



- **Designed specifically to measure luminance at the tunnel portal or within the tunnel**
- **CIE Approved measurement of L20**
- **Variable viewing angle within a range of 8 to 40° available**
- **Silicon photo diode, V_{λ} filtered for spectral response**
- **Rugged 316L stainless steel construction**
- **Heated window and enclosure with IP66 protection rating**
- **Optional wash-wipe facility available**
- **Choice of interface / comms protocols**

The LUMIOS measures the level of luminance, or brightness, created by natural light at the tunnel entrance to ensure that the visual perception of drivers will be maintained, both day and night, by avoiding sudden variations in lighting levels and potential “black hole effect” when entering and exiting a tunnel.

The LUMIOS uses a specially designed, highly light-sensitive photocell, filtered to provide a spectral response close to that of the average human eye, to react to changes in light levels at the entrance and exit to, as well as within, the tunnel environment. This reaction is virtually instantaneous. The light receptor measures the average luminance within a fixed viewing angle that can be set during manufacture within a range of 8 to 40°. The standard instrument has an acceptance angle of 20°, (as recommended by Commission Internationale de l’Éclairage, (C.I.E.), publication 88, 2004). The luminance measurement range is 0 - 10,000 cd/m², which can be scaled to suit customer requirements.

The LUMIOS is a self-contained intelligent analyser and the measurements are converted into an output signal of 0/2/4-20 mA (directly proportional to the luminance measurement) for hard wire connection and signal transmission to a host controller. The LUMIOS also comes with alarm relay contacts and Modbus serial communications protocol.

The LUMIOS has been designed to enable it to withstand extremes of weather conditions. The complete electronic system is contained within a water-proof, heated housing of powder coated steel with an IP66 protection rating. The LUMIOS has an operating temperature range from -40°C to +70°C (DC version) which ensures stable readings across all prevailing ambient temperature conditions. Various optional extras are available such as, mounting brackets and wash-wipe systems, providing a solution for the most demanding specifications.

Specification:

Measurement Performance

Item	Parameter	Units	Min	Max	Comment
01	Detector				Silicon photo diode, VI filtered
02	Viewing Angle (FWHM)	Deg	8	40	1° steps (defined at time of order) 20° as standard Special angles on request – contact the factory
03	Measurement Range	cd/m ²	0	10,000	Can be scaled within this range
04	Resolution	cd/m ²		1	Display resolution
05	Accuracy	cd/m ² %	-2 -3	2 3	Of reading
06	Damping	Seconds	1	600	Default setting is 10s

AC LUMIOS Power

07	AC Input Voltage	Vac	85	264	Nominal 100-240Vac
08	AC Input Frequency	Hz	47	63	Nominal 50-60Hz
09	Power Consumption	W	6	10 50	Without optional wiper With optional wiper

DC LUMIOS Power

10	Voltage	Vdc	+24		
11	Voltage Tolerance	%	-15	+15	
12	Nominal Current Consumption	mA		500	With optional wiper
13	Power Up Current Consumption	mA		1500	

Interface Options

14	Serial Outputs				ModBus RTU via RS485 (isolated) External USB
15	Analogue Outputs (One)	mA	0 / 2 / 4	20	Isolated and scalable (user selected)
16	Digital Relay Contacts (Four)	A	0 0	1 3	@240Vac (AC LUMIOS) @30Vdc (DC LUMIOS)

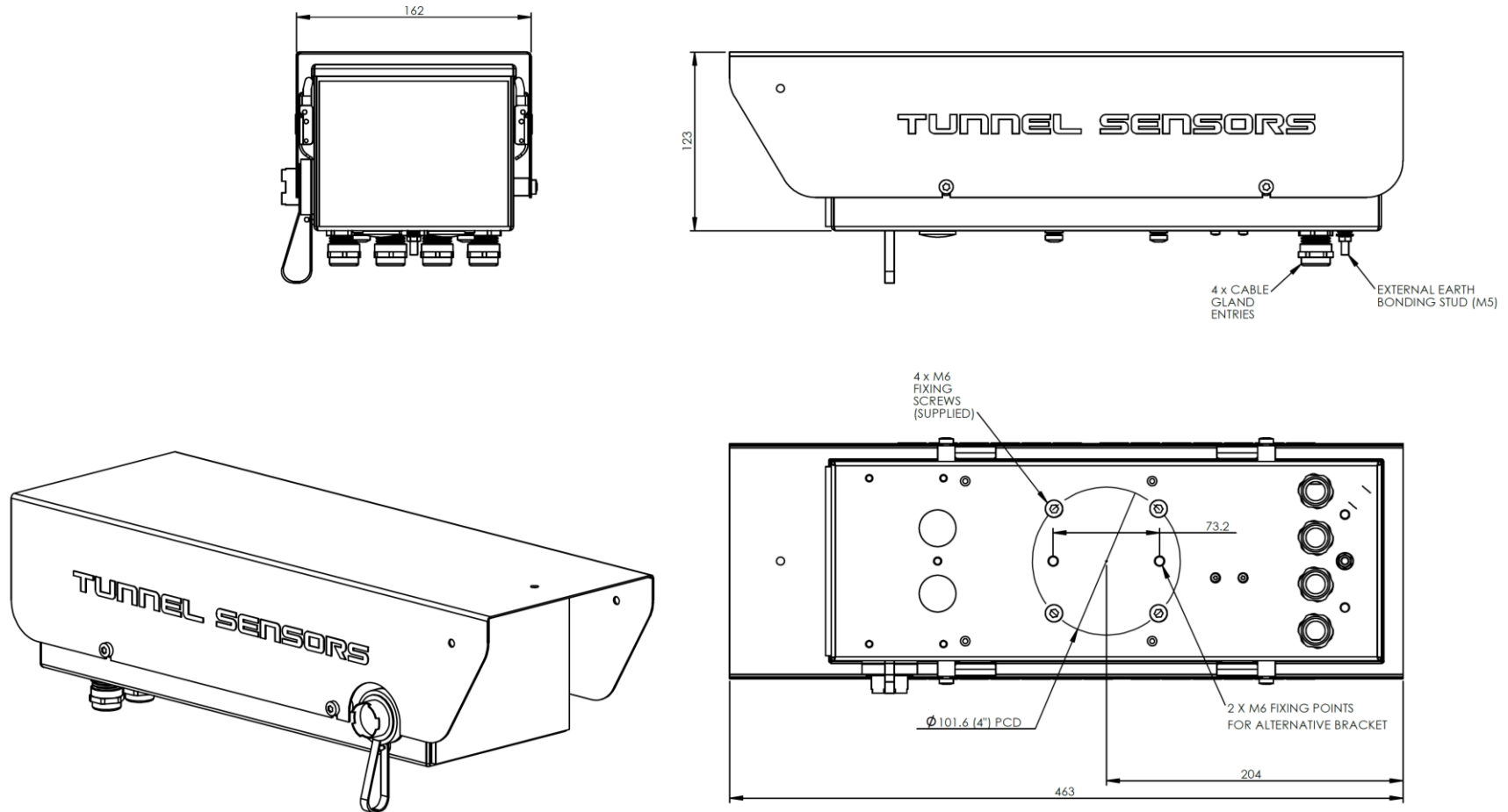
Physical

17	Ingress Protection			IP66	
18	Operating Temperature	°C	-40 -40	+50 +70	AC powered LUMIOS DC powered LUMIOS
19	Operating Humidity	%		100	
20	Materials				AISI/SAE 316L stainless steel
21	Dimensions	mm	463 x 162 x 122 463 x 162 x 184		Without optional wiper With optional wiper
22	Weight	kg	5.5 6.3		Without optional wiper With optional wiper

Compliance & Design

23	Regulatory Compliance				2014/30/EU (Electromagnetic Radiation) 2014/35/EU (Low Voltage)
24	Design Life	Years	20		
25	MTBF	Years	>20		
26	Warranty	Months	24		Return to base warranty. Extensions available

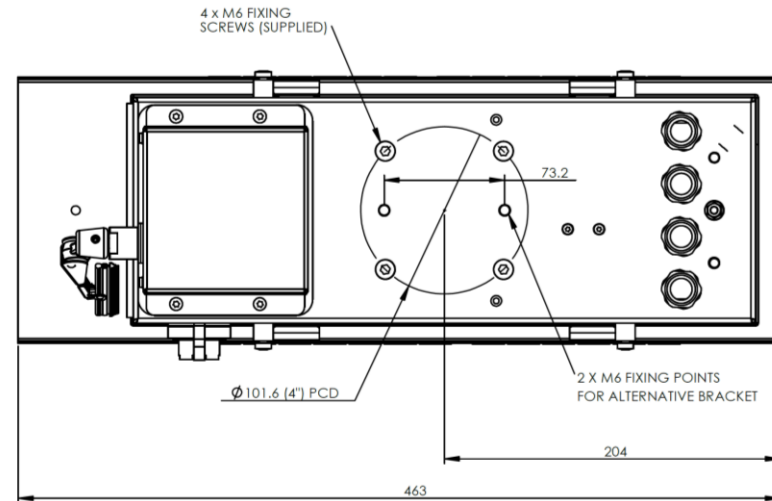
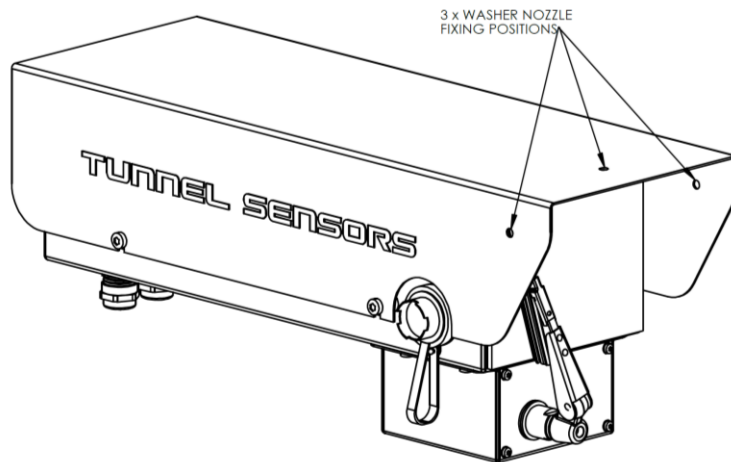
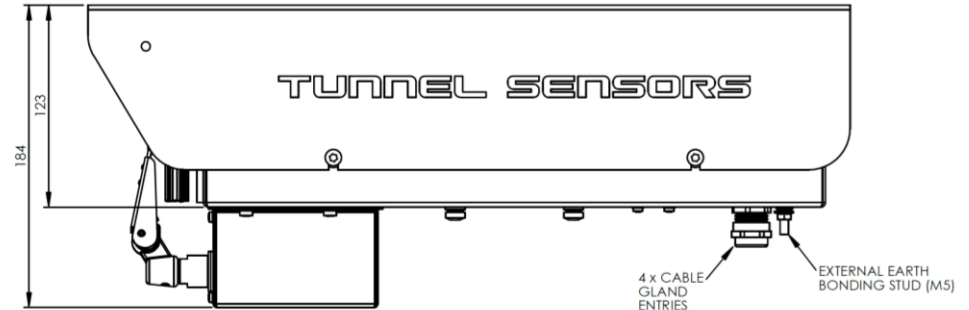
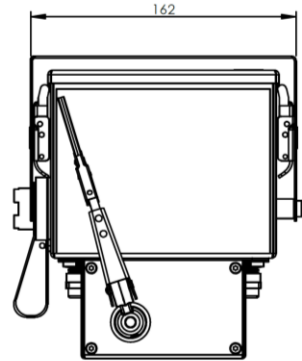
Dimensions (without wiper):



tunnelsensors@acoem.com www.tunnelsensors.com



Specifications are subject to change without notice.
All images used are for illustrative purposes only. (C) 2022 Tunnel Sensors. All rights reserved

Dimensions (with wiper):



Options & Accessories

Description	Order Code	Notes
AC LUMIOS MkIII Instrument 	TSL-LUMIOS-MKIII	AC powered LUMIOS MkIII no wiper. Viewing angle: 20°
	TSL-LUMIOS-xx-MKIII	AC powered LUMIOS MkIII no wiper. (xx = viewing angle; 8 to 40°)
	TSL-LUMIOS-W-MKIII	AC powered LUMIOS MkIII with wiper. Viewing angle: 20°
	TSL-LUMIOS-Wxx-MKIII	AC powered LUMIOS MkIII with wiper. (xx = viewing angle; 8 to 40°)
DC LUMIOS MkIII Instrument 	TSL-LUMIOS-D-MKIII	DC powered LUMIOS MkIII no wiper. Viewing angle: 20°
	TSL-LUMIOS-Dxx-MKIII	DC powered LUMIOS MkIII no wiper. (xx = viewing angle; 8 to 40°)
	TSL-LUMIOS-DW-MKIII	DC powered LUMIOS MkIII with wiper. Viewing angle: 20°
	TSL-LUMIOS-DWxx-MKIII	DC powered LUMIOS MkIII with wiper. (xx = viewing angle; 8 to 40°)
Universal Bracket 	TSL-LU3-BRK-U	For mounting LUMIOS on a wall or a pole, with pan and tilt adjustment.
Wall Bracket 	TSL-LU3-BRK-W	For mounting LUMIOS on a wall, with pan and tilt adjustment.

<p>Pole Top Bracket</p> 	<p>TSL-LU3-BRK-PT</p>	<p>For mounting LUMIOS on top of a pole or post, with pan and tilt adjustment.</p>
<p>Washer System</p> 	<p>TSL-LU3-WSH-5</p>	<p>+24Vdc, 5L reservoir, 8m head height, low fluid level output. Designed specifically for use with LUMIOS MkIII. This washer unit is connected to the LUMIOS using the 10m cable supplied, which provides power, command and control functionality.</p>

Note that the actual part may differ from the above representative pictures.