

## Luminance Photometer (LCAM)

### General Description

The LCAM measures the level of luminance or brightness created by natural light and communicates it to the lighting control cabinet in a tunnel, underpass, or any other outdoor area on a specific site. The lighting control system, in turn, adjusts the luminaire light levels maintaining the required visual perception of drivers. During both day and night, the LCAM measurements will avoid sudden variations in lighting levels and potential “black hole or glaring effects” 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 opening angle subtending 20° as recommended by CIE 88:2004 and RP-8-18.

Used with TLACS-EM or TLACS-U, the LCAM interfaces the system's main controller (LCC or UDE) using either a Power Line communication, RS-485, RJ-45, or fiber optic link.

To ensure proper alignment of the photometer, the LCAM can take a photo for the operator to compare it with one from the original setup.

### Features

- Accurate measurement of tunnel entrance luminance
- CIE and IES-approved measurement technology
- Other viewing angles available to compensate when Safe Stopping Sight Distance (SSSD) from the tunnel portal installation is not possible (when ordering)
- Photometer alignment monitoring
- Designed explicitly for tunnel control systems
- Rugged 316 Stainless Steel construction
- Simple installation/operation
- Communication for remote diagnostic and some configuration

## Technical Specifications

### Electrical

Item	Units	Min	Max	Comment
Input Voltage (Nominal)	VAC	120	480	As per the selected part number
Power Consumption	W	6	10	Excluding wiper/washer
	W	48	52	With wiper/washer system (optional)

### Interface Options

Item	Type/Units	Min	Max	Comment
Serial Outputs	RS-485			Modbus RTU (isolated)
	RJ-45			Ethernet
	Fiber optic			
	Power line			
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	@240 VAC (signal levels and data valid)
Network Controller Integration	RS-485 Link			Internal diagnostic. Available when integrated with Nyx Hemera Network Controller.

## Environmental

### Photometer

Item	Units	Min	Max	Comment
Ingress Protection			IP66	
Operating Temperature	°F (°C)	-40 (-40)	122 (50)	Washer fluid needs to meet this specification
Storage Temperature	°F (°C)	-40 (-40)	122 (50)	
Operating Humidity	%		100	Up to

### Junction Box (needed for all versions except for RS-485/120-240 VAC L-N)

Item	Description	Comment
Ingress Protection	IP66	
Materials	Stainless steel 316	

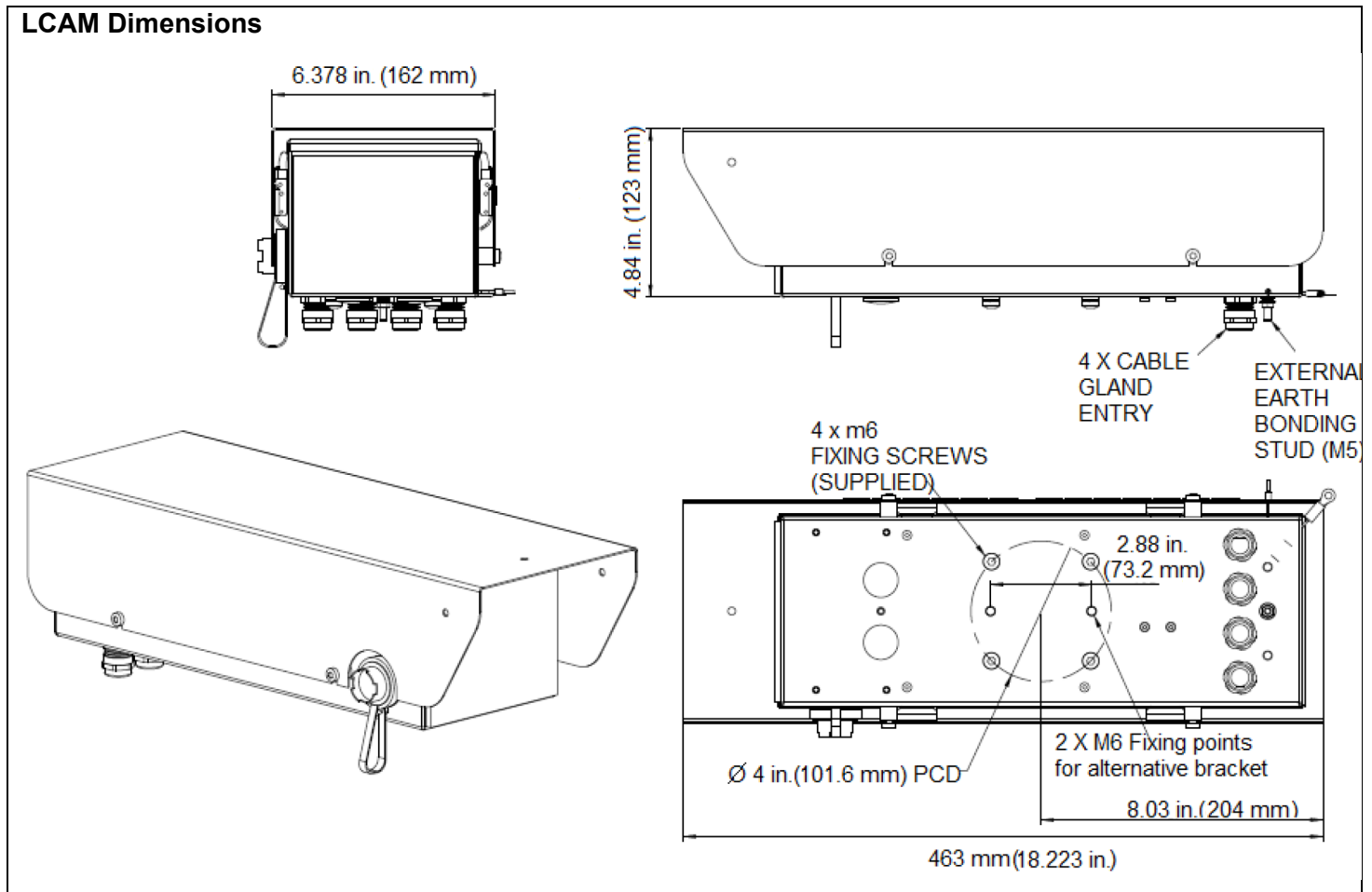
## Standards

Item	Description
<b>LCAM</b>	
Regulatory Compliance	2004/108/EC (Electromagnetic Radiation)/ 2006/95/EC (Low Voltage)
<b>LCAM Junction Box</b>	
Safety standards	CAN/CSA-C22.2 No. 14 UL 508A (2nd Edition)

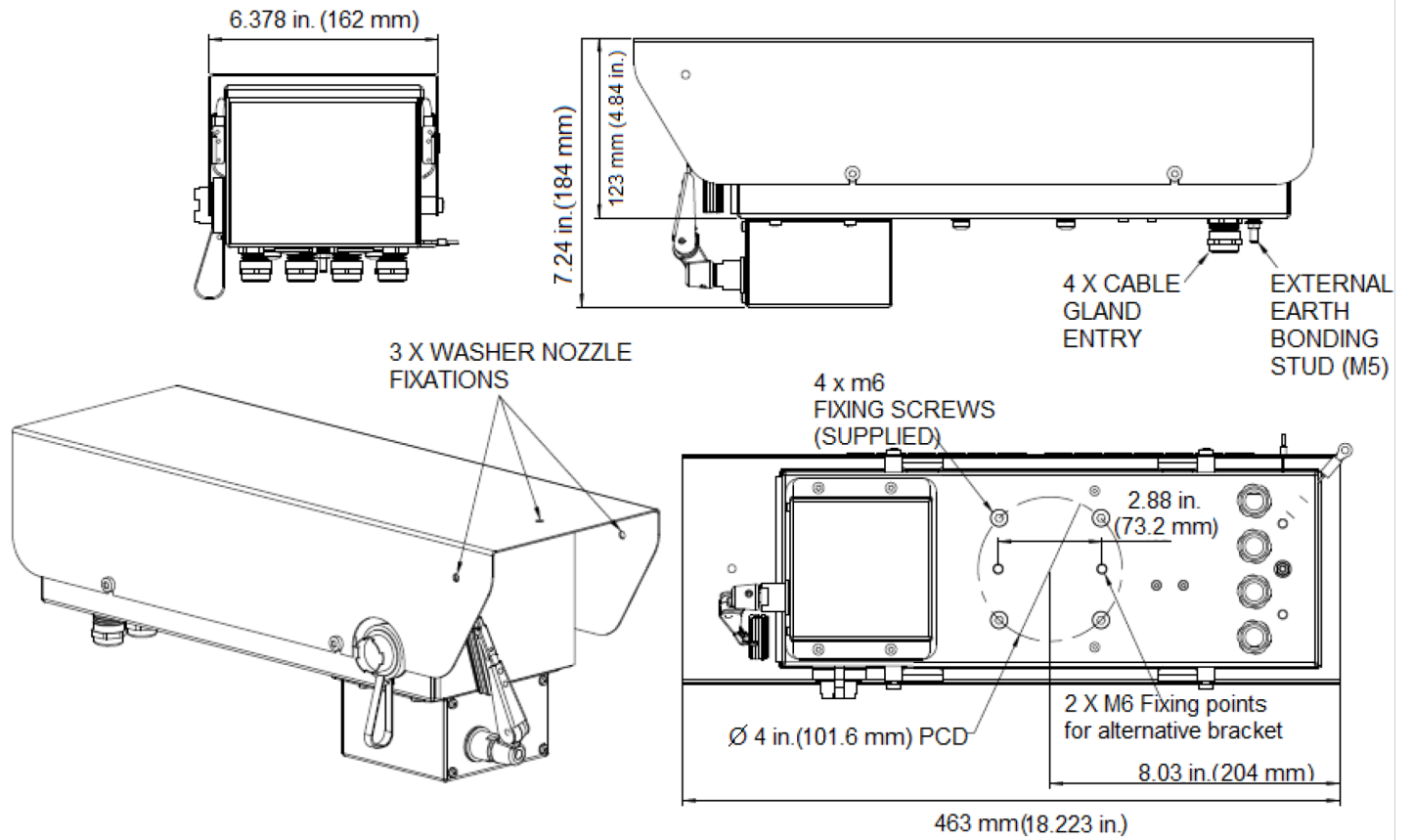
## Installation Information

### Mechanical Specifications

LCAM Junction Box								
Junction Box Dimension H x W x D Inches (mm)	Interface Connection				Voltage Input		Washer System	
	RS-485	RJ-45	Fiber SM or MM	Power Line	120 - 240 VAC L-N	240 VAC L-L, 277 L-N, 347 VAC L-N, 480 VAC L-L	With	Without
No junction box	X				X			X
10 x 8 x 6 (250 x 205 x 154)	X					X		X
16 x 14 x 8 (400 x 350 x 205)			X			X		X
26 x 20 x 12 (654 x 500 x 300)				any			X	



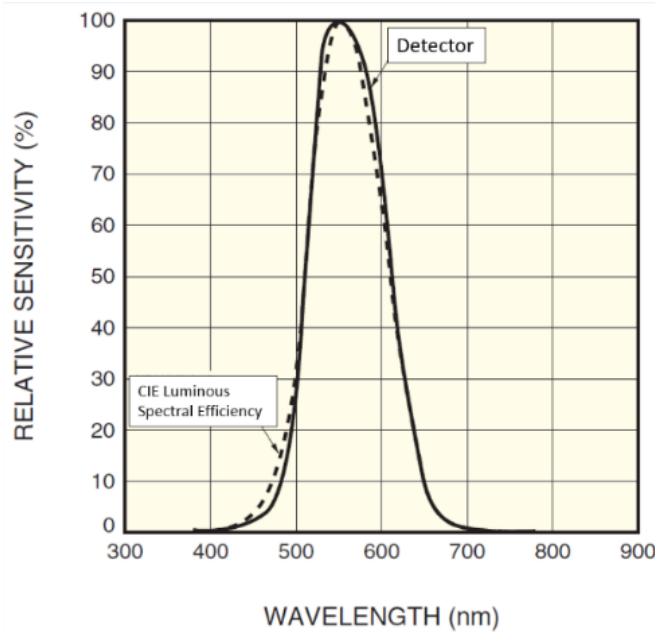
**LCAM Dimensions with Wiper/Washer Option**



## Measurement Performance

Parameter	Units	Min	Max	Comment
Detector				Silicon photodiode, V <sub>λ</sub> -filtered
Viewing Angle (FWHM)	degree	10	40	20° as standard; from 10 to 40° if requested
Measurement Range	cd/m <sup>2</sup>	0	10 000	Scalable
Resolution	cd/m <sup>2</sup>		1	Display resolution
Accuracy	%			Under 3%
Damping	seconds	1	100	The default setting is 10 s

## Spectral Efficiency



## Product Ordering Information

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



Segment Name (Left to Right)	Segment Value	Description
Interface option	P	Photometer
Viewing angle	20	Standard angle of 20°
	10-40	Factory pre-configured: 10° to 40°. If you have a 15-degree viewing angle, the value will be 15.
Mounting	1	1 = wall/pole mounting
Wiper	N	No wiper option
	W	Wiper option
Washer system	N	No washer system option
	E	5-liter washer system
Input voltage	1	120 to 240 VAC line-neutral
	2	277 VAC line-neutral
	3	480 VAC line-line
	4	347 VAC line-neutral
	5	240 VAC line-line
Interface connection	1	Ethernet (RJ-45)
	2	Fiber optics, single-mode
	3	Fiber optics, multi-mode
	4	RS-485 (terminal block)
	5	Power line
Other specific information		

For more information, please do not hesitate to contact the Nyx Hemera team at [info@nyx-hemera.com](mailto:info@nyx-hemera.com).