

LASER
IN BETRIEB

2023 LARGE AREA LASER PROTECTION
BARRIERS
CABINS, CURTAINS, MOBILE SCREENS, ROLLER BLINDS, PROTECTION AND SAFETY DEVICES.



Sichtbare und unsichtbare
Laserstrahlung, Bestrahlung von
Auge oder Haut durch direkte
oder Streustrahlung vermeiden
Laser Klasse 4

PROTECT[®]
LASERSCHUTZ GMBH

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LASER PROTECTION

at the highest technical level! The fields of application of laser systems in medicine, industry, research and development are becoming more and more diverse, the lasers more and more powerful, requirements are constantly increasing.

Through the targeted development of our laser shields, we are always offering you the best possible solution to safeguard your laser workstations.

In accordance with EN 60825-4, we ensure the correct selection of laser protection material for your individual requirements. Our materials are certified according to EN 12254.

Our competent team will be happy to answer all your questions to ensure you the best laser protection solutions for your requirements.

**Our protection level calculator
can be found online at**



protect-laserschutz.de/en/protection-level-calculator



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LASER PROTECTION CURTAINS



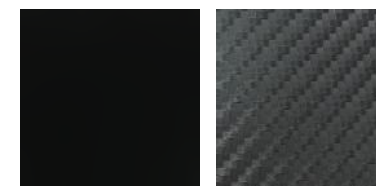
Curtain Type: **ISO PROTECT BUDGET**

Weight: 1 kg/m²

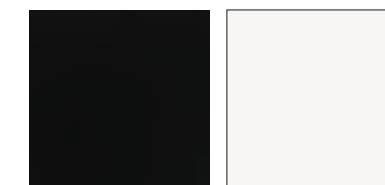
Protection levels (EN 12254):
 180 – 315 D AB8 + IR AB3 + M AB5Y
 > 315 – 1050 D AB5 + I AB7 + R AB6 + M AB8
 > 1050 – 1400 D AB4 + I AB7 + R AB6 + M AB8
 > 1400 – 11000 DIR AB2 + M AB3Y
 PF CE

Power densities according to EN 12254:
 180-1050 100 sec 100kW/m² (10 W/cm²)
 > 1050-1400 100 sec 2,5MW/m² (250 W/cm²)
 > 1400-11000 100 sec 100kW/m² (10 W/cm²)

Item No.: **220-BUDGET-59**
 Colors/Texture: Black/Carbon



Item No.: **220-BUDGET-54**
 Colors/Texture: Black/White



220-BUDGET-02
 White



220-BUDGET-061
 Carbon/Carbon



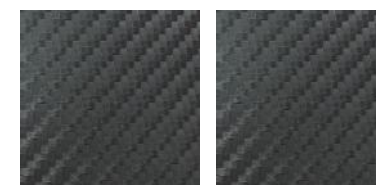
Curtain Type: **ISO PROTECT BUDGET EXTRA**

Weight: 2 kg/m²

Protection levels (EN 12254):
 180 – 315 D AB3 + IR AB3 + M AB5Y
 > 315 – 1050 D AB6 + IR AB7Y + M AB8
 > 1050 – 1400 D AB5 + IR AB7Y + M AB8
 > 1400 – 11000 DIR AB3 + M AB4Y
 PF CE

Power densities according to EN 12254:
 180-315 100 sec 100 kW/m² (10 W/cm²)
 > 1050-1400 100 sec 2,5 MW/m² (250 W/cm²)
 > 1400-11000 100 sec 100 kW/m² (10 W/cm²)

Item No.: **220-BUDGET-Extra-61**
 Colors/Texture: Carbon/Carbon



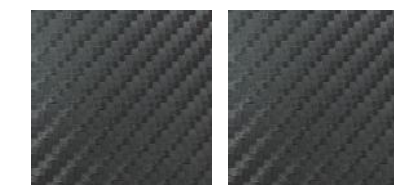
Curtain Type: **ISO PROTECT BUDGET SUPERIOR**

Weight: ca. 3 kg/m²

Protection levels (EN 12254):
 180 – 315 D AB9 + IR AB3 + M AB5Y
 > 315 – 1400 D AB6 + IR AB7Y + M AB8
 > 1050 – 1400 DIR AB3 + M AB4Y
 PF CE

Power densities according to EN 12254:
 180-11000 100 sec 1 MW/m² (100 W/cm²)

Item No.: **220-BUDGET-Superior**
 Colors/Texture: Carbon/Carbon



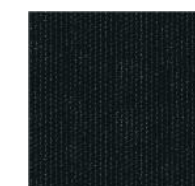
Curtain Type: **ISO PROTECT HIGH TECH**

Weight: 2,2 kg/m²

Protection levels (EN 12254):
 180 – 315 D AB9 + IR AB4 + M AB5Y
 > 315 – 532 D AB7 + IR AB6 + M AB8Y
 > 532 – 1050 D AB7 + IR AB7 + M AB8Y
 > 1050 – 1400 D AB6 + IR AB7 + M AB8Y
 > 1400 – 11000 D AB3 + IR AB4 + M AB3Y
 PF CE

Power densities according to EN 12254:
 180-315 100 sek 1000 kW/m² (100 W/cm²)
 > 315-1050 100 sek 10000 kW/m² (1000 W/cm²)
 > 1050-1400 100 sek 25000 kW/m² (2500 W/cm²)
 > 1400-11000 100 sek 1000 kW/m² (100 W/cm²)

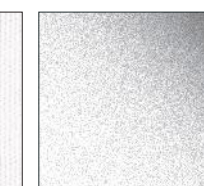
Item No.: **220-High-01**
 Colors/Texture: Black



220-High-02
 White



220-High-03
 Silver



LASER PROTECTION CURTAINS

Curtain Type: ISO PROTECT LASER PROTECTION SLATS

Protection levels (EN 12254):

> 315 – 1050	D AB7
> 315 – 1400	I AB7
> 1050 – 1400	D AB6
> 1400 – 11000	D AB3

PF CE

Power densities according to EN 12254:

180-315	100 sec	10kW/m ² (1 W/cm ²)
> 315-1050	100 sec	10MW/m ² (1 kW/cm ²)
> 1050-1400	100 sec	25MW/m ² (2.5 kW/cm ²)
> 1400-11000	100 sec	1MW/m ² (100 W/cm ²)

Item No.: **280-LAM-300x2000-77**
Colors/Texture: Red-brown



Curtain Type: ISO PROTECT BUDGET LP

Weight: 0,3 kg/m²

Protection levels (EN 12254):

180 – 315	D AB5 + R AB2
> 315 – 850	D AB2
> 850 – 1400	D AB3
> 1400 – 11000	D AB1

PF CE

Power densities according to EN 12254:

180-850	100 sec	100 W/m ² (0.01 W/cm ²)
> 1050-1400	100 sec	25 kW/m ² (2.5 W/cm ²)
> 1400-11000	100 sec	10 kW/m ² (1 W/cm ²)

Item No.: **220-BUDGET-LP**
Colors/Texture: Black



CLEAN ROOM LASER PROTECTION CURTAINS

Curtain Type: ISO PROTECT CR ESD

Laser protection curtain for clean rooms with electrostatic charging protection

Weight: 0,68 kg/m²

Protection levels (EN 12254):

315 – 1050	D AB4
> 1050 – 1400	D AB3

PF CE

Power densities according to EN 12254:

315-1050	100 sec	250 kW/m ² (250 W/cm ²)
> 1050-1400	100 sec	25 kW/m ² (25 W/cm ²)

Item No.: **230-PROTECT-CR-ESD**
Colors/Texture: Black/Black



Curtain Type: ISO PROTECT CR

Laser protection curtain for clean rooms

Weight: 1,3 kg/m²

Protection levels (EN 12254):

315 – 1050	D AB5
> 1050 – 1400	D AB4

PF CE

Power densities according to EN 12254:

315-1050	100 sec	2500 kW/m ² (250 W/cm ²)
> 1050-1400	100 sec	250 kW/m ² (25 W/cm ²)

Item No.: **230-PROTECT-CR**
Colors/Texture: Black/Black



Curtain Type: ISO PROTECT HIGH TECH

Weight: 2,2 kg/m²

Protection levels (EN 12254):

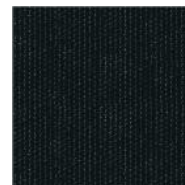
180 – 315	D AB9 + IR AB4 + M AB5Y
> 315 – 532	D AB7 + IR AB6 + M AB8Y
> 532 – 1050	D AB7 + IR AB7 + M AB8Y
> 1050 – 1400	D AB6 + IR AB7 + M AB8Y
> 1400 – 11000	D AB3 + IR AB4 + M AB3Y

PF CE

Power densities according to EN 12254:

180-315	100 sek	1000 kW/m ² (100 W/cm ²)
> 315-1050	100 sek	10000 kW/m ² (1000 W/cm ²)
> 1050-1400	100 sek	25000 kW/m ² (2500 W/cm ²)
> 1400-11000	100 sek	1000 kW/m ² (100 W/cm ²)

Item No.: **220-High-01**
Colors/Texture: Black



Item No.: **220-High-02**
Colors/Texture: White



Item No.: **220-High-03**
Colors/Texture: Silver



**MOBILE
LASER PROTECTION
BARRIERS**

Barrier type: **ISO PROTECT SERVICE**

Weight: ca. 5kg per transport bag

Range of coverage

(WxH, mm): 3000x2000
1000x2000

Protection levels (EN 12254):

180 – 315	D AB8 + IR AB3 + M AB5Y
> 315 – 1050	D AB5
> 1050 – 1400	D AB4
> 315 – 1400	I AB7 + R AB6 + M AB8
> 1400 – 11000	DIR AB2 + M AB3Y PF CE

Power densities according to EN 12254:

180-315	100 sec	100 kW/m ² (10 W/cm ²)
> 1050-1400	100 sec	2,5 MW/m ² (250 W/cm ²)
> 1400-11000	100 sec	100 kW/m ² (10 W/cm ²)

Item No.: 240-SERVICE-3x2 (Set with three panels)
240-SERVICE-1x2 (Single panel)

Colors/Texture: Black/Carbon

The material of the barrier consists of ISO PROTECT BUDGET. The standard version consists of three individual elements, each 1000x2000 mm. Every individual panel of the barrier is delivered in a transport bag.

The set is easy to transport and to assemble. Therefore it is particularly suitable for mobile service technicians.



Barrier type: **LASER PROTECTION CURTAIN ON MOBILE ROLLING FRAME**

Range of coverage min. 2100mm width up to max. 4300mm and 2100mm height

Item No.: 220-BUD-G (Frame with BUDGET curtain)
220-HIGH-G (Frame with HIGHTECH curtain)

The barrier is optionally available with ISO PROTECT BUDGET or ISO PROTECT HIGHTECH material. The side-mounted swivel arms are optional and can be ordered in two lengths (700mm or 1100mm) to adapt the laser barrier to the respective locations. We also offer a height-adjustable frame (2100 - 2600mm) on request.

Curtain Type: **ISO PROTECT BUDGET**

Weight: 1 kg/m²

Protection levels (EN 12254):

180 – 315	D AB8 + IR AB3 + M AB5Y
> 315 – 1050	D AB5 + I AB7 + R AB6 + M AB8
> 1050 – 1400	D AB4 + I AB7 + R AB6 + M AB8
> 1400 – 11000	DIR AB2 + M AB3Y PF CE

Power densities according to EN 12254:

180-315	100 sec	100 kW/m ² (10 W/cm ²)
> 1050-1400	100 sec	2,5 MW/m ² (250 W/cm ²)
> 1400-11000	100 sec	100 kW/m ² (10 W/cm ²)

Curtain Type: **ISO PROTECT HIGH TECH**

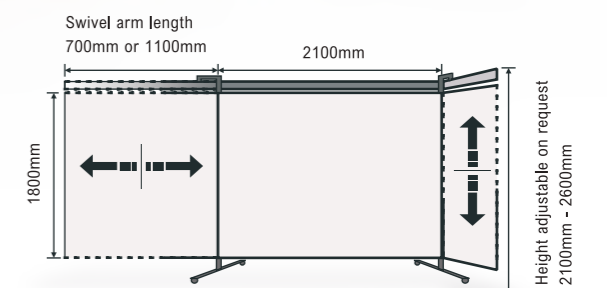
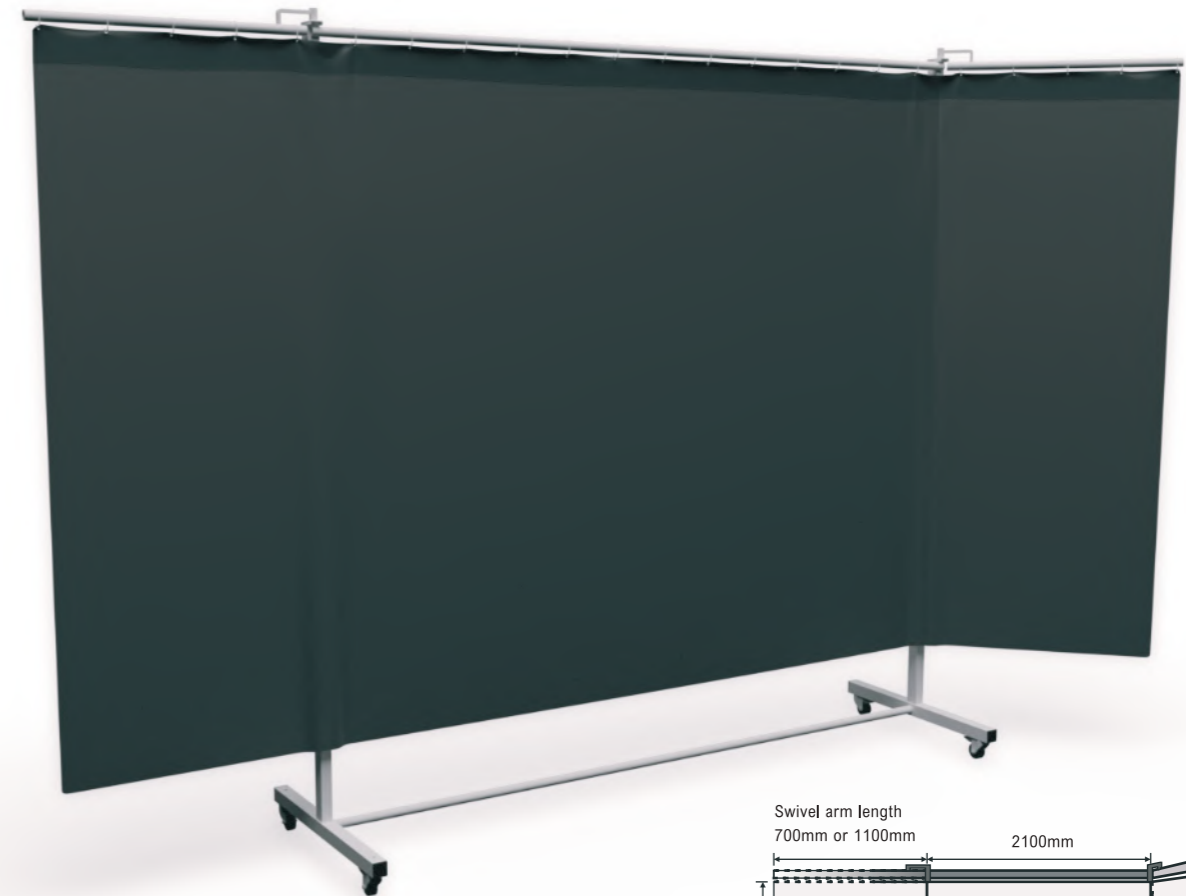
Weight: 2,2 kg/m²

Protection levels (EN 12254):

180 – 315	D AB9 + IR AB4 + M AB5Y
> 315 – 532	D AB7 + IR AB6 + M AB8Y
> 532 – 1050	D AB7 + IR AB7 + M AB8Y
> 1050 – 1400	D AB6 + IR AB7 + M AB8Y
> 1400 – 11000	D AB3 + IR AB4 + M AB3Y PF CE

Power densities according to EN 12254:

180-315	100 sec	1000 kW/m ² (100 W/cm ²)
> 315-1050	100 sec	10000 kW/m ² (1000 W/cm ²)
> 1050-1400	100 sec	25000 kW/m ² (2500 W/cm ²)
> 1400-11000	100 sec	1000 kW/m ² (100 W/cm ²)



LASER PROTECTION BARRIERS

SAMPLE CONFIGURATIONS

TYPE: PEGASUS

Item No.: 250-PEGASUS-3,8x2,2



Shield type: **PEGASUS**

Weight: ca. 19 kg per Panel

Range of coverage
(WxH, mm): 1250 x 2200 x 60 mm (WxHxD), inkl. 30 mm stand height (1 Panel)
Tolerance: +/- 1 mm/running metre.

Protection levels (EN 12254):

180 – 315	D AB10 + IR AB5 + M AB6Y
> 315 – 1050	DR AB7 + I AB8 + M AB10
> 1050 – 1400	D AB7 + I AB8 + R AB6 + M AB10
> 1400 – 11000	DIR AB4 + M AB4Y
	PF CE

Power densities according to
EN 12254:

180 – 315	100 sec	10 MW/m ² (1 kW/cm ²)
> 1050 – 1400	100 sec	250 MW/m ² (25 kW/cm ²)
> 1400 – 11000	100 sec	10 MW/cm ² (1 kW/cm ²)

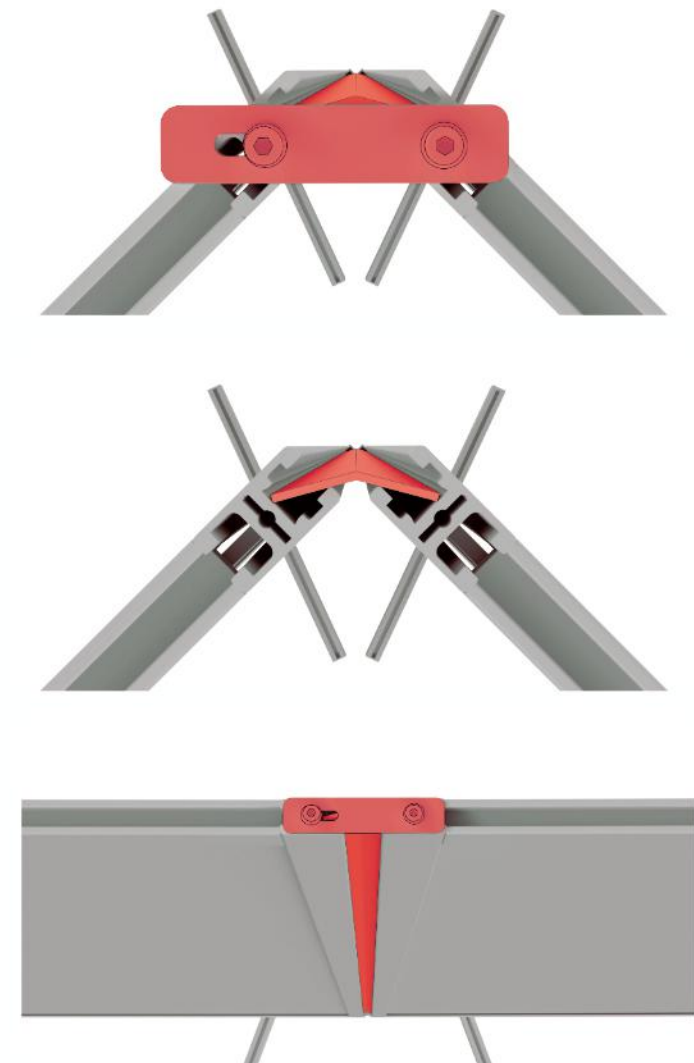
Alternatively, the specified protection according to EN 60825-4 (power densities) is possible on request!

Item No.: 250-PEGASUS-3,8x2,2 (Set consisting of three panels)

The barrier material is made of a 4mm thick aluminium composite. The standard version contains three individual elements, each 1250 x 2200 mm barrier area (3800mm x 2200mm in total).

MODULAR EXPANDABLE PANEL SYSTEM

Seamless radiation coverage even between the panels!



=50

LASER
IN BETRIEB



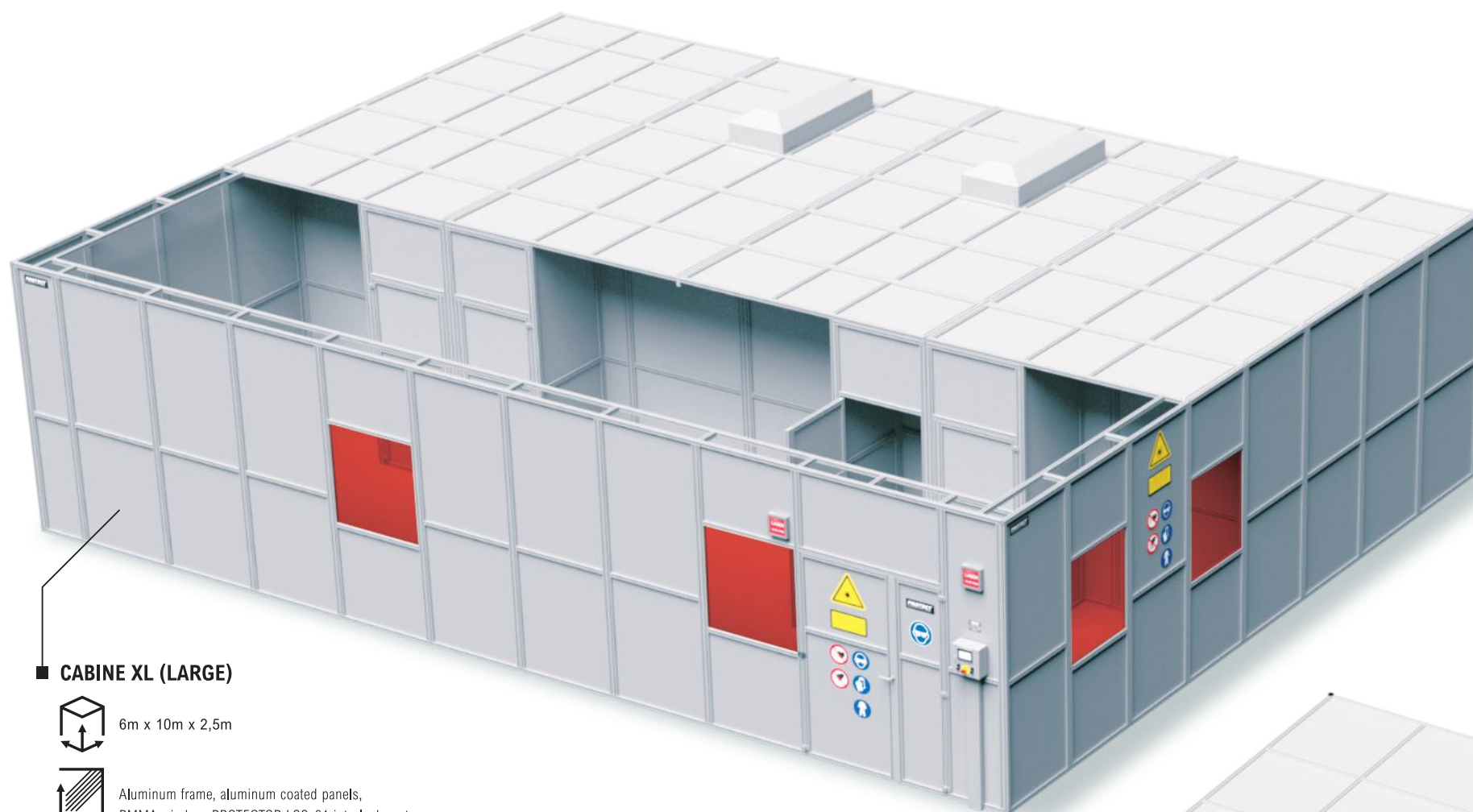
**LASER PROTECTION
CABINS**

LASER PROTECTION CABINS

SAMPLE CONFIGURATIONS

TYPE: PROMETHEUS

Item No.: 250-PROM-CABIN



■ CABINE XL (LARGE)

6m x 10m x 2,5m

Aluminum frame, aluminum coated panels, PMMA window, PROTECTOR LSS-01 interlock system

Cabin type: **PROMETHEUS**

Maximum size (WxH, mm): Individual
The laser enclosure is delivered as a kit
Tolerance: +/- 1 mm/running metre.

Description: Suitable for all laser types from 180-11000 nm. The stand wall structure consists of aluminium system profiles in 40mm x 40mm or 40mm x 80mm, depending on static requirements, completely constructed with cover caps and truss profile. The surface element consists of a special aluminium multilayer plate in 4mm thickness, matt brushed.

We manufacture tailor-made laser protection cabins specifically according to your individual requirements in terms of size, equipment, material, window configuration and safety requirements. All materials of the protection cabins installed by us are tested according to EN 12254. The construction takes place according to your specifications and the structural conditions at the assembly site. Our laser protection cabins are conform to EN 60825-4. On request, we would be pleased to advise you regarding further tests and requirements.

Further individual configurations such as ventilation, security and locking systems, window count and placement, warning lights and signs, roof and wall constructions as well as coatings are possible. Our customer advisory service will be delighted to provide you with more information.

Protection levels (EN 12254):	180 – 315	D AB10 + IR AB5 + M AB6Y
> 315 – 1050	DR AB7 + I AB8 + M AB10	
> 1050 – 1400	D AB7 + I AB8 + R AB6 + M AB10	
> 1400 – 11000	DIR AB4 + M AB4Y	
PF CE		

Power densities according to EN 12254:	180-315	100 sec	10 MW/m ² (1 kW/cm ²)
> 1050-1400	100 sec	250 MW/m ² (25 kW/cm ²)	
> 1400-11000	100 sec	10 MW/cm ² (1 kW/cm ²)	

Alternatively, the specified protection according to EN 60825-4 (power densities) is possible on request!

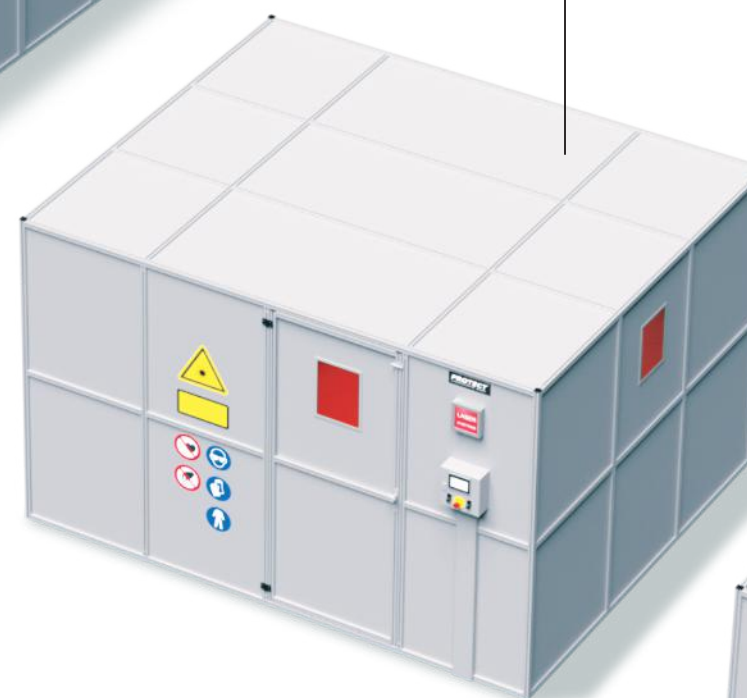
A foundation angle for fixing on the work floor as a foundation finish is available. A walk-in roof (150 kg/m²) can be realized at an additional cost.

- At extra cost :
- Optional lighting and ventilation according to technical requirements
 - Optional revolving or sliding doors
 - Data input and output on request
 - Laser protection windows

■ CABIN M (MEDIUM)

3m x 3,7m x 2,3m

Aluminum frame, aluminum coated panels, PMMA window, PROTECTOR LSS-01 interlock system



■ CABIN S (SMALL)

3m x 2,5m x 2,3m

Aluminum frame, aluminum coated panels, PMMA window, PROTECTOR LSS-01 interlock system



Shield type: **LSR-BUDGET**

Max size
(WxH, mm): Individual

Protection levels
(EN 12254):

180 – 315	D AB8 + IR AB3 + M AB5Y
> 315 – 1050	D AB5 + I AB7 + R AB6 + M AB8
> 1050 – 1400	D AB4 + I AB7 + R AB6 + M AB8
> 1400 – 11000	DIR AB2 + M AB3Y

PF CE

Power densities according to
EN 12254:

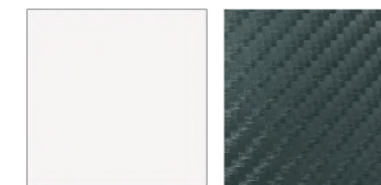
180-1050	100 sec	100kW/m ²	(10 W/cm ²)
> 1050-1400	100 sec	2,5MW/m ²	(250 W/cm ²)
> 1400-11000	100 sec	100kW/m ²	(10 W/cm ²)

Item No.: 260-LSRM-BUDGET (Manually operated)
260-LSRE-BUDGET (Electrical)

Laser safety blinds for darkening laser workstations and laboratories. The blinds are approved for all laser types from 180 – 1100 nm according to laser data and protection levels.

The blinds are available manually or electrical operated.
The roller material is made out of 220-BUDGET-60 in White/Carbon.

220-BUDGET-60
White/Carbon



**LASERPROTECTION
BLINDS**

**CUSTOMIZED
SOLUTIONS**

REINRAUMVORHÄNGE

Maximum size
(WxH, mm): nach Aufmaß

Material thickness: 1mm

Alle Vorhänge (mit und ohne Laserschutz) von PROTECT-Laserschutz GmbH können durch Einschweißen in eine spezielle PVC Folie reinraumtauglich gemacht werden. Die Folie ist transparent, antistatisch und für alle Vorhangarten erhältlich.



LASER PROTECTION LOCKS

Maximum size
(WxH, mm): Individual

Material thickness: Depending on curtain material

Our curtains can be used for laser protection locks, adapted to individual requirements and installed according to local conditions.



**LASER PROTECTION
ROLLER DOORS**

Maximum size
(WxH, mm): Individual

Material: Aluminium

For large-area shielding of entrances and driveways, we also offer shielding systems to protect work areas from laser/scattering radiation. The electrically or manually operated systems may also be equipped with safety monitoring and shut-off devices.



Article: **PROTECTOR LSS-01 INTERLOCK**

Size (WxH, mm) 3000x2000

Description: The PROTECTOR LSS-01 Interlock System allows you to visualize diagnostic data for cabin safety and react quickly to errors and malfunctions in production operations. The monitoring and control unit manufactured in Germany is individually configured according to the customer's configuration requirements. User and access rights can be managed directly from the device.

The LSS-01 is adapted to the requirements and safety concept of the operator and, depending on the application, complies with the standards PL e according to EN ISO 13849-1 and up to SIL CL 3 according to EN IEC 62061.

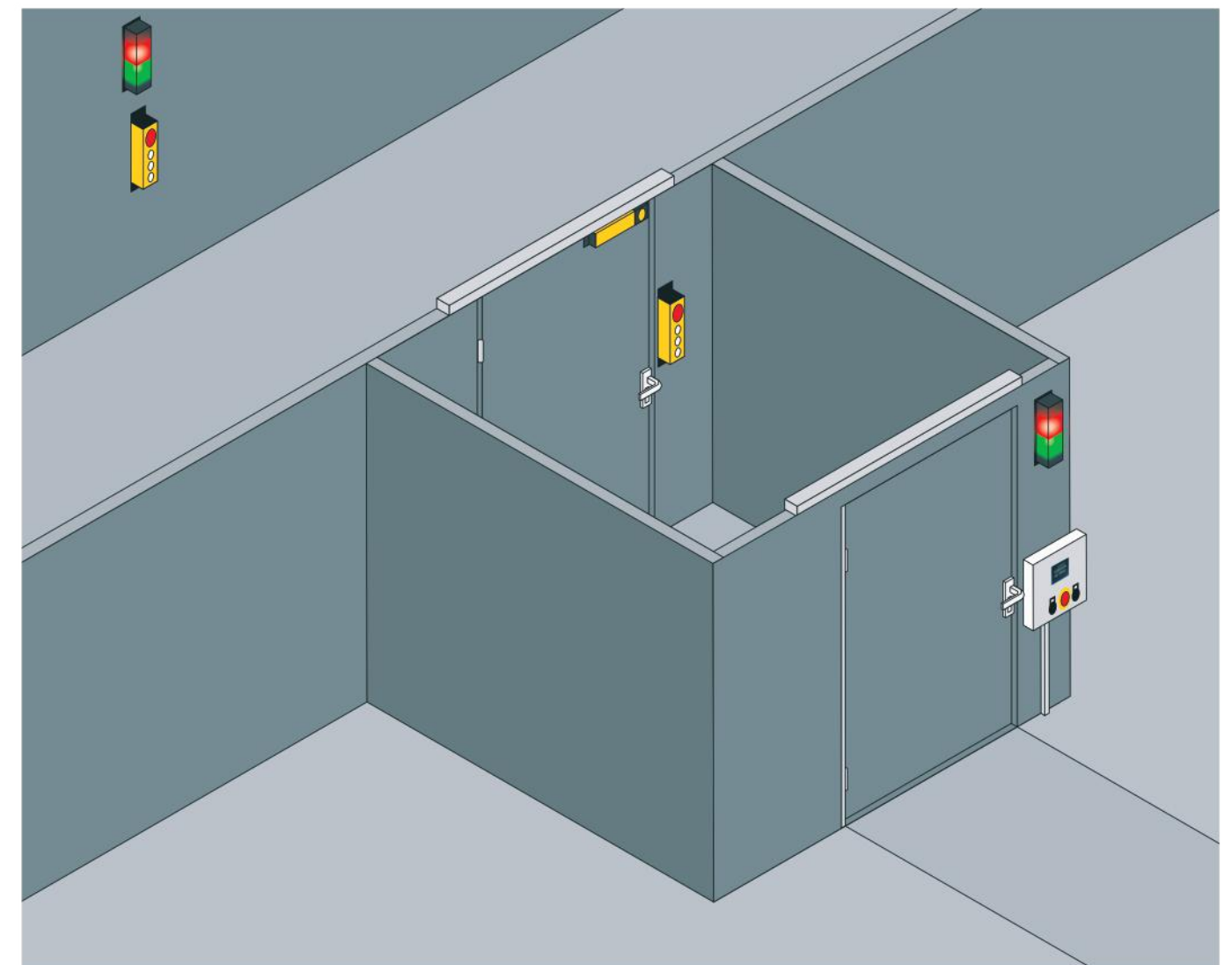
SAMPLE CONFIGURATIONS

Ports/Interfaces: TCP/IP, Modbus/TCP (customer-specific integration)
Emergency shut down

Two-handed switch
Start button
Safety light barrier
Scanner
Safety door switch with and without guard

Display: Touch Screen, Multicolor (480x272), illuminated

Monitoring: Error message and cross-circuit monitoring
Status information
Connection monitoring



**LASER SAFETY
SYSTEMS**

WHAT DATA DO I NEED TO DETERMINE THE LEVEL OF PROTECTION?

You have to provide the name of the laser manufacturer as well as the name of the laser device.

In addition, the following data are required:

- Wavelength
- Beam diameter in focus
- Beam divergence behind the focus

In case of continuous stroke lasers:

- Performance

For pulsed lasers:

- Pulse energy
- Pulse duration
- Pulse repetition rate
- Average output

If you do not know where to find this information, contact the manufacturer of your laser device.

WHAT DO THE LETTERS AND NUMBERS MEAN?

Numbers (e.g. 180-350) = Wavelength range

Letters for mode of operation:

- D = Continuing line
- I = Impulse laser
- R = Q-switched pulsed laser
- M = Mode coupled pulse laser

LB = Level of protection (e.g. LB 6)

PF = Manufacturer identification number

S = Increased strength of the material

CE = Certified according to European standards

ALL IN ONE LASER PROTECTION SERVICE

Whether laser protection cabins, darkening blinds (with and without laser protection) or laser protection curtains: PROTECT-Laserschutz manufactures customized solutions according to the individual requirements of our customers.

Many years of know-how in designing laser barriers guarantees each customer the correctly calculated laser protection for every application.

All of our laser shields are tested according to EN 12254. On request, PROTECT-Laserschutz will take over the acceptance of the installed shieldings according to EN 60825-4.

PROTECT-Laserschutz GmbH

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