

TFLEX BASE



The ideal solution for standard tunnel lighting

TFLEX BASE is part of the TFLEX tunnel lighting solutions, providing an energy efficient solution optimised for various typical tunnel areas, from entry to exit. It takes into account all design factors and traffic conditions that can potentially affect safety, in particular the characteristics of the traffic, the type of vehicles, length and geometry of the tunnel.

Equipped with the latest digital, electronic and optical technologies, TFLEX BASE ensures high visual performance and an optimised lighting management for a better driving experience in tunnels.



Concept

TFLEX BASE has been designed to deliver the standard lighting needs for tunnel zones such as entrance, interior zone and exit, in various environments.

Do not let its name fool you, TFLEX BASE is a completely versatile tunnel solution integrating the latest optical and digital technology. It is equipped with LensoFlex® photometric engines with high-power LEDs, to always provide the best performance and visibility inside the tunnel. In combination with specific tunnel optics, TFLEX BASE ensures optimised lighting levels on road and wall surfaces while providing high visual comfort and unrivaled uniformity. Made of robust and sustainable materials (aluminium, steel and glass), TFLEX BASE ensures long-lasting performance in the harshest tunnel environments. With a tool-free philosophy for the opening/closing and smart cabling, TFLEX BASE facilitates installation and maintenance operations to minimise costs and traffic disruption.

TFLEX BASE has been developed to enable constant dimming with an optimised power factor. Designed with two electronic circuits, TFLEX BASE can either be dimmed completely, partially or even have 50% of its LEDs switched off. This possibility not only maximises energy savings, it also extends the lifetime of the complete installation and reduces the need for disruptive maintenance.

TFLEX BASE is available with various mounting options. An adjustable bracket available in stainless-steel or galvanised steel allows TFLEX BASE to be mounted on walls and ceiling, and tilted up to 90° for the most complex tunnel geometries. A bracket-free version is also available, allowing TFLEX BASE to be simply mounted on ceilings with threaded rods. TFLEX BASE is part of Schröder's complete tunnel solution that includes robust luminaires, smart cabling with quick-on QPD connectors and advanced control systems to improve safety for drivers and to provide major operational benefits for tunnel managers.

TYPES OF APPLICATION

- TUNNELS & UNDERPASSES

KEY ADVANTAGES

- Flexibility: modular approach with wide range of lighting distributions
- Compact, lightweight and easy to install
- Two electrical circuits for enhanced dimming possibilities, optimised power factor and longer lifespan
- Designed for long-lasting performance
- High quality and robust materials
- Tool-free access for easy maintenance



TFLEX BASE is built around a tool-free philosophy for opening/closing as well as for the power, control and cabling.



Pre-assembled with tool-free, fire rated cables and connectors, TFLEX BASE reduces the installation time dramatically and improves quality and reliability.



Designed with two electronic circuits, TFLEX BASE enables constant dimming with an optimised power factor.



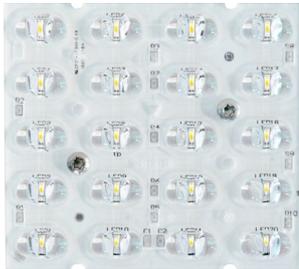
TFLEX BASE offers various mounting options for ceiling or wall mounting with fixed or tiltable fixations.



LensoFlex®4

LensoFlex®4 maximises the heritage of the LensoFlex® concept with a very compact yet powerful photometric engine based upon the addition principle of photometric distribution. The number of LEDs in combination with the driving current determines the intensity level of the light distribution. With optimised light distributions and very high efficiency, this fourth generation enables the products to be downsized to meet application requirements with an optimised solution in terms of investment.

LensoFlex®4 optics can feature backlight control to prevent intrusive lighting, or a glare limiter for high visual comfort.



Advanced Tunnel Solution (ATS)

The ATS (Advanced Tunnel Solution) is a control system that manages luminaire controllers (Lumgates) to deploy pre-defined lighting scenarios or to take charge of the lighting installation at any moment.

The ATS controller can operate as a standalone unit or can be linked to the main tunnel control system to interact with features not directly related to lighting (traffic management, ventilation, fire detection etc.).



Luminance meter (L20)

The luminance meter measures the luminance provided by natural light in the access zone from the safe stopping distance. It sends the data to the ATS control system that adjusts the lighting levels to avoid any visual adaptation problems.



Lumgate

The Lumgate is an RS485 closed-loop device connected to the luminaire drivers to control the light intensity and provide command/reporting features.

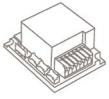
One Lumgate can control several luminaires.



Tunnel Control System (TCS)

The Tunnel Control System (TCS) is a gateway ensuring the connection/control of the multiple ATS controllers as well as the communication with the central management system of the tunnel infrastructure (SCADA) if applicable.





IzyHub

IzyHub is an innovative device that aims to keep luminaire installation and maintenance hassle-free. This single central connection hub distributes electricity and control information to all parts of the luminaire, ensuring that all components work together and offering reliable, long-term performance.

Its compact size and error-proof connections enable smaller and lighter luminaires that are easier to maintain and upgrade.



Surge Protection

IzyHub features a built-in surge protection device. This prevents electrical surges resulting from lightning strikes and other transient voltages that originate from the mains network from damaging the luminaire, even in the most demanding conditions. The protective device also includes an end-of-life LED warning light, indicating that the luminaire is protected correctly.

User-friendly

Installing a luminaire has never been easier. IzyHub features tool-free connector as the main connection terminal. It enables 30% shorter installation times compared with standard solutions. Lever actuated spring-loaded electrical connectors provide optimal contact throughout the entire life of the product.

Easy maintenance

On the rare occasion that a component needs to be replaced in the luminaire, IzyHub makes sure that operations are carried out quickly and easily. Luminaire component connections are keyed so that mixing up electrical connections is physically impossible. Installers do not need to trace wires individually: plug it in, and it works straight away.



Versions and upgrades

IzyHub has several versions featuring different connectivity options. IzyHub can include an SPD, can work with external dimming and operate with all type of control sockets. It is also able to provide bi-power control and to include fuse options.

These options provide flexibility for future upgrades by only having to replace the IzyHub to connect the new equipment. No complicated re-wiring needed.

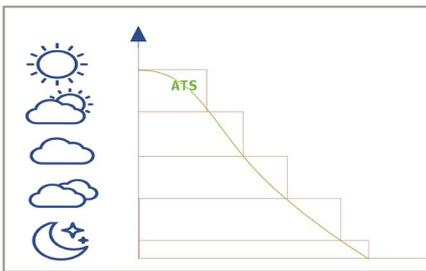




Jointly developed by Schröder and Phoenix Contact, the Advanced Tunnel Solution (ATS) has been designed to control every lighting point or clusters of luminaires to perfectly adapt the lighting level according to conditions in the tunnel, to monitor the power consumption and to report the burning hours or any failure to facilitate maintenance. The system includes a self-commissioning feature and enables scenarios to be adapted remotely at any moment.

PRECISE AND CONTINUOUS DIMMING

ATS provides 25 different dimming levels to precisely adapt the lighting to the real needs. Without any over-lighting, the energy consumption is limited to what is absolutely necessary to ensure safe and comfortable driving conditions.



FLEXIBILITY

Flexible redundancy offers security on multi-level applications, not only for the lighting.

PLUG AND PLAY COMMISSIONING

The tunnel lighting study can be directly imported into the ATS control system.

This unique feature, in combination with the auto-addressing of the Lumgates, leads to an extremely short commissioning time once the fixtures have been installed.

Each luminaire or cluster of luminaires is attributed the precise dimming profile linked to its position and characteristics.

INTERACTION WITH THIRD PARTY SYSTEMS

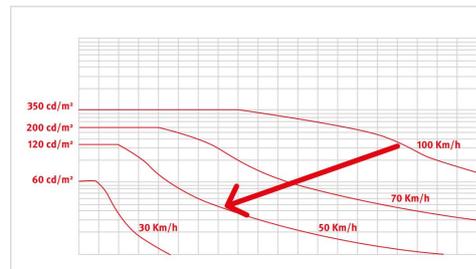
Every command or signal sent to or coming from a tunnel component (emergency exit, smoke extraction system, traffic management system...) can be used to trigger a responsive lighting scenario. All of the tunnel equipment can be controlled through the same bus command.

MAXIMISED SAFETY

The system enables the easy set-up of emergency and disaster management scenarios.

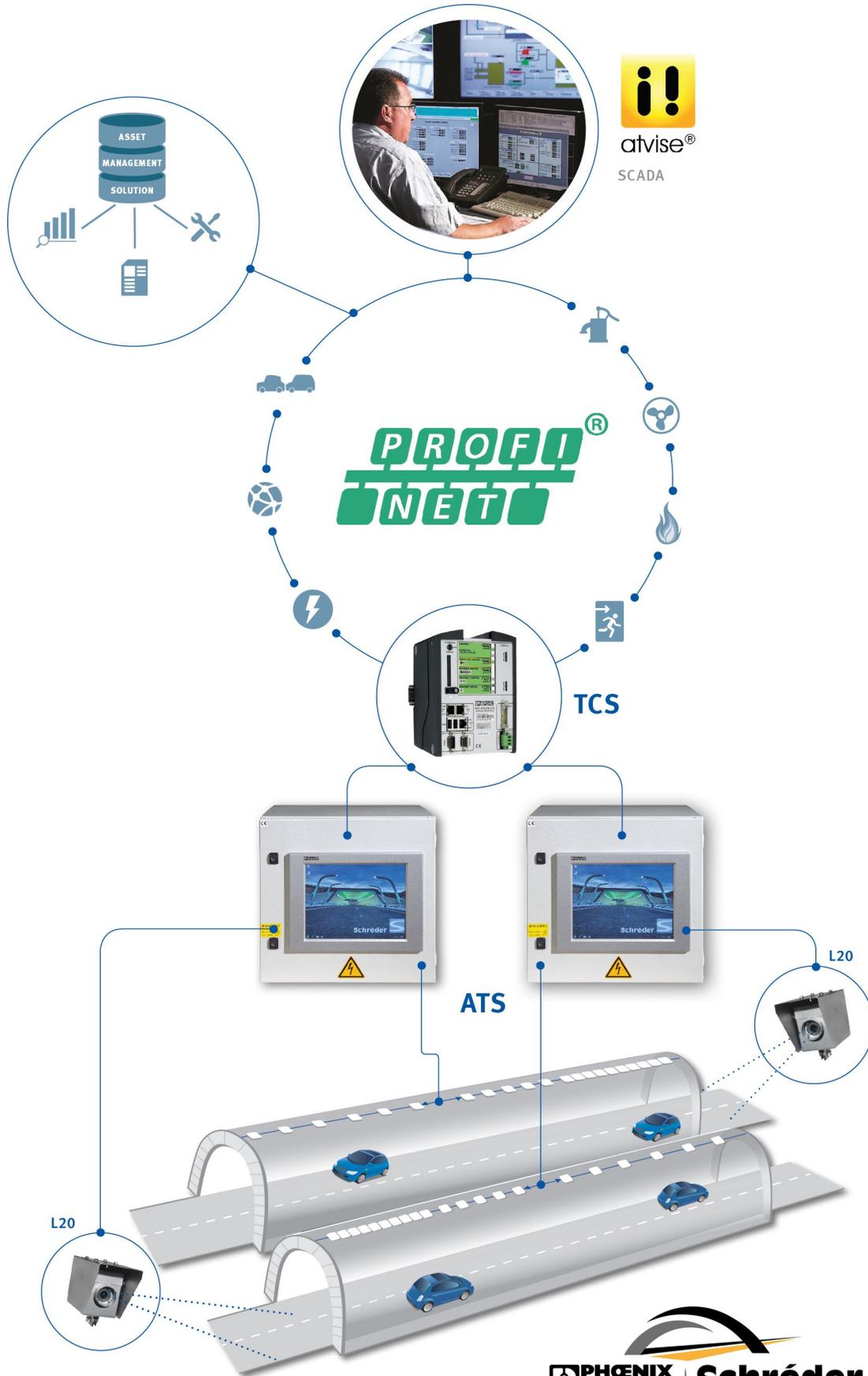
ADAPTIVE LIGHTING ACCORDING TO SPEED

The ATS can be linked to a traffic monitoring system to obtain data regarding speed or density to adapt the lighting level according to safety standards. This option further reduces energy consumption and increases the lifetime of the installation while ensuring the best driving conditions for motorists.



ADAPTIVE LIGHTING ACCORDING TO POLLUTION

Based on cleaning cycles, the ATS can take into account the depreciation of the flux due to dirt accumulation to continuously provide the requested lighting level in the tunnel. No more, no less. This feature offers additional energy savings while providing safety and comfort for users.



GENERAL INFORMATION

Circle Light label	Score ≥90 - The product fully meets circular economy requirements
CE mark	Yes
ENEC certified	Yes
ENEC+ certified	Yes

HOUSING AND FINISH

Housing	Aluminium Stainless steel Galvanised steel
Optic	PMMA
Protector	Tempered glass
Housing finish	Polyester powder coating
Standard colour(s)	AKZO grey 900 sanded
Tightness level	IP66/IP69
Impact resistance	IK 10
Vibration test	Compliant with modified IEC 68-2-6 (0.5G)
Access for maintenance	Tool-less access to gear compartment

OPERATING CONDITIONS

Operating temperature range (Ta)	-20°C up to +50°C / -4°F up to 122°F
----------------------------------	--------------------------------------

· Depending on the luminaire configuration. For more details, please contact us.

ELECTRICAL INFORMATION

Electrical class	Class I EU
Nominal voltage	220-240V – 50-60Hz
Surge protection options (kV)	10
Electromagnetic compatibility (EMC)	EN 55015 / EN 61000-3-2 / EN 61000-3-3 / EN 61547
Control protocol(s)	1-10V, DALI
Control options	Bi-power, Remote management
Associated control system(s)	Advanced Tunnel Solution (ATS)

OPTICAL INFORMATION

LED colour temperature	4000K (Neutral White 740)
Colour rendering index (CRI)	>70 (Neutral White 740)

LIFETIME OF THE LEDS @ TQ 25°C

All configurations	100,000h - L95 (high-power LEDs)
--------------------	----------------------------------

· Lifetime may be different according to the size/configurations. Please consult us.

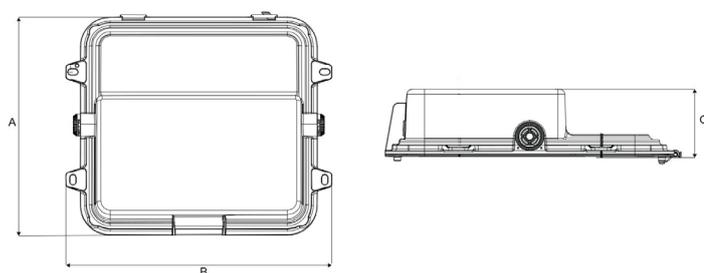
DIMENSIONS AND MOUNTING

AxBxC (mm | inch) 415x95.85x488 | 16.3x3.8x19.2

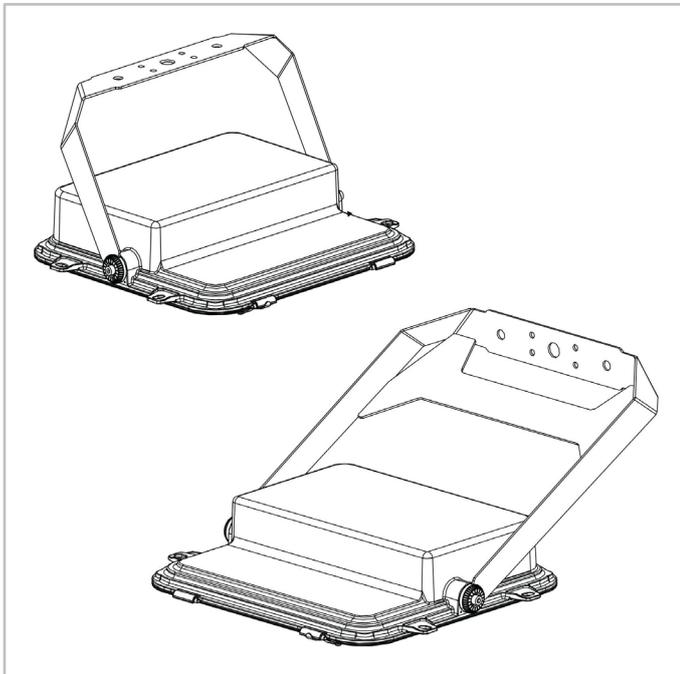
Weight (kg | lbs) 10 | 22.0

Mounting possibilities Surface mounting
Wall-mounted

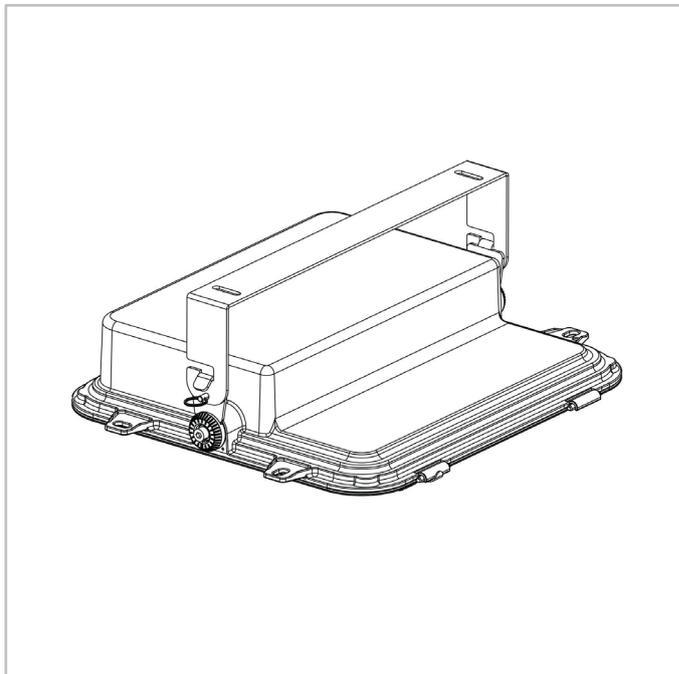
· For more information about mounting possibilities, please consult the installation sheet.



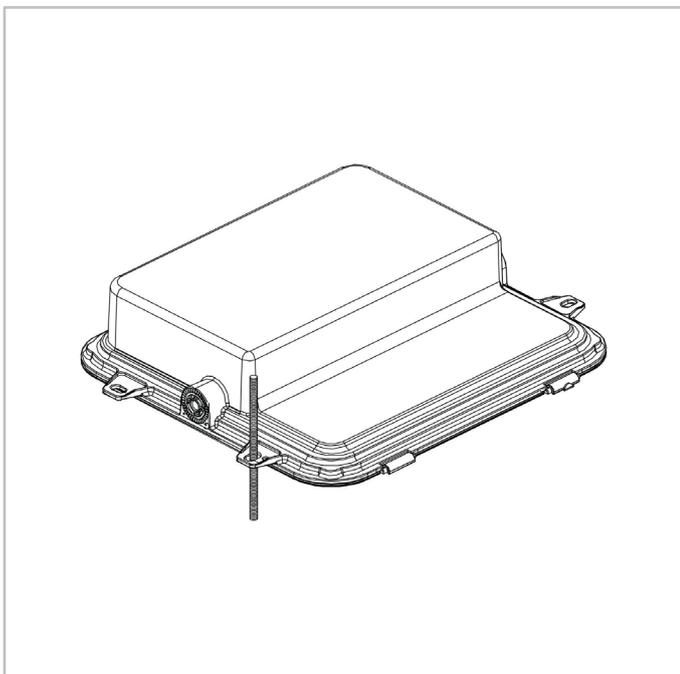
TFLEX BASE | Adjustable bracket – standard and long version



TFLEX BASE | Unpluggable bracket



TFLEX BASE | Threaded rod fixation





Luminaire	Number of LEDs	Current (mA)	Luminaire output flux (lm) Neutral White 740		Power consumption (W)	Luminaire efficacy (lm/W)	
			Min	Max		Up to	Photometry
TFLEX BASE	20	350	3100	3500	22.9	153	
	20	400	3500	3900	26.1	149	
	20	500	4300	4800	32.7	147	
	20	600	5000	5600	39.2	143	
	20	670	5400	6100	44	139	
	20	700	5600	6300	45.5	138	
	40	350	6500	7100	46	167	
	40	400	7400	8000	52	162	
	40	500	8900	9700	65	155	
	40	630	10900	11700	82	146	
	40	670	11400	12300	88	145	
	40	700	11800	12800	91	145	
	60	350	9500	10600	64	168	
	60	400	10700	11900	73	163	
	60	500	13000	14500	93	158	
	60	610	15300	17000	114	149	
	60	700	17000	19000	135	146	

Tolerance on LED flux is $\pm 7\%$ and on total luminaire power $\pm 5\%$

