TUNNEL LIGHT

The aim of evacuation lighting is to guide tunnel users during evacuation of the tunnel on foot in emergency circumstances. This aim is fulfilled with the use of emergency signs that unambiguously indicate the route of escape to a place of safety.

- Maintained
- Self-testing with 90' & 3h autonomous duration
- CBS models (for Central Battery System)

CE | 1,5h/3h | IP66 | IP65 | IK08

M MAINTAINED | ST SELF TESTING | SC SELF CONTAINED | CBS

60m | 80m | 78m | 110m

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SAFETY & SECURITY SYSTEMS

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EMERGENCY LIGHTING
TUNNEL LIGHT

Car passenger and freight transport are the dominant transport modes in EU and as modern road networks become more crowded, the use of tunnels and underpasses is expanding. Tunnel installations are demanding, due to limited maintenance access and corrosive atmospheric conditions and emergency luminaires have to satisfy the requirement for both reliable performance and absolute minimum of operation requirements.

The aim of evacuation lighting is to guide tunnel users during evacuation of the tunnel on foot in emergency circumstances. This aim is fulfilled with the use of emergency signs that unambiguously indicate the route of escape to a place of safety.

Emergency exit signs in tunnel installations are manufactured in accordance to the following specifications

- RABT 2006: This regulation contain principles, information and criteria for planning the equipment of road tunnels and their operation.
- EN 16276:2013 Evacuation lighting in Road Tunnels: the standard specifies evacuation lighting in road tunnels longer that 500m and with an AADT (Annual Average Daily Traffic) higher than 500 vehicles.
- EN 1838 Lighting applications: Emergency lighting: the standard specifies the luminous requirements for emergency escape lighting and standby lighting systems and is referenced in EN 16276:2013.
- Directive 2004/54/EC: This Directive of the European Parliament specifies the minimum safety requirements for tunnels in the Trans-European Road Network.
- CIE 88-2004: This technical report provides guidance for design of lighting systems of road tunnels and underpasses.
- EN ISO 7010: the standard specifies the safety colors and safety signs in registered safety signs.

Types of Emergency exit signs used in Tunnel installations.

Emergency exit signs are used in pedestrian guidance during emergency situations and have to fulfil two main functions:

- Provide unambiguous marking for the evacuation route
- Have a ubiquitous and unobtrusive presence in order to familiarize users in their presence under normal operation.

Studies have shown that motorists are reluctant to leave their vehicles at an early stage of an emergency and, as such, the presence of a clear indicating lighting system, that users have familiarity with, decreases early emergency evacuation times of the tunnel as well as provide clear and unambiguous marking of the evacuation route.

There are two main types of emergency exit signs in tunnel installations:

- **Exit sign luminaires that are used for marking the evacuation route:** the evacuation route shall be marked with luminaires at a spacing not exceeding 25m and placed not higher than 1,5m above the carriageway level. Luminous intensities of each marker shall not exceed 40 cd during normal conditions in a cone of 2 x 15o with the axis formed by the driver's observation direction.

- **Exit sign luminaires that are used for marking the emergency exit:** the luminaire is green colored and the design of emergency signs is covered by ISO 7010 and ISO 3864-1. A flasher with a frequency of 0,5 Hz to 2 Hz and luminous intensity of not lower that 100 cd is used to attract attention of fleeing pedestrians. Emergency exit luminaires have to provide good color rendering of green surface finishes in the area around the emergency exit, including the door and door frame.

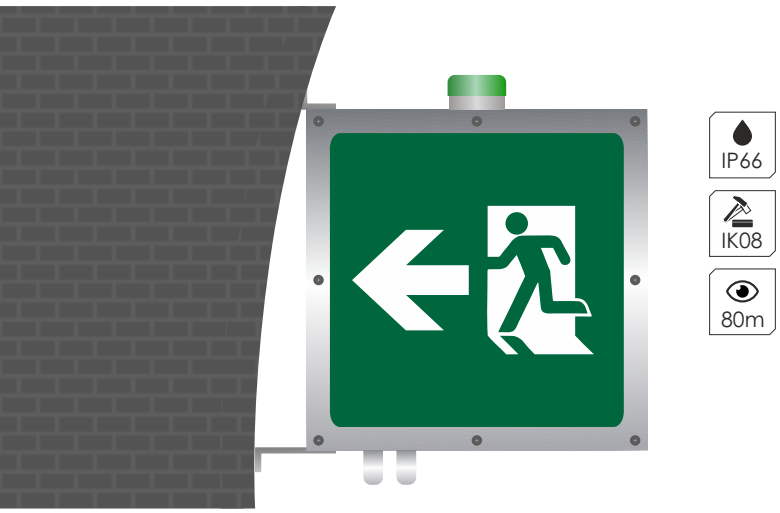
Materials and Construction

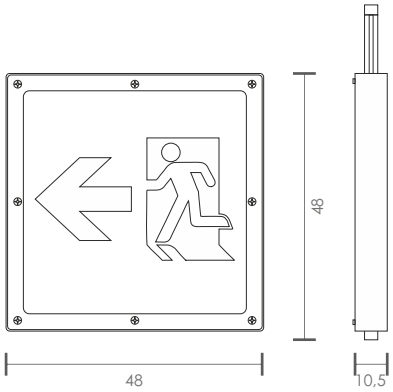
As specified in CIE 88/2004, a good tunnel lighting system requires constant maintenance in order to keep system performance throughout the expected equipment life. As a result, materials and finishes used in luminaire manufacturing are of specific importance, as the luminaires have to be able to withstand use of chemical solvents, pressurized super-heated water as well as maintain water and dust tightness.

All Olympia Electronics emergency tunnel signs are made from electrostatically painted steel plate in their basic configuration and can be constructed from the following materials:

- **Electrostatically painted steel plate.** Basic configuration of the emergency tunnel signs.
- **AISI 304:** the most common 18/8 stainless steel grade (18% chromium, 8% nickel), also known as A2 stainless steel, in accordance with ISO 3506.
- **AISI 316:** the second most common stainless steel, it contains molybdenum in order to prevent specific forms of corrosion. Also known as marine grade stainless steel.
- **AISI 316Ti:** a variant of AISI 316 that includes titanium for heat resistance.

Furthermore, all Olympia Electronics emergency tunnel signs are manufactured with high precision in order to satisfy Ingress Protection Code EN 60529 and are rated at IP65 and IP66.





The codes of the following products have enclosures manufactured by electrostatically painted steel plate. Enclosured of different material can be manufactured on demand by adding the related material suffix at the product code: /304, /316, /316Ti.

SELF-TESTING

Description	GR-577/L/15/ST/WP Self-testing, maintained, double sided, IP66	GR-577/L/18/ST/WP Self-testing, maintained, double sided, IP66	GR-578/L/15/ST/WP Self-testing, maintained, double sided, IP66	GR-578/L/18/ST/WP Self-testing, maintained, double sided, IP66
Code	923577005	923577006	923578006	923578007
Consumption	9W / 9,5VA	11,2W / 11,7VA	9,5W / 10VA	12W / 12,5VA
Light output (Mains / Emergency)	Mains 680lm Emergency 340lm	Mains 850lm Emergency 425lm	Mains 680lm Emergency 390lm	Mains 850lm Emergency 425lm
Autonomous duration	1,5h	1,5h	3h	3h
Battery Ni-Cd	4,8V / 1,5Ah	4,8V / 1,5Ah	4,8V / 3Ah	4,8V / 3Ah

GR-XXX/L/XX/ST/WP/O *All the above models can be manufactured as single sided with aluminum backplate.*
GR-XXX/L/XX/ST/WP/B *All the above models can be manufactured with xenon red beacon on top.*

230V CBS

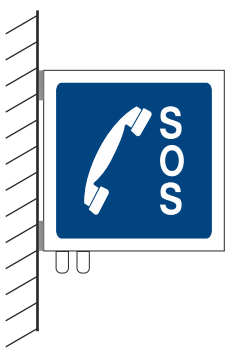
Description	GR-576/L/15/WP Luminaire for CBS 230V, double sided, IP66	GR-576/L/15/WP/B/304 Luminaire for CBS 230V, single sided, IP66 with beacon	GR-576/L/15/WP/O Luminaire for CBS 230V, single sided, IP66	GR-576/L/18/WP Luminaire for CBS 230V, double sided, IP66	GR-576/L/18/WP/O Luminaire for CBS 230V, single sided, IP66
Code	923576100	923576116	923576102	923576101	923576103
Consumption	7,2W / 7,6VA	7,2W / 7,6VA	7,2W / 7,6VA	8,2W / 8,7VA	8,2W / 8,7VA
Light output	680lm	680lm	680lm	850lm	850lm

GR-XXX/L/XX/WP/B *All the above models can be manufactured with xenon red beacon on top.*

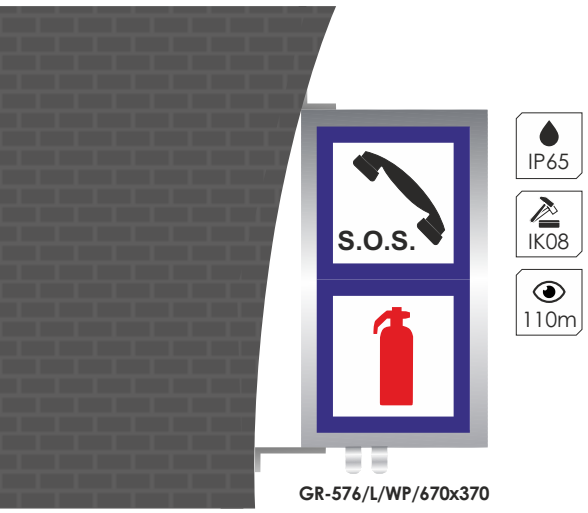
Mounting method - Indications are designed upon request

Double sided luminaire with exit marking sign mounted vertically to the wall with a base adapted to the geometry of the tunnel.

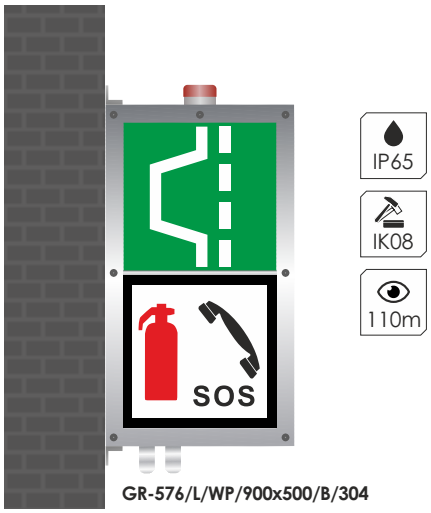
Double sided luminaire mounted vertically to the wall with emergency telephone marking sign.



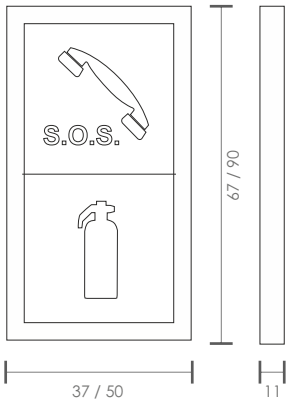
Single sided luminaire mounted parallel to the wall with marking distances from the escape routes.



GR-576/L/WP/670x370



GR-576/L/WP/900x500/B/304



The luminaire is powered by emergency backup battery and can be supplied by 230V AC on demand.

The code of the following product have enclosures manufactured by electrostatically painted steel plate. Enclosured of different material can be manufactured on demand by adding the related material suffix at the product code: /304, /316, /316Ti.

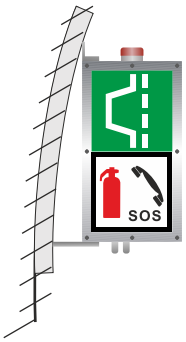
230V CBS

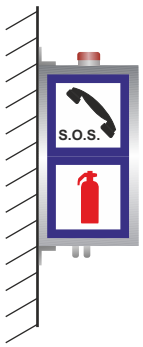
Description	GR-576/L/WP/670x370 Luminaire for CBS 230V, double sided, IP65	GR-576/L/WP/900x500/B/304 Luminaire for CBS 230V, double sided, IP65 with beacon
Code	923576114	923576117
Consumption	9,6W / 9,9VA	10.8W / 11.2VA
Light output	850lm	1100lm

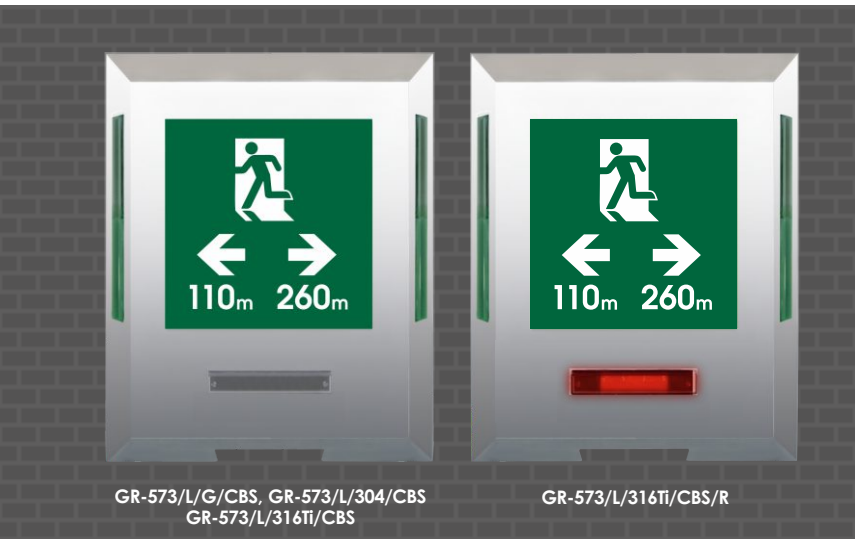
GR-XXX/L/XX/670x370/B *The above luminaire can be manufactured with xenon red beacon on top.*

Mounting method - Indications are designed upon request

Double sided luminaire mounted vertically to the wall, indicating the location of the fire nest and emergency telephone.

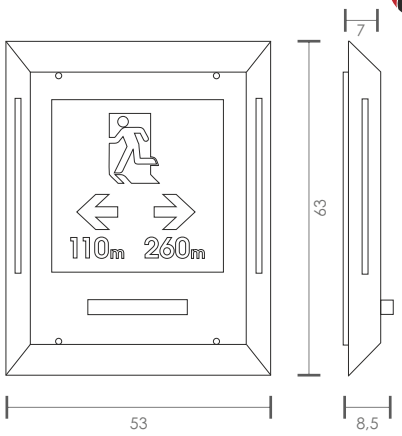






GR-573/L/G/CBS, GR-573/L/304/CBS
GR-573/L/316Ti/CBS

GR-573/L/316Ti/CBS/R



The luminaire is powered by emergency backup battery and can be supplied by 230V AC on demand.

The code of the following product have enclosures manufactured by electrostatically painted steel plate. Enclosured of different material can be manufactured on demand by adding the related material suffix at the product code: /304, /316, /316Ti

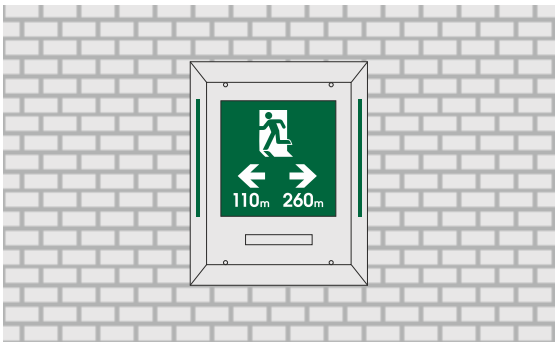
230V CBS

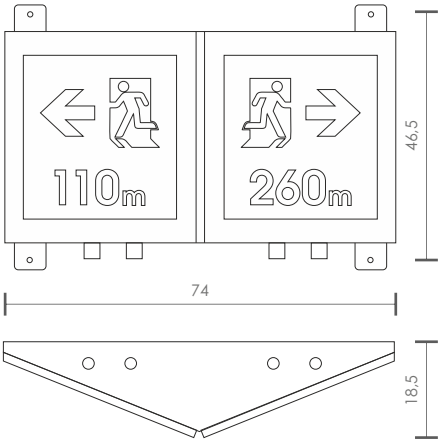
Description	GR-573/L/G/CBS Luminaire for CBS 230V, single sided, IP66	GR-573/L/304/CBS Luminaire for CBS 230V, single sided, IP66	GR-573/L/316Ti/CBS Luminaire for CBS 230V, single sided, IP66	GR-573/L/316Ti/CBS/R Luminaire for CBS 230V, single sided, IP66 with red beacon
Code	923573000	923573002	923573004	923573005
Consumption	9,6W / 9,9VA	9,6W / 9,9VA	9,6W / 9,9VA	9,6W / 9,9VA
Light source output	230cd/m^2 (sign) 120cd/m^2 (indication)	230cd/m^2 (sign) 120cd/m^2 (indication)	230cd/m^2 (sign) 120cd/m^2 (indication)	230cd/m^2 (sign) 120cd/m^2 (indication)
Spot light source	-	>25 cd from -87 to +87 degrees	-	-

- The regular version has two independent power supplies: one for the illuminated exit signs and one for the beacon.
- Upon demand, each exit sign can be supplied independently.
- The operating functions of the self-contained version are controlled via PLC.

Mounting method - Indications are designed upon request

Single sided luminaire mounted parallel to the wall indicating the distance of the nearest escape routes.





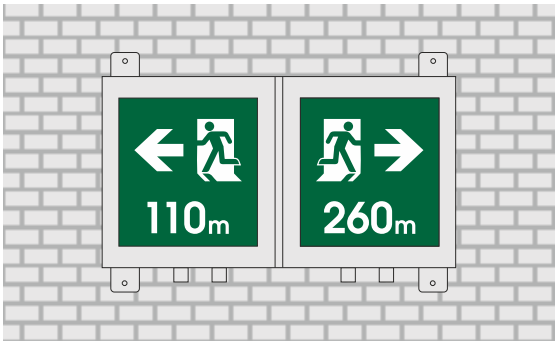
The codes of the following products have enclosures manufactured by electrostatically painted steel plate. Enclosured of different material can be manufactured on demand by adding the related material suffix at the product code: /304, /316, /316Ti.

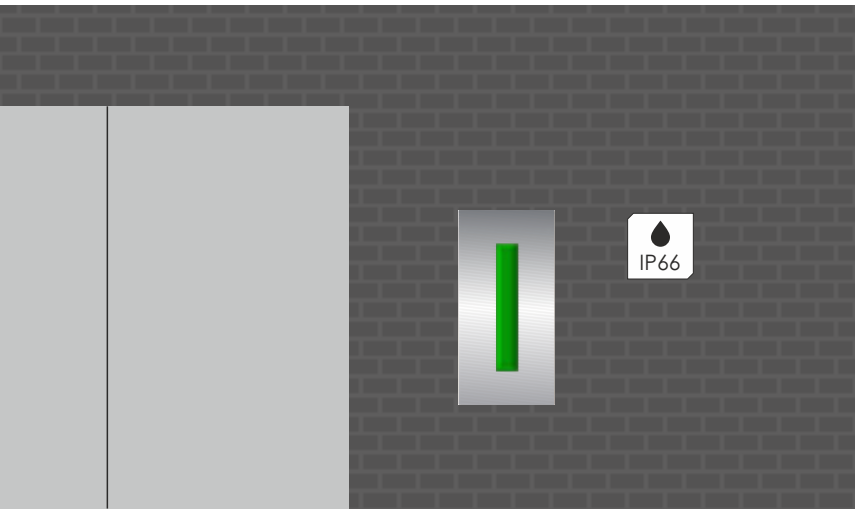
SELF-TESTING	Description	GR-579/L/90/WP Self-testing, maintained, 60° angle indication, IP66	GR-579/L/180/WP Self-testing, maintained, 60° angle indication, IP66
	Code	923579000	923579001
	Consumption	2 x 9W / 2 x 9,5VA	2 x 9W / 2 x 9,5VA
	Light output (Mains / Emergency)	Mains 2 x 680lm Emergency 2 x 340lm	Mains 2 x 680lm Emergency 2 x 340lm
	Autonomous duration	1,5h	3h
	Battery Ni-Cd	2 x 4,8V / 1,5Ah	2 x 4,8V / 3Ah

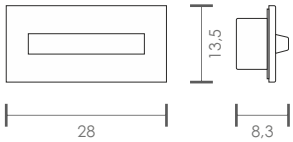
230V CBS	Description	GR-575/L/WP Luminaire for CBS 230V, 60° angle indication, IP66
	Code	923575100
	Consumption	2 x 6,4W / 6,8VA
	Light source output	2 x 680lm

Mounting method - Indications are designed upon request

Parallel wall mounted with 60° angle indication of the distances of the nearest escape routes.





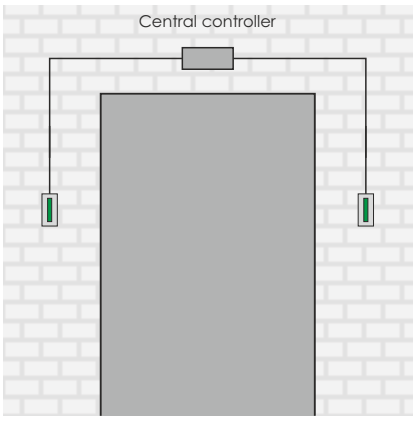


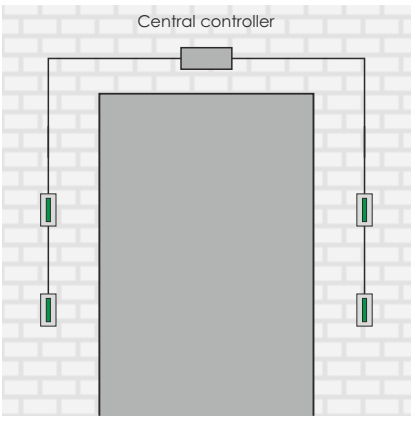
The code of the following product have enclosures manufactured by electrostatically painted steel plate. Enclosured of different material can be manufactured on demand by adding the related material suffix at the product code: /304, /316, /316Ti.

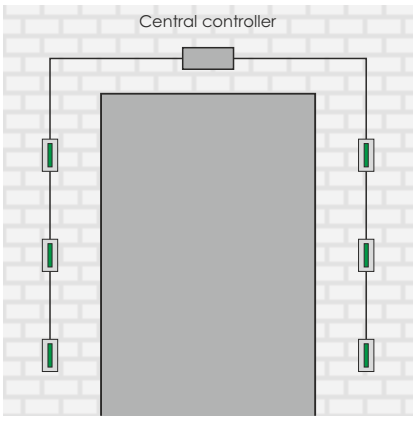
24V CBS			
	Description	GR-596/L/24VDC/WP Luminaire for CBS 24V, for tunnel escape door, IP66	GR-597 Central controller 230V, IP66 for GR-59x/L/316Ti/24VDC/WP
	Code	923596003	923597000
	Consumption	5 W	35 W
	Light source output	>120cd/m^2	Control interface: through PLC

Mounting method

Luminaires mounted around the perimeter of the escape door.







TUNNEL LIGHT

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