VISION ASF
TUNNEL LIGHTING

Modularity
Thermally optimized
Diverse optic
Tool free maintenance
Quick replacement
Longevity

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TUNNEL LIGHTNG

While driving through tunnel, lighting is all about your priceless safety. Experience in designing and producing open-design luminaires confirmed the reliability and durability of such luminaires in extreme outdoor conditions, such as high humidity, high temperatures, and big temperature oscillations, as in desert conditions.

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The high-level modularity design is realized via various optics, power and controllability options, which broadens its field of application to different tunnel types.
Lighting management and communication indicates smart energy consumption. Considering the longevity of all components (>100,000h), the need for maintenance is reduced, leading to additional savings.

Ambient temperatures up to 40°C

The housing of the luminaire is made of stainless steel EN 1. 4571 (AISI 316 Ti), protected by an epoxy-polyester powder coating of fine structured texture for highest resistance to corrosion.
This tunnel luminaire is designed to apply to all types of tunnels, urban areas and highways, regardless of the speed limit, volume of traffic, composition, dimension of the tunnel and their longevity, etc.

The distribution of light is defined by lenses made of optical grade PMMA with high UV and temperature resistance, appropriate for high current and temperature conditions.

PMM LENSES

90 % LOR

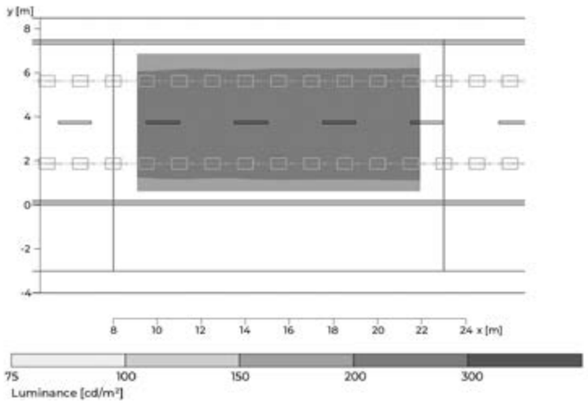
14900 lm
to
36947 lm

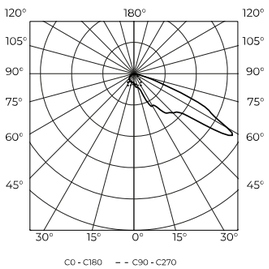
Tunnel Trebesing - Oströhre FR Salzburg - EFB

Entrance, Threshold zone (constant)

Measuring range: 7.50 m - 22.50 m Points: nx = 7, ny = 6, nz = 3

Roadway (R2, q0 = 0.065)	L_{av} (cd/m2)	U0	UI	qc (av)	TI max
Calculated values	213.74	0.79	0.97	0.53	3
Required values	213.69	0.75	0.97	0.53	3
Fulfilled/Not fulfilled	✓	✓	✓	✓	✓

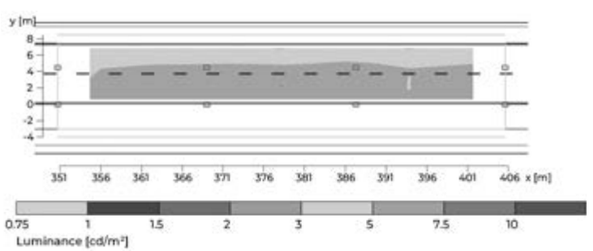


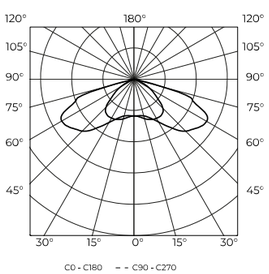


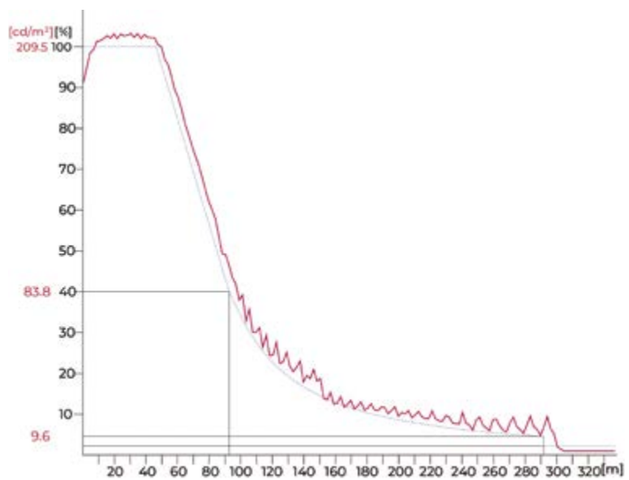
Interior, Interior zone

Measuring range: 350.70 m - 405.60 m Points: nx = 7, ny = 6, nz = 3

Roadway (R2, q0 = 0.065)	L_{av} (cd/m2)	U0	UI	qc (av)	TI max
Calculated values	4.88	0.60	0.83	0.15	10
Required values	4.94	0.62	0.83	0.15	7
Fulfilled/Not fulfilled	✓	✓	✓	✓	✓

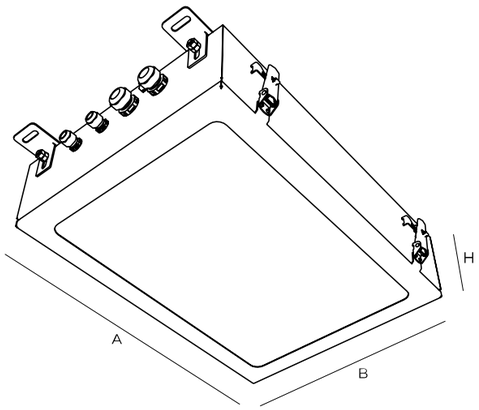






Calculation results, Trebesing tunnel - east tube FR Salzburg - EFB
Course, adaptation (L), S1: 100%, Beo.1

TECHNICAL DATA



Dimensions A / B / H	690/500/173
Ingressprotection rating	IP66 on 6 bar
Impact resistance rating	IK08
Finish	Electropolished stainless steel
Weight	20 - 25.5 kg
Ambient temperature range	≤40°C
LED service life	> 100.000h (L90B10)
Lens LOR	> 90%
Luminaire luminous flux	14900- 36947lm
Total power	108 - 234W
Luminaire efficiency	> 140lm/W
Luminaire LOR	ASY > 81%, SYM > 84%
Light colour temperatur / CRI	3000K–5700K / 70–80
Power supply	220- 240V 50/60Hz
Constant current range	410- 1050mA
Control gear	ECG, DIMM 1-10, DSI, DALI, 4-20mA, Line Switch

STANDARD EQUIPMENT

- Wireless interface communication
- Programmable
- AOC - Adjustable Output Current
- CLO - Constant light output
- Virtual midnight
- Protection against transient main peaks up 6 kV
- Electronic short-circuit protection
- Overload protection
- Thermal protection
- Voltage range 198-264VAC
- Safety swich
- 1-10V analogue management
- Indicator lamp visible from outside
- Through-wiring housing

ADDITIONAL EQUIPMENT AND/ OR POSSIBILITIES

- Powder coating stainless steel
- Central management
- Protection against transient main peaks up to 10 kV
- Voltage range 150-264VAC
- DALI communication
- CLi [4-20mA- analogue control]
- SDi [230V- discrete control]
- Adjustable mounting brackets
- Programmable directly at the mounting site via wireless interface communicator.

SERVICEABILITY

EASY ACCESS

ACCESS TO ELECTRICAL COMPONENTS WITHOUT TOOLS

SIMPLE UPGRADE

MOUNTING

Retrofit kit consists of a lighting unit and driver unit for powering LED light sources.

Easy mounting with only two clicks saves valuable time for on-site installation.

Illumination performance and traffic safety in different types of tunnels are achieved with appropriately chosen optics.

Longevity is assured by using high-efficiency outdoor LED modules are suitable for harsh and humid ambient conditions.

Luminaire with 4 brackets and the possibility of an angle adjustment of 5°; upon request, an angle can be adjusted of ±45°.

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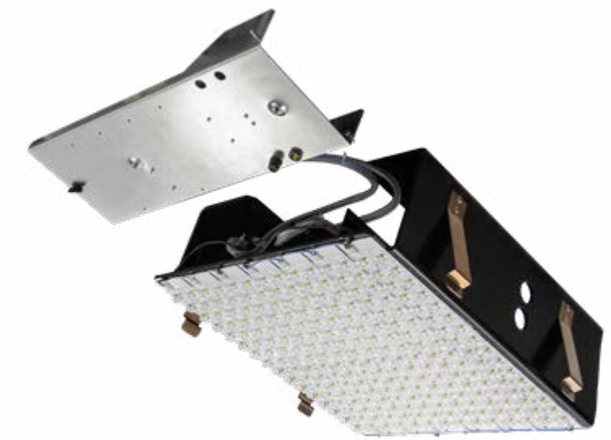
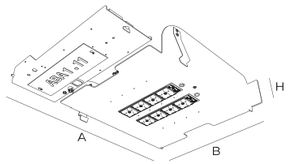
Smart LED lighting solutions for tunnels and subways include fully integrated control systems to monitor and manage various factorssuch as levels of light outside and inside the tunnel, traffic speed and density, various tunnel zones, motion, presence, speed detection, etc.



Buck provides multiple solutions for luminaire control such as analogue current coded 230 V step dim interface (SDi), and digital bidirectionalcoded 230 V step dim RS-485 interface (RSi).

Tunnel lighting LED retrofit kit, part of BUCK smart tunnel illuminationsystem. Appropriate for various tunnel types and other harshenvironments. Its longevity, energy efficiency and overall reliableperformance ensure low usage costs.



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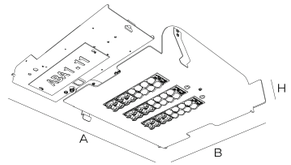

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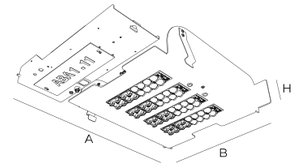

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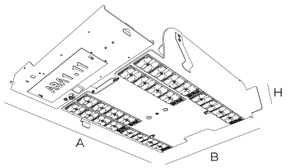

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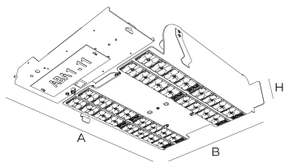

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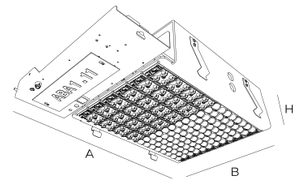

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	DIMENSIONS A / B / H (mm)	LED LUMEN (4000/CRI 70/MAX) SYM / ASY	TOTAL POWER W SYM / ASY	WEIGTH kg
INSERT ASF 2	640 / 465 / 160	14900 / -	108 / -	5.00
INSERT ASF 3	640 / 465 / 160	17411 / 15325	120 / 116	5.50
INSERT ASF 4	640 / 465 / 160	20495 / 18237	138 / 134	6.00
INSERT ASF 6	640 / 465 / 160	26587 / 23936	176 / 173	5.50
INSERT ASF 8	640 / 465 / 160	- / 26860	190 / -	5.50
INSERT ASF 12	620 / 410 / 160	36947 / 33728	234 / 232	11.00

VISION ASF L

Linear tunnel lighting luminaire is suitable for different tunnel types and challenging surroundings. Its lasting durability, energy-saving design, and consistently dependable operation contribute to keeping operational costs low. The elongated luminaire shape gives the impression of a continuous lighting line throughout the tunnel, improving users visual comfort.

	DIMENSIONS A / B / H (mm)	LED LUMEN 4000K SYM / ASY	TOTAL POWER W MAX
VISION ASF L 2	1055 / 275 / 140	11607 / -	80
VISION ASF L 4	1535 / 275 / 140	23215 / -	160

BUCK TCC : TUNNEL COMPLETE CONTROL SYSTEM

SCADA
central system for real-time monitoring and control of regional traffic tunnels

TCA : Tunnel Control Agregator
Industrial PC
for aggregating control over complete tunnel and execution of emergency scenarios due to incidents, e.g., fire, CO levels, traffic accident, SOS phone, power failure...

TLC : Tunnel Local Control
Industrial PLC
with communication interfaces for local control and execution in the tunnel section

Industrial Hi-Speed Ethernet Optical Network
for connecting tunnels with regional command center

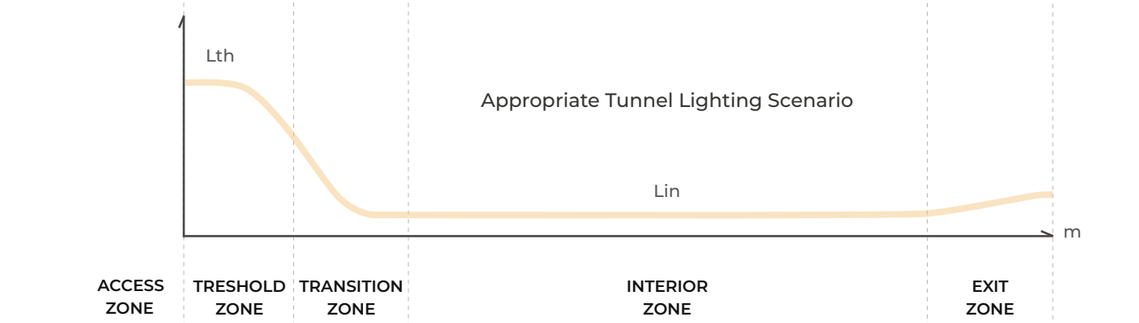
Industrial network
for tunnel equipment

L20

Lighting control interface:

- RSi as digital bidirectional RS-485 interface (addressable luminaires with feedback);
- SDi as discrete time coded 230 V step dim interface (no feedback);
- CLi as analogue current loop 4-20 mA interface (no feedback).

L20, Lth, Lin: Luminance meters as lighting control feedback.



ALTERNATIVE ENERGY SOURCES

Installing solar panels or other types of renewable energy sources is an excellent way to take advantage of the benefits of “free” electricity while simultaneously reducing our dependence on the power grid.
This approach can decrease costs and alleviate the pressure on the network, particularly during peak usage throughout the day.
Additionally, renewable energy sources offer an almost infinite supply of energy from natural sources, and they are considered environmentally friendly because they generate little to no emissions of CO2 and other harmful greenhouse gases that can damage the ozone layer or adversely impact the environment.