

## LCAM Tunnel Entrance Photometer

### General Description

The LCAM measures and communicates to the Lighting Control Cabinet (LCC) the level of luminance or brightness created by natural light at the tunnel entrance / exit. The tunnel light control system in turn adjust the tunnel luminaire light levels 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 LCAM uses a specially designed, highly light-sensitive photocell, filtered to provide a spectral response close to the average human eye for optimal performance.

The light receptor measures the average luminance over a scalable range of 0 - 10,000 cd/m<sup>2</sup> within an acceptance angle subtending 20° as recommended by CIE 088:2044 and RP-22-11.

To ensure proper alignment of the photometer, an operator can request an image, and have it compared with a valid one taken at the installation time. An alarm can then be set up if the unit has moved and does not provide an effective reading.



### Features

- CIE and IES approved measurement technology
- Accurate measurement of tunnel entrance luminance
- Photometer alignment monitoring
- Variable viewing angle to compensate if cannot be installed at a Safe Stopping Sight Distance (SSSD) from the tunnel portal.
- Specifically designed for tunnels control system
- Rugged 316 Stainless Steel construction
- Simple installation/operation
- Communication for remote diagnostic and configuration



## Technical Specifications

### Measurement Performance

Parameter	Units	Min	Max	Comment
Detector				Silicon photo diode, $V\lambda$ filtered
Viewing Angle (FWHM)	Deg	10	40	20° as standard; from 10 to 40° under request
Measurement Range	cd/m <sup>2</sup>	0	10,000	Range [1, 10.000] cd/m <sup>2</sup> scalable
Resolution	cd/m <sup>2</sup>		1	Display resolution
Accuracy	%			Under 3%
Damping	seconds	1	100	Default setting is 10s

### Electrical

Item	Description	Min	Max	Comment
Input Voltage	Vac	120	480	See product ordering information below for different versions available
Power Consumption	W	6	10	Excluding washer
	W	48	52	With wiper/washer system (optional)

### Interface Options

Item	Description	Min	Max	Comment
Serial Outputs				ModBus RTU via RS485 (isolated) Ethernet (RJ-45) or Fiber Optic under request
Analog Outputs (one)	mA	0 / 2 / 4	20	Isolated and scalable (user selected) Maximum 500 Ohms resistance loop
Digital Relay Contacts (four)	A	0	1	@240Vac (signal levels and data valid)
Network Controller Integration				Internal diagnostic available when integrated with Nyx Hemera Network Controller. (Using RS485 Link)

### Physical - Photometer

Item	Description	Min	Max	Comment
Ingress Protection			IP66	
Operating Temperature	°C	-40	+50	
Storage Temperature	°C	-40	+50	
Operating Humidity	%		100	Up to
Regulatory Compliance				2004/108/EC (Electromagnetic Radiation)/ 2006/95/EC (Low Voltage)
Materials				Stainless steel 316 (powder coated)
Warranty	Months	24		Return to base warranty. Extensions available

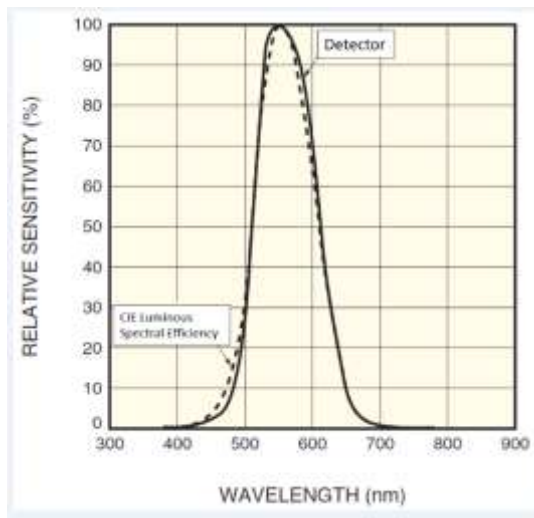


**Physical – Junction box (needed for all version except for RS-485 / 120-240 VAC L-N**

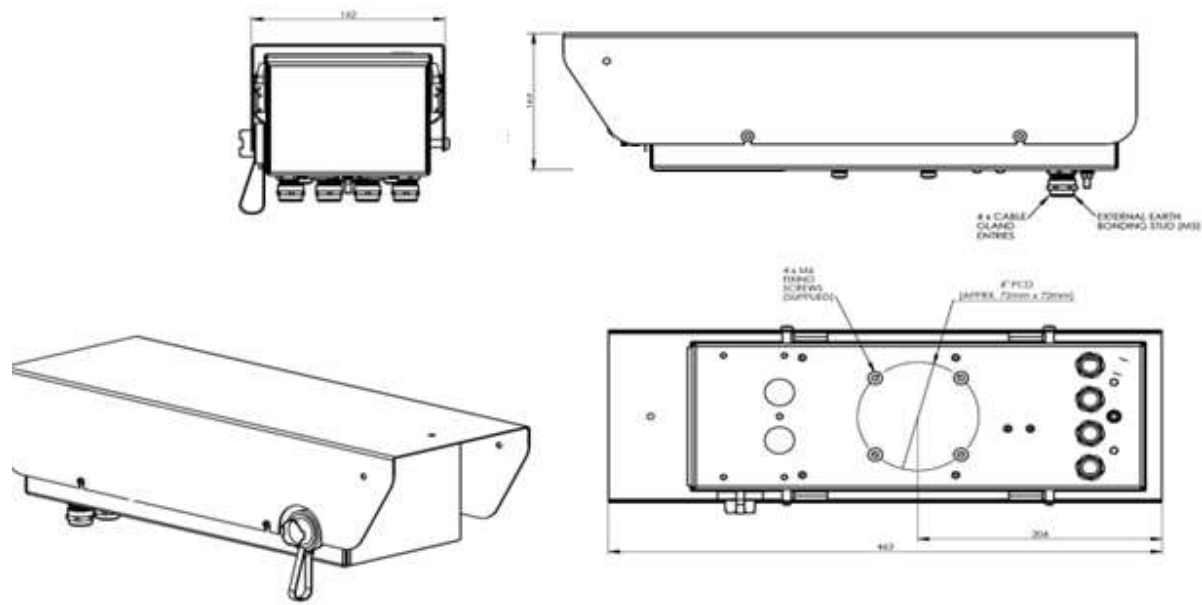
<b>Ingress Protection</b>			IP66	
<b>Materials</b>				Stainless steel 316 (powder coated)

Junction box dimension	Interface Connection			Voltage Input		Washer System	
	RS485	RJ45	FO SM or FO MM	120 - 240VAC L-N	240 VAC L-L, 277 L-N, 347 VAC L-N, 480 VAC P-P	Yes	No
No junction box	X			X		X	
250 X 205 X 154	X				X	X	
654 X 500 X 300	X			X			X
654 X 500 X 300	X				X		X
400 X 350 X 203		X		X		X	
400 X 350 X 203		X			X	X	
654 X 500 X 300		X		X			X
654 X 500 X 300		X			X		X
400 X 350 X 203			X	X		X	
400 X 350 X 203			X		X	X	
654 X 500 X 300			X	X			X
654 X 500 X 300			X		X		X

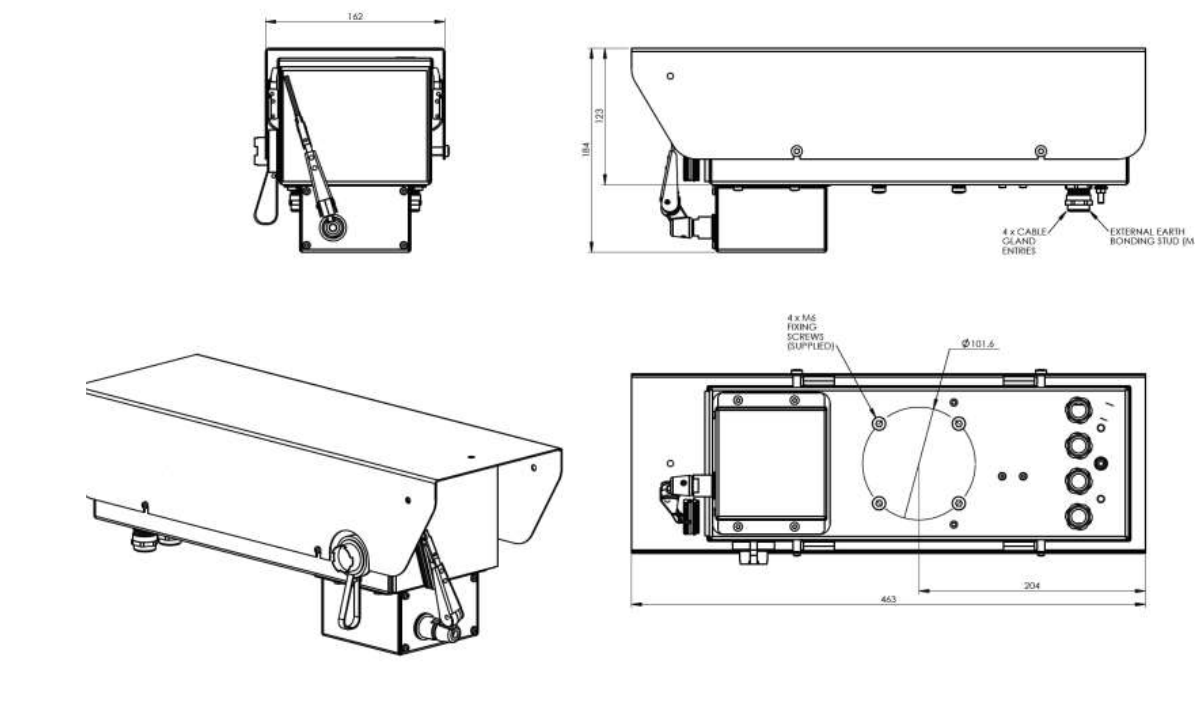
**Spectral Efficiency**



LCAM Dimension



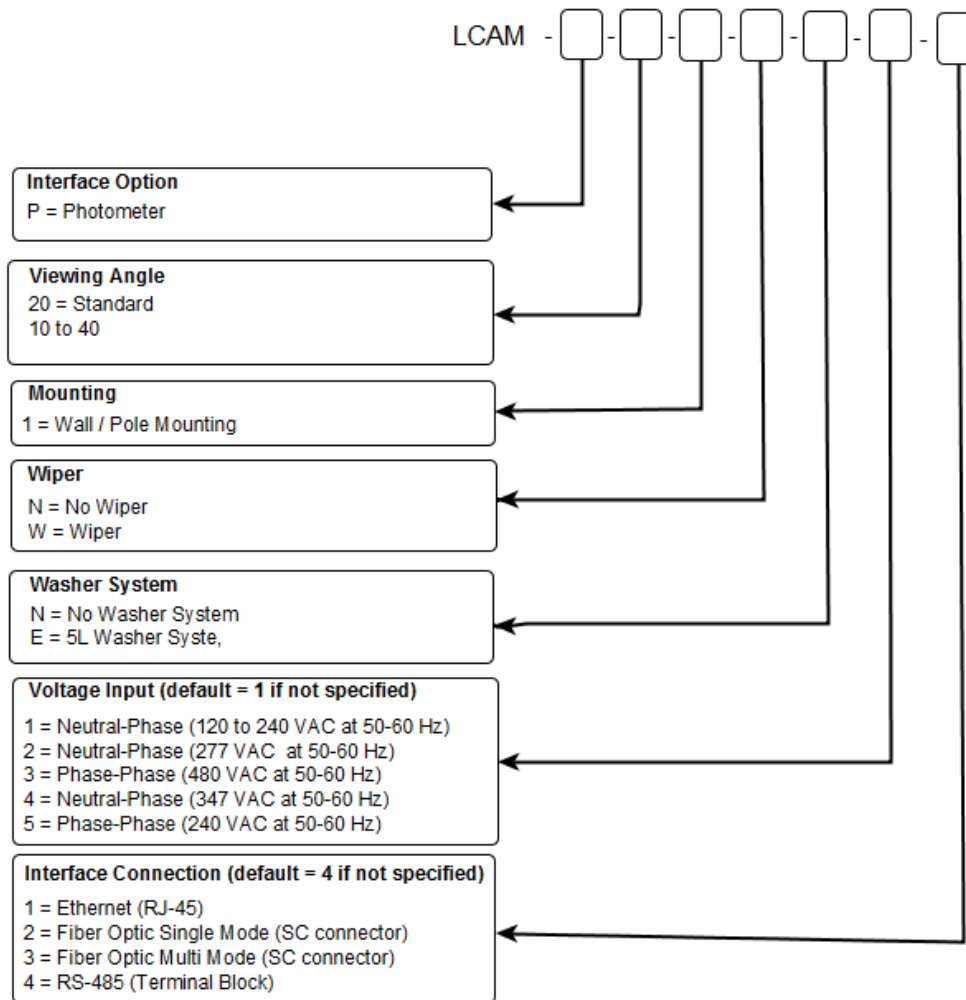
Dimensions with wiper-washer option



## Product Ordering Information

LCAM product identification follows the chart diagram below. Note that some combinations are exclusive.

For any further information, please contact [info@nyx-hemera.com](mailto:info@nyx-hemera.com)



**Note:** Different options and configurations available. Please contact us at [info@nyx-hemera.com](mailto:info@nyx-hemera.com).

