory support technology and the ultra-flat and lightweight rucksack design reduce the fatiguing effect, so you can complete your demanding jobs more easily.



reddot winner 2021



Ventilated half mask made of flame-retardant material completely covers the mouth and nose area. Positive pressure makes it easier to breathe, preventing users from feeling fatigued.

Shoulder carrying unit for ergonomically perfect weight distribution of the super-lightweight filter system (weighs just 550 g).

Headband adjustable to any increment – for all sizes from XS to XL.

Y-hose with adjustable neck strap and flexible hose elements guides the air directly into the half mask.

Blower unit with automatic air flow calibration and a high-performance battery with 6 to 12 hours of operating time for an uninterrupted working day.*

Traps aerosols, smoke, particles, gases, vapours or viruses. Powerful filter unit with spark guard, odour filter, pre-filter and particle filter.



swiss air system	
Art. no.	4700.010
Version	PAPR, control panel, half mask, particle filter, pre-filter, filter cover, spark guard, hose system, headband and neck strap, shoulder carrying unit, charger, rucksack.

* Operating time depending on air flow, at room temperature with a new filter

uvex silv-Air

All uvex respirators are tested and approved in accordance with the European standard 149. This standard sets out a wide range of requirements for respirators, with the aim of providing the user with the highest level of protection and comfort.

With a filtering efficiency of at least 99%, FFP3 masks constitute the highest protection class. They filter up to 30 times the respective occupational exposure limit (OEL*) and are suitable for protecting against toxic particles, dusts and smoke.

uvex silv-Air 2310 planet

- Particle-filtering preformed mask with exhalation valve for larger face shapes
- Valve and four-point headband attachment partially made of recycled material, 26.5 percent of the total product is made from recycled content
- Polybags made of 30 percent recycled material
- Flexible, adjustable nose clip so that the mask fits comfortably and securely
- Very soft, all-around sealing lip for optimal wearer comfort and secure fit
- Exhalation valve for noticeably reducing breathing resistance

uvex silv-Air 2310 planet	
Art. no.	8762313
Version	FFP3 NR D preformed mask with valve
Colour	white



uvex silv-Air 5310+

- Particle-filtering flat-fold mask for larger face shapes
- Wide, seamless headband for ensuring a comfortable and secure fit
- Comfortable sealing lip in the nose and chin area for a reliable fit
- Incorporated nose clip that is easy to adjust
- Exhalation valve for reducing heat and humidity as well as noticeably reducing breathing resistance

uvex silv-Air 5310+	
Art. no.	8735311
Version	FFP 3 NR D folding mask with valve
Colour	white



uvex silv-Air 5310

- Particle-filtering flat-fold mask for small to medium face shapes
- Wide, seamless headband for ensuring a comfortable and secure fit
- Comfortable sealing lip in the nose and chin area for a reliable fit
- Incorporated nose clip that is easy to adjust
- Exhalation valve for reducing heat and humidity as well as noticeably reducing breathing resistance

uvex silv-Air 5310	
Art. no.	8735310
Version	FFP 3 NR D folding mask with valve
Colour	white



* OELs = The occupational exposure limit values (OELs) are the average concentration of a substance in the air in the workplace, up to which no damage (chronic or acute) is to be expected if employees work there for eight hours a day for five days a week. The OELs replace the maximum workplace concentration (MWC) and the technical reference concentration (TRC) – however, as long as both of these values are not yet fully taken into account in the OELs, they can still be used on an interim basis for assessing risks in the workplace.

Gloves and clothing

In its Information 203-093 Chapter 5.4.2 the German DGUV explicitly points out the necessity of protecting of the hands and body in combination with powerful HLDs.

To minimise the risk of injury when working with open lasers closed, flame-retardant clothing (e.g. protective welding clothing) must be worn. We therefore present below a selection of such clothing and gloves (purchase via www.uvex-safety.de).

uvex banox pro

The permanently spark- and flame-retardant clothing is characterised by permanently high welding protection and a high level of wearing comfort with practical features. The fabric blend is particularly breathable and hard-wearing.

To ensure complete protection **uvex banox pro** should always be worn in combination with dungarees or trousers.



uvex banox pro collection
79% cotton, 20% polyester,
1% antistatic fibres,
approx. 450 g/m²

	uvex banox pro jacket	uvex banox pro trousers	uvex banox pro dungarees
Art. no.	88181	88182	88183
Colour	navy	navy	navy
Size	42-64, 90-110	42-64, 90-110	42-64, 90-110

uvex protection fire + arc

The uvex protection fire + arc product family offers safe protection against thermal hazards. In combination with a jacket, the products reach even higher protection classes.



Long sleeve polo pro
54% Modacryl (Protex),
44% cotton, 2% antistatic fibres,
approx. 270 g/cm²



Long sleeve shirt pro
55% modacrylic, 43% cotton,
2% rotex), 44% cotton, 2% antistatic
fibres, approx. 165 g/cm²

	uvex protection fire + arc Long sleeve polo pro	uvex protection fire + arc Long sleeve shirt pro
Art. no.	17238	89312
Colour	grey	navy
Size	XS-3XL	37/38-49/50

HexArmor 4062 Chrome SLT®



- Level 4 arc protection: Laboratory tested according to HRC ATPV at 46 cal/cm³
- Goatskin leather palm offers comfort and secure grip
- Stitched with aramid thread
- Full aramid lining for all-round cut protection
- Extended protective cuff for easy donning and doffing

	HexArmor 4062 Chrome SLT®
Art. no.	60655
Standard	EN 388:2016 (2 X 2 3 E), EN 407 (4 2 2 14 1)
Colour	beige
Size	6-12

uvex C500 wet

Cut protection glove with outstanding wearing comfort

- Outstanding mechanical abrasion resistance thanks to the innovative SoftGrip coating (uvex C500 foam and uvex C500 wet)
- Very good grip in wet environments
- Very high cut protection thanks to the patented uvex Bamboo TwinFlex® Technology
- Suitable for contact heat up to +100 °C (EN407)
- High flexibility
- Very good dexterity and fingertip sensitivity
- Perfect fit thanks to 3D Ergo Technology
- Silicone-free according to impression test
- Certified to OEKO-TEX® Standard 100 (S02-0648 HOHENSTEIN HTTI)



	uvex C500 wet
Art. no.	60492
Type	With knitted cuff
Standard	EN 388 (4 X 4 2 C), EN 407 (X 1 X X X X)
Material	Bamboo viscose, Fibreglass, High-performance polyethylene (HPPE), Polyamide (PA)
Coating	High performance elastomer (HPE)
Suitability	Suitable for damp and oily work environments
Colour	lime, anthracite
Size	7-11

Protection of the surroundings

To ensure the safety of the operator and other persons in the vicinity, a combination of suitable protective equipment as well as organisational and technical measures is absolutely essential.

These safety precautions further minimise the risk of exposure to scattered radiation. To prevent the uncontrolled spread of laser radiation, laservision offers modular laser safety barriers, roll-ups or curtains.

E25 modular barrier system



Hinge protects at any angle completely from laser light



E25.FRAME.100x
The E25 window frame kit

- Fast and flexible ready-to-use enclosure
- 360° Flex Joint – laser-safe at any angle
- Modular design consisting of 2–9 segments
- Segment size 1257 × 2100 mm (W × H)
- M7P06 Barrier as standard filling
- Custom fillings (barrier and window) up to dmax = 6 mm available
- Short delivery times
- Space-saving storage

Description	Dimensions	Art. no.
Start/end module	1257 × 2100 mm (W × H)	E25.M7P06.1001
Inside module	1257 × 2100 mm (W × H)	E25.M7P06.1002
Window frame kit	On request	E25.FRAME.1001
Available windows	On request	e.g. P1D01, P1L03, P1N01, P1P10, P1P20, P1P21
Transport packaging	Based on cost	E25.VPACK.1000

Roll-up BC3.F1P01.x based on BC3 (SHELTER-Light)

- Free-standing laser safety curtain
- Quick and easy assembly, simple transport
- Connection of several modules using Velcro/fleece tape
- Roll-up set consisting of 3× roll-up and 2× connector incl. bag

BC3 Roll-Up variants	Dimensions	Art. no.
Roll-Up, stand-alone	900 × 2000 mm (W × H)	BC3.F1P01.1RU1
Roll-Up connector	450 × 2000 mm (W × H)	BC3.F1P01.1274
Roll-Up set, consisting of 3× Roll-Ups and 2× connectors incl. bag		VBP999307



Laser safety training

Proper handling of laser technology requires sound training in order to minimize the associated risks. laservision and the uvex academy offer a modular

training program tailored to all needs from users to laser safety officers.



Besides tutorials used as annual safety briefings, the program ranges from practical exercises to a special measurement technology seminar. The courses can also be held at your location on request.

The new blended learning course **Laser Safety Officer for Technical Applications** enables participants to learn the majority of the content through self-study independent of the location and at your own pace. It concludes with a 4-hour live webinar.



Laser safety training at the uvex academy

[uvex-safety.com/en/
knowledge/uvex-academy/](http://uvex-safety.com/en/knowledge/uvex-academy/)